Annual Operation and Monitoring Report
Champlain Waste Disposal Site
2005

Prepared for:

Township of Champlain
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1 INTRODUCTION

The Township of Champlain retained the services of Levac Robichaud Leclerc Associates Ltd. (LRL) to prepare an Operation and Monitoring Report for the Champlain Waste Disposal Site. The Township owns the 24.8 hectare (61 acre) landfill located off County Road 11 (Cassburn Road), approximately 4.5 km south of the Village of L'Orignal in the Township of Champlain, Ontario. The location of the landfill is shown on the map included in **Appendix A**. The Township operates the landfill under Certificate of Approval No. A471601 issued on March 11, 1980 and amended on November 19, 2004.

The monitoring program was performed in accordance with the Ministry of the Environment (MOE) review and recommendations of past monitoring reports and our report entitled "*Annual Monitoring Program, 2004*" dated March 2005. This report is intended to fulfill Condition 10 of the amended Provisional Certificate of Approval No. A471601 (November 2004).

2 SCOPE OF WORK

LRL's scope of work for this project consisted of the following tasks:

- Review of landfill operation activities during the 2005 operating year;
- Install a new monitoring well in the area of MW7.
- Conducting a semi-annual groundwater monitoring program that included sampling all monitoring wells (if possible) located within the landfill property. The sampling events took place during the spring and fall of 2005 in order to obtain the seasonal change of the groundwater chemistry;
- Analyze the samples according to the Ontario Ministry of the Environment (MOE) landfill standards and guidelines, including analyzing several samples for Volatile Organic Compounds (VOC);
- Confirming the groundwater flow paths by obtaining the water levels of the monitoring wells;
- Verifying the presence or absence of landfill (methane) gas at the site;
- Review the current and historical laboratory analysis of groundwater obtained from the monitoring wells to determine if there is a trend in the levels of selected parameters;
- Ensuring that the site is in compliance with the MOE's Guideline B-7;
- Preparing an annual monitoring report.

3 SUMMARY OF OPERATION

3.1 Type and Quantity of Waste Accepted

The Champlain Waste Disposal Site is licensed to receive domestic and commercial non-hazardous solid industrial waste, with all other regular domestic liquid wastes being disposed of at a separate landfill site. The wastes accepted at the landfill include white goods, tires, scrap metal, construction debris, wood and furniture.

Due to the small size of the landfill a scale facility is not economically justified therefore the volume is estimated the volume based on the increase in the waste footprint and height. During 2005 the waste footprint (north of the access road) extended approximately 4.5 m and its height (1.2 m) and width (40 m) has not changed. Therefore the approximate volume of waste accepted at the landfill this year is 216 m^3.

3.2 Remaining Capacity

The licensed area of the landfill is 24.84 ha. Approximately 30 percent (7 ha) is cleared with the remainder being dense brush. The footprint of the existing waste is approximately 1.5 ha, which represents only 2.3 % of the approved capacity (1 285 036 m^3). Based on the licensed size and the amount of waste accepted, the landfill could operate for another 2 700 years. This does not take into consideration population growth and increase use of recycling.

Due to the size of the landfill and the relatively small volume of waste accepted annually, a 25-year development plan was prepared for the landfill (starting this year). The plan showed the progression of the waste footprint at five-year intervals (see **Appendix A**). The waste is to be placed north of the access road where waste is currently being placed and the active face will progress eastward. The footprint of this area is approximately 6 600 m^2 and its capacity is 7 560 m^3. The development plan will be updated after 25 years or when the capacity is reached, which ever comes first. The amount of waste accepted this year represents 2.8 % of this area's capacity.

3.3 Compliance with Design, Operation & Maintenance Plan

A Design, Operation and Maintenance Plan has been prepared for the landfill and includes, but is not limited to, the following:

- Types of waste accepted;
- Waste inspection and accepting procedures;
- Inspection schedules;
- Emergency response and contingency plans; and
- Information that must be recorded (i.e. amounts of waste accepted, summary of recycling operation, inspections conducted);

According to the site superintendent, there has been no problems or incidents at the landfill (i.e. spills, accidents, vandalism, odours, windblown litter). No unapproved wase has been deposited at the landfill. The site is regularly inspected for windblown and off-site litter. There have been no complaints from adjacent landowners or users of the landfill.

In April 2005, the Cornwall District MOE conducted a site visit of the landfill. It was observed that a large shallow excavation was dug in front of the landfill's active face south of the access road. Water was pooling in this area and waste was being deposited within the water. MOE stated that the deposition of waste with in the water be stopped. The township has filled in this shallow excavation, covered the active face with a minimum of 0.6 m of cover material and the depositing of waste in this area has stopped. All waste is currently being placed in the area north of the access road.

3.4 Recycling Operation

Waste accepted at the site such as tires, white goods, concrete, asphalt and metals are removed by local contractors for recycling. The quantities of waste recycled were not recorded.

4 LANDFILL'S HYDROGEOLOGICAL SETTINGS

Hydrogeological site assessments of the Champlain Waste Disposal Site have been conducted by LRL in 1996 and 2001. The assessment involved drilling boreholes and installation of monitoring wells. The following information regarding the site was revealed:

- The landfill site is located on a topographical high point, showing a shallow rock ridge within the existing landfill operations. The rock dips in both an east and west direction.
- Bedrock was located at depth ranging between 2.1 to 4.4 m on the shallow ridge dipping to depth below 5.5 m towards the west and 11.5 m towards the east. The first 1.2 m of the bedrock formation east of the ridge is considered fractured and pervious while the entire depth tested (3.0 m) on the west side of the ridge is fractured rock.
- The site geology consist of a sand deposit on the bedrock ridge approximately 0.9 to 4.1 metres in thickness underlained by a dense to very dense silt and sand glacial till.
- A typical cross-section of the site in succession away from the ridge going east or west shows:
    - Pervious loose beach sand;
    - Silt and silty sand transition layer
    - Impervious firm to hard marine clay; and
    - Sandy silty medium dense glacial till resting over bedrock.
- Due to the topographic high point and the bedrock ridge a water divide line crosses the site in the area of the high point where the waste material is buried.
- Three (3) water tables are encountered at this site:
    - Shallow perched water table located in the surficial sand layer, which flows towards the northeast;
    - Deep water table located within the till layer and the fractured bedrock which flows to the north; and
    - Overburden groundwater flow is from the high point towards the northwest.
- The groundwater recharge at this site comes mainly from the rain falling over the site. The recharge rate of the aquifers is considered small.

A site plan and a profile of the above-mentioned geological features are included in **Appendix A**.

5 ANNUAL MONITORING PROGRAM

5.1 Monitoring Well Installation

A new monitoring well was installed on site in July 2005, near the location of MW7. Since 1996 MW7 has only been sampled twice. The well has not been drilled deep enough into the bedrock to ensure sufficient quantities of groundwater for sampling. The well was drilled by Gilles Bourgeois Well Drilling Ltd. using an air rotary drill rig. The well was drilled to a depth of 12 m and extended approximately 6.4 m into the bedrock.

The well was constructed within the 150 mm hole made in the overburden soils and bedrock. A 50 mm slotted PVC piezometer was placed inside the hole in order to bisect the groundwater table. The annular space around the slotted portion of the piezometer was backfilled with pre-washed and graded silica sand up to 300 mm above the groundwater table. The remaining annular space was filled with 0.3 m of bentonite to form a seal and avoid cross contamination with surface water infiltration. The remainder of the annual space was sealed with soil cuttings. The borehole log detailing the well's construction is included in **Appendix B**.

5.2 Groundwater Sampling

LRL technical staff conducted groundwater sampling on May 31st and November 16th, 2005. This involved sampling eighteen (18) monitoring wells installed within the landfill. The location of all monitoring wells and site features are shown on our site plan in **Appendix A**. Fourteen (14) of the existing monitoring wells were sampled in the spring and thirteen (13) were sampled in the fall. The remaining wells were not sampled because they were either dry or there was an insufficient amount of water for sampling and chemical analysis.

The monitoring wells were purged of standing water prior to sampling of the groundwater. The monitoring wells were purged dry three (3) times or equivalent of three (3) well volumes was removed. The monitoring wells were purged using "Waterra" flexible tubing fitted with a foot valve. All "Waterra" tubing and foot valves were left in the monitoring wells to permit future sampling and avoid cross contamination.

The water was transferred immediately into laboratory prepared bottles containing the appropriate preservative for the target parameters. The water samples for metal were filtered in the field using high efficiency "Waterra" filters. All groundwater samples collected were submitted to Paracel Laboratories Ltd. of Ottawa for analysis of Column 1 parameters listed in Schedule 5 of the MOE's *Landfill Standards* (May 1998) with the inclusion of arsenic, manganese, Total Kjeldahl Nitrogen (TKN), potassium, hardness (calculated), nitrites and volatile organic compounds (VOC). Inclusion of arsenic in the groundwater analysis will determine if the use of arsenic contaminated soil as cover material has impacted the groundwater. Field parameters such as temperature and pH were measured on site using a hand held instrument.

The static water elevation of all monitoring wells was measured prior to collecting the groundwater samples. The groundwater elevations are shown on the site plan and are summarized in **Table 1**. Water levels have generally increased by 0.03 m when compared to the 2004 measurements. The flow directions of the shallow and deep overburden aquifers have remained the same: to the east and west for the shallow aquifer and to the northeast for the deep aquifer from the water division line located on the site's high point.

Table 1 Summary of monitoring wells sampled in 2005.

Monitoring Well	Aquifer Tapped into	Type of Monitor	Water Level Depth (m) Elevation (m)		Wells Sampled		Comments
			Spring	Fall	Spring	Fall	
MW-1S	Sand	Impact	0.89 98.46	1.21 98.14			Insufficient water present in well for sampling
MW-1D	Till	Impact	1.31 98.04	1.37 97.98	X	X	
MW-2	Sand	Impact	1.55 98.71	1.41 98.85	X	X	
MW-3S	Fill	Leachate	1.71 98.09	1.73 97.07			Insufficient water present in well for sampling
MW-3D	Till	Leachate	1.62 98.18	1.74 98.06	X	X	
MW-4S	Sand	Impact	1.09 98.26	1.08 98.27			Insufficient water present in well for sampling
MW-4D	Till	Impact	3.97 95.38	4.08 95.27	X		Insufficient water present in well for sampling in Fall
MW-5S	Sand	Impact	0.24 97.43	0.07 97.60	X	X	
MW-5D	Bedrock	Impact	6.55 91.09	7.23 90.41	X	X	
MW-7S	Bedrock	Impact	DRY	DRY			Insufficient water present in well for sampling
MW-7D	Bedrock	Impact	--	7.25 88.90		X	Well installed after spring sampling.
MW-8S	Sand	Impact	1.21 98.02	1.25 97.98	X	X	
MW-8D	Till	Impact	7.99 91.20	8.59 90.60	X	X	
MW-11	Till	Background	4.52 95.01	4.79 94.74	X	X	
MW-12S	Clay	Background	0.29 95.76	0.57 95.48	X	X	
MW-12D	Till	Background	3.70 92.37	4.0 92.09	X	X	
MW-14	Till	Background	1.75 95.41	4.03 93.13	X	X	
MW-15S	Sand	Impact	1.30 96.80	1.34 96.76	X	X	
MW-15D	Till	Impact	5.78 92.06	6.74 91.10	X		Insufficient water present in well for sampling in Fall

The summary tables of the groundwater chemistry of each well are presented in **Appendix C**. These tables show the evolution of the groundwater since monitoring commenced in 1996. Excedances in relation to the Ontario Drinking Water Standard – 2005 (ODWS) are given. The laboratory analysis reports for the groundwater samples collected during the spring and fall sampling events of 2005 are enclosed in **Appendix D** and **Appendix E,** respectively.

5.3 Discussion and Interpretation of Results

In general, the groundwater chemistry has remained relatively unchanged from the previous year with only marginal increases or decreases in some parameters. General exceedances to the ODWS remain similar to those in previous years such as for iron, manganese and dissolved organic carbon (DOC). These elements are considered aesthetic, they are commonly found in exceedances within groundwater aquifers throughout Ontario and are naturally occurring. Nevertheless, these levels shall be monitored through an annual sampling program for any increases.

5.3.1 Background Monitors

The background water quality is measured in MW11, MW12-S, MW12-D and MW14. Although these wells are down gradient to the waste, their distance from the buried waste (at least 40 m) and the fact that the concentrations of leachate parameters have remained relatively low, allow them to be used as background monitors. The chemical analysis of these wells will be closely examined in the future to ensure that potential leachate plumes do not impact the wells. If it is determined so, they will be used as impact monitors and new background wells will be drilled further down gradient.

For MW11, the levels of the parameters have remained relatively constant over the years; indicating the well has not been influenced by the landfill activities down gradient, to the northwest. However the levels of nitrates are high relative to the other monitoring wells, including the leachate monitor MW3-D. The levels of nitrate range from 1.8 to 3.2 mg/L; while in most of the wells the levels are either below 1.0 mg/L or not detected. MW-11 is located upstream of the groundwater flow and along the south property line, suggesting a potential exterior source. This may be related to agricultural activities such as the application of manure or fertilizer onto neighbouring lands. The levels of iron (0.4 mg/L) marginally exceeded the ODWS of 0.3 mg/L. This level is comparable to or less than the levels found in the other monitoring wells further downstream of the buried waste.

The remaining monitoring wells to the east of the buried waste (MW12-S, MW12-D, MW14) generally showed no increasing trend in the measured parameters. The levels of iron and manganese are found to be above the ODWS of 0.3 mg/L and 0.05 mg/L, respectively. The levels of iron ranged between 0.5 and 3.3 mg/L with the highest level being found in MW12-S. The levels of manganese ranged between 0.1 and 0.25 mg/L with the highest levels found in MW12-S. The levels of iron in MW12-S and manganese in MW12-S and MW12-Dis comparable to that found in the past. There was a significant increase in the level of iron in MW12-D and MW14 during the fall sampling; it has not been detected in the past few sampling events. Further sampling will indicate if there is an increasing trend in this parameter.

A VOC scan was done on the groundwater samples from MW11, MW12-S and MW12-D. Trace amounts of toluene were detected in MW11 and MW12-D (0.0025 mg/L) during the spring sampling. There is no ODWS for this parameter. Trace VOCs have been detected in these wells and in MW14 in the past.

5.3.2 Leachate Monitor

Excedances in MW3-D (leachate quality) included hardness, total dissolved solids (TDS), iron and manganese. The levels of these parameters are similar to that found in the past sampling. Hardness ranged between 508 and 566 mg/L which is above the ODWS of 500 mg/L. However it has decreased since the 2004 sampling. TDS is between 290 mg/L and 830 mg/L (the ODWS is 500 mg/L). Iron was not detected in the spring but found at 0.6 mg/L in the fall, above the ODWS of 0.3 mg/L. Manganese ranged between 0.35 mg/L and 0.95 mg/L above the ODWS of 0.05 mg/L. However its level are lower than that found during the 2004 sampling. The levels of barium, which were found to be increasing in the past, have dropped. The levels of nitrates during the 2004 sampling is similar to that found in the past and in other monitoring wells.

Tetrachloroethylene and toluene were detected in the groundwater samples during the spring sampling at 0.001 mg/L and 0.0045 mg/L, respectively. The level of tetrachloroethylene is significantly lower than the ODWS of 0.03 mg/L. There is no ODWS limit for toluene.

5.3.3 Impact Monitors

MW7-S and MW7-D are located directly downstream (northwest) of the buried waste. MW7-S has been dry since 2002 therefore a deeper well (MW7-D) was drilled in July 2005. The water was sampled in the fall. The results showed high levels of iron and manganese. Iron was 3.9 mg/L, above the ODWS of 0.3 mg/L and manganese was 0.25 mg/L above the ODWS of 0.05 mg/L. The levels of these parameters are similar to that found in the other impact monitors and may be naturally occurring.

MW2, MW4-S and MW4-D are located directly downstream (northeast) of the buried waste. There was insufficient groundwater for sampling MW4-S and MW4-D (fall only). The groundwater from MW2 showed no excedances of the ODWS or no increasing trends in any of the parameters. The levels of DOC in the well have decreased to between non-detectable and 0.5 mg/L. The levels found during the past sampling events were between 1 mg/L and 7 mg/L. A groundwater sample was collected from MW4-D during the spring. This is the third sample collected from this well since 1996, as it is normally dry. The level of DOC was 9 mg/L, above the ODWS of 5 mg/L; TDS was 790 mg/L, above the ODWS of 500 mg/L; and manganese was 0.55 mg/L, above the ODWS of 0.05 mg/L. However the ODWS levels are comparable to that found in other impact monitors; more sampling from this well would be required to determine if there is an impact due to the buried waste.

MW8-S and MW8-D are located directly downstream (to the east) of the buried waste. Iron and manganese in MW8-S was 0.4 mg/L and between 0.3 and 1.1 mg/L, respectively. This is above their respective ODWS of 0.3 mg/L and 0.05 mg/L. The level of manganese in MW8-D was 0.35 mg/L. These levels are comparable to that found in the past and in other monitoring wells. The pH in MW8-S is between 5.68 and 5.82 mg/L below the ODWS of 6.5. The levels found is similar to that found during the past sampling events; however it is much lower than that found in the other monitoring wells. The nitrate concentrations have steadily increased in MW8-S in the past, however they were not detected during the 2004 and 2005 sampling. High levels DOC measured in MW8-D during the 2004 season (between 20 and 25 mg/L) were not measured during this sampling event. The DOC levels ranged between 1.0 mg/L and 1.5 mg/L.

MW1-S and MW1-D are located up gradient (to the southwest) of the buried waste. MW1-S had an insufficient amount of water for sampling. As discussed in past reports, this well and MW1-D are interconnected therefore the water from MW1-D is representative of that from MW1-S. The

levels of TDS in the Fall sampling was 840 mg/L, above the ODWS of 500 mg/L. Iron and manganese were 2.2 mg/L and 0.15 mg/L, respectively. They were above their respective ODWS of 0.3 mg/L and 0.05 mg/L. The levels found were comparable to that found during the past events. The pH during the fall sampling was 6.34, which is lower than the ODWS of 6.5. The pH levels found in this well have been consistently low. MW1-D, like MW-11 has consistently shown above normal nitrate levels. MW-1 is also located upstream of the groundwater flow and along the south property line, suggesting a probable exterior source (agricultural activity).

The remaining wells to the east of the buried waste (MW5-S, MW5-D, MW15-S, MW15-D) generally exceed the ODWS for iron and manganese. The level of iron is between being non-detectable and 9.5 mg/L. The level of manganese is between being non-detectable and 1.7 mg/L. The highest levels of iron and manganese were found in MW5-D during the fall sampling. The level of iron and manganese has increased significantly in MW-5 during the fall sampling. Further sampling will determine if this is an increasing trend or an anomalous result. Otherwise these wells showed no increasing trend in the levels of measured parameters and the levels were similar to that found in the past. The pH of the water from MW15-S is low, between 6.23 and 6.29. These levels have been found during the past sampling. The high level of DOC found in MW15-S in the Fall 2004 sampling (7 mg/L) is likely an anomalous result as the levels have dropped during the 2005 sampling to between 1.0 and 1.5 mg/L.

A VOC scan was performed on samples collected during the spring and fall from the following indicator monitors: MW8-D and MW8-S. Toluene was detected in these wells during the spring sampling at 0.002 mg/L in MW8-S and 0.0035 mg/L in MW8-D. VOC were not detected during the fall sampling. There is no ODWS for toluene however the levels found are low.

6 ENVIRONMENTAL IMPACT ASSESSMENT

6.1 Guideline B-7

The Environmental Impact Assessment was performed in accordance with the Reasonable Use Guideline (RUG) (MOEE Guidelines, B-7, 1995, also O. Reg. 232/98). The Guideline B-7 addresses the levels of off-site leachate impacts on the groundwater considered acceptable by the MOE and defines the level of impact on the groundwater beyond which some form of mitigation measure would be warranted. Under Guideline B-7 a change in the quality of the groundwater on adjacent properties will only be acceptable if the quality is not degraded in excess of fifty (50) percent of the difference between the background concentrations and the established water quality criteria for non-health related parameters and twenty-five (25) percent of the difference for health related parameters. The reasonable use for groundwater in the subject area has been determined for domestic supplies therefore the water quality criteria used is the ODWS. The reasonable use assessment was limited to landfill leachate indicator parameters such as chloride, alkalinity, hardness and sulphate as recommended by the MOE.

For the purpose of the environmental impact assessment the following were taken into consideration:

- **Background Concentration (C_b):** MW-11, MW12-S, MW12-D and MW14 were chosen as background water quality concentration. The average concentration of a given parameter was obtained for the spring and fall sampling.

- **On Site Leachate Concentrations:** Samples obtained from MW-3D installed in the buried waste was chosen as representative of on site leachate concentrations.
- **Leachate Quality:** The monitoring wells located downstream of the groundwater flow direction and near the property line were retained to perform the analysis, which included MW2, MW5-S, MW5-D, MW7-D, MW8-S, MW8-D, MW15-S and MW15-D.

The maximum concentration (C_m) of a particular contaminate that would be acceptable in the groundwater beneath the adjacent property is calculated as follows:

$C_m = C_b + x(C_r - C_b)$

where : C_b is the background concentration

C_r is the maximum concentration in accordance with the Province' s water management guidelines (i.e. ODWS)

x is the constant that reduces the contamination levels

0.25 for health related

0.50 for non - health related

Table 2 and Table 3 presents the RUG assessment of the leachate indicator parameters for spring and fall, respectively, and compares the results with leachate quality parameters obtained from the monitoring wells located within the waste area and downstream of the flow direction. Calculation of the RUG is included in **Appendix F**.

The reasonable use assessment reveals that the groundwater within the immediate vicinity of the buried waste is impacted with high levels of hardness and alkalinity. Levels of hardness and alkalinity are above C_m in MW3-D. Hardness exceeded the C_m in MW4-D in the spring. The groundwater from MW7-D in the fall exceeded the C_m for alkalinity, hardness and sulphate. These excedances were marginal and were less than that for the leachate monitor with the exception of sulphate. The excedance of these parameters may be due to the natural groundwater quality or due to leachate impacts. This is the first time this well was sampled and its baseline conditions have not be determined. Furthermore, this well taps deeper into the bedrock than the other well. Further sampling will determine the source of the impacts. The groundwater quality in the remainder of the wells meets Guideline B-7. The leachate plume has not affected the remaining monitoring wells located downstream to the east.

Included in **Appendix H** are time-series graphs of alkalinity, chloride, sulphate and hardness with their respective C_m. There are no increasing trends observed in the monitoring wells for these parameters.

Table 2 Groundwater chemistry using RUG, Spring 2005.

	Monitoring Well	Concentration (mg/L)			
		Alkalinity	Chloride	Hardness	Sulphate
Ontario Drinking Water Standard (C_r)		500	250	500	500
Background Monitors* (C_b)		104	2	108	10
Maximum Concentration (C_m)**		**302**	**126**	**304**	**255**
Leachate Monitor	MW3-D	**400**	3	**508**	100
Impact Monitors	MW1-D	65	8	56	18
	MW2	65	ND	60	5
	MW4-D	290	30	**498**	250
	MW5-S	65	3	68	13
	MW5-D	150	2	141	8
	MW8-S	20	11	46	20
	MW8-D	130	3	134	15
	MW15-S	20	4	30	8
	MW15-D	100	1	90	22

* Average of wells MW11, MW12-S, MW12-D, MW14 for spring sampling.
** $C_m = C_b - 0.5(C_r - C_b)$
UNDERLINE: Above RUG limit (C_m)
ND: Not Detected

Table 3 Groundwater chemistry using RUG, Fall 2005.

	Monitoring Well	Concentration (mg/L)			
		Alkalinity	Chloride	Hardness	Sulphate
Ontario Drinking Water Standard (C_r)		500	250	500	500
Background Monitor* (C_b)		198	2	134	9
Maximum Concentration (C_m)**		**349**	**126**	**317**	**255**
Leachate Monitor	MW3-D	**460**	9	**566**	82
Impact Monitors	MW1-D	95	14	152	22
	MW2	130	ND	65	6
	MW5-S	70	3	77	12
	MW5-D	151	3	148	12
	MW7-D	**360**	13	**356**	**260**
	MW8-S	35	12	62	22
	MW8-D	150	7	181	33
	MW15-S	25	4	42	8

* Average of wells MW11, MW12-S, MW12-D, MW14 for fall sampling.
** $C_m = C_b - 0.5(C_r - C_b)$
UNDERLINE: Above RUG limit (C_m)
ND: Not Detected

6.2 Ion Balance

A major ion balance was conducted on the groundwater sample analytical results. This was done to comply with Condition 10(m) of the Amendment to the Certificate of Approval. The percent difference between the sum (expressed as meq/L) of major cations and ions is calculated as follows:

$$\%Difference = 100 \times \frac{\Sigma cation - \Sigma anion}{\Sigma cation + \Sigma anion}$$

The percent difference between the sums is summarized in Table 4. Calculation of the ion balance is included in **Appendix F**. The ions included in the balance include alkalinity (HCO_3^-), chloride, sulphate, nitrates, calcium, magnesium, potassium and sodium.

Table 4 Summary of ion calculations.

	Monitoring Well	% Difference	
		Spring 2005	Fall 2005
Background Monitor (C_b)	MW11	**10.5**	**-23.7**
	MW12-S	**18.0**	**14.2**
	MW12-D	8.6	10.0
	MW14	**12**	**14.1**
Leachate Monitor	MW3-D	8.5	**11.4**
Impact Monitors	MW1-D	**-11.6**	**14.9**
	MW2	9.7	**-18.9**
	MW4-D	1.2	NA
	MW5-S	4.6	**12.2**
	MW5-D	6.0	**18.4**
	MW7-D	NA	-5.5
	MW8-S	3.5	**10.4**
	MW8-D	5.7	9.4
	MW15-S	7.3	**18.6**
	MW15-D	1.9	NA

UNDERLINE: Difference greater than ±10% **NA**: Not Applicable/Not Analysed

The ionic balance is one of the most common ways to check for analytical errors. Water is electrically neutral, so the sum of the cations in meq/L should equal the sum of the anions in meq/L. The ionic balance error should be less than 10 %. If the balance is much greater then

- The analysis is poor; or
- There were other constituents present that were not used to calculate the balance.

Some of the wells were marginally above 10%, namely MW11, MW14 and MW1-D in the spring and MW3-D, MW5-S and MW8-S in the fall. MW12-S in the spring and MW11, MW12-S, MW14, MW1-D, MW2, MW5-D and MW15-S in the fall were significantly above the 10% limit. Inclusion of other constituents (such as metals) did not bring down the percent difference. The high percent difference may be due to the presence of high levels of calcium (as in MW5-D) and alkalinity (as in MW2, MW11 and MW12-S).

6.3 Piper Trilinear Diagrams

Trends in groundwater quality have been plotted on Piper Trilinear diagrams, which are included in **Appendix G**. This was done to comply with Condition 10(k) of the Amendment to the Certificate of Approval. A Piper diagram is a plot that provides visual representation of the concentration of major ions in water. The diagram can be used in determining similarities and differences among water samples. Plots were done for the spring and fall sampling events. Calculation for the diagram is included in **Appendix F**.

Many of the wells sampled are clustered together on the diagram, indicating they are similar in ion ratios. The Piper diagram indicates that for most of the wells, the predominant ions in the groundwater are calcium, magnesium, sulphate and chloride.

From the Spring 2005 sampling, MW8-S and MW4-D appear to have different water chemistry from the other wells. The data for these wells is separate from the cluster of wells in the anion triangular field and diamond shape field. These two wells are downstream of the buried waste. From the Fall 2005 sampling MW8-S and MW7-D appeared to have slightly different chemistry from the remaining wells. MW7-D is the deep well down gradient of the waste. This well taps into the bedrock at a greater depth than the other wells.

7 LANDFILL GASES

The presence or absence of landfill gas (methane) was determined with the use of a piezometer installed above the groundwater table and located within waste area. This piezometer was placed in MW-3 and landfill gas was measured using a Thermo Gastech vapour monitor (model GT-105). Landfill gases were not detected during the investigation.

The total available waste disposal volume of the landfill is considerably lower than 3.0 million m^3 and the waste is predominantly non-hazardous dry waste. Therefore, landfill gases should not be a concern for this site (O. Reg. 232/1998, Section 15).

8 CONCLUSIONS AND RECOMMENDATIONS

Presently, there are nineteen (19) single and multi-level monitoring wells installed across the landfill site, which bisect the two (2) overburden groundwater tables. A new monitoring well, MW7-D was drilled to replace MW7. During the course of 2005, most of them were sampled. Those that could not be sampled were either dry or had insufficient water quantity to permit proper water sampling. These were MW1-S, MW3-S, MW4-S, MW4-D (Fall) and MW7-S.

Generally, the groundwater chemistry has remained essentially unchanged from the previous years with only marginal increases or decreases in some parameters. Parameters exceeding the ODWS remain similar to those in previous years such as for iron, manganese and DOC with no major increases in concentrations. As noted before, these substances are commonly found in exceedance in groundwater throughout Ontario. Again this year, above average nitrate nitrogen levels were found in monitoring wells located upstream from the landfill (MW1-D and MW11), which may indicate a potential exterior source of contamination such as the surrounding agricultural activities. In any case, these levels shall be monitored closely in the subsequent sampling events.

Arsenic has not been detected in any of the groundwater samples. This indicates that the storage and use of the arsenic contaminated soil as cover material has not impacted the groundwater during the 2005 operation. However, continued sampling will confirm if there will be an impact in the future.

The groundwater impact assessment indicated that the site is in compliance with the Guideline B-7 requirements. The water samples collected from the monitoring well MW3-D, located within the buried waste, were impacted by the landfill operations. The groundwater from MW7-D was marginally above the C_m for alkalinity, hardness and sulphate. This well is located to the northwest and downstream of the buried waste. This well was drilled in July 2005 and was only sampled once. The exceeding parameters may be due to the natural groundwater quality or due to leachate impacts. Furthermore, this well taps deeper into the bedrock than the other well. Further sampling will determine the source of the impacts. Towards the east the leachate plume appears to be presently isolated within the active landfill itself. The downstream wells set along the property's limit meet the guidelines.

Finally, landfill gases were not detected during this investigation, which is common considering the volume and type of waste being buried (dry solids).

9 2005 MONITORING PROGRAM

The proposed monitoring program for the upcoming year shall be conducted in the same manner as in the past year and shall generally consist of the following tasks:

- The sampling events shall be carried out during the spring and fall to obtain the seasonal variation of water chemistry and to compare with previous sampling data.
- Parameters monitored will include the indicator list given in the MOE Landfill Standards (Schedule 5, Column 2) with the inclusion of arsenic, manganese, Total Kjeldahl Nitrogen (TKN), potassium, hardness (calculated), nitrites and volatile organic compounds (VOC). Arsenic was added to the parameter list in order to monitor any impact of the arsenic impaired soil that was imported to the landfill this fall.
- VOC scan shall be performed on groundwater from MW3-D and in the monitoring wells where traces of VOC were detected (MW-8D, MW-8S, MW11, MW12-D, MW12-S).
- Field parameters shall include conductivity, TDS, temperature and pH.
- Water elevation shall be taken during each sampling event to confirm the groundwater flow direction.
- Monitoring for landfill gases will be during both sampling events.

We trust this report meets with your requirements. If you have any questions or comments regarding this report, please do not hesitate to contact the undersigned.

Yours truly,

Levac Robichaud Leclerc Associates Ltd.

Michelle Hanna
Manager, Environmental Services

Marc-Antoine Laforte, P. Eng. Ph. D

APPENDIX A
SITE LOCATION, SITE PLAN & GEOLOGICAL CROSS SECTION

APPENDIX B
MONITORING WELL MW7-D CONSTRUCTION

LEVAC ROBICHAUD LECLERC ASSOCIATES LTD.
Project Managers and Consulting Engineers

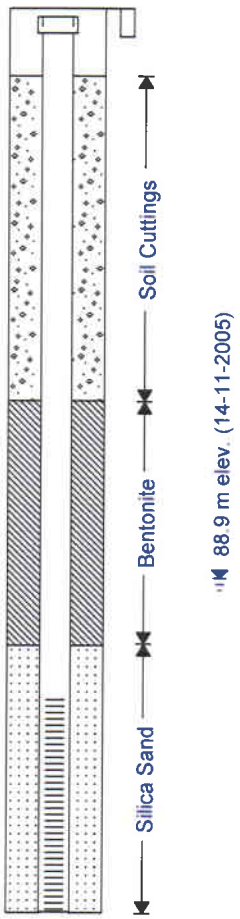
Project No: L9618
Project: Champlain Landfill Monitoring Program
Client: Township of Champlain
Location: Champlain Township

Monitoring Well: MW7-D
Date: July 2005
Technician: F. Elie
Driller: Gilles Bourgeouis
Drill Type: Air Rotary

SUBSURFACE PROFILE

Depth (m)	Elev./Depth (m)	Soil Description
0.0	96.15	Ground Surface
	0.00	***Sand***
	94.78	
	1.37	***Clay***
	91.43	
	4.72	***Till***
	90.67	
	5.48	***Shale***
		Bedrock
	84.05	
	12.10	End of Borehole.

WELL CONSTRUCTION



1-2884 Chamberland Street
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APPENDIX C
GROUNDWATER CHEMISTRY SUMMARY TABLES

Groundwater Analysis Summary

MW1-S

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	99.35
Casing	1.15	100.5
PVC Pipe	0.97	100.32
Depth of Well	2.44	96.91

Type of Monitoring Well: Impact
Aquifer Tapped: Sand

Parameter	Units	ODWS Guidelines	1996	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring2 005	Fall 2005
			Dec-96	Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters													
Water Depth (below PVC pipe)	m	NA										1.86	2.18
Water Depth (bgs)	m	NA	1.32	1.56	0.84	–	1.9	1.52	1.38	1	1.23	0.89	1.21
Water Level Elevation	m	NA	98.03	97.79	98.51	--	97.45	97.83	97.97	99.32	99.09	98.46	98.14
Conductivity	US/cm	NV	–	--	--	--	--	--	223	116	306	157	289
pH	unitless	6.5-8.5	7.78	–	–	–	–	--	6.68	8.27	6.83	7.05	7.08
TDS	mg/L	500	–	–	–	–	--	--	112	–	152	78	145
Temperature	°C	<15	4.3	–	–	–	–	--	7.7	11.5	4.3	18.5	9.8

Comments

The well is used only to measure field parameters indicated above as it contains in sufficient groundwater to permit adequate sampling and analysis. In addition MW1-D, which is installed in the same location, is representative of the same targeted parameters

MW1-D

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	99.35
Casing	1.15	100.5
PVC Pipe	0.97	100.32
Depth of Well	4.42	94.93

Type of Monitoring Well: Impact
Aquifer Tapped: Till

Parameter	Units	MDL	ODWS Guidelines	1996	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Dec-96	Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters														
Water Depth (below PVC pipe)	m	NA	NA				--						2.28	2.34
Water Depth (bgs)	m	NA	NA	1.22	1.84	1.3	--	2.15	1.27	1.16	1.32	1.57	1.31	1.37
Water Level Elevation	m	NA	NA	98.13	97.5	98.1	--	97.2	98.08	98.19	98.03	97.78	98.04	97.98
Conductivity	uS/cm	NA	NV	--	--	--	--	--	--	--	198	80	162	295
pH	unitless	NA	6.5-8.5	--	--	--	--	--	--	--	7.6	6.75	6.94	6.86
TDS	mg/L	NA	500	--	--	--	--	--	--	--	--	170	80	147
Temperature	°C	NA	<15	4.2	4.2	5.5	6	9	6.2	7.9	9.5	2.8	**17.7**	9.1
General Chemistry														
Alkalinity	mg/L	5	30-500	--	62	85	50	95	70	110	120	90	85	95
BOD	mg/L	2	NV	--	2	ND	ND	ND	1	2	2	2	2	2
Chloride	mg/L	1	250	17	25.6	17	11	16	21	21	12	16	8	14
COD	mg/L	20	NV	--	553	16	ND	32	42	36	55	23	80	40
Conductivity	uS/cm	5	NV	--	303	170	--	340	270	340	260	320	200	330
DOC	mg/L	0.5	5	--	--	--	--	**7**	4.4	**8**	2	**9.5**	2.5	4
Hardness	mg/L		500	--	136	105	61	93	123	158	**548**	117	56	152
Nitrite (N) [1]	mg/L	0.1	1	0.34	ND	0.01	ND	ND	--	--	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	10	ND	ND	4.7	0.4	3.8	2.8	2	3	5	3.1	6.4
Nitrates + Nitrites (N)	mg/L		10 [2]	0.34	ND	4.7	0.4	3.8	2.8	--	3	5	3.1	6.4
Ammonia/Ammonium (N)	mg/L	0.01	NV	0.87	0.12	0.19	0.06	0.25	0.01	0.05	0.12	0.12	ND	ND
TKN	mg/L	0.1	NV	1.04	3.3	0.05	0.12	1	--	--	0.05	1.1	1.1	0.4
Sulphate	mg/L	1	500	25	22.5	31	15	26	19	18	17	22	18	22
pH	unitless	0.05	6.5 - 8.5	8.14	**6.36**	**6.4**	6.6	7	**6.34**	7.37	6.75	6.62	6.49	**6.34**
TDS	mg/L	10	500	--	155	290	120	190	230	360	**2 700**	300	**840**	90
TOC	mg/L		NV	8.8	54	3.9	3.2	13	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	0.13	9.4	1.4	0.05	0.03	--	--	--	--	--	--
Metals														
Aluminum	mg/L	0.01	0.1	ND	--	**5.6**	**1.4**	**0.5**	ND	**0.71**	--	ND	--	--
Antimony	mg/L	0.001	0.06	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	0.025	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	1	--	0.05	0.21	0.07	0.05	0.02	0.03	**1.4**	0.03	0.02	0.04
Beryllium	mg/L	0.05	NV	ND	--	ND	ND	ND	ND	ND	--	ND	--	--
Boron	mg/L	0.05	5	0.01	0.02	0.05	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/L	0.001	0.005	ND	--	ND	ND	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	NV	43	42.5	33	18	23	42	50	170	35	17	48
Chromium	mg/L	0.05	0.05	ND	--	ND	ND	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	NV	0.01	--	0.015	ND	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	1	ND	--	0.12	ND	0.005	ND	ND	--	ND	--	--
Iron	mg/L	0.1	0.3	--	**19.1**	**77**	**11**	**2**	ND	**0.4**	**24**	ND	ND	**2.2**
Lead	mg/L	0.001	0.01	--	--	**0.025**	0.005	ND	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	NV	--	7.2	5.6	3.8	8.6	**4.4**	8	30	7.2	3.2	7.8
Manganese	mg/L	0.05	0.05	--	**0.438**	**0.4**	**0.1**	**0.45**	**0.1**	ND	**3.8**	**0.25**	ND	**0.15**
Mercury	mg/L		0.001	--	--	--	--	--	--	ND	--	--	--	--
Molybdenum	mg/L	0.005	NV	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	NV	--	--	0.03	0.01	ND	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	NV	--	1.4	3.2	1	1.4	1.2	2.6	7.4	1	0.8	2
Selenium	mg/L	0.005	0.01	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	NV	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	200	--	6.3	7.6	5.8	13	6.6	6.6	7.4	4.8	5.2	7
Thallium	mg/L	0.001	NV	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	NV	--	--	0.08	0.01	ND	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	5	--	--	0.12	0.04	ND	ND	ND	--	ND	--	--
Comments														
Spring 2004: Sediment in sample may have biased results.														

Groundwater Analysis Summary

MW2

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	100.26
Casing	1.16	101.42
PVC Pipe	1.07	101.33
Depth of Well	3.66	96.6

Type of Monitoring Well: Impact
Aquifer Tapped: Sand

Parameter	Units	MDL	ODWS Guidelines	1996	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Dec-96	Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters														
Water Depth (below PVC pipe)	m	NA	NA										2.62	2.48
Water Depth (bgs)	m	NA	NA	1.19	--	1.47	--	2.5	1.9	2.01	1.5	1.63	1.55	1.41
Water Level Elevation	m	NA	NA	99.07	--	98.79	--	97.76	98.36	98.25	98.76	98.63	98.71	98.85
Conductivity	uS/cm	NA	NV	--	--	--	--	--	--	--	--	159	138	186
pH	unitless	NA	6.5-8.5	--	--	--	--	--	--	--	--	8.3	7.69	7.79
TDS	mg/L	NA	500	--	--	--	--	--	--	--	--	79	69	90
Temperature	°C	NA	<15	4.8	4	5	5.1	9.5	6.2	9.9	--	4.3	21	9.3
General Chemistry														
Alkalinity	mg/L	5	30-500	--	80	80	70	70	65	70	60	65	65	130
BOD	mg/L	2	NV	--	ND	ND	2	2	ND	4	2	2	ND	ND
Chloride	mg/L	1	250	5	2.6	22	ND	ND	21	1	ND	ND	ND	ND
COD	mg/L	20	NV	--	79	22	4	ND	11	25	24	5	ND	ND
Conductivity	uS/cm	5	NV	--	207	140	--	160	170	160	140	80	140	150
DOC	mg/L	0.5	5	--	--	--	--	2.6	2.6	3	1	7	0.5	ND
Hardness	mg/L		500	--	68	72	49	80	82	62	43	31	60	65
Nitrite (N) [1]	mg/L	0.1	1	ND	ND	0.3	ND	ND	--	--	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	10	ND	1.3	0.3	0.1	0.2	0.3	0.5	0.01	ND	ND	0.1
Nitrates + Nitrites (N)	mg/L		10 [2]	ND	1.3	0.6	0.1	0.2	--	--	0.01	ND	ND	0.1
Ammonia/Ammonium (N)	mg/L	0.01	NV	--	0.03	0.05	ND	0.26	0.11	0.06	0.04	0.12	ND	ND
TKN	mg/L	0.1	NV	0.3	1.43	0.05	0.12	3.4	--	--	0.7	0.7	0.4	0.2
Sulphate	mg/L	1	500	57	15.5	240	8	9	10	9	6	7	5	6
pH	unitless	0.05	6.5 - 8.5	7.08	8.15	7.9	6.8	6.9	8.1	6.28	8.11	6.88	8.15	7.87
TDS	mg/L	10	500	--	116	240	74	74	120	81	110	56	310	80
TOC	mg/L		NV	7.3	1	2.1	6.6	3	--	34	--	--	--	--
Total Phosphorus	mg/L		NV	7.08	8.9	0.01	0.02	0.02	--	--	--	--	--	--
Metals														
Aluminum	mg/L	0.01	0.1	ND	ND	0.67	0.01	ND	0.01	0.02	--	ND	--	--
Antimony	mg/L	0.001	0.06	ND	ND	ND	ND	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	0.025	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	1	ND	0.03	0.03	ND	0.01	0.01	0.01	ND	0.01	0.01	0.01
Beryllium	mg/L	0.05	NV	ND	ND	ND	ND	ND	ND	ND	--	ND	--	--
Boron	mg/L	0.05	5	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/L	0.001	0.005	0.009	NA	ND	ND	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	NV	49	22	25	ND	24	29	21	14	7.8	20	22
Chromium	mg/L	0.05	0.05	ND	NA	ND	16	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	NV	0.05	NA	ND	ND	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	1	ND	NA	0.01	ND	ND	ND	0.015	--	ND	--	--
Iron	mg/L	0.1	0.3	ND	2.61	1	ND	ND	ND	ND	ND	ND	ND	0.3
Lead	mg/L	0.001	0.01	ND	ND	ND	ND	ND	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	NV	ND	3.1	3	2.4	5	2.2	2.2	2	2.8	2.4	2.4
Manganese	mg/L	0.05	0.05	ND	0.029	0.05	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	mg/L		0.001	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--
Molybdenum	mg/L	0.005	NV	--	--	ND	ND	ND	0.005	ND	--	ND	--	--
Nickel	mg/L	0.005	NV	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	NV	--	--	1	ND	0.8	0.4	0.2	ND	0.4	ND	ND
Selenium	mg/L	0.005	0.01	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	NV	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	200	--	--	6.2	7.4	3.8	11	9.6	12	8.4	5.2	5.6
Thallium	mg/L	0.001	NV	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	NV	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	5	--	--	0.02	ND	ND	ND	ND	--	ND	--	--
Comments														

MW3-S

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	99.8
Casing	1.2	101
PVC Pipe	1.06	100.86
Depth of Well	1.5	98.3

Type of Monitoring Well: Leachate
Aquifer Tapped: Fill

Parameter	Units	MDL	ODWS Guidelines	1996	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Dec-96	Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters														
Water Depth (below PVC pipe)	m	NA	NA									2	2.77	2.79
Water Depth (bgs)	m	NA	NA	1.96	2.38	1.78	--	DRY	2.08	1.78	1.64	0.94	1.71	1.73
Water Level Elevation	m	NA	NA	97.84	97.42	98.02	--	DRY	97.72	98.02	98.16	98.86	98.09	98.07
Conductivity	uS/cm	NA	NV	--	--	--	--	--	--	--	678	767	755	1076
pH	unitless	NA	6.5-8.5	--	--	--	--	--	--	--	7.3	6.81	6.7	6.84
TDS	mg/L	NA	500	--	--	--	--	--	--	--	--	381	374	369
Temperature	°C	NA	<15	--	--	--	--	--	--	--	11.3	2.4	17.3	8.3
General Chemistry														
Alkalinity	mg/L	5	30-500	--	--	--	330	--	--	--	--	--	--	--
BOD	mg/L	2	NV	--	--	--	1	--	--	--	--	--	--	--
Chloride	mg/L	1	250	--	--	--	1	--	--	--	--	--	--	--
COD	mg/L	20	NV	--	--	--	24	--	--	--	--	--	--	--
Conductivity	uS/cm	5	NV	--	--	--	--	--	--	--	--	--	--	--
DOC	mg/L	0.5	5	--	--	--	--	--	--	--	--	--	--	--
Hardness	mg/L		500	--	--	--	49	--	--	--	--	--	--	--
Nitrite (N) [1]	mg/L	0.1	1	--	--	--	ND	--	--	--	--	--	--	--
Nitrate (N)	mg/L	0.05	10	--	--	--	3.6	--	--	--	--	--	--	--
Nitrates + Nitrites (N)	mg/L		10 [2]	--	--	--	0.1	--	--	--	--	--	--	--
Ammonia/Ammonium (N)	mg/L	0.01	NV	--	--	--	0.05	--	--	--	--	--	--	--
TKN	mg/L	0.1	NV	--	--	--	0.9	--	--	--	--	--	--	--
Sulphate	mg/L	1	500	--	--	--	70	--	--	--	--	--	--	--
pH	unitless	0.05	6.5 - 8.5	--	--	--	6.8	--	--	--	--	--	--	--
TDS	mg/L	10	500	--	--	--	420	--	--	--	--	--	--	--
TOC	mg/L		NV	--	--	--	19	--	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	--	--	--	0.06	--	--	--	--	--	--	--
Metals														
Aluminum	mg/L	0.01	0.1	--	--	--	0.05	--	--	--	--	--	--	--
Antimony	mg/L	0.001	0.06	--	--	--	ND	--	--	--	--	--	--	--
Arsenic	mg/L	0.01	0.025	--	--	--	ND	--	--	--	--	--	--	--
Barium	mg/L	0.01	1	--	--	--	0.03	--	--	--	--	--	--	--
Beryllium	mg/L	0.05	NV	--	--	--	ND	--	--	--	--	--	--	--
Boron	mg/L	0.05	5	--	--	--	0.2	--	--	--	--	--	--	--
Cadmium	mg/L	0.001	0.005	--	--	--	ND	--	--	--	--	--	--	--
Calcium	mg/L	0.2	NV	--	--	--	120	--	--	--	--	--	--	--
Chromium	mg/L	0.05	0.05	--	--	--	ND	--	--	--	--	--	--	--
Cobalt	mg/L	0.005	NV	--	--	--	ND	--	--	--	--	--	--	--
Copper	mg/L	0.005	1	--	--	--	ND	--	--	--	--	--	--	--
Iron	mg/L	0.1	0.3	--	--	--	ND	--	--	--	--	--	--	--
Lead	mg/L	0.001	0.01	--	--	--	ND	--	--	--	--	--	--	--
Magnesium	mg/L	0.2	NV	--	--	--	9.4	--	--	--	--	--	--	--
Manganese	mg/L	0.05	0.05	--	--	--	0.3	--	--	--	--	--	--	--
Mercury	mg/L		0.001	--	--	--	ND	--	--	--	--	--	--	--
Molybdenum	mg/L	0.005	NV	--	--	--	ND	--	--	--	--	--	--	--
Nickel	mg/L	0.005	NV	--	--	--	0.025	--	--	--	--	--	--	--
Potassium	mg/L	0.2	NV	--	--	--	4.8	--	--	--	--	--	--	--
Selenium	mg/L	0.005	0.01	--	--	--	ND	--	--	--	--	--	--	--
Silver	mg/L	0.001	NV	--	--	--	ND	--	--	--	--	--	--	--
Sodium	mg/L	0.2	200	--	--	--	13	--	--	--	--	--	--	--
Thallium	mg/L	0.001	NV	--	--	--	ND	--	--	--	--	--	--	--
Vanadium	mg/L	0.01	NV	--	--	--	ND	--	--	--	--	--	--	--
Zinc	mg/L	0.02	5	--	--	--	0.04	--	--	--	--	--	--	--

Comments

The well is used only to measure field parameters indicated above as it contains in sufficient groundwater to permit adequate sampling and analysis. In addition MW3-D, which is installed in the same location, is representative of the same targeted parameters

Groundwater Analysis Summary

MW3-D

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	99.8
Casing	1.2	101
PVC Pipe	1.1	100.9
Depth of Well	4.88	94.92

Type of Monitoring Well: Leacate
Aquifer Tapped: Till

Parameter	Units	MDL	ODWS Guidelines	1996	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Dec-96	Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters														
Water Depth (below PVC pipe)	m	NA	NA										2.72	2.84
Water Depth (bgs)	m	NA	NA	2.01	2.38	1.78	--	2.89	2.1	1.8	1.65	2.04	1.62	1.74
Water Level Elevation	m	NA	NA	97.79	97.42	98.02	--	96.91	97.7	98	98.15	97.76	98.18	98.06
Conductivity	uS/cm	NA	NV	--	--	--	--	--	--	--	571	821	778	921
pH	unitless	NA	6.5-8.5	--	--	--	--	--	--	--	7.4	6.78	6.7	6.63
TDS	mg/L	NA	500	--	--	--	--	--	--	--	--	410	388	463
Temperature	°C	NA	<15	4.9	4.1	5	5.2	9.8	6.4	7.9	10.2	4.7	16.5	8.2
General Chemistry														
Alkalinity	mg/L	5	30-500	--	434	310	380	440	340	330	260	410	400	460
BOD	mg/L	2	NV	--	3	3	1	--	ND	--	2	2	ND	ND
Chloride	mg/L	1	250	9	3.3	6.5	2	4	3	2	2	2	3	9
COD	mg/L	20	NV	--	247	10	15	30	25	47	11	13	20	ND
Conductivity	uS/cm	5	NV	--	849	760	--	710	850	820	630	850	950	940
DOC	mg/L	0.5	5	--	--	**6**	**14**	**8**	**6.4**	**17**	4	**6**	4.5	4.5
Hardness	mg/L		500	--	426	220	320	210	**578**	**849**	**1216**	**1115.2**	**507.8**	**566**
Nitrite (N) [1]	mg/L	0.1	1	ND	ND	0.01	ND	ND	ND	ND	0.05	ND	ND	ND
Nitrate (N)	mg/L	0.05	10	ND	0.8	4.7	0.3	0.2	0.3	**20**	1.9	0.7	6.3	0.4
Nitrates + Nitrites (N)	mg/L		10 [2]	ND	0.8	4.71	0.3	0.2	0.3	**20**	1.95	0.7	6.3	0.4
Ammonia/Ammonium (N)	mg/L	0.01	NV	--	0.07	0.06	0.08	0.18	ND	0.05	0.12	0.12	ND	ND
TKN	mg/L	0.1	NV	0.65	2.67	0.7	2.4	0.4	0.8	0.8	1	0.4	0.4	0.5
Sulphate	mg/L	1	500	226	38	120	100	43	140	50	64	57	100	82
pH	unitless	0.05	6.5 - 8.5	6.68	6.5	7.5	7	6.8	6.56	7.24	7.01	6.64	6.58	6.64
TDS	mg/L	10	500	--	483	480	**660**	**510**	**600**	**540**	400	**1300**	**830**	**290**
TOC	mg/L		NV	10.6	23	6	22	10	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	0.02	19	0.02	0.08	0.03	0.01	1.4	--	--	--	--
Metals														
Aluminum	mg/L	0.01	0.1	ND	--	0.06	**0.13**	**0.78**	ND	**0.32**	--	**9.9**	--	--
Antimony	mg/L	0.001	0.06	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	0.025	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	1	--	0.1	0.12	0.1	0.14	0.1	0.33	0.24	1	0.12	0.14
Beryllium	mg/L	0.05	NV	ND	--	ND	ND	ND	ND	ND	--	0.003	--	--
Boron	mg/L	0.05	5	0.22	0.19	0.2	0.2	0.2	0.15	0.2	0.25	0.15	0.2	0.2
Cadmium	mg/L	0.001	0.005	ND	--	ND	ND	ND	ND	ND	NA	ND	--	--
Calcium	mg/L	0.2	NV	153	159	76	120	70	220	320	470	410	190	210
Chromium	mg/L	0.05	0.05	ND	--	ND	ND	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	NV	0.02	--	ND	ND	ND	ND	ND	--	0.03	--	--
Copper	mg/L	0.005	1	0.02	--	0.01	ND	0.005	ND	ND	--	0.02	--	--
Iron	mg/L	0.1	0.3	--	--	0.2	ND	**1.6**	ND	ND	ND	ND	ND	**0.6**
Lead	mg/L	0.001	0.01	--	**0.06**	ND	ND	ND	ND	ND	--	0.001	--	--
Magnesium	mg/L	0.2	NV	--	7	6.4	7.4	8.4	6.8	12	10	22	8	10
Manganese	mg/L	0.05	0.05	--	**2.07**	**0.95**	**0.35**	**0.1**	ND	**0.4**	**0.55**	**3.3**	**0.35**	**0.95**
Mercury	mg/L		0.001	--	NA	ND	ND	ND	ND	ND	--	--	--	--
Molybdenum	mg/L	0.005	NV	--	NA	ND	ND	ND	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	NV	--	NA	0.005	0.005	ND	0.005	0.01	--	0.02	--	--
Potassium	mg/L	0.2	NV	--	6.5	5.2	5.6	5.4	6.2	5.4	6	8.2	5.4	8.2
Selenium	mg/L	0.005	0.01	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	NV	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	200	--	3.5	3.8	4.4	4.2	2.8	11	3.2	2.8	4.4	10
Thallium	mg/L	0.001	NV	--	--	ND	ND	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	NV	--	--	ND	ND	ND	ND	ND	--	0.01	--	--
Zinc	mg/L	0.02	5	--	--	ND	0.04	ND	0.04	0.06	--	0.06	--	--
Volatile Organic Compounds [3]														
Styrene	mg/L		NV	--	--	ND	ND	0.0004	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	mg/L		0.03	--	--	ND	ND	0.002	ND	ND	ND	ND	0.001	ND
Toluene	mg/L		NV	--	--	ND	ND	0.005	ND	ND	ND	ND	0.0045	ND

Comments

3 Spring 2004: Sediment in pre-preserved metals containers may haved biased results.

Groundwater Analysis Summary

MW4-S

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	99.35
Casing	1.02	100.37
PVC Pipe	0.84	100.19
Depth of Well	2.44	96.91

Type of Monitoring Well: Impact
Aquifer Tapped: Sand

Parameter	Units	MDL	ODWS Guidelines	1996	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Dec-96	Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters														
Water Depth (below PVC pipe)	m	NA	NA									1.34	1.93	1.92
Water Depth (bgs)	m	NA	NA	1.09	0.94	0.86	--	DRY	DRY	0.96	DRY	0.5	1.09	1.08
Water Level Elevation	m	NA	NA	98.26	98.41	98.49	--	DRY	DRY	98.39	DRY	98.85	98.26	98.27
Conductivity	uS/cm	NA	NV	--	--	--	--	--	--	--	--	1123	--	1481
pH	mg/L	NA	6.5-8.5	7.58	--	--	7	--	--	7.33	--	7.7	--	6.93
TDS	mg/L	NA	500	--	--	--	--	--	--	--	--	576	--	742
Temperature	°C	NA	<15	4.2	--	--	5	--	--	9.8	--	3.4	--	8.4
General Chemistry														
Alkalinity	mg/L	5	30-500	--	--	--	170	--	--	90	--	--	--	--
BOD	mg/L	2	NV	--	--	--	ND	--	--	4	--	--	--	--
Chloride	mg/L	1	250	12		--	43	--	--	42	--	--	--	--
COD	mg/L	20	NV	--	--	--	16	--	--	42	--	--	--	--
Conductivity	uS/cm	5	NV	--	--	--	--	--	--	960	--	--	--	--
DOC	mg/L	0.5	5	--	--	--	--	--	--	17	--	--	--	--
Hardness	mg/L		500	--	--	--	240	--	--	615	--	--	--	--
Nitrite (N) [1]	mg/L	0.1	1	ND	--	--	ND	--	--	--	--	--	--	--
Nitrate (N)	mg/L	0.05	10	ND	--	--	ND	--	--	ND	--	--	--	--
Nitrates + Nitrites (N)	mg/L		10 [2]	ND	--	--	ND	--	--	--	--	--	--	--
Ammonia/Ammonium (N)	mg/L	0.01	NV	ND	--	--	ND	--	--	0.09	--	--	--	--
TKN	mg/L	0.1	NV	0.15	--	--	2.7	--	--	--	--	--	--	--
Sulphate	mg/L	1	500	53	--	--	130	--	--	460	--	--	--	--
pH	unitless	0.05	6.5 - 8.5	7.44	--	--	7	--	--	7.33	--	--	--	--
TDS	mg/L	10	500	--	--	--	380	--	--	710	--	--	--	--
TOC	mg/L		NV	3.1	--	--	13	--	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	2.5	--	--	0.05	--	--	--	--	--	--	--
Metals														
Aluminum	mg/L	0.01	0.1	0.05	--	--	0.02	--	--	14	--	--	--	--
Antimony	mg/L	0.001	0.06	--	--	--	ND	--	--	ND	--	--	--	--
Arsenic	mg/L	0.01	0.025	--	--	--	ND	--	--	ND	--	--	--	--
Barium	mg/L	0.01	1	--	--	--	0.03	--	--	0.27	--	--	--	--
Beryllium	mg/L	0.05	NV	ND	--	--	ND	--	--	0.003	--	--	--	--
Boron	mg/L	0.05	5	--	--	--	0.25	--	--	0.25	--	--	--	--
Cadmium	mg/L	0.001	0.005	--	--	--	ND	--	--	ND	--	--	--	--
Calcium	mg/L	0.2	NV	51	--	--	72	--	--	210	--	--	--	--
Chromium	mg/L	0.05	0.05	ND	--	--	ND	--	--	ND	--	--	--	--
Cobalt	mg/L	0.005	NV	0.02	--	--	ND	--	--	ND	--	--	--	--
Copper	mg/L	0.005	1	0.039	--	--	ND	--	--	0.05	--	--	--	--
Iron	mg/L	0.1	0.3	--	--	--	ND	--	--	1	--	--	--	--
Lead	mg/L	0.001	0.01	--	--	--	ND	--	--	0.01	--	--	--	--
Magnesium	mg/L	0.2	NV	--	--	--	16	--	--	22	--	--	--	--
Manganese	mg/L	0.05	0.05	--	--	--	0.2	--	--	2.6	--	--	--	--
Mercury	mg/L		0.001	--	--	--	ND	--	--	ND	--	--	--	--
Molybdenum	mg/L	0.005	NV	--	--	--	ND	--	--	ND	--	--	--	--
Nickel	mg/L	0.005	NV	--	--	--	0.005	--	--	0.015	--	--	--	--
Potassium	mg/L	0.2	NV	--	--	--	2	--	--	20	--	--	--	--
Selenium	mg/L	0.005	0.01	--	--	--	ND	--	--	ND	--	--	--	--
Silver	mg/L	0.001	NV	--	--	--	ND	--	--	ND	--	--	--	--
Sodium	mg/L	0.2	200	--	--	--	16	--	--	33	--	--	--	--
Thallium	mg/L	0.001	NV	--	--	--	ND	--	--	ND	--	--	--	--
Vanadium	mg/L	0.01	NV	--	--	--	ND	--	--	0.01	--	--	--	--
Zinc	mg/L	0.02	5	--	--	--	0.06	--	--	0.06	--	--	--	--
Comments														

MW4-D

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	99.35
Casing	1.02	100.37
PVC Pipe	0.85	100.2
Depth of Well	4.26	95.09

Type of Monitoring Well: Impact
Aquifer Tapped: Till

Parameter	Units	MDL	ODWS Guidelines	1996	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Dec-96	Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters														
Water Depth (below PVC pipe)	m	NA	NA										4.82	4.93
Water Depth (bgs)	m	NA	NA	3.82	DRY	3.75	--	DRY	DRY	DRY	DRY	DRY	3.97	4.08
Water Level Elevation	m	NA	NA	95.53	DRY	95.6	--	DRY	DRY	DRY	DRY	DRY	95.38	95.27
Conductivity	uS/cm	NA	NV	--	--	--	--	--	--	--	--	--	830	1008
pH	mg/L	NA	6.5-8.5	7.58	--	--	7.2	--	--	--	--	--	6.65	7.34
TDS	mg/L	NA	500	--	--	--	--	--	--	--	--	--	411	504
Temperature	°C	NA	<15	4.2	--	--	5	--	--	--	--	--	19.5	9.1
General Chemistry														
Alkalinity	mg/L	5	30-500	--	--	--	140	--	--	--	--	--	290	--
BOD	mg/L	2	NV	--	--	--	ND	--	--	--	--	--	ND	--
Chloride	mg/L	1	250	12	--	--	4	--	--	--	--	--	30	--
COD	mg/L	20	NV	--	--	--	10	--	--	--	--	--	20	--
Conductivity	uS/cm	5	NV	--	--	--	--	--	--	--	--	--	1000	--
DOC	mg/L	0.5	5	--	--	--	--	--	--	--	--	--	9	--
Hardness	mg/L		500	--	--	--	100	--	--	--	--	--	498.4	--
Nitrite (N) [1]	mg/L	0.1	1	ND	--	--	ND	--	--	--	--	--	ND	--
Nitrate (N)	mg/L	0.05	10	0.28	--	--	0.2	--	--	--	--	--	ND	--
Nitrates + Nitrites (N)	mg/L		10 [2]	0.28	--	--	0.2	--	--	--	--	--	ND	--
Ammonia/Ammonium (N)	mg/L	0.01	NV	--	--	--	ND	--	--	--	--	--	ND	--
TKN	mg/L	0.1	NV	0.89	--	--	1.8	--	--	--	--	--	0.4	--
Sulphate	mg/L	1	500	54	--	--	55	--	--	--	--	--	250	--
pH	unitless	0.05	6.5 - 8.5	7.58	--	--	7.2	--	--	--	--	--	6.55	--
TDS	mg/L	10	500	--	--	--	420	--	--	--	--	--	790	--
TOC	mg/L		NV	21.4	--	--	17	--	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	21.4	--	--	0.4	--	--	--	--	--	--	--
Metals														
Aluminum	mg/L	0.01	0.1	--	--	--	ND	--	--	--	--	--	--	--
Antimony	mg/L	0.001	0.06	--	--	--	ND	--	--	--	--	--	--	--
Arsenic	mg/L	0.01	0.025	--	--	--	ND	--	--	--	--	--	ND	--
Barium	mg/L	0.01	1	--	--	--	0.05	--	--	--	--	--	0.04	--
Beryllium	mg/L	0.05	NV	--	--	--	ND	--	--	--	--	--	--	--
Boron	mg/L	0.05	5	--	--	--	0.3	--	--	--	--	--	0.04	--
Cadmium	mg/L	0.001	0.005	0.008	--	--	ND	--	--	--	--	--	--	--
Calcium	mg/L	0.2	NV	35	--	--	31	--	--	--	--	--	160	--
Chromium	mg/L	0.05	0.05	ND	--	--	ND	--	--	--	--	--	--	--
Cobalt	mg/L	0.005	NV	0.1	--	--	ND	--	--	--	--	--	--	--
Copper	mg/L	0.005	1	0.117	--	--	ND	--	--	--	--	--	--	--
Iron	mg/L	0.1	0.3	--	--	--	ND	--	--	--	--	--	ND	--
Lead	mg/L	0.001	0.01	--	--	--	ND	--	--	--	--	--	--	--
Magnesium	mg/L	0.2	NV	--	--	--	5.2	--	--	--	--	--	24	--
Manganese	mg/L	0.05	0.05	--	--	--	ND	--	--	--	--	--	0.55	--
Mercury	mg/L		0.001	--	--	--	NA	--	--	--	--	--	--	--
Molybdenum	mg/L	0.005	NV	--	--	--	0.01	--	--	--	--	--	--	--
Nickel	mg/L	0.005	NV	--	--	--	ND	--	--	--	--	--	--	--
Potassium	mg/L	0.2	NV	--	--	--	9.6	--	--	--	--	--	2.6	--
Selenium	mg/L	0.005	0.01	--	--	--	ND	--	--	--	--	--	--	--
Silver	mg/L	0.001	NV	--	--	--	ND	--	--	--	--	--	--	--
Sodium	mg/L	0.2	200	--	--	--	21	--	--	--	--	--	24	--
Thallium	mg/L	0.001	NV	--	--	--	ND	--	--	--	--	--	--	--
Vanadium	mg/L	0.01	NV	--	--	--	ND	--	--	--	--	--	--	--
Zinc	mg/L	0.02	5	--	--	--	0.02	--	--	--	--	--	--	--
Comments														

Groundwater Analysis Summary

MW5-S

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	97.67
Casing	1.04	98.71
PVC Pipe	1.03	98.7
Depth of Well	3.66	94.01

Type of Monitoring Well: Impact
Aquifer Tapped: Till

Parameter	Units	MDL	ODWS Guidelines	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters													
Water Depth (below PVC pipe)	m	NA	**NA**									1.27	1.1
Water Depth (bgs)	m	NA	**NA**	0.15	0.11	--	0.85	0.73	0.82	0.3	0.39	0.24	0.07
Water Level Elevation	m	NA	**NA**	97.52	97.56	--	96.82	96.94	96.85	97.37	97.28	97.43	97.6
Conductivity	uS/cm	NA	**NV**	--	--	--	--	--	--	225	363	159	142
pH	mg/L	NA	**6.5-8.5**	--	--	--	--	--	--	8.6	7.15	7.56	7.56
TDS	mg/L	NA	**500**	--	--	--	--	--	--	--	165	160	74
Temperature	°C	NA	**<15**	4	5.5	5.2	13	5.4	7.9	8	2.6	13.2	6.9
General Chemistry													
Alkalinity	mg/L	5	**30-500**	91	90	75	60	60	60	60	55	65	70
BOD	mg/L	2	**NV**	ND	1	1	ND	ND	2	2	2	2	2
Chloride	mg/L	1	**250**	3.6	26	3	2	2	3	2	3	3	3
COD	mg/L	20	**NV**	23	31	8	22	19	40	8	7	7	ND
Conductivity	uS/cm	5	**NV**	245	210	--	180	160	170	170	160	160	160
DOC	mg/L	0.5	**5**	--	--	--	2.8	2	3.5	1.5	3.5	1.5	2
Hardness	mg/L		**500**	108	84	68	66	87	74	69	46	68	77
Nitrite (N) [1]	mg/L	0.1	**1**	ND	0.2	ND	ND	--	--	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	**10**	0.8	0.1	ND	0.7	ND	ND	0.1	ND	ND	ND
Nitrates + Nitrites (N)	mg/L		**10** [2]	0.8	0.3	ND	0.7	--	--	0.1	ND	ND	ND
Ammonia/Ammonium (N)	mg/L	0.01	**NV**	0.08	0.08	0.04	0.1	0.11	0.06	0.16	0.18	ND	ND
TKN	mg/L	0.1	**NV**	0.72	0.35	1.3	0.3	--	--	0.6	0.7	0.2	0.6
Sulphate	mg/L	1	**500**	19.9	220	14	14	15	15	13	14	13	12
pH	unitless	0.05	**6.5 - 8.5**	7.45	7.7	6.7	6.7	7.37	7.72	7.01	7.15	6.8	6.98
TDS	mg/L	10	**500**	127	270	110	98	120	120	140	120	140	100
TOC	mg/L		**NV**	4	2.1	9	2.8	--	--	--	--	--	--
Total Phosphorus	mg/L		**NV**	5.32	0.01	0.03	0.03	--	--	--	--	--	--
Metals													
Aluminum	mg/L	0.01	**0.1**	--	**0.71**	0.01	0.05	0.01	ND	--	ND	--	--
Antimony	mg/L	0.001	**0.06**	--	ND	ND	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	**0.025**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	**1**	0.02	0.04	0.01	0.01	0.1	ND	0.01	ND	ND	0.01
Beryllium	mg/L	0.05	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Boron	mg/L	0.05	**5**	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/L	0.001	**0.005**	--	ND	ND	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	**NV**	32	28	19	18	27	22	19	8.8	19	22
Chromium	mg/L	0.05	**0.05**	--	ND	ND	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	**1**	--	0.01	ND	ND	ND	ND	--	ND	--	--
Iron	mg/L	0.1	**0.3**	**0.88**	**2.6**	**2.4**	**2**	**2**	**2.6**	**1.7**	**2.2**	**2.3**	**4.3**
Lead	mg/L	0.001	**0.01**	--	ND	ND	ND	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	**NV**	6.8	4.4	5	4.8	4.8	4.6	5.2	5.8	5	5.4
Manganese	mg/L	0.05	**0.05**	**0.089**	**0.15**	**0.1**	**0.1**	**0.1**	**0.15**	**0.15**	**0.1**	**0.1**	**0.15**
Mercury	mg/L		**0.001**	--	--	--	--	ND	ND	--	--	--	--
Molybdenum	mg/L	0.005	**NV**	--	ND	0.01	ND	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	**NV**	--		ND	ND	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	**NV**	1.9	0.2	ND	0.4	3.4	1.2	0.8	0.6	1.6	1.8
Selenium	mg/L	0.005	**0.01**	--	ND	ND	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	**200**	3.6	2	3.2	3.8	3.4	3.4	3.4	2.8	3.6	7
Thallium	mg/L	0.001	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	**5**	--	0.02	0.02	ND	ND	0.04	--	ND	--	--
Comments													

Groundwater Analysis Summary

MW5-D

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	97.64
Casing	0.87	98.51
PVC Pipe	0.8	98.44
Depth of Well	11.99	85.65

Type of Monitoring Well: Impact
Aquifer Tapped: Bedrock

Parameter	Units	MDL	ODWS Guidelines	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters													
Water Depth (below PVC pipe)	m	NA	**NA**									7.35	8.03
Water Depth (bgs)	m	NA	**NA**	7.11	5.39	--	7.99	6.58	7.7	6.59	7.41	6.55	7.23
Water Level Elevation	m	NA	**NA**	90.53	92.25	--	89.65	91.06	89.94	91.05	90.23	91.09	90.41
Conductivity	uS/cm	NA	**NV**	--	--	--	--	--	--	350	203	291	278
pH	mg/L	NA	**6.5-8.5**	--	--	--	--	--	--	7.95	7.87	7.26	7.16
TDS	mg/L	NA	**500**	--	--	--	--	--	--	--	103	142	141
Temperature	°C	NA	**<15**	3.8	7	--	8	7.1	7.5	10.1	4	14	6.8
General Chemistry													
Alkalinity	mg/L	5	**30-500**	171	160	--	160	160	150	150	160	150	151
BOD	mg/L	2	**NV**	ND	1	--	ND	ND	1	2	2	ND	2
Chloride	mg/L	1	**250**	5.4	8.5	--	1	--	2	1	2	2	3
COD	mg/L	20	**NV**	34	19	--	24	16	62	10	10	10	20
Conductivity	uS/cm	5	**NV**	286	340	--	310	330	330	320	310	290	270
DOC	mg/L	0.5	**5**	--	--	--	**6**	**6.2**	**9.5**	4.5	5	5	5
Hardness	mg/L		**500**	170	130	--	79	196	172	145	123	141	148
Nitrite (N) [1]	mg/L	0.1	**1**	ND	0.1	--	ND	--	ND	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	**10**	0.8	0.2	--	ND	ND	ND	ND	ND	ND	ND
Nitrates + Nitrites (N)	mg/L		**10** [2]	0.8	0.3	--	ND	--	ND	ND	ND	ND	ND
Ammonia/Ammonium (N)	mg/L	0.01	**NV**	0.16	0.09	--	0.11	0.16	0.09	0.17	0.15	ND	0.11
TKN	mg/L	0.1	**NV**	2.75	0.45	--	0.3	--	0.5	0.6	6	0.4	0.7
Sulphate	mg/L	1	**500**	21.2	50	--	11	9	13	8	7	8	12
pH	unitless	0.05	**6.5 - 8.5**	7.29	8	--	7.3	7.61	8.28	7.38	6.88	7.64	6.83
TDS	mg/L	10	**500**	207	230	--	170	210	220	390	180	190	210
TOC	mg/L		**NV**	1	3.9	--	7.2	--	--	--	--	--	--
Total Phosphorus	mg/L		**NV**	2.56	0.08	--	0.06	--	0.05	--	--	--	--
Metals													
Aluminum	mg/L	0.01	**0.1**	--	**0.28**	--	0.03	0.02	ND	--	ND	--	--
Antimony	mg/L	0.001	**0.06**	--	ND	--	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	**0.025**	--	ND	--	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	**1**	0.14	0.14	--	0.15	0.13	0.13	0.12	0.09	0.12	0.04
Beryllium	mg/L	0.05	**NV**	--	ND	--	ND	ND	ND	ND	ND	--	--
Boron	mg/L	0.05	**5**	0.06	0.05	--	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/L	0.001	**0.005**	NA	ND	--	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	**NV**	52	43	--	19	67	56	45	37	46	49
Chromium	mg/L	0.05	**0.05**	--	ND	--	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	**NV**	--	ND	--	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	**1**	--	0.01	--	ND	ND	ND	--	ND	--	--
Iron	mg/L	0.1	**0.3**	0.05	0.08	--	**1.2**	**1.2**	**1.4**	**1.4**	**1**	**0.6**	**9.5**
Lead	mg/L	0.001	**0.01**	NA	ND	--	ND	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	**NV**	9.7	6.4	--	7.6	7	7.8	8	7.4	6.4	6.2
Manganese	mg/L	0.05	**0.05**	**0.105**	**0.2**	--	**0.2**	**0.35**	**0.25**	**0.25**	**0.15**	**0.3**	**1.7**
Mercury	mg/L		**0.001**	--	--	--	ND	--	ND	--	--	--	--
Molybdenum	mg/L	0.005	**NV**	--	ND	--	ND	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	**NV**	--	ND	--	ND	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	**NV**	3.8	1	--	0.6	1.4	2	1.2	1.2	1	4.6
Selenium	mg/L	0.005	**0.01**	--	ND	--	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	**NV**	--	ND	--	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	**200**	8.4	8.8	--	5	4.2	5.4	4.6	7.4	4	23
Thallium	mg/L	0.001	**NV**	--	ND	--	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	**NV**	--	ND	--	ND	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	**5**	--	0.02	--	ND	ND	0.04	--	ND	--	--
Volatile Organic Compounds [3]													
Styrene	mg/L		**NV**	--	--	--	ND	--	ND	--	--	--	--
Tetrachloroethylene	mg/L		**0.03**	--	--	--	ND	--	ND	--	--	--	--
Toluene	mg/L		**NV**	--	--	--	ND	--	ND	--	--	--	--
Comments													

Groundwater Analysis Summary

MW7S

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	96.17
Casing	0.87	97.04
PVC Pipe	0.85	97.02
Depth of Well	6.76	89.41

Type of Monitoring Well: Impact
Aquifer Tapped: Bedrock

Parameter	Units	MDL	ODWS Guidelines	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters													
Water Depth (below PVC pipe)	m	NA	**NA**									DRY	DRY
Water Depth (bgs)	m	NA	**NA**	--	5.31	--	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Water Level Elevation	m	NA	**NA**	--	90.86	--	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Conductivity	uS/cm	NA	**NV**	--	--	--	--	--	--	--	--	--	--
pH	mg/L	NA	**6.5-8.5**	--	--	--	--	--	--	--	--	--	--
TDS	mg/L	NA	**500**	--	--	--	--	--	--	--	--	--	--
Temperature	°C	NA	**<15**	--	--	--	--	--	--	--	--	--	--
General Chemistry													
Alkalinity	mg/L	5	**30-500**	22	80	70	--	--	--	--	--	--	--
BOD	mg/L	2	**NV**	ND	1	1	--	--	--	--	--	--	--
Chloride	mg/L	1	**250**	7.5	12	ND	--	--	--	--	--	--	--
COD	mg/L	20	**NV**	55	2	3	--	--	--	--	--	--	--
Conductivity	uS/cm	5	**NV**	105	220	--	--	--	--	--	--	--	--
DOC	mg/L	0.5	**5**	--	2	**8.8**	--	--	--	--	--	--	--
Hardness	mg/L		**500**	37	91	51	--	--	--	--	--	--	--
Nitrite (N) [1]	mg/L	0.1	**1**	ND	0.1	ND	--	--	--	--	--	--	--
Nitrate (N)	mg/L	0.05	**10**	ND	0.2	0.2	--	--	--	--	--	--	--
Nitrates + Nitrites (N)	mg/L		**10** [2]	ND	0.3	0.2	--	--	--	--	--	--	--
Ammonia/Ammonium (N)	mg/L	0.01	**NV**	0.09	0.04	0.03	--	--	--	--	--	--	--
TKN	mg/L	0.1	**NV**	1.61	0.3	0.5	--	--	--	--	--	--	--
Sulphate	mg/L	1	**500**	15.3	34	10	--	--	--	--	--	--	--
pH	unitless	0.05	**6.5 - 8.5**	5.82	7.9	6.8	--	--	--	--	--	--	--
TDS	mg/L	10	**500**	55	120	180	--	--	--	--	--	--	--
TOC	mg/L		**NV**	23	3	8.6	--	--	--	--	--	--	--
Total Phosphorus	mg/L		**NV**	9.87	0.02	0.04	--	--	--	--	--	--	--
Metals													
Aluminum	mg/L	0.01	**0.1**	--	**0.16**	ND	--	--	--	--	--	--	--
Antimony	mg/L	0.001	**0.06**	--	ND	ND	--	--	--	--	--	--	--
Arsenic	mg/L	0.01	**0.025**	--	ND	ND	--	--	--	--	--	--	--
Barium	mg/L	0.01	**1**	0.02	0.01	ND	--	--	--	--	--	--	--
Beryllium	mg/L	0.05	**NV**	--	ND	ND	--	--	--	--	--	--	--
Boron	mg/L	0.05	**5**	0.05	0.05	ND	--	--	--	--	--	--	--
Cadmium	mg/L	0.001	**0.005**	NA	ND	ND	--	--	--	--	--	--	--
Calcium	mg/L	0.2	**NV**	11.4	28	17	--	--	--	--	--	--	--
Chromium	mg/L	0.05	**0.05**	--	ND	ND	--	--	--	--	--	--	--
Cobalt	mg/L	0.005	**NV**	--	ND	ND	--	--	--	--	--	--	--
Copper	mg/L	0.005	**1**	--	0.05	0.01	--	--	--	--	--	--	--
Iron	mg/L	0.1	**0.3**	0.43	0.2	ND	--	--	--	--	--	--	--
Lead	mg/L	0.001	**0.01**	--	ND	ND	--	--	--	--	--	--	--
Magnesium	mg/L	0.2	**NV**	2	5	2	--	--	--	--	--	--	--
Manganese	mg/L	0.05	**0.05**	0.24	0.05	ND	--	--	--	--	--	--	--
Mercury	mg/L		**0.001**	--	ND	ND	--	--	--	--	--	--	--
Molybdenum	mg/L	0.005	**NV**	--	ND	ND	--	--	--	--	--	--	--
Nickel	mg/L	0.005	**NV**	--	ND	ND	--	--	--	--	--	--	--
Potassium	mg/L	0.2	**NV**	ND	0.4	ND	--	--	--	--	--	--	--
Selenium	mg/L	0.005	**0.01**	--	ND	ND	--	--	--	--	--	--	--
Silver	mg/L	0.001	**NV**	--	ND	ND	--	--	--	--	--	--	--
Sodium	mg/L	0.2	**200**	4.9	9.6	3.4	--	--	--	--	--	--	--
Thallium	mg/L	0.001	**NV**	--	ND	ND	--	--	--	--	--	--	--
Vanadium	mg/L	0.01	**NV**	--	ND	ND	--	--	--	--	--	--	--
Zinc	mg/L	0.02	**5**	--	ND	0.02	--	--	--	--	--	--	--
Volatile Organic Compounds [3]													
Styrene	mg/L		**NV**	--	ND	0.0012	--	--	--	--	--	--	--
Tetrachloroethylene	mg/L		**0.03**	--	ND	0.0015	--	--	--	--	--	--	--
Toluene	mg/L		**NV**	--	ND	0.001	--	--	--	--	--	--	--
Comments													

Groundwater Analysis Summary

MW7D

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	96.15
Casing	0.99	97.14
PVC Pipe	0.72	96.87
Depth of Well	13.2	83.67

Type of Monitoring Well: Impact
Aquifer Tapped: Bedrock

Parameter	Units	MDL	ODWS Guidelines	Fall 2005
				Nov-05
Field Parameters				
Water Depth (below PVC pipe)	m	NA	**NA**	7.97
Water Depth (bgs)	m	NA	**NA**	7.25
Water Level Elevation	m	NA	**NA**	88.9
Conductivity	uS/cm	NA	**NV**	918
pH	mg/L	NA	**6.5-8.5**	7.43
TDS	mg/L	NA	**500**	460
Temperature	°C	NA	**<15**	6.2
General Chemistry				
Alkalinity	mg/L	5	**30-500**	360
BOD	mg/L	2	**NV**	ND
Chloride	mg/L	1	**250**	13
COD	mg/L	20	**NV**	20
Conductivity	uS/cm	5	**NV**	870
DOC	mg/L	0.5	**5**	1.5
Hardness	mg/L		**500**	356
Nitrite (N) [1]	mg/L	0.1	**1**	ND
Nitrate (N)	mg/L	0.05	**10**	0.3
Nitrates + Nitrites (N)	mg/L		**10** [2]	0.3
Ammonia/Ammonium (N)	mg/L	0.01	**NV**	0.3
TKN	mg/L	0.1	**NV**	0.4
Sulphate	mg/L	1	**500**	260
pH	unitless	0.05	**6.5 - 8.5**	7.24
TDS	mg/L	10	**500**	470
TOC	mg/L		**NV**	--
Total Phosphorus	mg/L		**NV**	9.87
Metals				
Aluminum	mg/L	0.01	**0.1**	--
Antimony	mg/L	0.001	**0.06**	--
Arsenic	mg/L	0.01	**0.025**	ND
Barium	mg/L	0.01	**1**	0.04
Beryllium	mg/L	0.05	**NV**	--
Boron	mg/L	0.05	**5**	0.2
Cadmium	mg/L	0.001	**0.005**	NA
Calcium	mg/L	0.2	**NV**	98
Chromium	mg/L	0.05	**0.05**	--
Cobalt	mg/L	0.005	**NV**	--
Copper	mg/L	0.005	**1**	--
Iron	mg/L	0.1	**0.3**	**3.9**
Lead	mg/L	0.001	**0.01**	--
Magnesium	mg/L	0.2	**NV**	27
Manganese	mg/L	0.05	**0.05**	**0.25**
Mercury	mg/L		**0.001**	--
Molybdenum	mg/L	0.005	**NV**	--
Nickel	mg/L	0.005	**NV**	--
Potassium	mg/L	0.2	**NV**	8.6
Selenium	mg/L	0.005	**0.01**	--
Silver	mg/L	0.001	**NV**	--
Sodium	mg/L	0.2	**200**	72
Thallium	mg/L	0.001	**NV**	--
Vanadium	mg/L	0.01	**NV**	--
Zinc	mg/L	0.02	**5**	--
Comments				

Groundwater Analysis Summary

MW8-S

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	99.23
Casing	1.04	100.27
PVC Pipe	0.9	100.13
Depth of Well	3.76	95.47

Type of Monitoring Well: Impact
Aquifer Tapped: Sand

Parameter	Units	MDL	ODWS Guidelines	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters													
Water Depth (below PVC pipe)	m	NA	**NA**									2.11	2.15
Water Depth (bgs)	m	NA	**NA**	1.61	1.08	--	1.98	1.6	1.27	1.29	1.38	1.21	1.25
Water Level Elevation	m	NA	**NA**	97.62	98.15	--	97.25	97.63	97.96	97.94	97.85	98.02	97.98
Conductivity	uS/cm	NA	**NV**	--	--	--	--	--	--	116	100	150	181
pH	mg/L	NA	**6.5-8.5**	--	--	--	--	--	--	8.27	7.05	6.6	7.13
TDS	mg/L	NA	**500**	--	--	--	--	--	--	--	51	76	87
Temperature	°C	NA	**<15**	4.2	5	5.2	7.1	5.4	11.1	11.5	5.6	16	10.2
General Chemistry													
Alkalinity	mg/L	5	**30-500**	22	15	5	10	ND	5	10	20	20	35
BOD	mg/L	2	**NV**	ND	ND	1	2	ND	2	ND	2	ND	ND
Chloride	mg/L	1	**250**	7.5	14	3	3	2	2	7	6	11	12
COD	mg/L	20	**NV**	55	51	2	28	14	23	1	35	ND	ND
Conductivity	uS/cm	5	**NV**	105	80	--	80	80	90	120	90	140	160
DOC	mg/L	0.5	**5**	--	1	**9.4**	**13**	**18**	1	1.5	3	1.5	2.5
Hardness	mg/L		**500**	37	31	20	30	27	27	40	34	46	62
Nitrite (N) [1]	mg/L	0.1	**1**	ND	0.1	ND	ND	--	ND	0.4	ND	ND	ND
Nitrate (N)	mg/L	0.05	**10**	ND	0.2	2.5	4	5.3	6.9	ND	ND	ND	ND
Nitrates + Nitrites (N)	mg/L		**10** [2]	ND	0.3	2.5	4	--	6.9	0.4	ND	ND	ND
Ammonia/Ammonium (N)	mg/L	0.01	**NV**	0.09	0.05	ND	0.03	0.03	ND	0.1	0.04	ND	ND
TKN	mg/L	0.1	**NV**	1.61	ND	0.6	0.6	--	0.6	0.1	0.7	0.2	0.5
Sulphate	mg/L	1	**500**	15.3	34	6	7	6	7	24	12	20	22
pH	unitless	0.05	**6.5 - 8.5**	5.82	**6.4**	7	7	**5.86**	**6.46**	**5.71**	**5.94**	**5.68**	**5.82**
TDS	mg/L	10	**500**	55	100	120	58	110	90	110	76	130	50
TOC	mg/L		**NV**	23	3.9	9.4	20	--	--	--	--	--	--
Total Phosphorus	mg/L		**NV**	9.98	0.001	0.001	0.0001	--	0.06	--	--	--	--
Metals													
Aluminum	mg/L	0.01	**0.1**	--	**0.49**	ND	ND	ND	ND	--	ND	--	--
Antimony	mg/L	0.001	**0.06**	--	ND	ND	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	**0.025**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	**1**	0.02	0.2	ND	ND	ND	ND	0.01	0.01	0.01	0.02
Beryllium	mg/L	0.05	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Boron	mg/L	0.05	**5**	0.05	0.05	ND	ND	ND	ND	ND	ND	ND	0.1
Cadmium	mg/L	0.001	**0.005**	--	ND	ND	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	**NV**	11.4	8.4	6	7.6	8.8	9	12	10	14	20
Chromium	mg/L	0.05	**0.05**	--	ND	ND	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	**1**	--	0.01	ND	ND	ND	ND	--	ND	--	--
Iron	mg/L	0.1	**0.3**	**0.43**	**0.4**	ND	ND	ND	ND	ND	ND	ND	**0.4**
Lead	mg/L	0.001	**0.01**	--	ND	ND	ND	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	**NV**	2	2.4	1.2	2.6	1.2	1.2	2.4	2.2	2.8	3
Manganese	mg/L	0.05	**0.05**	**0.24**	**0.15**	0.05	ND	ND	ND	ND	**0.1**	**0.3**	**1.1**
Mercury	mg/L		**0.001**	--	ND	ND	ND	--	ND	--	--	--	--
Molybdenum	mg/L	0.005	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	**NV**	ND	0.2	ND	1.2	0.6	0.4	0.4	0.4	1.4	1
Selenium	mg/L	0.005	**0.01**	--	ND	ND	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	**200**	4.9	3.8	2.8	2.8	2.6	2.4	4	2.4	3.8	9.6
Thallium	mg/L	0.001	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	**5**	--	ND	0.02	ND	ND	0.2	--	ND	--	--
Volatile Organic Compounds [3]													
Styrene	mg/L		**NV**	--	ND	0.0008	0.0044	--	0.0024	ND	ND	ND	ND
Tetrachloroethylene	mg/L		**0.03**	--	ND	0.0005	0.001	--	ND	ND	0.0004	ND	ND
Toluene	mg/L		**NV**	--	ND	0.0025	0.002	--	ND	ND	ND	0.002	ND
Comments													

Groundwater Analysis Summary

MW8-D

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	99.19
Casing	1.01	100.2
PVC Pipe	0.93	100.12
Depth of Well	11.46	87.73

Type of Monitoring Well: Impact
Aquifer Tapped: Till

Parameter	Units	MDL	ODWS Guidelines	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters													
Water Depth (below PVC pipe)	m	NA	NA									8.92	9.52
Water Depth (bgs)	m	NA	NA	8.84	7.13	--	8.66	8.39	8.85	8.12	8.81	7.99	8.59
Water Level Elevation	m	NA	NA	90.35	92.06	--	90.53	90.8	90.34	91.07	90.38	91.2	90.6
Conductivity	uS/cm	NA	NV	--	--	--	--	--	--	289	315	280	367
pH	mg/L	NA	6.5-8.5	--	--	--	--	--	--	7.95	7.15	7.11	8.07
TDS	mg/L	NA	500	--	--	--	--	--	--	--	157	139	185
Temperature	°C	NA	<15	3.7	8	8	8.1	8.2	10	12	4.4	16.5	8.3
General Chemistry													
Alkalinity	mg/L	5	30-500	201	130	130	130	120	130	120	130	130	150
BOD	mg/L	2	NV	5	27	1	ND	ND	2	ND	ND	ND	ND
Chloride	mg/L	1	250	8.7	13	6	4	3	4	3	4	3	7
COD	mg/L	20	NV	982	22	2	32	8	42	1	1	1	ND
Conductivity	uS/cm	5	NV	--	479	280	--	300	280	300	290	300	360
DOC	mg/L	0.5	5	--	2	--	1.4	2	2.5	**20**	**25**	1.5	1
Hardness	mg/L		500	250	130	130	74	167	157	125	34	134	181
Nitrite (N) [1]	mg/L	0.1	1	ND	0.1	ND	ND	0.3	--	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	10	ND	0.3	1.5	0.7	0.3	0.3	0.3	ND	0.3	ND
Nitrates + Nitrites (N)	mg/L		10 [2]	ND	0.4	1.5	0.7	0.6	--	0.3	ND	0.3	ND
Ammonia/Ammonium (N)	mg/L	0.01	NV	0.11	0.04	0.03	0.02	0.05	0.02	0.07	0.1	ND	ND
TKN	mg/L	0.1	NV	2.35	0.2	0.5	0.2	0.2	--	0.3	0.5	0.1	0.4
Sulphate	mg/L	1	500	58.1	100	26	22	17	24	15	22	15	33
pH	unitless	0.05	6.5 - 8.5	7.63	8	7	6.9	7.74	8.35	7.57	7.24	7.47	7.1
TDS	mg/L	10	500	291	280	170	76	190	153	190	260	210	120
TOC	mg/L		NV	ND	2.1	5.2	3.2	--	8	--	--	--	--
Total Phosphorus	mg/L		NV	0.01	0.01	0.05	0.09	0.03	--	--	--	--	--
Metals													
Aluminum	mg/L	0.01	0.1	--	**0.34**	0.03	**0.12**	0.02	ND	--	ND	--	--
Antimony	mg/L	0.001	0.06	--	ND	ND	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	0.025	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	1	0.09	0.06	0.04	0.04	ND	0.04	0.05	0.03	0.04	0.04
Beryllium	mg/L	0.05	NV	--	ND	ND	ND	ND	ND	ND	ND	--	--
Boron	mg/L	0.05	5	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/L	0.001	0.005	--	ND	ND	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	NV	68.5	42	38	17	62	50	39	10	42	56
Chromium	mg/L	0.05	0.05	--	ND	ND	ND	ND	ND	NA	ND	--	--
Cobalt	mg/L	0.005	NV	--	ND	ND	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	1	--	0.01	ND	ND	ND	ND	--	ND	--	--
Iron	mg/L	0.1	0.3	**0.85**	**0.6**	ND	ND	ND	ND	ND	ND	ND	0.3
Lead	mg/L	0.001	0.01	--	ND	ND	ND	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	NV	19.1	7	7.4	7.8	3	7.8	6.6	2.2	7	10
Manganese	mg/L	0.05	0.05	**0.554**	**0.15**	ND	0.05	ND	ND	ND	**0.1**	ND	**0.35**
Mercury	mg/L		0.001	--	ND	--	ND	ND	ND	--	--	--	--
Molybdenum	mg/L	0.005	NV	--	ND	0.01	ND	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	NV	--	ND	ND	ND	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	NV	5.6	1	0.8	1	1.2	1.6	1	1.4	1	2.4
Selenium	mg/L	0.005	0.01	--	ND	ND	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	NV	--	ND	ND	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	200	9.1	3	3.2	3.6	2.2	2.8	3.2	2.8	3.2	8.2
Thallium	mg/L	0.001	NV	--	ND	ND	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	NV	--	ND	ND	ND	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	5	--	ND	0.02	ND	ND	0.02	--	ND	--	--
Volatile Organic Compounds [3]													
Styrene	mg/L		NV	--	ND	0.0004	0.0004	ND	--	ND	ND	ND	ND
Tetrachloroethylene	mg/L		0.03	--	ND	ND	0.001	ND	--	ND	0.0008	ND	ND
Toluene	mg/L		NV	--	ND	0.0015	0.0005	ND	--	ND	ND	0.0035	ND
Comments													

MW11

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	99.53
Casing	0.96	100.49
PVC Pipe	0.88	100.41
Depth of Well	5.86	93.67

Type of Monitoring Well: Background
Aquifer Tapped: Till

Parameter	Units	MDL	ODWS Guidelines	Fall 2000	Spring 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-00	May-01	Jun-02	Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-06
Field Parameters													
Water Depth (below PVC pipe)	m	NA	**NA**									5.4	5.67
Water Depth (bgs)	m	NA	**NA**	4.87	4.27	--	5.13	4.48	4.5	4.62	4.66	4.52	4.79
Water Level Elevation	m	NA	**NA**	94.66	95.26	--	94.4	95.05	95.03	94.91	94.87	95.01	94.74
Conductivity	uS/cm	NA	**NV**	--	--	--	--	--	--	390	525	331	433
pH	mg/L	NA	**6.5-8.5**	--	--	--	--	--	--	8.28	6.75	7.49	7.71
TDS	mg/L	NA	**500**	--	--	--	--	--	--	--	260	162	215
Temperature	°C	NA	**<15**	4.1	8	6	7	6.2	9.6	10.1	5	15	8.9
General Chemistry													
Alkalinity	mg/L	5	**30-500**	167	160	160	190	160	170	160	180	150	470
BOD	mg/L	2	**NV**	ND	2	ND	2	ND	1	4	ND	ND	ND
Chloride	mg/L	1	**250**	10.5	19	8	9	8	8	8	9	7	8
COD	mg/L	20	**NV**	233	40	19	33	6	45	6	1	ND	ND
Conductivity	uS/cm	5	**NV**	410	380	--	420	390	410	400	400	380	430
DOC	mg/L	0.5	**5**	--	--	0.6	2.4	2.2	2.5	2	2.5	1	ND
Hardness	mg/L		**500**	199	110	140	100	256	234	140	165	177.88	236.94
Nitrite (N) [1]	mg/L	0.1	**1**	ND	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	**10**	3.1	2.2	2.2	2.5	2.7	3	3.2	2.9	1.8	2
Nitrates + Nitrites (N)	mg/L		**10** [2]	3.1	2.3	2.2	2.5	2.7	3	3.2	2.9	1.8	2
Ammonia/Ammonium (N)	mg/L	0.01	**NV**	0.05	0.08	ND	0.07	0.03	0.04	0.05	0.03	ND	ND
TKN	mg/L	0.1	**NV**	0.71	1.4	0.6	0.5	ND	0.6	0.3	0.6	0.3	0.3
Sulphate	mg/L	1	**500**	24.7	63	18	15	18	21	17	18	17	18
pH	unitless	0.05	**6.5 - 8.5**	7.4	7.8	7	7.4	7.67	8.5	7.78	7.55	7.58	7.57
TDS	mg/L	10	**500**	233	270	270	210	260	270	260	300	220	30
TOC	mg/L		**NV**	ND	3.9	4	3.4	--	ND	--	--	--	--
Total Phosphorus	mg/L		**NV**	ND	0.01	0.02	0.03	ND	0.03	--	--	--	--
Metals													
Aluminum	mg/L	0.01	**0.1**	--	0.09	ND	ND	ND	ND	--	ND	--	--
Antimony	mg/L	0.001	**0.06**	--	ND	ND	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	**0.025**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	**1**	0.05	0.04	0.03	0.04	0.03	0.04	0.03	0.03	0.03	0.04
Beryllium	mg/L	0.05	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Boron	mg/L	0.05	**5**	0.02	0.05	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/L	0.001	**0.005**	--	ND	ND	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	**NV**	66.4	34	44	30	92	81	56	66	60	81
Chromium	mg/L	0.05	**0.05**	--	ND	ND	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	**1**	--	0.01	ND	0.01	ND	ND	--	ND	--	--
Iron	mg/L	0.1	**0.3**	ND	0.2	ND	ND	ND	ND	ND	ND	ND	**0.4**
Lead	mg/L	0.001	**0.01**	--	ND	ND	ND	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	**NV**	8	5.8	6.4	7.2	6.4	7.6	7.6	7.6	6.8	8.4
Manganese	mg/L	0.05	**0.05**	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	mg/L		**0.001**	--	--	ND	ND	ND	ND	--	--	--	--
Molybdenum	mg/L	0.005	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	**NV**	4.4	1	ND	0.4	1	1	0.6	0.4	0.6	1.2
Selenium	mg/L	0.005	**0.01**	--	ND	ND	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	**200**	5.1	4	3.4	4	3.2	3.2	3.4	2.8	4.2	8.8
Thallium	mg/L	0.001	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	**NV**	--	ND	ND	ND	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	**5**	--	ND	0.02	ND	ND	0.02	--	ND	--	--
Volatile Organic Compounds [3]													
Styrene	mg/L		**NV**	--	--	0.0008	0.002	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	mg/L		**0.03**	--	--	0.003	0.002	ND	ND	ND	0.0008	ND	ND
Toluene	mg/L		**NV**	--	--	0.0025	0.001	ND	ND	ND	ND	0.0025	ND
Comments													

Groundwater Analysis Summary

MW12-S

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	96.05
Casing	0.96	97.01
PVC Pipe	0.81	96.86
Depth of Well	3.07	92.98

Type of Monitoring Well: Background
Aquifer Tapped: Clay

Parameter	Units	MDL	ODWS Guidelines	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters										
Water Depth (below PVC pipe)	m	NA	NA						1.1	1.38
Water Depth (bgs)	m	NA	NA	0.74	0.4	0.33	0.36	0.29	0.29	0.57
Water Level Elevation	m	NA	NA	95.31	95.65	95.72	95.69	95.76	95.76	95.48
Conductivity	uS/cm	NA	NV	--	--	--	200	207	133	141
pH	unitless	NA	6.5 - 8.5	7.5	6.74	7.5	7.7	7.4	6.71	7.17
TDS	mg/L	NA	500	--	--	--	--	104	66	68
Temperature	°C	NA	<15	11	6.4	6.8	9.9	2.2	14.8	8.2
General Chemistry										
Alkalinity	mg/L	5	30-500	110	40	70	70	70	80	40
BOD	mg/L	2	NV	1	ND	3	2	ND	ND	ND
Chloride	mg/L	1	250	1	ND	1	ND	1	1	1
COD	mg/L	20	NV	68	33	59	7	310	40	40
Conductivity	uS/cm	5	NV	230	120	180	180	180	190	120
DOC	mg/L	0.5	5	**8**	**5.6**	**14**	4	4.5	**8**	4
Hardness	mg/L		500	95	45	76	79	48	99	46
Nitrite (N) [1]	mg/L	0.1	1	ND	--	ND	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	10	ND	ND	ND	ND	0.6	ND	ND
Nitrates + Nitrites (N)	mg/L		10 [2]	ND	--	ND	ND	0.6	ND	ND
Ammonia/Ammonium (N)	mg/L	0.01	NV	0.118	0.04	0.09	0.18	0.09	0.27	<0.01
TKN	mg/L	0.1	NV	0.3	--	0.5	1.2	0.4	0.5	0.7
Sulphate	mg/L	1	500	9	10	13	9	36	9	8
pH	unitless	0.05	6.5 - 8.5	7.5	6.74	7.5	6.77	7.55	6.51	6.73
TDS	mg/L	10	500	190	120	150	150	300	140	50
TOC	mg/L		NV	12	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	0.44	--	0.07	--	--	--	--
Metals										
Aluminum	mg/L	0.01	0.1	1.7	0.1	0.06	--	0.06	--	--
Antimony	mg/L	0.001	0.06	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	0.025	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	1	0.08	ND	0.01	0.01	ND	0.02	<0.01
Beryllium	mg/L	0.05	NV	ND	ND	ND	--	ND	--	--
Boron	mg/L	0.05	5	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/L	0.001	0.005	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	NV	23	13	23	22	9.6	29	13
Chromium	mg/L	0.05	0.05	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	NV	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	1	ND	ND	ND	--	ND	--	--
Iron	mg/L	0.1	0.3	**7.6**	**3**	**3**	**3.7**	**5.8**	**3.3**	**2.7**
Lead	mg/L	0.001	0.01	ND	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	NV	9.4	3	4.6	5.8	5.8	6.4	3.4
Manganese	mg/L	0.05	0.05	**0.5**	**0.15**	**0.2**	**0.25**	**0.25**	**0.25**	**0.2**
Mercury	mg/L		0.001	--	--	ND	--	--	--	--
Molybdenum	mg/L	0.005	NV	ND	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	NV	0.01	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	NV	0.8	0.8	1	0.6	0.4	1	0.8
Selenium	mg/L	0.005	0.01	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	NV	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	200	3	4.4	ND	4	3	4.6	4.2
Thallium	mg/L	0.001	NV	ND	ND	6.8	--	ND	--	--
Vanadium	mg/L	0.01	NV	0.02	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	5	0.02	ND	0.04	--	ND	--	--
Volatile Organic Compounds [3]										
Styrene	mg/L		NV	--	--	ND	ND	ND	ND	ND
Tetrachloroethylene	mg/L		0.03	--	--	ND	ND	0.008	ND	ND
Toluene	mg/L		NV	--	--	ND	ND	ND	ND	ND
Comments										

Groundwater Analysis Summary

MW12-D

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	96.08
Casing	1.04	97.12
PVC Pipe	0.805	96.885
Depth of Well	9.05	87.03

Type of Monitoring Well: Background
Aquifer Tapped: Till

Parameter	Units	MDL	ODWS Guidelines	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters										
Water Depth (below PVC pipe)	m	NA	NA						4.51	4.8
Water Depth (bgs)	m	NA	NA	5.5	4.26	4.07	3.71	4.14	3.705	3.995
Water Level Elevation	m	NA	NA	90.58	91.82	92.01	92.37	91.94	92.375	92.085
Conductivity	uS/cm	NA	NV	--	--	--	225	305	258	279
pH	mg/L	NA	6.5-8.5	--	--	--	8.6	7.51	7.12	7.12
TDS	mg/L	NA	500	--	--	--	--	152	130	140
Temperature	°C	NA	<15	11	NA	7.5	8	3	15.7	7.6
General Chemistry										
Alkalinity	mg/L	5	30-500	160	140	140	140	140	140	150
BOD	mg/L	2	NV	6	ND	2	4	2	ND	ND
Chloride	mg/L	1	250	5	ND	1	ND	ND	ND	ND
COD	mg/L	20	NV	30	12	42	7	7	<20	20
Conductivity	uS/cm	5	NV	380	280	300	290	270	290	280
DOC	mg/L	0.5	5	11	4	2.5	3.5	5	2.5	3.5
Hardness	mg/L		500	120	144	126	116	87	105	107
Nitrite (N) [1]	mg/L	0.1	1	ND	ND	--	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	10	ND	ND	ND	ND	ND	ND	ND
Nitrates + Nitrites (N)	mg/L		10 [2]	ND	ND	--	ND	ND	ND	ND
Ammonia/Ammonium (N)	mg/L	0.01	NV	0.36	0.05	0.34	0.44	0.3	ND	ND
TKN	mg/L	0.1	NV	0.6	0.6	--	1.2	0.9	180	0.7
Sulphate	mg/L	1	500	19	3	5	5	7	7	5
pH	unitless	0.05	6.5 - 8.5	6.8	8.12	8.32	8	7.91	7.75	7.82
TDS	mg/L	10	500	240	200	190	210	150	180	130
TOC	mg/L		NV	12	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	0.12	0.15	--	--	--	--	--
Metals										
Aluminum	mg/L	0.01	0.1	ND	0.02	ND	--	ND	--	--
Antimony	mg/L	0.001	0.06	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	0.025	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	1	0.05	0.05	0.03	0.04	ND	0.01	0.03
Beryllium	mg/L	0.05	NV	ND	ND	ND	--	ND	--	--
Boron	mg/L	0.05	5	0.1	ND	0.05	0.05	ND	0.05	0.05
Cadmium	mg/L	0.001	0.005	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	NV	21	38	29	25	15	24	23
Chromium	mg/L	0.05	0.05	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	NV	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	1	ND	ND	ND	--	ND	--	--
Iron	mg/L	0.1	0.3	ND	ND	0.2	0.1	ND	ND	0.8
Lead	mg/L	0.001	0.01	ND	ND	ND	NA	ND	--	--
Magnesium	mg/L	0.2	NV	16	12	13	13	12	11	12
Manganese	mg/L	0.05	0.05	0.15	0.05	0.05	0.1	0.06	ND	0.1
Mercury	mg/L		0.001	NA	ND	ND	--	--	--	--
Molybdenum	mg/L	0.005	NV	0.01	ND	0.005	--	0.01	--	--
Nickel	mg/L	0.005	NV	ND	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	NV	7.4	6	6.4	5.8	5.4	4	6.8
Selenium	mg/L	0.005	0.01	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	NV	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	200	12	9	12	12	14	16	19
Thallium	mg/L	0.001	NV	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	NV	ND	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	5	ND	ND	0.02	--	ND	--	--
Volatile Organic Compounds [3]										
Styrene	mg/L		NV	--	ND	--	ND	ND	ND	ND
Tetrachloroethylene	mg/L		0.03	--	ND	--	ND	0.0008	ND	ND
Toluene	mg/L		NV	--	ND	--	ND	ND	0.0025	ND
Comments										

Groundwater Analysis Summary

MW14

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	97.16
Casing	0.95	98.11
PVC Pipe	0.83	97.99
Depth of Well	6.3	90.86

Type of Monitoring Well: Background
Aquifer Tapped: Till

Parameter	Units	MDL	ODWS Guidelines	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters										
Water Depth (below PVC pipe)	m	NA	NA						2.58	4.86
Water Depth (bgs)	m	NA	NA	DRY	3.22	4.17	1.87	4.28	1.75	4.03
Water Level Elevation	m	NA	NA	DRY	93.94	92.99	95.29	92.88	95.41	93.13
Conductivity	uS/cm	NA	NV	--	--	--	1.57	300	94	260
pH	mg/L	NA	6.5-8.5	--	--	--	8.25	7.35	7.53	7.96
TDS	mg/L	NA	500	--	--	--	--	150	47	125
Temperature	°C	NA	<15	--	5.5	9.4	8	5.6	14.7	10.1
General Chemistry										
Alkalinity	mg/L	5	30-500	--	95	110	55	140	45	130
BOD	mg/L	2	NV	--	ND	2	ND	ND	ND	ND
Chloride	mg/L	1	250	--	ND	1	ND	ND	ND	ND
COD	mg/L	20	NV	--	9	26	1	ND	ND	ND
Conductivity	uS/cm	5	NV	--	210	230	130	280	110	260
DOC	mg/L	0.5	5	--	3.2	2	1.5	ND	1	ND
Hardness	mg/L		500	--	165	127	57	128	49	144
Nitrite (N) [1]	mg/L	0.1	1	--	ND	ND	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	10	--	0.3	0.9	ND	1	ND	0.4
Nitrates + Nitrites (N)	mg/L		10 [2]	--	0.3	0.9	ND	1	ND	0.4
Ammonia/Ammonium (N)	mg/L	0.01	NV	--	0.11	0.05	0.08	0.1	ND	ND
TKN	mg/L	0.1	NV	--	3.2	0.2	0.2	0.5	ND	0.1
Sulphate	mg/L	1	500	--	7	7	6	6	5	6
pH	unitless	0.05	6.5 - 8.5	--	7.71	7.9	7	7.71	6.8	7.43
TDS	mg/L	10	500	--	ND	170	110	180	80	120
TOC	mg/L		NV	--	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	--	ND	0.01	--	--	--	--
Metals										
Aluminum	mg/L	0.01	0.1	--	**0.11**	0.04	--	ND	--	--
Antimony	mg/L	0.001	0.06	--	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	0.025	--	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	1	--	0.04	ND	ND	0.2	ND	0.1
Beryllium	mg/L	0.05	NV	--	ND	ND	--	ND	--	--
Boron	mg/L	0.05	5	--	ND	ND	ND	ND	ND	ND
Cadmium	mg/L	0.001	0.005	--	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	NV	--	55	46	19	42	17	51
Chromium	mg/L	0.05	0.05	--	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	NV	--	ND	ND	--	ND	--	--
Copper	mg/L	0.005	1	--	ND	ND	--	ND	--	--
Iron	mg/L	0.1	0.3	--	ND	ND	ND	ND	ND	**0.5**
Lead	mg/L	0.001	0.01	--	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	NV	--	6.6	2.8	2.2	5.6	1.6	4
Manganese	mg/L	0.05	0.05	--	ND	ND	ND	ND	ND	ND
Mercury	mg/L		0.001	--	ND	ND	--	--	--	--
Molybdenum	mg/L	0.005	NV	--	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	NV	--	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	NV	--	1.6	0.6	0.4	0.4	0.2	0.8
Selenium	mg/L	0.005	0.01	--	ND	ND	--	ND	--	--
Silver	mg/L	0.001	NV	--	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	200	--	3	1.6	2.2	1.6	2	2.6
Thallium	mg/L	0.001	NV	--	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	NV	--	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	5	--	ND	0.04	--	ND	--	--
Volatile Organic Compounds [3]										
Styrene	mg/L		NV	--	0.0016	ND	--	--	--	--
Tetrachloroethylene	mg/L		0.03	--	0.001	ND	--	--	--	--
Toluene	mg/L		NV	--	0.002	ND	--	--	--	--
Comments										

Groundwater Analysis Summary

MW15-S

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	98.1
Casing	1.04	99.14
PVC Pipe	0.94	99.04
Depth of Well	3.02	95.08

Type of Monitoring Well: Impact
Aquifer Tapped: Sand

Parameter	Units	MDL	ODWS Guidelines	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters										
Water Depth (below PVC pipe)	m	NA	NA						2.24	2.28
Water Depth (bgs)	m	NA	NA	1.93	3.45	3.38	1.24	1.44	1.3	1.34
Water Level Elevation	m	NA	NA	96.17	94.65	94.72	96.86	96.66	96.8	96.76
Conductivity	uS/cm	NA	NV	--	--	--	85	108	77	91
pH	mg/L	NA	6.5-8.5	--	--	--	8.5	7.58	6.95	7.87
TDS	mg/L	NA	500	--	--	--	--	53	38	44
Temperature	°C	NA	<15	13	NA	8.5	8.8	5	14.3	9.4
				25						
Alkalinity	mg/L	5	30-500	50	25	20	10	20	20	25
BOD	mg/L	2	NV	ND	ND	2	2	ND	ND	ND
Chloride	mg/L	1	250	3	3	4	3	5	4	4
COD	mg/L	20	NV	37	10	30	4	4	ND	ND
Conductivity	uS/cm	5	NV	160	75	80	60	80	75	90
DOC	mg/L	0.5	5	2.8	1.6	2	1.5	7	1.5	1
Hardness	mg/L		500	61	27	18	19	22	30	42
Nitrite (N) [1]	mg/L	0.1	1	ND	--	ND	ND	ND	ND	ND
Nitrate (N)	mg/L	0.05	10	ND	ND	ND	0.4	ND	ND	ND
Nitrates + Nitrites (N)	mg/L		10 [2]	ND	--	ND	0.4	ND	ND	ND
Ammonia/Ammonium (N)	mg/L	0.01	NV	0.02	0.01	0.02	0.09	0.12	ND	ND
TKN	mg/L	0.1	NV	0.2	--	0.3	0.5	0.7	0.2	0.2
Sulphate	mg/L	1	500	13	10	10	8	7	8	8
pH	unitless	0.05	6.5 - 8.5	6.7	6.5	6.97	**6.16**	6.88	**6.29**	**6.23**
TDS	mg/L	10	500	120	62	80	78	56	70	160
TOC	mg/L		NV	5.4	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	0.8	--	0.8	--	--	--	--
Metals										
Aluminum	mg/L	0.01	0.1	0.09	ND	ND	--	ND	--	--
Antimony	mg/L	0.001	0.06	ND	ND	ND	--	ND	--	--
Arsenic	mg/L	0.01	0.025	ND	ND	ND	ND	ND	ND	ND
Barium	mg/L	0.01	1	ND	ND	ND	ND	0.01	0.01	0.01
Beryllium	mg/L	0.05	NV	ND	ND	ND	--	ND	--	--
Boron	mg/L	0.05	5	ND	ND	ND	ND	ND	ND	ND
Cadmium	mg/L	0.001	0.005	ND	ND	ND	--	ND	--	--
Calcium	mg/L	0.2	NV	18	8.2	7	5.6	6.2	9.2	13
Chromium	mg/L	0.05	0.05	ND	ND	ND	--	ND	--	--
Cobalt	mg/L	0.005	NV	ND	ND	ND	--	ND	--	--
Copper	mg/L	0.005	1	ND	ND	ND	--	ND	--	--
Iron	mg/L	0.1	0.3	ND	ND	ND	ND	ND	ND	**0.6**
Lead	mg/L	0.001	0.01	ND	ND	ND	--	ND	--	--
Magnesium	mg/L	0.2	NV	3.8	1.6	ND	1.2	1.6	1.8	2.4
Manganese	mg/L	0.05	0.05	**0.1**	0.05	**1.6**	ND	ND	ND	ND
Mercury	mg/L		0.001	--	--	ND	--	--	--	--
Molybdenum	mg/L	0.005	NV	ND	ND	ND	--	ND	--	--
Nickel	mg/L	0.005	NV	ND	ND	ND	--	ND	--	--
Potassium	mg/L	0.2	NV	0.8	0.4	0.2	ND	0.2	ND	0.4
Selenium	mg/L	0.005	0.01	ND	ND	ND	--	ND	--	--
Silver	mg/L	0.001	NV	ND	ND	ND	--	ND	--	--
Sodium	mg/L	0.2	200	2.8	2.2	1.8	2	1.4	2.2	3.4
Thallium	mg/L	0.001	NV	ND	ND	ND	--	ND	--	--
Vanadium	mg/L	0.01	NV	ND	ND	ND	--	ND	--	--
Zinc	mg/L	0.02	5	ND	ND	0.02	--	ND	--	--
Volatile Organic Compounds [3]										
Styrene	mg/L		NV	--	--	ND	--	--	--	--
Tetrachloroethylene	mg/L		0.03	--	--	ND	--	--	--	--
Toluene	mg/L		NV	--	--	ND	--	--	--	--
Comments										

Groundwater Analysis Summary

MW15-D

Well Details:

	Height (m)	Elevation (m)
Ground Surface	0	97.84
Casing	1.01	98.85
PVC Pipe	0.94	98.78
Depth of Well	7.34	90.5

Type of Monitoring Well: Impact
Aquifer Tapped: Till

Parameter	Units	MDL	ODWS Guidelines	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005
				Nov-02	Jul-03	Nov-03	Jun-04	Dec-04	Jun-05	Nov-05
Field Parameters										
Water Depth (below PVC pipe)	m	NA	NA						6.72	7.68
Water Depth (bgs)	m	NA	NA	7.16	7.29	8.01	5.84	6.74	5.78	6.74
Water Level Elevation	m	NA	NA	90.68	90.55	89.83	92	91.1	92.06	91.1
Conductivity	uS/cm	NA	NV	--	--	--	335	310	225	225
pH	mg/L	NA	6.5-8.5	--	--	--	7.97	7.43	7.15	7.53
TDS	mg/L	NA	500	--	--	--	--	155	112	111
Temperature	°C	NA	<15	--	--	--	10.1	4	15	7.7
General Chemistry										
Alkalinity	mg/L	5	30-500	--	110	--	110	120	100	--
BOD	mg/L	2	NV	--	ND	--	2	ND	ND	--
Chloride	mg/L	1	250	--	2	--	ND	ND	1	--
COD	mg/L	20	NV	--	9	--	4	7	ND	--
Conductivity	uS/cm	5	NV	--	340	--	290	300	240	--
DOC	mg/L	0.5	5	--	3	--	2	4.5	1.5	--
Hardness	mg/L		500	--	175	--	116	97	90	--
Nitrite (N) [1]	mg/L	0.1	1	--	ND	--	0.4	ND	ND	--
Nitrate (N)	mg/L	0.05	10	--	0.6	--	ND	0.6	0.1	--
Nitrates + Nitrites (N)	mg/L		10 [2]	--	0.6	--	0.04	0.6	0.1	--
Ammonia/Ammonium (N)	mg/L	0.01	NV	--	ND	--	0.05	0.9	ND	--
TKN	mg/L	0.1	NV	--	0.2	--	200	0.4	0.2	--
Sulphate	mg/L	1	500	--	62	--	35	36	22	--
pH	unitless	0.05	6.5 - 8.5	--	7.73	--	7.85	7.55	7.84	--
TDS	mg/L	10	500	--	250	--	200	300	160	--
TOC	mg/L		NV	--	--	--	--	--	--	--
Total Phosphorus	mg/L		NV	--	0.02	--	--	--	--	--
Metals										
Aluminum	mg/L	0.01	0.1	--	ND	--	--	ND	--	--
Antimony	mg/L	0.001	0.06	--	ND	--	--	ND	--	--
Arsenic	mg/L	0.01	0.025	--	ND	--	ND	ND	ND	--
Barium	mg/L	0.01	1	--	0.02	--	0.01	ND	0.01	--
Beryllium	mg/L	0.05	NV	--	ND	--	--	ND	--	--
Boron	mg/L	0.05	5	--	ND	--	ND	ND	ND	--
Cadmium	mg/L	0.001	0.005	--	ND	--	--	ND	--	--
Calcium	mg/L	0.2	NV	--	55	--	31	24	25	--
Chromium	mg/L	0.05	0.05	--	ND	--	--	ND	--	--
Cobalt	mg/L	0.005	NV	--	ND	--	--	ND	--	--
Copper	mg/L	0.005	1	--	0.1	--	--	ND	--	--
Iron	mg/L	0.1	0.3	--	ND	--	ND	ND	ND	--
Lead	mg/L	0.001	0.01	--	ND	--	--	ND	--	--
Magnesium	mg/L	0.2	NV	--	9.2	--	9.4	9	6.8	--
Manganese	mg/L	0.05	0.05	--	ND	--	ND	ND	ND	--
Mercury	mg/L		0.001	--	ND	--	--	--	--	--
Molybdenum	mg/L	0.005	NV	--	0.015	--	--	0.005	--	--
Nickel	mg/L	0.005	NV	--	ND	--	--	ND	--	--
Potassium	mg/L	0.2	NV	--	2.6	--	2.2	2	1.2	--
Selenium	mg/L	0.005	0.01	--	ND	--	--	ND	--	--
Silver	mg/L	0.001	NV	--	ND	--	--	ND	--	--
Sodium	mg/L	0.2	200	--	19	--	10	13	8.6	--
Thallium	mg/L	0.001	NV	--	ND	--	--	ND	--	--
Vanadium	mg/L	0.01	NV	--	ND	--	--	ND	--	--
Zinc	mg/L	0.02	5	--	ND	--	--	ND	--	--
Volatile Organic Compounds [3]										
Styrene	mg/L		NV	--	0.0008	--	--	--	--	--
Tetrachloroethylene	mg/L		0.03	--	ND	--	--	--	--	--
Toluene	mg/L		NV	--	0.0015	--	--	--	--	--
Comments										
										--

Groundwater Analysis Summary

Notes:

1 Measured as nitrogen

2 Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L as nitrogen.

3 Only VOCs detected in past are listed in the summary tables. Refer to Laboratory Certificate of Analysis for list of all VOCs scanned.

BOLD Above ODWS

-- Not Analysed/Not Available/Not Measured

Glossary terms:

NA: Not Applicable
ND: Not Detected
NV: No values established by provincial governing agent
BOD: Biological Oxygen Demand
TOC: Total organic compounds
TDS: Total dissolved solids
TSS: Total Suspended Solids
TKN: Total Kjeldahl Nitrogen
COD: Chemical Oxygen Demand
DOC: Dissolved Organic Carbon
VOC: Volatile Organic Compounds
MDL: Minimum Detection Limit

APPENDIX D
LABORATORY CERTIFICATE OF ANALYSIS
SPRING 2005

PARACEL Laboratories Ltd.
Environmental &
Indoor Air Quality

300-2319 St. Laurent Blvd.
Ottawa ON K1G 4J8
Phone: (613) 731-9577
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Toll Free: 800-7491947
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Order #: K8788

Certificate of Analysis

Levac Robichaud Leclerc Associates Ltd.

1-2884, Chamberland Street
Rockland, ON K4K 1M6
Attn: Ms. Michelle Hanna

Phone: (613)-446-7777
Fax: (613)-446-1427

Client PO:
Project: **L9618**
Custody #: **27188**

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
K8788.1	MW1-D
K8788.2	MW2
K8788.3	MW4D
K8788.4	MW5S
K8788.5	MW5D
K8788.6	MW15D
K8788.7	MW15S
K8788.8	MW14

Approved By: Mark Foto for Dale Robertson, B.Sc.
Laboratory Director

Certificate of Analysis

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Analysis Summary Table

Analysis	Method Reference/Description
Metals	EPA 200.8 - ICP-MS
Alkalinity	EPA 310.1 - titration
Ammonia, total	MOE SDNP-E3223A - colourimetric
Anions	EPA 300.1 - ion chromatography
COD	EPA 410.1 - digestion, colourimetric
Conductivity	EPA 120.1 - electrode
pH	EPA 150.1 - pH probe
Solids, dissolved	SM17 2540C - filtration, gravimetric
Solids, total suspended	SM17 2540D - gravimetric
Total Kjeldahl Nitrogen	MOE RTNP-E3180A - digestion, colourimetric
DOC	E3247B - combustion IR
BOD, 5-day	APHA 5210B

n/a: not applicable
MDL: Method Detection Limit

Certificate of Analysis

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Matrix: Water

	Sample ID:	MW1-D	MW2	MW4D
	Sample Date:	31/05/2005	31/05/2005	31/05/2005
Parameter	MDL/Units	K8788.1	K8788.2	K8788.3
Arsenic	0.01 mg/L	< 0.01	< 0.01	< 0.01
Barium	0.01 mg/L	0.02	0.01	0.04
Boron	0.05 mg/L	< 0.05	< 0.05	0.40
Calcium	0.2 mg/L	17	20	160
Iron	0.1 mg/L	< 0.1	< 0.1	< 0.1
Magnesium	0.2 mg/L	3.2	2.4	24
Manganese	0.05 mg/L	< 0.05	< 0.05	0.55
Potassium	0.2 mg/L	0.8	< 0.2	2.6
Sodium	0.2 mg/L	5.2	5.2	24
Alkalinity	5 mg/L	65	65	290
Ammonia, total as N	0.01 mg/L	< 0.01	< 0.01	< 0.01
Chloride	1 mg/L	8	< 1	30
Nitrate as N	0.1 mg/L	3.1	< 0.1	< 0.1
Nitrite as N	0.05 mg/L	< 0.05	< 0.05	< 0.05
Sulphate	1 mg/L	18	5	250
Conductivity	5 uS/cm	200	140	1,000
COD	20 mg/L	80	< 20	20
pH	0.05 pH units	6.49	8.15	6.55
Solids, dissolved	10 mg/L	840	310	790
Total Kjeldahl Nitrogen	0.1 mg/L	0.4	0.4	0.4
Solids, total suspended	2 mg/L	41,000	4,700	290
DOC	0.5 mg/L	2.5	0.5	9.0
BOD	2 mg/L	< 2	< 2	< 2

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Matrix: Water

	Sample ID:	MW5S	MW5D	MW15D
	Sample Date:	31/05/2005	31/05/2005	31/05/2005
Parameter	MDL/Units	K8788.4	K8788.5	K8788.6
Arsenic	0.01 mg/L	< 0.01	< 0.01	< 0.01
Barium	0.01 mg/L	< 0.01	0.12	0.01
Boron	0.05 mg/L	< 0.05	< 0.05	< 0.05
Calcium	0.2 mg/L	19	46	25
Iron	0.1 mg/L	2.3	0.6	< 0.1
Magnesium	0.2 mg/L	5.0	6.4	6.8
Manganese	0.05 mg/L	0.10	0.30	< 0.05
Potassium	0.2 mg/L	0.6	1.0	1.2
Sodium	0.2 mg/L	3.6	4.0	8.6
Alkalinity	5 mg/L	65	150	100
Ammonia, total as N	0.01 mg/L	< 0.01	< 0.01	< 0.01
Chloride	1 mg/L	3	2	1
Nitrate as N	0.1 mg/L	< 0.1	< 0.1	0.1
Nitrite as N	0.05 mg/L	< 0.05	< 0.05	< 0.05
Sulphate	1 mg/L	13	8	22
Conductivity	5 uS/cm	160	290	240
COD	20 mg/L	< 20	40	< 20
pH	0.05 pH units	6.80	7.64	7.84
Solids, dissolved	10 mg/L	140	190	160
Total Kjeldahl Nitrogen	0.1 mg/L	0.2	0.4	0.2
Solids, total suspended	2 mg/L	8	2	< 2
DOC	0.5 mg/L	1.5	5.0	1.5
BOD	2 mg/L	< 2	< 2	< 2

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Matrix: Water

Parameter	Sample ID: / Sample Date: / MDL/Units	MW15S 31/05/2005 K8788.7	MW14 31/05/2005 K8788.8
Arsenic	0.01 mg/L	< 0.01	< 0.01
Barium	0.01 mg/L	0.01	< 0.01
Boron	0.05 mg/L	< 0.05	< 0.05
Calcium	0.2 mg/L	9.2	17
Iron	0.1 mg/L	< 0.1	< 0.1
Magnesium	0.2 mg/L	1.8	1.6
Manganese	0.05 mg/L	< 0.05	< 0.05
Potassium	0.2 mg/L	< 0.2	0.2
Sodium	0.2 mg/L	2.2	2.0
Alkalinity	5 mg/L	20	45
Ammonia, total as N	0.01 mg/L	< 0.01	< 0.01
Chloride	1 mg/L	4	< 1
Nitrate as N	0.1 mg/L	< 0.1	< 0.1
Nitrite as N	0.05 mg/L	< 0.05	< 0.05
Sulphate	1 mg/L	8	5
Conductivity	5 uS/cm	75	110
COD	20 mg/L	< 20	< 20
pH	0.05 pH units	6.29	6.80
Solids, dissolved	10 mg/L	70	80
Total Kjeldahl Nitrogen	0.1 mg/L	0.2	< 0.1
Solids, total suspended	2 mg/L	< 2	2
DOC	0.5 mg/L	1.5	1.0
BOD	2 mg/L	< 2	< 2

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

QA/QC Results

	Blank	Spike (QC Limits)	Duplicate	
Arsenic	< 0.01 mg/L	105% (70 - 130%)	< 0.01	< 0.01
Barium	< 0.01 mg/L	97% (70 - 130%)	0.12	0.12
Boron	< 0.05 mg/L	95% (70 - 130%)	0.20	0.20
Manganese	< 0.05 mg/L	90% (80 - 120%)	0.35	0.35
Alkalinity	< 5 mg/L	n/a	65	65
Ammonia, total as N	< 0.01 mg/L	96% (75 - 125%)	< 0.01	< 0.01
Chloride	< 1 mg/L	91% (75 - 125%)	180	180
Nitrate as N	< 0.1 mg/L	96% (75 - 125%)	3.5	3.5
Nitrite as N	< 0.05 mg/L	91% (75 - 125%)	< 0.05	< 0.05
Sulphate	< 1 mg/L	92% (75 - 125%)	36	36
Conductivity	< 5 uS/cm	n/a	300	310
COD	< 20 mg/L	98% (85 - 115%)	< 20	< 20
pH	n/a	n/a	7.80	7.80
Solids, dissolved	< 10 mg/L	n/a	90	80
Total Kjeldahl Nitrogen	< 0.1 mg/L	91% (75 - 125%)	0.4	0.4
Solids, total suspended	< 2 mg/L	n/a	< 2	< 2
DOC	< 0.5 mg/L	84% (70 - 130%)	2.0	2.5
BOD	< 2 mg/L	84% (75 - 125%)	< 2	< 2

PARACEL Laboratories Ltd.
Environmental & Indoor Air Quality

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Order #: K8787

Certificate of Analysis

Levac Robichaud Leclerc Associates Ltd.

1-2884, Chamberland Street
Rockland, ON K4K 1M6
Attn: Ms. Michelle Hanna

Phone: (613)-446-7777
Fax: (613)-446-1427

Client PO:
Project: **L9618**
Custody #: **27187 BB6585**

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
K8787.1	MW3-D
K8787.2	MW8-S
K8787.3	MW8-D
K8787.4	MW11
K8787.5	MW12-S
K8787.6	MW12-D

Approved By: Mark Foto for Dale Robertson, B.Sc.
Laboratory Director

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Analysis Summary Table

Analysis	Method Reference/Description
Metals	EPA 200.8 - ICP-MS
Alkalinity	EPA 310.1 - titration
Ammonia, total	MOE SDNP-E3223A - colourimetric
Anions	EPA 300.1 - ion chromatography
COD	EPA 410.1 - digestion, colourimetric
Conductivity	EPA 120.1 - electrode
pH	EPA 150.1 - pH probe
Solids, dissolved	SM17 2540C - filtration, gravimetric
Solids, total suspended	SM17 2540D - gravimetric
Total Kjeldahl Nitrogen	MOE RTNP-E3180A - digestion, colourimetric
DOC	E3247B - combustion IR
BOD, 5-day	APHA 5210B
VOCs	EPA 624 - P&T GC-MS

n/a: not applicable
MDL: Method Detection Limit

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Matrix: Water

Parameter	Sample ID: / Sample Date: / MDL/Units	MW3-D 31/05/2005 K8787.1	MW8-S 31/05/2005 K8787.2	MW8-D 31/05/2005 K8787.3
Arsenic	0.01 mg/L	< 0.01	< 0.01	< 0.01
Barium	0.01 mg/L	0.12	0.01	0.04
Boron	0.05 mg/L	0.20	< 0.05	< 0.05
Calcium	0.2 mg/L	190	14	42
Iron	0.1 mg/L	< 0.1	< 0.1	< 0.1
Magnesium	0.2 mg/L	8.0	2.8	7.0
Manganese	0.05 mg/L	0.35	0.30	< 0.05
Potassium	0.2 mg/L	5.4	< 0.2	1.0
Sodium	0.2 mg/L	4.4	3.8	3.2
Alkalinity	5 mg/L	400	20	130
Ammonia, total as N	0.01 mg/L	< 0.01	< 0.01	< 0.01
Chloride	1 mg/L	3	11	3
Nitrate as N	0.1 mg/L	6.3	< 0.1	0.3
Nitrite as N	0.05 mg/L	< 0.05	< 0.05	< 0.05
Sulphate	1 mg/L	100	20	15
Conductivity	5 uS/cm	950	140	300
COD	20 mg/L	20	< 20	< 20
pH	0.05 pH units	6.58	5.68	7.47
Solids, dissolved	10 mg/L	830	130	210
Total Kjeldahl Nitrogen	0.1 mg/L	0.4	0.2	0.1
Solids, total suspended	2 mg/L	60,000	12	2
DOC	0.5 mg/L	4.5	1.5	1.5
BOD	2 mg/L	< 2	< 2	< 2
Benzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Bromodichloromethane	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
Bromoform	0.0008 mg/L	< 0.0008	< 0.0008	< 0.0008
Bromomethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Chlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

		MW3-D	MW8-S	MW8-D
		31/05/2005	31/05/2005	31/05/2005
		K8787.1	K8787.2	K8787.3
Chloroethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
Chloroform	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Chloromethane	0.003 mg/L	< 0.003	< 0.003	< 0.003
Dibromochloromethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,2-Dibromoethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
m-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
o-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
p-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1-Dichloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,2-Dichloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1-Dichloroethylene	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
c-1,2-Dichloroethylene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
t-1,2-Dichloroethylene	0.001 mg/L	< 0.001	< 0.001	< 0.001
1,2-Dichloropropane	0.0007 mg/L	< 0.0007	< 0.0007	< 0.0007
c-1,3-Dichloropropene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
t-1,3-Dichloropropene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Methylene Chloride	0.004 mg/L	< 0.004	< 0.004	< 0.004
Styrene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1,1,2-Tetrachloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1,2,2-Tetrachloroethane	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Tetrachloroethylene	0.0005 mg/L	0.0010	< 0.0005	< 0.0005
Toluene	0.0005 mg/L	0.0045	0.0020	0.0035
1,1,1-Trichloroethane	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1,2-Trichloroethane	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Trichloroethylene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
Trichlorofluoromethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
1,3,5-Trimethylbenzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Vinyl Chloride	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

		MW3-D	MW8-S	MW8-D
		31/05/2005	31/05/2005	31/05/2005
		K8787.1	K8787.2	K8787.3
m/p-Xylene	0.001 mg/L	< 0.001	< 0.001	< 0.001
o-Xylene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,4-Bromofluorobenzene	surrogate	110%	108%	109%
Dibromofluoromethane	surrogate	98%	101%	98%
Toluene-d8	surrogate	98%	95%	94%

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Matrix: Water

Parameter	Sample ID: / Sample Date: / MDL/Units	MW11 31/05/2005 K8787.4	MW12-S 31/05/2005 K8787.5	MW12-D 31/05/2005 K8787.6
Arsenic	0.01 mg/L	< 0.01	< 0.01	< 0.01
Barium	0.01 mg/L	0.03	0.02	0.01
Boron	0.05 mg/L	< 0.05	< 0.05	0.05
Calcium	0.2 mg/L	60	29	24
Iron	0.1 mg/L	< 0.1	3.3	< 0.1
Magnesium	0.2 mg/L	6.8	6.4	11
Manganese	0.05 mg/L	< 0.05	0.25	< 0.05
Potassium	0.2 mg/L	0.6	1.0	4.0
Sodium	0.2 mg/L	4.2	4.6	16
Alkalinity	5 mg/L	150	80	140
Ammonia, total as N	0.01 mg/L	< 0.01	0.27	< 0.01
Chloride	1 mg/L	7	1	< 1
Nitrate as N	0.1 mg/L	1.8	< 0.1	< 0.1
Nitrite as N	0.05 mg/L	< 0.05	< 0.05	< 0.05
Sulphate	1 mg/L	17	9	7
Conductivity	5 uS/cm	380	190	290
COD	20 mg/L	< 20	40	< 20
pH	0.05 pH units	7.58	6.51	7.75
Solids, dissolved	10 mg/L	220	140	180
Total Kjeldahl Nitrogen	0.1 mg/L	0.3	0.5	0.3
Solids, total suspended	2 mg/L	4	8	12
DOC	0.5 mg/L	1.0	8.0	2.5
BOD	2 mg/L	< 2	< 2	< 2
Benzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Bromodichloromethane	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
Bromoform	0.0008 mg/L	< 0.0008	< 0.0008	< 0.0008
Bromomethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Chlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

		MW11	MW12-S	MW12-D
		31/05/2005	31/05/2005	31/05/2005
		K8787.4	K8787.5	K8787.6
Chloroethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
Chloroform	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Chloromethane	0.003 mg/L	< 0.003	< 0.003	< 0.003
Dibromochloromethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,2-Dibromoethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
m-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
o-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
p-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1-Dichloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,2-Dichloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1-Dichloroethylene	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
c-1,2-Dichloroethylene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
t-1,2-Dichloroethylene	0.001 mg/L	< 0.001	< 0.001	< 0.001
1,2-Dichloropropane	0.0007 mg/L	< 0.0007	< 0.0007	< 0.0007
c-1,3-Dichloropropene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
t-1,3-Dichloropropene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Methylene Chloride	0.004 mg/L	< 0.004	< 0.004	< 0.004
Styrene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1,1,2-Tetrachloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1,2,2-Tetrachloroethane	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Tetrachloroethylene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Toluene	0.0005 mg/L	0.0025	0.0025	0.0025
1,1,1-Trichloroethane	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1,2-Trichloroethane	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Trichloroethylene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
Trichlorofluoromethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
1,3,5-Trimethylbenzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Vinyl Chloride	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

		MW11	MW12-S	MW12-D
		31/05/2005	31/05/2005	31/05/2005
		K8787.4	K8787.5	K8787.6
m/p-Xylene	0.001 mg/L	< 0.001	< 0.001	< 0.001
o-Xylene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,4-Bromofluorobenzene	surrogate	105%	111%	109%
Dibromofluoromethane	surrogate	100%	98%	99%
Toluene-d8	surrogate	99%	99%	98%

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

QA/QC Results

	Blank	Spike (QC Limits)	Duplicate	
Arsenic	< 0.01 mg/L	105% (70 - 130%)	< 0.01	< 0.01
Barium	< 0.01 mg/L	97% (70 - 130%)	0.12	0.12
Boron	< 0.05 mg/L	95% (70 - 130%)	0.20	0.20
Manganese	< 0.05 mg/L	90% (80 - 120%)	0.35	0.35
Alkalinity	< 5 mg/L	n/a	400	400
Ammonia, total as N	< 0.01 mg/L	96% (75 - 125%)	< 0.01	< 0.01
Chloride	< 1 mg/L	93% (75 - 125%)	3	3
Nitrate as N	< 0.1 mg/L	98% (75 - 125%)	6.2	6.3
Nitrite as N	< 0.05 mg/L	93% (75 - 125%)	< 0.05	< 0.05
Sulphate	< 1 mg/L	92% (75 - 125%)	100	100
Conductivity	< 5 uS/cm	n/a	300	310
COD	< 20 mg/L	98% (85 - 115%)	< 20	< 20
pH	n/a	n/a	7.80	7.80
Solids, dissolved	< 10 mg/L	n/a	90	80
Total Kjeldahl Nitrogen	< 0.1 mg/L	91% (75 - 125%)	0.4	0.4
Solids, total suspended	< 2 mg/L	n/a	< 2	< 2
DOC	< 0.5 mg/L	84% (70 - 130%)	2.0	2.5
BOD	< 2 mg/L	84% (75 - 125%)	< 2	< 2
Benzene	< 0.0005 mg/L	115% (61 - 135%)	< 0.0005	< 0.0005
Bromodichloromethane	< 0.0004 mg/L	105% (48 - 164%)	< 0.0004	< 0.0004
Bromoform	< 0.0008 mg/L	131% (3 - 182%)	< 0.0008	< 0.0008
Bromomethane	< 0.001 mg/L	91% (8 - 200%)	< 0.001	< 0.001
Carbon Tetrachloride	< 0.0005 mg/L	101% (19 - 155%)	< 0.0005	< 0.0005
Chlorobenzene	< 0.0004 mg/L	111% (61 - 139%)	< 0.0004	< 0.0004
Chloroethane	< 0.001 mg/L	111% (50 - 150%)	< 0.001	< 0.001
Chloroform	< 0.0006 mg/L	106% (52 - 134%)	0.0078	0.0072
Chloromethane	< 0.003 mg/L	105% (50 - 193%)	< 0.003	< 0.003
Dibromochloromethane	< 0.0005 mg/L	117% (33 - 175%)	< 0.0005	< 0.0005
1,2-Dibromoethane	< 0.001 mg/L	117% (33 - 172%)	< 0.001	< 0.001
m-Dichlorobenzene	< 0.0004 mg/L	131% (63 - 133%)	< 0.0004	< 0.0004

Certificate of Analysis

Report Date: 10-Jun-2005
Order Date: 01-Jun-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

	Blank	Spike (QC Limits)	Duplicate	
o-Dichlorobenzene	< 0.0004 mg/L	131% (55 - 141%)	< 0.0004	< 0.0004
p-Dichlorobenzene	< 0.0004 mg/L	107% (64 - 134%)	< 0.0004	< 0.0004
1,1-Dichloroethane	< 0.0005 mg/L	107% (51 - 134%)	< 0.0005	< 0.0005
1,2-Dichloroethane	< 0.0005 mg/L	101% (38 - 164%)	< 0.0005	< 0.0005
1,1-Dichloroethylene	< 0.0006 mg/L	109% (47 - 150%)	< 0.0006	< 0.0006
c-1,2-Dichloroethylene	< 0.0004 mg/L	125% (62 - 139%)	< 0.0004	< 0.0004
t-1,2-Dichloroethylene	< 0.001 mg/L	118% (48 - 153%)	< 0.001	< 0.001
1,2-Dichloropropane	< 0.0007 mg/L	109% (45 - 155%)	< 0.0007	< 0.0007
c-1,3-Dichloropropene	< 0.0004 mg/L	109% (27 - 178%)	< 0.0004	< 0.0004
t-1,3-Dichloropropene	< 0.0005 mg/L	110% (40 - 167%)	< 0.0005	< 0.0005
Ethylbenzene	< 0.0005 mg/L	110% (58 - 147%)	< 0.0005	< 0.0005
Methylene Chloride	< 0.004 mg/L	111% (66 - 150%)	< 0.004	< 0.004
Styrene	< 0.0004 mg/L	117% (48 - 146%)	< 0.0004	< 0.0004
1,1,1,2-Tetrachloroethane	< 0.0005 mg/L	113% (70 - 131%)	< 0.0005	< 0.0005
1,1,2,2-Tetrachloroethane	< 0.0006 mg/L	134% (24 - 171%)	< 0.0006	< 0.0006
Tetrachloroethylene	< 0.0005 mg/L	116% (33 - 153%)	< 0.0005	< 0.0005
Toluene	< 0.0005 mg/L	100% (55 - 148%)	< 0.0005	< 0.0005
1,1,1-Trichloroethane	< 0.0004 mg/L	105% (44 - 133%)	< 0.0004	< 0.0004
1,1,2-Trichloroethane	< 0.0006 mg/L	117% (38 - 163%)	< 0.0006	< 0.0006
Trichloroethylene	< 0.0004 mg/L	106% (55 - 152%)	< 0.0004	< 0.0004
Trichlorofluoromethane	< 0.001 mg/L	106% (60 - 163%)	< 0.001	< 0.001
1,3,5-Trimethylbenzene	< 0.0005 mg/L	116% (57 - 135%)	< 0.0005	< 0.0005
Vinyl Chloride	< 0.0005 mg/L	106% (51 - 168%)	< 0.0005	< 0.0005
m/p-Xylene	< 0.001 mg/L	111% (45 - 168%)	< 0.001	< 0.001
o-Xylene	< 0.0005 mg/L	109% (28 - 183%)	< 0.0005	< 0.0005

APPENDIX E
LABORATORY CERTIFICATE OF ANALYSIS
FALL 2005

PARACEL Laboratories Ltd.
Environmental & Indoor Air Quality

300-2319 St. Laurent Blvd.
Ottawa ON K1G 4J8
Phone: (613) 731-9577
Fax: (613) 731-9064
Toll Free: 800-7491947
email: paracel@paracellabs.com

Order #: K2883

Certificate of Analysis

Levac Robichaud Leclerc Associates Ltd.

1-2884, Chamberland Street
Rockland, ON K4K 1M6
Attn: Ms. Michelle Hanna

Phone: (613)-446-7777
Fax: (613)-446-1427

Client PO:
Project: **L9618**
Custody #: **22326 BB6585**

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
K2883.1	MW1-D
K2883.2	MW2
K2883.3	MW5-S
K2883.4	MW5-D
K2883.5	MW7-D
K2883.6	MW15-S
K2883.7	MW14

Approved By: Mark Foto for Dale Robertson, B.Sc.
Laboratory Director

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Analysis Summary Table

Analysis	Method Reference/Description
Metals	EPA 200.8 - ICP-MS
Alkalinity	EPA 310.1 - titration
Ammonia, total	MOE SDNP-E3223A - colourimetric
Anions	EPA 300.1 - ion chromatography
COD	EPA 410.1 - digestion, colourimetric
Conductivity	EPA 120.1 - electrode
pH	EPA 150.1 - pH probe
Solids, dissolved	SM17 2540C - filtration, gravimetric
Solids, total suspended	SM17 2540D - gravimetric
Total Kjeldahl Nitrogen	MOE RTNP-E3180A - digestion, colourimetric
DOC	E3247B - combustion IR
BOD, 5-day	APHA 5210B

n/a: not applicable
MDL: Method Detection Limit

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Matrix: Water

Parameter	Sample ID:	MW1-D	MW2	MW5-S
	Sample Date:	16/11/2005	16/11/2005	16/11/2005
	MDL/Units	K2883.1	K2883.2	K2883.3
Arsenic	0.01 mg/L	< 0.01	< 0.01	< 0.01
Barium	0.01 mg/L	0.04	0.01	0.01
Boron	0.05 mg/L	< 0.05	< 0.05	< 0.05
Calcium	0.2 mg/L	48	22	22
Iron	0.1 mg/L	2.2	0.3	4.3
Magnesium	0.2 mg/L	7.8	2.4	5.4
Manganese	0.05 mg/L	0.15	< 0.05	0.15
Potassium	0.2 mg/L	2.0	0.2	1.8
Sodium	0.2 mg/L	7.0	5.6	7.0
Alkalinity	5 mg/L	95	130	70
Ammonia, total as N	0.01 mg/L	< 0.01	< 0.01	< 0.01
Chloride	1 mg/L	14	< 1	3
Nitrate as N	0.1 mg/L	6.4	0.1	< 0.1
Nitrite as N	0.05 mg/L	< 0.05	< 0.05	< 0.05
Sulphate	1 mg/L	22	6	12
Conductivity	5 uS/cm	330	150	160
COD	20 mg/L	40	< 20	< 20
pH	0.05 pH units	6.34	7.87	6.98
Solids, dissolved	10 mg/L	90	80	100
Total Kjeldahl Nitrogen	0.1 mg/L	0.4	0.2	0.6
Solids, total suspended	2 mg/L	19,000	5,300	1,400
DOC	0.5 mg/L	4.0	< 0.5	2.0
BOD	2 mg/L	< 2	< 2	< 2

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO:

Project: **L9618**

Matrix: Water

Parameter	Sample ID: / Sample Date: / MDL/Units	MW5-D 16/11/2005 K2883.4	MW7-D 16/11/2005 K2883.5	MW15-S 16/11/2005 K2883.6
Arsenic	0.01 mg/L	< 0.01	< 0.01	< 0.01
Barium	0.01 mg/L	0.04	0.04	0.01
Boron	0.05 mg/L	< 0.05	0.20	< 0.05
Calcium	0.2 mg/L	49	98	13
Iron	0.1 mg/L	9.5	3.9	0.6
Magnesium	0.2 mg/L	6.2	27	2.4
Manganese	0.05 mg/L	1.7	0.25	< 0.05
Potassium	0.2 mg/L	4.6	8.6	0.4
Sodium	0.2 mg/L	23	72	3.4
Alkalinity	5 mg/L	120	360	25
Ammonia, total as N	0.01 mg/L	0.11	0.30	< 0.01
Chloride	1 mg/L	3	13	4
Nitrate as N	0.1 mg/L	< 0.1	0.3	< 0.1
Nitrite as N	0.05 mg/L	< 0.05	< 0.05	< 0.05
Sulphate	1 mg/L	12	260	8
Conductivity	5 uS/cm	270	870	90
COD	20 mg/L	< 20	< 20	< 20
pH	0.05 pH units	6.83	7.24	6.23
Solids, dissolved	10 mg/L	210	470	160
Total Kjeldahl Nitrogen	0.1 mg/L	0.7	0.4	0.2
Solids, total suspended	2 mg/L	4,100	3,600	120
DOC	0.5 mg/L	5.0	1.5	1.0
BOD	2 mg/L	2	< 2	< 2

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Matrix: Water

Parameter	MDL/Units	Sample ID: MW14
		Sample Date: 16/11/2005
		K2883.7
Arsenic	0.01 mg/L	< 0.01
Barium	0.01 mg/L	0.01
Boron	0.05 mg/L	< 0.05
Calcium	0.2 mg/L	51
Iron	0.1 mg/L	0.5
Magnesium	0.2 mg/L	4.0
Manganese	0.05 mg/L	< 0.05
Potassium	0.2 mg/L	0.8
Sodium	0.2 mg/L	2.6
Alkalinity	5 mg/L	130
Ammonia, total as N	0.01 mg/L	< 0.01
Chloride	1 mg/L	< 1
Nitrate as N	0.1 mg/L	0.4
Nitrite as N	0.05 mg/L	< 0.05
Sulphate	1 mg/L	6
Conductivity	5 uS/cm	260
COD	20 mg/L	< 20
pH	0.05 pH units	7.43
Solids, dissolved	10 mg/L	120
Total Kjeldahl Nitrogen	0.1 mg/L	0.1
Solids, total suspended	2 mg/L	640
DOC	0.5 mg/L	< 0.5
BOD	2 mg/L	< 2

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

QA/QC Results

	Blank	Spike (QC Limits)	Duplicate	
Arsenic	< 0.01 mg/L	87% (70 - 130%)	< 0.01	< 0.01
Barium	< 0.01 mg/L	89% (70 - 130%)	0.03	0.04
Boron	< 0.05 mg/L	91% (70 - 130%)	< 0.05	< 0.05
Manganese	< 0.05 mg/L	87% (80 - 120%)	0.15	0.15
Alkalinity	< 5 mg/L	n/a	95	95
Ammonia, total as N	< 0.01 mg/L	104% (75 - 125%)	0.27	0.30
Chloride	< 1 mg/L	94% (75 - 125%)	57	57
Nitrate as N	< 0.1 mg/L	98% (75 - 125%)	< 0.1	< 0.1
Nitrite as N	< 0.05 mg/L	94% (75 - 125%)	< 0.05	< 0.05
Sulphate	< 1 mg/L	93% (75 - 125%)	16	17
Conductivity	< 5 uS/cm	n/a	310	300
COD	< 20 mg/L	94% (85 - 115%)	40	40
pH	n/a	n/a	6.35	6.35
Solids, dissolved	< 10 mg/L	n/a	40	50
Total Kjeldahl Nitrogen	< 0.1 mg/L	111% (75 - 125%)	0.4	0.4
Solids, total suspended	< 2 mg/L	n/a	< 2	< 2
DOC	< 0.5 mg/L	87% (70 - 130%)	2.0	1.5
BOD	< 2 mg/L	85% (75 - 125%)	< 2	< 2

PARACEL Laboratories Ltd.
Environmental & Indoor Air Quality

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Order #: K2884

Certificate of Analysis

Levac Robichaud Leclerc Associates Ltd.

1-2884, Chamberland Street
Rockland, ON K4K 1M6
Attn: Ms. Michelle Hanna

Phone: (613)-446-7777
Fax: (613)-446-1427

Client PO:
Project: **L9618**
Custody #: **22325 BB6585**

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
K2884.1	MW3-D
K2884.2	MW8-S
K2884.3	MW8-D
K2884.4	MW11
K2884.5	MW12-S
K2884.6	MW12-D

Approved By: Mark Foto for Dale Robertson, B.Sc.
Laboratory Director

Certificate of Analysis

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO:

Project: **L9618**

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Analysis Summary Table

Analysis	Method Reference/Description
Metals	EPA 200.8 - ICP-MS
Alkalinity	EPA 310.1 - titration
Ammonia, total	MOE SDNP-E3223A - colourimetric
Anions	EPA 300.1 - ion chromatography
COD	EPA 410.1 - digestion, colourimetric
Conductivity	EPA 120.1 - electrode
pH	EPA 150.1 - pH probe
Solids, dissolved	SM17 2540C - filtration, gravimetric
Solids, total suspended	SM17 2540D - gravimetric
Total Kjeldahl Nitrogen	MOE RTNP-E3180A - digestion, colourimetric
DOC	E3247B - combustion IR
BOD, 5-day	APHA 5210B
VOCs	EPA 624 - P&T GC-MS

n/a: not applicable
MDL: Method Detection Limit

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO:

Project: **L9618**

Matrix: Water

Parameter	MDL/Units	Sample ID: MW3-D	MW8-S	MW8-D
		Sample Date: 16/11/2005	16/11/2005	16/11/2005
		K2884.1	K2884.2	K2884.3
Arsenic	0.01 mg/L	< 0.01	< 0.01	< 0.01
Barium	0.01 mg/L	0.14	0.02	0.04
Boron	0.05 mg/L	0.20	0.10	< 0.05
Calcium	0.2 mg/L	210	20	56
Iron	0.1 mg/L	0.6	0.4	0.3
Magnesium	0.2 mg/L	10	3.0	10
Manganese	0.05 mg/L	0.95	1.1	0.35
Potassium	0.2 mg/L	8.2	1.0	2.4
Sodium	0.2 mg/L	10	9.6	8.2
Alkalinity	5 mg/L	460	35	150
Ammonia, total as N	0.01 mg/L	< 0.01	< 0.01	< 0.01
Chloride	1 mg/L	9	12	7
Nitrate as N	0.1 mg/L	0.4	< 0.1	< 0.1
Nitrite as N	0.05 mg/L	< 0.05	< 0.05	< 0.05
Sulphate	1 mg/L	82	22	33
Conductivity	5 uS/cm	940	160	360
COD	20 mg/L	< 20	< 20	< 20
pH	0.05 pH units	6.64	5.82	7.10
Solids, dissolved	10 mg/L	290	50	120
Total Kjeldahl Nitrogen	0.1 mg/L	0.5	0.5	0.4
Solids, total suspended	2 mg/L	18,000	5,200	4,400
DOC	0.5 mg/L	4.5	2.5	1.0
BOD	2 mg/L	< 2	< 2	< 2
Benzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Bromodichloromethane	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
Bromoform	0.0008 mg/L	< 0.0008	< 0.0008	< 0.0008
Bromomethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Chlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

		MW3-D	MW8-S	MW8-D
		16/11/2005	16/11/2005	16/11/2005
		K2884.1	K2884.2	K2884.3
Chloroethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
Chloroform	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Chloromethane	0.003 mg/L	< 0.003	< 0.003	< 0.003
Dibromochloromethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,2-Dibromoethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
m-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
o-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
p-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1-Dichloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,2-Dichloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1-Dichloroethylene	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
c-1,2-Dichloroethylene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
t-1,2-Dichloroethylene	0.001 mg/L	< 0.001	< 0.001	< 0.001
1,2-Dichloropropane	0.0007 mg/L	< 0.0007	< 0.0007	< 0.0007
c-1,3-Dichloropropene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
t-1,3-Dichloropropene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Methylene Chloride	0.004 mg/L	< 0.004	< 0.004	< 0.004
Styrene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1,1,2-Tetrachloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1,2,2-Tetrachloroethane	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Tetrachloroethylene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Toluene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1,1-Trichloroethane	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1,2-Trichloroethane	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Trichloroethylene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
Trichlorofluoromethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
1,3,5-Trimethylbenzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Vinyl Chloride	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

		MW3-D	MW8-S	MW8-D
		16/11/2005	16/11/2005	16/11/2005
		K2884.1	K2884.2	K2884.3
m/p-Xylene	0.001 mg/L	< 0.001	< 0.001	< 0.001
o-Xylene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,4-Bromofluorobenzene	surrogate	95%	105%	107%
Dibromofluoromethane	surrogate	101%	117%	109%
Toluene-d8	surrogate	102%	102%	102%

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

Matrix: Water

Parameter	MDL/Units	Sample ID: MW11	MW12-S	MW12-D
		Sample Date: 16/11/2005	16/11/2005	16/11/2005
		K2884.4	K2884.5	K2884.6
Arsenic	0.01 mg/L	< 0.01	< 0.01	< 0.01
Barium	0.01 mg/L	0.04	< 0.01	0.03
Boron	0.05 mg/L	< 0.05	< 0.05	0.05
Calcium	0.2 mg/L	81	13	23
Iron	0.1 mg/L	0.4	2.7	0.8
Magnesium	0.2 mg/L	8.4	3.4	12
Manganese	0.05 mg/L	< 0.05	0.20	0.10
Potassium	0.2 mg/L	1.2	0.8	6.8
Sodium	0.2 mg/L	8.8	4.2	19
Alkalinity	5 mg/L	470	40	150
Ammonia, total as N	0.01 mg/L	< 0.01	< 0.01	< 0.01
Chloride	1 mg/L	8	1	< 1
Nitrate as N	0.1 mg/L	2.0	< 0.1	< 0.1
Nitrite as N	0.05 mg/L	< 0.05	< 0.05	< 0.05
Sulphate	1 mg/L	18	8	5
Conductivity	5 uS/cm	430	120	280
COD	20 mg/L	< 20	40	20
pH	0.05 pH units	7.57	6.73	7.82
Solids, dissolved	10 mg/L	30	50	130
Total Kjeldahl Nitrogen	0.1 mg/L	0.3	0.7	0.7
Solids, total suspended	2 mg/L	1,100	130	900
DOC	0.5 mg/L	< 0.5	4.0	3.5
BOD	2 mg/L	< 2	< 2	< 2
Benzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Bromodichloromethane	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
Bromoform	0.0008 mg/L	< 0.0008	< 0.0008	< 0.0008
Bromomethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Chlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

		MW11	MW12-S	MW12-D
		16/11/2005	16/11/2005	16/11/2005
		K2884.4	K2884.5	K2884.6
Chloroethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
Chloroform	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Chloromethane	0.003 mg/L	< 0.003	< 0.003	< 0.003
Dibromochloromethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,2-Dibromoethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
m-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
o-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
p-Dichlorobenzene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1-Dichloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,2-Dichloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1-Dichloroethylene	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
c-1,2-Dichloroethylene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
t-1,2-Dichloroethylene	0.001 mg/L	< 0.001	< 0.001	< 0.001
1,2-Dichloropropane	0.0007 mg/L	< 0.0007	< 0.0007	< 0.0007
c-1,3-Dichloropropene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
t-1,3-Dichloropropene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Methylene Chloride	0.004 mg/L	< 0.004	< 0.004	< 0.004
Styrene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1,1,2-Tetrachloroethane	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1,2,2-Tetrachloroethane	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Tetrachloroethylene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Toluene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,1,1-Trichloroethane	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
1,1,2-Trichloroethane	0.0006 mg/L	< 0.0006	< 0.0006	< 0.0006
Trichloroethylene	0.0004 mg/L	< 0.0004	< 0.0004	< 0.0004
Trichlorofluoromethane	0.001 mg/L	< 0.001	< 0.001	< 0.001
1,3,5-Trimethylbenzene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Vinyl Chloride	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

		MW11	MW12-S	MW12-D
		16/11/2005	16/11/2005	16/11/2005
		K2884.4	K2884.5	K2884.6
m/p-Xylene	0.001 mg/L	< 0.001	< 0.001	< 0.001
o-Xylene	0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
1,4-Bromofluorobenzene	surrogate	105%	105%	106%
Dibromofluoromethane	surrogate	111%	103%	104%
Toluene-d8	surrogate	102%	102%	101%

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

QA/QC Results

	Blank	Spike (QC Limits)	Duplicate	
Arsenic	< 0.01 mg/L	87% (70 - 130%)	< 0.01	< 0.01
Barium	< 0.01 mg/L	89% (70 - 130%)	0.03	0.04
Boron	< 0.05 mg/L	91% (70 - 130%)	< 0.05	< 0.05
Manganese	< 0.05 mg/L	87% (80 - 120%)	0.15	0.15
Alkalinity	< 5 mg/L	n/a	25	25
Ammonia, total as N	< 0.01 mg/L	104% (75 - 125%)	0.27	0.30
Chloride	< 1 mg/L	94% (75 - 125%)	57	57
Nitrate as N	< 0.1 mg/L	98% (75 - 125%)	< 0.1	< 0.1
Nitrite as N	< 0.05 mg/L	94% (75 - 125%)	< 0.05	< 0.05
Sulphate	< 1 mg/L	93% (75 - 125%)	16	17
Conductivity	< 5 uS/cm	n/a	310	300
COD	< 20 mg/L	94% (85 - 115%)	40	40
pH	n/a	n/a	6.35	6.35
Solids, dissolved	< 10 mg/L	n/a	40	50
Total Kjeldahl Nitrogen	< 0.1 mg/L	111% (75 - 125%)	0.4	0.4
Solids, total suspended	< 2 mg/L	n/a	18,000	18,000
DOC	< 0.5 mg/L	87% (70 - 130%)	2.0	1.5
BOD	< 2 mg/L	85% (75 - 125%)	< 2	< 2
Benzene	< 0.0005 mg/L	92% (61 - 135%)	< 0.0005	< 0.0005
Bromodichloromethane	< 0.0004 mg/L	87% (48 - 164%)	< 0.0004	< 0.0004
Bromoform	< 0.0008 mg/L	110% (3 - 182%)	< 0.0008	< 0.0008
Bromomethane	< 0.001 mg/L	86% (8 - 200%)	< 0.001	< 0.001
Carbon Tetrachloride	< 0.0005 mg/L	92% (19 - 155%)	< 0.0005	< 0.0005
Chlorobenzene	< 0.0004 mg/L	101% (61 - 139%)	< 0.0004	< 0.0004
Chloroethane	< 0.001 mg/L	84% (50 - 150%)	< 0.001	< 0.001
Chloroform	< 0.0006 mg/L	94% (52 - 134%)	< 0.0006	< 0.0006
Chloromethane	< 0.003 mg/L	79% (50 - 193%)	< 0.003	< 0.003
Dibromochloromethane	< 0.0005 mg/L	109% (33 - 175%)	< 0.0005	< 0.0005
1,2-Dibromoethane	< 0.001 mg/L	94% (33 - 172%)	< 0.001	< 0.001
m-Dichlorobenzene	< 0.0004 mg/L	94% (63 - 133%)	< 0.0004	< 0.0004

Certificate of Analysis

Report Date: 25-Nov-2005
Order Date: 17-Nov-2005

Client: **Levac Robichaud Leclerc Associates Ltd.**

Client PO: Project: **L9618**

	Blank	Spike (QC Limits)	Duplicate	
o-Dichlorobenzene	< 0.0004 mg/L	96% (55 - 141%)	< 0.0004	< 0.0004
p-Dichlorobenzene	< 0.0004 mg/L	90% (64 - 134%)	< 0.0004	< 0.0004
1,1-Dichloroethane	< 0.0005 mg/L	90% (51 - 134%)	< 0.0005	< 0.0005
1,2-Dichloroethane	< 0.0005 mg/L	97% (38 - 164%)	< 0.0005	< 0.0005
1,1-Dichloroethylene	< 0.0006 mg/L	84% (47 - 150%)	< 0.0006	< 0.0006
c-1,2-Dichloroethylene	< 0.0004 mg/L	87% (62 - 139%)	< 0.0004	< 0.0004
t-1,2-Dichloroethylene	< 0.001 mg/L	100% (48 - 153%)	< 0.001	< 0.001
1,2-Dichloropropane	< 0.0007 mg/L	78% (45 - 155%)	< 0.0007	< 0.0007
c-1,3-Dichloropropene	< 0.0004 mg/L	88% (27 - 178%)	< 0.0004	< 0.0004
t-1,3-Dichloropropene	< 0.0005 mg/L	83% (40 - 167%)	< 0.0005	< 0.0005
Ethylbenzene	< 0.0005 mg/L	102% (58 - 147%)	< 0.0005	< 0.0005
Methylene Chloride	< 0.004 mg/L	95% (66 - 150%)	< 0.004	< 0.004
Styrene	< 0.0004 mg/L	108% (48 - 146%)	< 0.0004	< 0.0004
1,1,1,2-Tetrachloroethane	< 0.0005 mg/L	103% (70 - 131%)	< 0.0005	< 0.0005
1,1,2,2-Tetrachloroethane	< 0.0006 mg/L	113% (24 - 171%)	< 0.0006	< 0.0006
Tetrachloroethylene	< 0.0005 mg/L	97% (33 - 153%)	< 0.0005	< 0.0005
Toluene	< 0.0005 mg/L	95% (55 - 148%)	< 0.0005	< 0.0005
1,1,1-Trichloroethane	< 0.0004 mg/L	92% (44 - 133%)	< 0.0004	< 0.0004
1,1,2-Trichloroethane	< 0.0006 mg/L	81% (38 - 163%)	< 0.0006	< 0.0006
Trichloroethylene	< 0.0004 mg/L	76% (55 - 152%)	< 0.0004	< 0.0004
Trichlorofluoromethane	< 0.001 mg/L	101% (60 - 163%)	< 0.001	< 0.001
1,3,5-Trimethylbenzene	< 0.0005 mg/L	97% (57 - 135%)	< 0.0005	< 0.0005
Vinyl Chloride	< 0.0005 mg/L	85% (51 - 168%)	< 0.0005	< 0.0005
m/p-Xylene	< 0.001 mg/L	108% (45 - 168%)	< 0.001	< 0.001
o-Xylene	< 0.0005 mg/L	109% (28 - 183%)	< 0.0005	< 0.0005

APPENDIX F
CALCULATIONS

Piper Trilinear Diagram
Fall

Parameter	Units	ODWS	Background Monitor				Leachate Monitor	Impact Monitors							
			MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW5-S	MW5-D	MW7-D	MW8-S	MW8-D	MW15-S
Calcium	mg/L	NV	81	13	23	51	210	48	22	22	49	98	20	56	13
Magnesium	mg/L	NV	8.4	3.4	12	4	10	7.8	2.4	5.4	6.2	27	3	10	2.4
Sodium	mg/L	200	8.8	4.2	19	2.6	10	7	5.6	7	23	72	9.6	8.2	3.4
Potassium	mg/L	NV	1.2	0.8	6.8	0.8	8.2	2	0	1.8	4.6	8.6	1	2.4	0.4
Chloride	mg/L	250	8	1	0	0	9	14	0	3	3	13	12	7	4
Alkalinity	mg/L	30-500	470	40	150	130	460	95	130	70	151	360	35	150	25
Sulphate	mg/L	500	18	8	5	6	82	22	6	12	12	260	22	33	8

Concentrations in meq/L

Parameter	Molecular Weight	Charge	Background Monitor				Leachate Monitor	Impact Monitors							
			MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW5-S	MW5-D	MW7-D	MW8-S	MW8-D	MW15-S
Alkalinity	61	-1	-7.7	-0.7	-2.5	-2.1	-7.5	-1.6	-2.1	-1.1	-2.5	-5.9	-0.6	-2.5	-0.4
Chloride	35.45	-1	-0.2	0.0	0.0	0.0	-0.3	-0.4	0.0	-0.1	-0.1	-0.4	-0.3	-0.2	-0.1
Sulphate	96.06	-2	-0.4	-0.2	-0.1	-0.1	-1.7	-0.5	-0.1	-0.2	-0.2	-5.4	-0.5	-0.7	-0.2
Calcium	40.08	2	4.0	0.6	1.1	2.5	10.5	2.4	1.1	1.1	2.4	4.9	1.0	2.8	0.6
Magnesium	24.3	2	0.7	0.3	1.0	0.3	0.8	0.6	0.2	0.4	0.5	2.2	0.2	0.8	0.2
Potassium	39.09	1	0.0	0.0	0.2	0.0	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.0
Sodium	23	1	0.4	0.2	0.8	0.1	0.4	0.3	0.2	0.3	1.0	3.1	0.4	0.4	0.1
% ANIONS															
Magnesium			13.4	24.7	31.5	10.9	6.9	18.9	12.8	23.5	12.5	21.2	14.6	20.4	19.7
Calcium			78.5	57.3	36.6	84.6	87.7	70.6	71.3	58.0	60.0	46.7	59.1	69.2	64.6
Sodium + Potassium			8.0	17.9	31.9	4.4	5.4	10.5	15.8	18.5	27.4	32.0	26.2	10.4	15.7
% CATIONS															
Alkalinity			92.8	77.1	95.9	94.5	79.4	64.6	94.5	77.4	88.1	50.5	41.9	73.5	59.5
Chloride			2.7	3.3	0.0	0.0	2.7	16.4	0.0	5.7	3.0	3.1	24.7	5.9	16.4
Sulphate			4.5	19.6	4.1	5.5	18.0	19.0	5.5	16.9	8.9	46.3	33.4	20.5	24.2

Piper Trilinear Diagram
Spring

Parameter	Units	ODWS	Background Monitor				Leachate Monitor	Impact Monitors								
			MW11	MW12-S	MW12-D	MW-14	MW3-D	MW1-D	MW2	MW4-D	MW5-S	MW5-D	MW8-S	MW8-D	MW15-S	MW15-D
Calcium	mg/L	NV	60	29	24	17	190	17	20	160	19	46	14	42	9.2	25
Magnesium	mg/L	NV	6.8	6.4	11	1.6	8	3.2	2.4	24	5	6.4	2.8	7	1.8	6.8
Sodium	mg/L	200	4.2	4.6	16	2	4.4	5.2	5.2	24	3.6	4	3.8	3.2	2.2	8.6
Potassium	mg/L	NV	0.6	1	4	0.2	5.4	0.8	0	2.6	1.6	1	1.4	1	0	1.2
Chloride	mg/L	250	7	1	0	0	3	8	0	30	3	2	11	3	4	1
Alkalinity	mg/L	30-500	150	80	140	45	400	65	65	290	65	150	20	130	20	100
Sulphate	mg/L	500	17	9	7	5	100	18	5	250	13	8	20	15	8	22

Concentrations in meq/L

Parameter	Molecular Weight	Charge	Background Monitor				Leachate Monitor	Impact Monitors								
			MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW4-D	MW5-S	MW5-D	MW8-S	MW8-D	MW15-S	MW15-D
Alkalinity	61	-1	-2.5	-1.3	-2.3	-0.7	-6.6	-1.1	-1.1	-4.8	-1.1	-2.5	-0.3	-2.1	-0.3	-1.6
Chloride	35.45	-1	-0.2	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.8	-0.1	-0.1	-0.3	-0.1	-0.1	0.0
Sulphate	96.06	-2	-0.4	-0.2	-0.1	-0.1	-2.1	-0.4	-0.1	-5.2	-0.3	-0.2	-0.4	-0.3	-0.2	-0.5
Calcium	40.08	2	3.0	1.4	1.2	0.8	9.5	0.8	1.0	8.0	0.9	2.3	0.7	2.1	0.5	1.2
Magnesium	24.3	2	0.6	0.5	0.9	0.1	0.7	0.3	0.2	2.0	0.4	0.5	0.2	0.6	0.1	0.6
Potassium	39.09	1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Sodium	23	1	0.2	0.2	0.7	0.1	0.2	0.2	0.2	1.0	0.2	0.2	0.2	0.1	0.1	0.4
% ANIONS																
Magnesium			14.9	23.9	31.2	12.3	6.3	19.4	13.9	17.8	26.4	17.4	20.4	20.3	21.1	25.3
Calcium			79.8	65.8	41.3	79.1	90.6	62.5	70.2	72.1	60.9	76.0	61.8	73.9	65.3	56.4
Sodium + Potassium			5.3	10.3	27.5	8.6	3.1	18.2	15.9	10.0	12.7	6.6	17.8	5.8	13.6	18.3
% CATIONS																
Alkalinity			81.7	85.9	94.0	87.6	75.2	64.0	91.1	44.0	75.0	91.7	31.1	84.3	54.0	77.1
Chloride			6.6	1.8	0.0	0.0	1.0	13.5	0.0	7.8	6.0	2.1	29.4	3.3	18.6	1.3
Sulphate			11.8	12.3	6.0	12.4	23.9	22.5	8.9	48.2	19.0	6.2	39.5	12.4	27.4	21.5

Ion Balance
Spring

Parameter	Units	Background Monitor				Leachate Monitor	Impact Monitors								
		MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW4-D	MW5-S	MW5-D	MW8-S	MW8-D	MW15-S	MW15-D
Alkalinity	mg/L	150	80	140	45	400	65	65	290	65	150	20	130	20	100
Chloride	mg/L	7	1	0	0	3	8	0	30	3	2	11	3	4	1
Sulphate	mg/L	17	9	7	5	100	18	5	250	13	8	20	15	8	22
Nitrates	mg/L	1.8	0	0	0	6.3	3.1	0	0	0	0	0	0.3	0	0.1
Calcium	mg/L	60	29	24	17	190	17	20	160	19	46	14	42	9.2	25
Magnesium	mg/L	6.8	6.4	11	1.6	8	3.2	2.4	24	5	6.4	2.8	7	1.8	6.8
Potassium	mg/L	0.6	1	4	0.2	5.4	0.8	0	2.6	1.6	1	1.4	1	0	1.2
Sodium	mg/L	4.2	4.6	16	2	4.4	5.2	5.2	24	3.6	4	3.8	3.2	2.2	8.6

Concentration in meq/L

Parameter	Molecular Weight	Charge	Background Monitor				Leachate Monitor	Impact Monitors								
			MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW4-D	MW5-S	MW5-D	MW8-S	MW8-D	MW15-S	MW15-D
Alkalinity	61	-1	-2.46	-1.31	-2.30	-0.74	-6.56	-1.07	-1.07	-4.75	-1.07	-2.46	-0.33	-2.13	-0.33	-1.64
Chloride	35.45	-1	-0.20	-0.03	0.00	0.00	-0.08	-0.23	0.00	-0.85	-0.08	-0.06	-0.31	-0.08	-0.11	-0.03
Sulphate	96.06	-2	-0.35	-0.19	-0.15	-0.10	-2.08	-0.37	-0.10	-5.21	-0.27	-0.17	-0.42	-0.31	-0.17	-0.46
Nitrates	62	-1	-0.03	0.00	0.00	0.00	-0.10	-0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calcium	40.08	2	2.99	1.45	1.20	0.85	9.48	0.85	1.00	7.98	0.95	2.30	0.70	2.10	0.46	1.25
Magnesium	24.3	2	0.56	0.53	0.91	0.13	0.66	0.26	0.20	1.98	0.41	0.53	0.23	0.58	0.15	0.56
Potassium	39.09	1	0.02	0.03	0.10	0.01	0.14	0.02	0.00	0.07	0.04	0.03	0.04	0.03	0.00	0.03
Sodium	23	1	0.18	0.20	0.70	0.09	0.19	0.23	0.23	1.04	0.16	0.17	0.17	0.14	0.10	0.37
Ion Balance			0.71	0.67	0.46	0.23	1.64	-0.36	0.25	0.26	0.14	0.34	0.08	0.30	0.10	0.08
% Difference			**10.5**	**18.0**	8.6	**12.0**	8.5	**-11.6**	9.7	1.2	4.6	6.0	3.5	5.7	7.3	1.9

Ion Balance
Fall

Parameter	Units	Background Monitor				Leachate Monitor	Impact Monitors							
		MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW5-S	MW5-D	MW7-D	MW8-S	MW8-D	MW15-S
Alkalinity	mg/L	470	40	150	130	460	95	130	70	151	360	35	150	25
Chloride	mg/L	8	1	0	0	9	14	0	3	3	13	12	7	4
Sulphate	mg/L	18	8	5	6	82	22	6	12	12	260	22	33	8
Nitrates	mg/L	2	0	0	0.4	0.4	6.4	0.1	0	0	0.3	0	0	0
Calcium	mg/L	81	13	23	51	210	48	22	22	49	98	20	56	13
Magnesium	mg/L	8.4	3.4	12	4	10	7.8	2.4	5.4	6.2	27	3	10	2.4
Potassium	mg/L	1.2	0.8	6.8	0.8	8.2	2	0	1.8	4.6	8.6	1	2.4	0.4
Sodium	mg/L	8.8	4.2	19	2.6	10	7	5.6	7	23	72	9.6	8.2	3.4

Concentration in meq/L

Parameter	Molecular Weight	Charge	Background Monitor				Leachate Monitor	Impact Monitors							
			MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW5-S	MW5-D	MW7-D	MW8-S	MW8-D	MW15-S
Alkalinity	61	-1	-7.70	-0.66	-2.46	-2.13	-7.54	-1.56	-2.13	-1.15	-2.48	-5.90	-0.57	-2.46	-0.41
Chloride	35.45	-1	-0.23	-0.03	0.00	0.00	-0.25	-0.39	0.00	-0.08	-0.08	-0.37	-0.34	-0.20	-0.11
Sulphate	96.06	-2	-0.37	-0.17	-0.10	-0.12	-1.71	-0.46	-0.12	-0.25	-0.25	-5.41	-0.46	-0.69	-0.17
Nitrates	62	-1	-0.03	0.00	0.00	-0.01	-0.01	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calcium	40.08	2	4.04	0.65	1.15	2.54	10.48	2.40	1.10	1.10	2.45	4.89	1.00	2.79	0.65
Magnesium	24.3	2	0.69	0.28	0.99	0.33	0.82	0.64	0.20	0.44	0.51	2.22	0.25	0.82	0.20
Potassium	39.09	1	0.03	0.02	0.17	0.02	0.21	0.05	0.00	0.05	0.12	0.22	0.03	0.06	0.01
Sodium	23	1	0.38	0.18	0.83	0.11	0.43	0.30	0.24	0.30	1.00	3.13	0.42	0.36	0.15
Ion Balance			-3.19	0.28	0.57	0.75	2.44	0.88	-0.72	0.41	1.26	-1.22	0.32	0.69	0.32
% Difference			**-23.7**	**14.2**	10.0	**14.1**	**11.4**	**14.9**	**-18.9**	**12.2**	**18.4**	-5.5	**10.4**	9.4	**18.6**

Reasonable Use Guidelines

SPRING

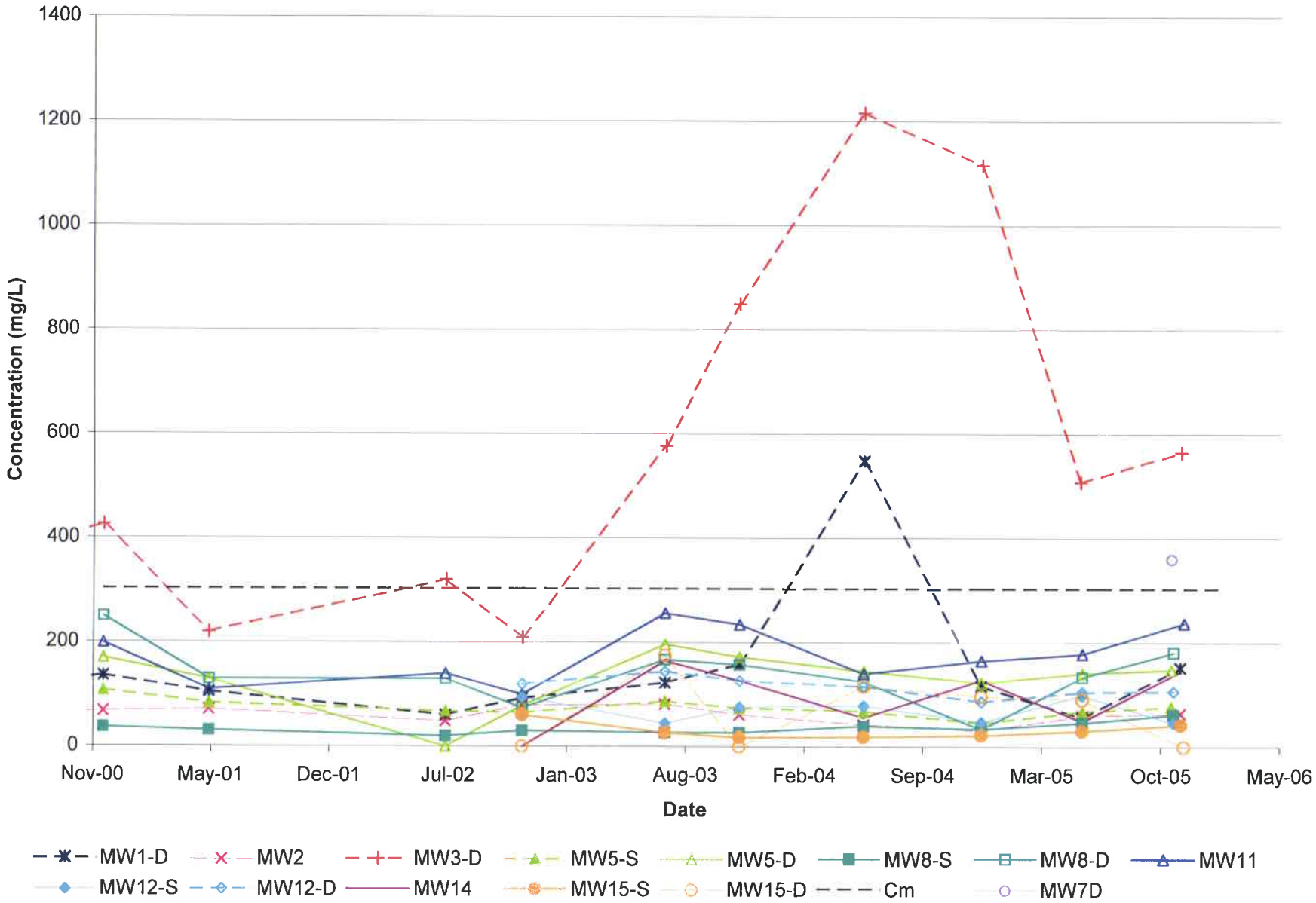
Parameter	Units	ODWS	Background Monitors					Cm	Leachate Monitor	Impact Monitors								
			MW11	MW12-S	MW12-D	MW14	Average		MW3-D	MW1-D	MW2	MW4-D	MW5-S	MW5-D	MW8-S	MW8-D	MW15-S	MW15-D
Alkalinity	mg/L	**500**	150	80	140	45	104	302	**400**	65	65	290	65	150	20	130	20	100
Chloride	mg/L	**250**	7	1	0	0	2	126	3	8	0	30	3	2	11	3	4	1
Hardness	mg/L	**500**	178	99	105	49	108	304	**508**	56	60	**498**	68	141	46	134	30	90
Sulphate	mg/L	**500**	17	9	7	5	10	255	100	18	5	250	13	8	20	15	8	22

FALL

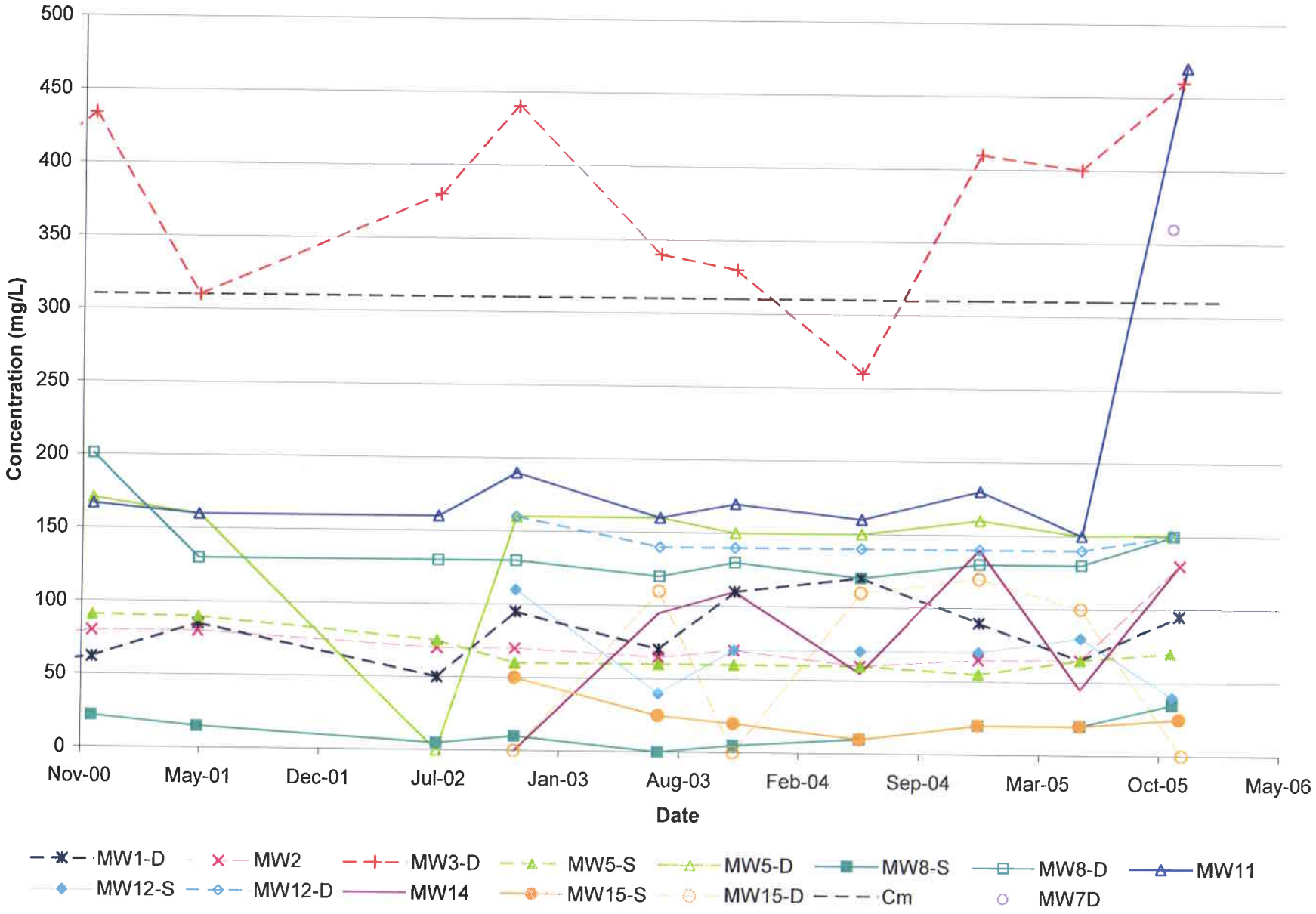
Parameter	Units	ODWS	Background Monitor					Cm	Leachate Monitor	Impact Monitors							
			MW11	MW12-S	MW12-D	MW14	Average		MW3-D	MW1-D	MW2	MW5-S	MW5-D	MW7-D	MW8-S	MW8-D	MW15-S
Alkalinity	mg/L	**500**	470	40	150	130	198	349	**460**	95	130	70	151	**360**	35	150	25
Chloride	mg/L	**250**	8	1	0	0	2	126	9	14	0	3	3	13	12	7	4
Hardness	mg/L	**500**	237	46	107	144	134	317	**566**	152	65	77	148	**356**	62	181	42
Sulphate	mg/L	**500**	18	8	5	6	9	255	82	22	6	12	12	**260**	22	33	8

APPENDIX G
TIME SERIES GRAPHS

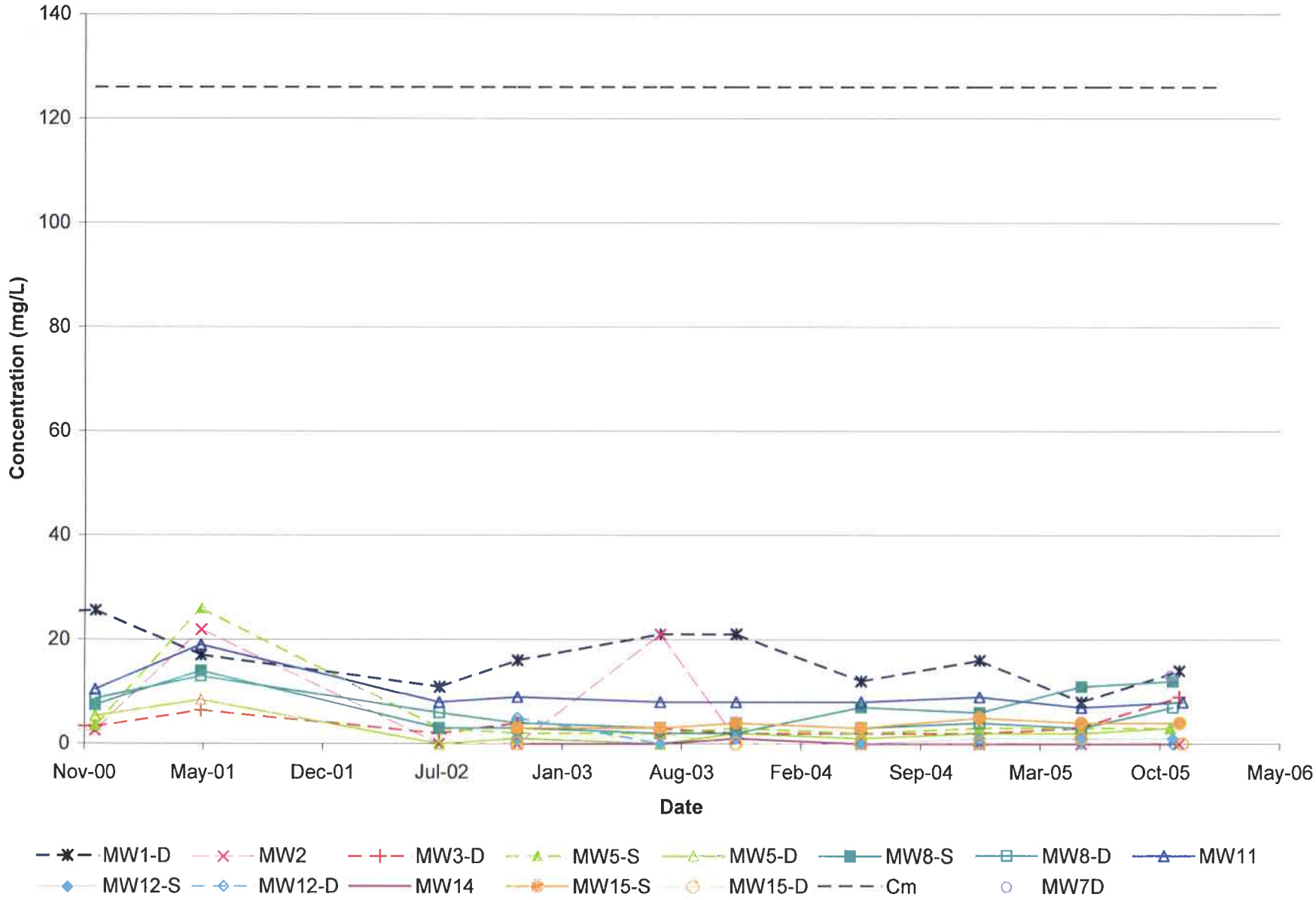
Groundwater Quality Trend
Hardness



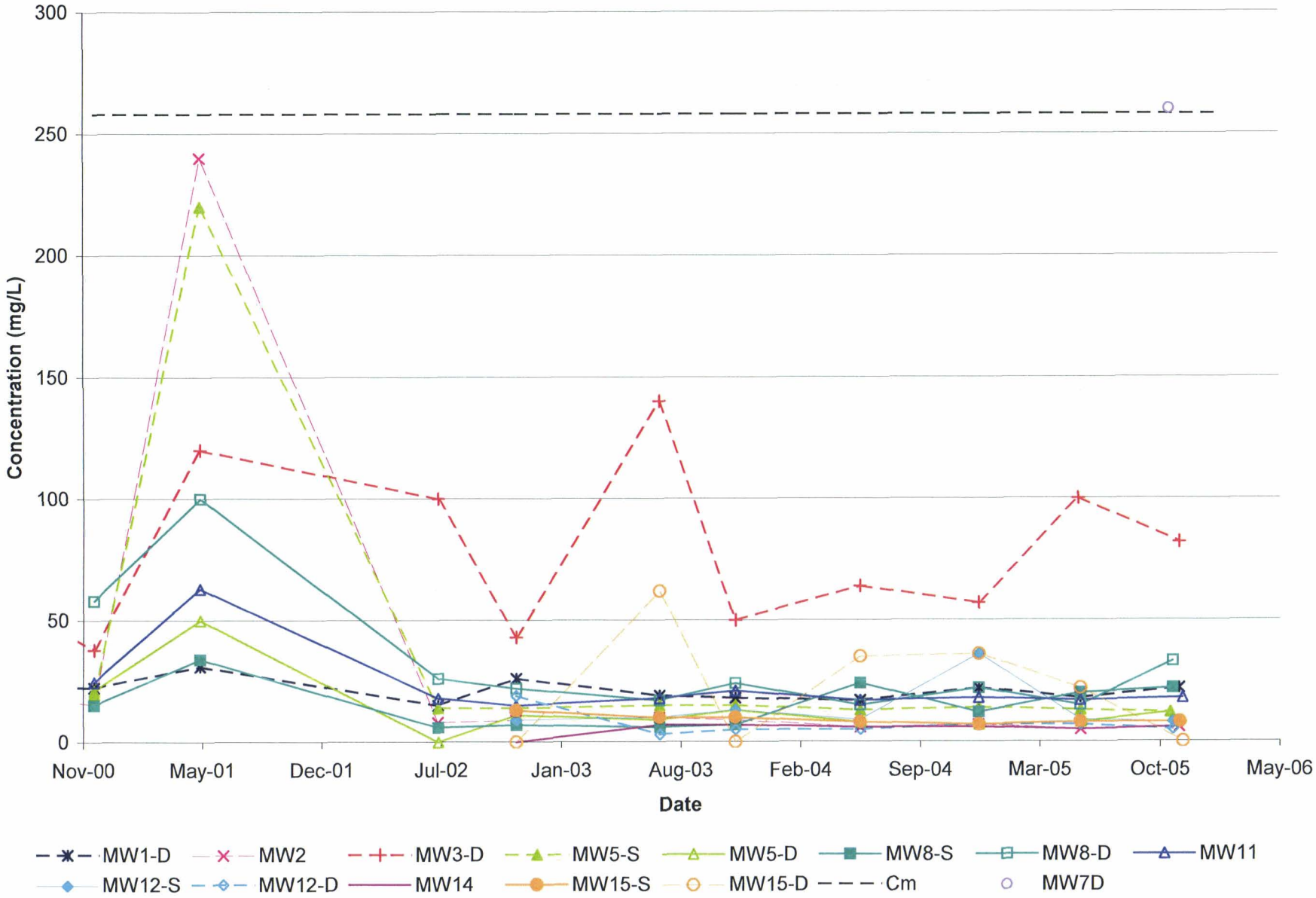
Groundwater Quality Trend
Alkalinity



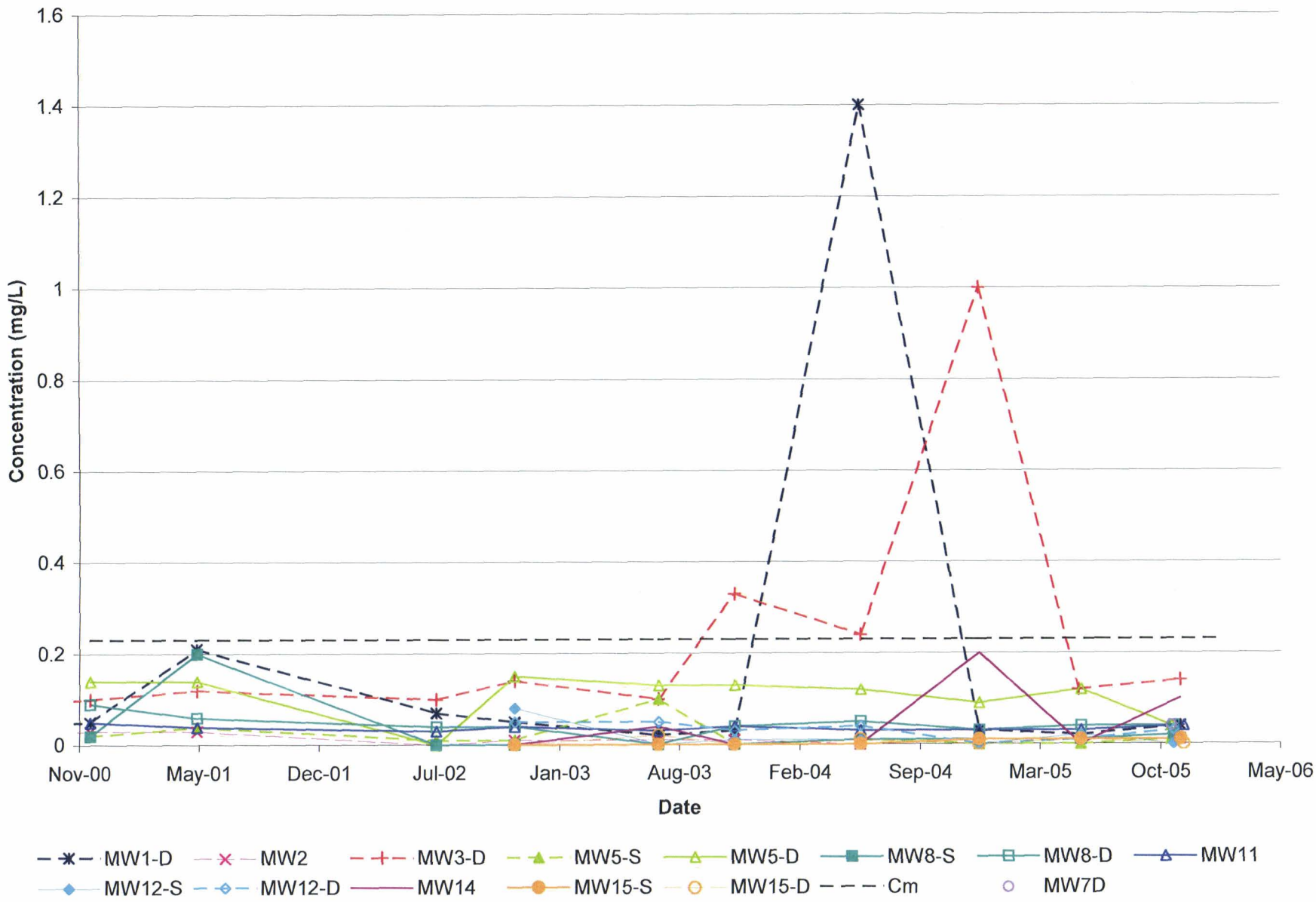
Groundwater Quality Trend
Chloride



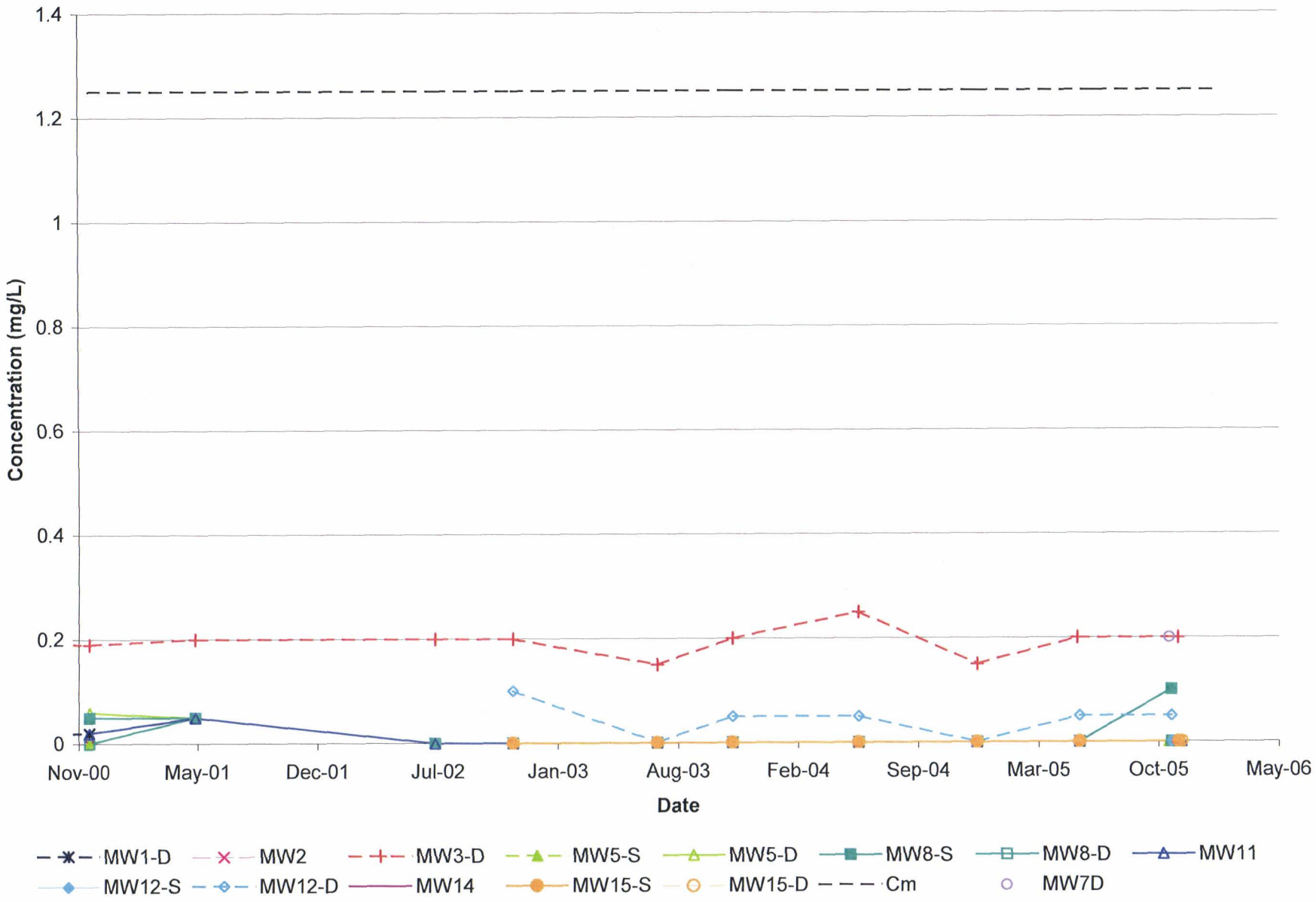
Groundwater Quality Trend
Sulphate



Groundwater Quality Trend
Barium



Groundwater Quality Trend
Boron

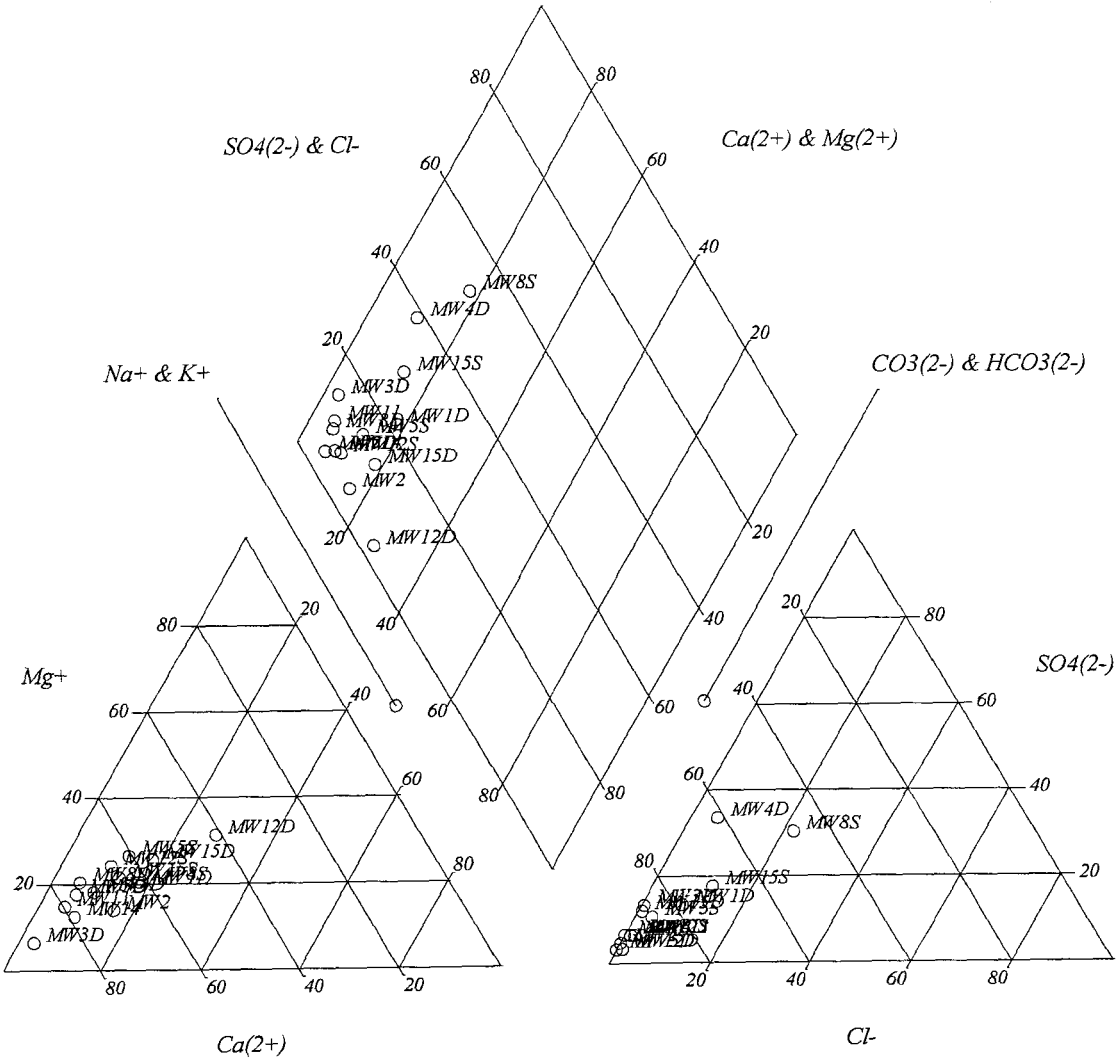


APPENDIX H
PIPER TRILINEAR DIAGRAMS

SPRING 2005

Triplot Results:

14 points (Converted to MEq).



Source Data (PPM):

No.	Label	Ca(2+)	Mg (2+)	Na+	K+	Cl-	CO3(2-)	HCO3 (2-)	SO4(2-)	Comment
	MW11	60	6.8	4.2	0.6	7	150	0	17	
	MW12S	29	6.4	4.6	1	1	80	0	9	
	MW12D	24	11	16	4	0	140	0	7	
	MW14	17	1.6	2	0.2	0	45	0	5	
	MW3D	190	8	4.4	5.4	3	400	0	100	
	MW1D	17	3.2	5.2	0.8	8	65	0	18	
	MW2	20	2.4	5.2	0	0	65	0	5	

MW4D	160	24	24	2.6	30	290	0	250
MW5S	19	5	3.6	1.6	3	65	0	13
MW5D	46	6.4	4	1	2	150	0	8
MW8S	14	2.8	3.8	1.4	11	20	0	20
MW8D	42	7	3.2	1	3	130	0	15
MW15S	9.2	1.8	2.2	0	4	20	0	8
MW15D	25	6.8	8.6	1.2	1	100	0	22

MEq Data:

No.	Label	Ca (2+)	Mg (2+)	Na+	K+	Cl-	CO3 (2-)	HCO3 (2-)	SO4 (2-)	Comment
1	MW11	2.994	0.56	0.183	0.0153	0.197	4.999	0.0	0.354	
2	MW12S	1.447	0.527	0.2	0.0256	0.0282	2.666	0.0	0.187	
3	MW12D	1.198	0.905	0.696	0.102	0.0	4.666	0.0	0.146	
4	MW14	0.848	0.132	0.087	0.00512	0.0	1.5	0.0	0.104	
5	MW3D	9.482	0.658	0.191	0.138	0.0846	13.33	0.0	2.082	
6	MW1D	0.848	0.263	0.226	0.0205	0.226	2.166	0.0	0.375	
7	MW2	0.998	0.197	0.226	0.0	0.0	2.166	0.0	0.104	
8	MW4D	7.984	1.975	1.044	0.0665	0.846	9.665	0.0	5.205	
9	MW5S	0.948	0.411	0.157	0.0409	0.0846	2.166	0.0	0.271	
10	MW5D	2.296	0.527	0.174	0.0256	0.0564	4.999	0.0	0.167	
11	MW8S	0.699	0.23	0.165	0.0358	0.31	0.667	0.0	0.416	
12	MW8D	2.096	0.576	0.139	0.0256	0.0846	4.333	0.0	0.312	
13	MW15S	0.459	0.148	0.0957	0.0	0.113	0.667	0.0	0.167	
14	MW15D	1.248	0.56	0.374	0.0307	0.0282	3.333	0.0	0.458	

Plot Data:

No.	Label	Ca(2+)	Mg(2+)	Na+ & K+	Cl-	CO3(2-) & HCO3 (2-)	SO4(2-)	Comment
1	MW11	79	14	5	3	90	6	
2	MW12S	65	23	10	0	92	6	
3	MW12D	41	31	27	0	96	3	
4	MW14	79	12	8	0	93	6	
5	MW3D	90	6	3	0	86	13	
6	MW1D	62	19	18	8	78	13	
7	MW2	70	13	15	0	95	4	
8	MW4D	72	17	10	5	61	33	

9	MW5S	60	26	12	3	85	10
10	MW5D	75	17	6	1	95	3
11	MW8S	61	20	17	22	47	29
12	MW8D	73	20	5	1	91	6
13	MW15S	65	21	13	11	70	17
14	MW15D	56	25	18	0	87	11

PIPER DIAGRAM
SPRING

Parameter	Units	ODWS	Background Monitor				Leachate Monitor	Impact Monitors								
			MW11	MW12-S	MW12-D	MW-14	MW3-D	MW1-D	MW2	MW4-D	MW5-S	MW5-D	MW8-S	MW8-D	MW15-S	MW15-D
Calcium	mg/L	NV	60	29	24	17	190	17	20	160	19	46	14	42	9.2	25
Magnesium	mg/L	NV	6.8	6.4	11	1.6	8	3.2	2.4	24	5	6.4	2.8	7	1.8	6.8
Sodium	mg/L	200	4.2	4.6	16	2	4.4	5.2	5.2	24	3.6	4	3.8	3.2	2.2	8.6
Potassium	mg/L	NV	0.6	1	4	0.2	5.4	0.8	0	2.6	1.6	1	1.4	1	0	1.2
Chloride	mg/L	250	7	1	0	0	3	8	0	30	3	2	11	3	4	1
Alkalinity	mg/L	30-500	150	80	140	45	400	65	65	290	65	150	20	130	20	100
Sulphate	mg/L	500	17	9	7	5	100	18	5	250	13	8	20	15	8	22

Concentrations in meq/L

Parameter	Molecular Weight	Charge	Background Monitor				Leachate Monitor	Impact Monitors								
			MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW4-D	MW5-S	MW5-D	MW8-S	MW8-D	MW15-S	MW15-D
Alkalinity	61	-1	-2.5	-1.3	-2.3	-0.7	-6.6	-1.1	-1.1	-4.8	-1.1	-2.5	-0.3	-2.1	-0.3	-1.6
Chloride	35.45	-1	-0.2	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.8	-0.1	-0.1	-0.3	-0.1	-0.1	0.0
Sulphate	96.06	-2	-0.4	-0.2	-0.1	-0.1	-2.1	-0.4	-0.1	-5.2	-0.3	-0.2	-0.4	-0.3	-0.2	-0.5
Calcium	40.08	2	3.0	1.4	1.2	0.8	9.5	0.8	1.0	8.0	0.9	2.3	0.7	2.1	0.5	1.2
Magnesium	24.3	2	0.6	0.5	0.9	0.1	0.7	0.3	0.2	2.0	0.4	0.5	0.2	0.6	0.1	0.6
Potassium	39.09	1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Sodium	23	1	0.2	0.2	0.7	0.1	0.2	0.2	0.2	1.0	0.2	0.2	0.2	0.1	0.1	0.4
% ANIONS																
Magnesium			14.9	23.9	31.2	12.3	6.3	19.4	13.9	17.8	26.4	17.4	20.4	20.3	21.1	25.3
Calcium			79.8	65.8	41.3	79.1	90.6	62.5	70.2	72.1	60.9	76.0	61.8	73.9	65.3	56.4
Sodium + Potassium			5.3	10.3	27.5	8.6	3.1	18.2	15.9	10.0	12.7	6.6	17.8	5.8	13.6	18.3
% CATIONS																
Alkalinity			81.7	85.9	94.0	87.6	75.2	64.0	91.1	44.0	75.0	91.7	31.1	84.3	54.0	77.1
Chloride			6.6	1.8	0.0	0.0	1.0	13.5	0.0	7.8	6.0	2.1	29.4	3.3	18.6	1.3
Sulphate			11.8	12.3	6.0	12.4	23.9	22.5	8.9	48.2	19.0	6.2	39.5	12.4	27.4	21.5

PIPER DIAGRAM
FALL

Parameter	Units	ODWS	Background Monitor				Leachate Monitor	Impact Monitors								
			MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW5-S	MW5-D	MW7-D	MW8-S	MW8-D	MW15-S	MW16-D
Calcium	mg/L	NV	81	13	23	51	210	48	22	22	49	98	20	56	13	--
Magnesium	mg/L	NV	8.4	3.4	12	4	10	7.8	2.4	5.4	6.2	27	3	10	2.4	--
Sodium	mg/L	200	8.8	4.2	19	2.6	10	7	5.6	7	23	72	9.6	8.2	3.4	--
Potassium	mg/L	NV	1.2	0.8	6.8	0.8	8.2	2	0	1.8	4.6	8.6	1	2.4	0.4	--
Chloride	mg/L	250	8	1	0	0	9	14	0	3	3	13	12	7	4	--
Alkalinity	mg/L	30-500	470	40	150	130	460	95	130	70	151	360	35	150	25	--
Sulphate	mg/L	500	18	8	5	6	82	22	6	12	12	260	22	33	8	--

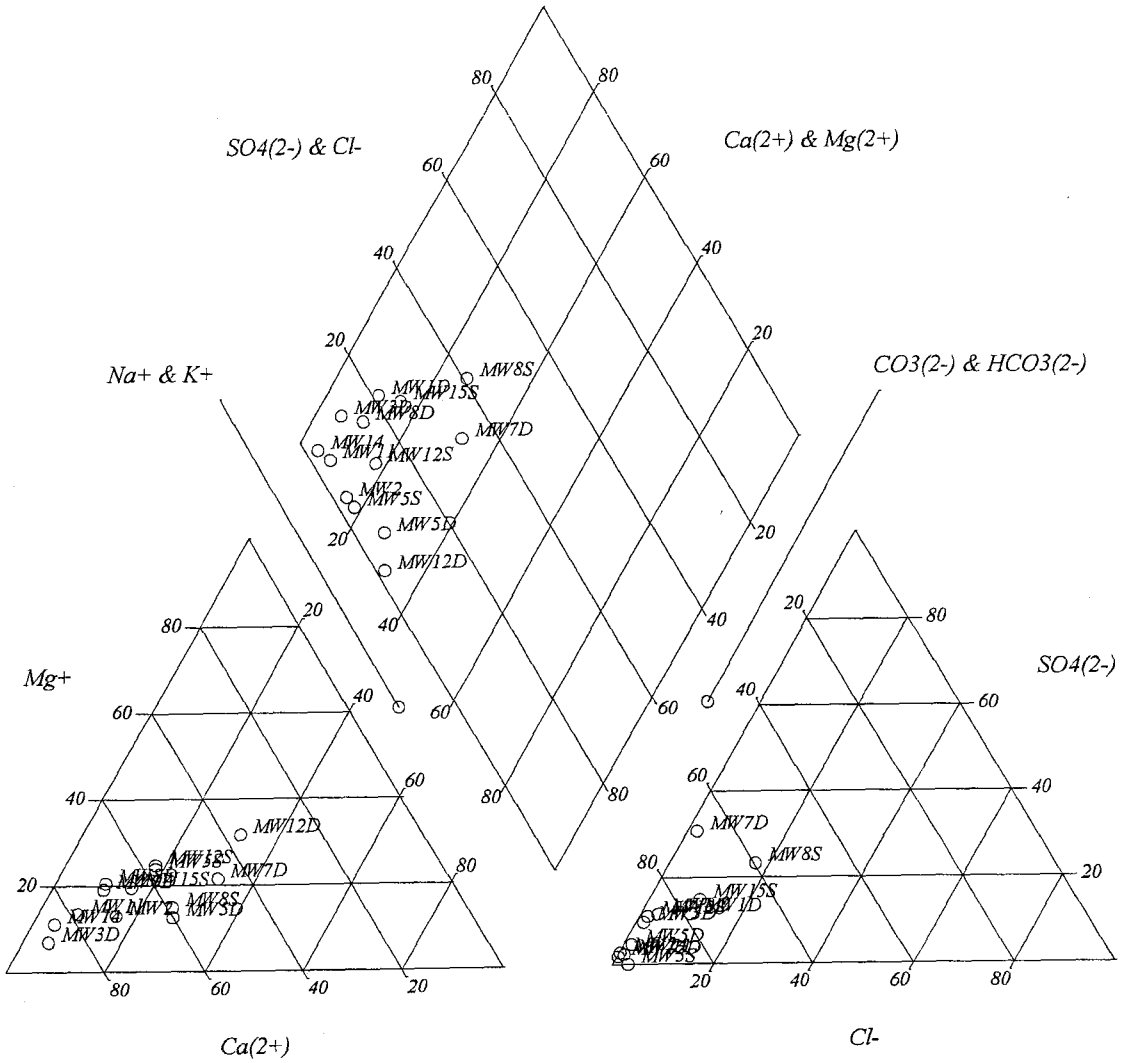
Concentrations in meq/L

Parameter	Molecular Weight	Charge	Background Monitor				Leachate Monitor	Impact Monitors								
			MW11	MW12-S	MW12-D	MW14	MW3-D	MW1-D	MW2	MW5-S	MW5-D	MW7-D	MW8-S	MW8-D	MW15-S	MW16-D
Alkalinity	61	-1	-7.7	-0.7	-2.5	-2.1	-7.5	-1.6	-2.1	-1.1	-2.5	-5.9	-0.6	-2.5	-0.4	#VALUE!
Chloride	35.45	-1	-0.2	0.0	0.0	0.0	-0.3	-0.4	0.0	-0.1	-0.1	-0.4	-0.3	-0.2	-0.1	#VALUE!
Sulphate	96.06	-2	-0.4	-0.2	-0.1	-0.1	-1.7	-0.5	-0.1	-0.2	-0.2	-5.4	-0.5	-0.7	-0.2	#VALUE!
Calcium	40.08	2	4.0	0.6	1.1	2.5	10.5	2.4	1.1	1.1	2.4	4.9	1.0	2.8	0.6	#VALUE!
Magnesium	24.3	2	0.7	0.3	1.0	0.3	0.8	0.6	0.2	0.4	0.5	2.2	0.2	0.8	0.2	#VALUE!
Potassium	39.09	1	0.0	0.0	0.2	0.0	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.0	#VALUE!
Sodium	23	1	0.4	0.2	0.8	0.1	0.4	0.3	0.2	0.3	1.0	3.1	0.4	0.4	0.1	#VALUE!
% ANIONS																
Magnesium			13.4	24.7	31.5	10.9	6.9	18.9	12.8	23.5	12.5	21.2	14.6	20.4	19.7	#VALUE!
Calcium			78.5	57.3	36.6	84.6	87.7	70.6	71.3	58.0	60.0	46.7	59.1	69.2	64.6	#VALUE!
Sodium + Potassium			8.0	17.9	31.9	4.4	5.4	10.5	15.8	18.5	27.4	32.0	26.2	10.4	15.7	#VALUE!
% CATIONS																
Alkalinity			92.8	77.1	95.9	94.5	79.4	64.6	94.5	77.4	88.1	50.5	41.9	73.5	59.5	#VALUE!
Chloride			2.7	3.3	0.0	0.0	2.7	16.4	0.0	5.7	3.0	3.1	24.7	5.9	16.4	#VALUE!
Sulphate			4.5	19.6	4.1	5.5	18.0	19.0	5.5	16.9	8.9	46.3	33.4	20.5	24.2	#VALUE!

FALL 2005

Triplot Results:

13 points (Converted to MEq).



Source Data (PPM):

No.	Label	Ca(2+)	Mg (2+)	Na+	K+	Cl-	CO3(2-)	HCO3 (2-)	SO4(2-)	Comment
	MW11	81	8.4	8.8	1.2	8	470	0	18	
	MW12S	13	3.4	4.2	0.8	1	40	0	8	
	MW12D	23	12	19	6.8	0	150	0	5	
	MW14	51	4	2.6	0.8	0	130	0	6	
	MW3D	210	10	10	8.2	9	460	0	82	
	MW1D	48	7.8	7	2	14	95	0	22	
	MW2	22	2.4	5.6	0	0	130	0	6	

MW5S	22	5.4	7	1.8	3	70	12	
MW5D	49	6.2	23	4.6	3	151	0	12
MW7D	98	27	72	8.6	13	360	0	260
MW8S	20	3	9.6	1	12	35	0	22
MW8D	56	10	8.2	2.4	7	150	0	33
MW15S	13	2.4	3.4	0.4	4	25	0	8

MEq Data:

No.	Label	Ca(2+)	Mg (2+)	Na+	K+	Cl-	CO3 (2-)	HCO3 (2-)	SO4 (2-)	Comment
1	MW11	4.042	0.691	0.383	0.0307	0.226	15.66	0.0	0.375	
2	MW12S	0.649	0.28	0.183	0.0205	0.0282	1.333	0.0	0.167	
3	MW12D	1.148	0.987	0.826	0.174	0.0	4.999	0.0	0.104	
4	MW14	2.545	0.329	0.113	0.0205	0.0	4.333	0.0	0.125	
5	MW3D	10.48	0.823	0.435	0.21	0.254	15.33	0.0	1.707	
6	MW1D	2.395	0.642	0.304	0.0512	0.395	3.166	0.0	0.458	
7	MW2	1.098	0.197	0.244	0.0	0.0	4.333	0.0	0.125	
8	MW5S	1.098	0.444	0.304	0.046	0.0846	2.333	0.197	0.0	
9	MW5D	2.445	0.51	1.0	0.118	0.0846	5.033	0.0	0.25	
10	MW7D	4.89	2.222	3.132	0.22	0.367	12.0	0.0	5.413	
11	MW8S	0.998	0.247	0.418	0.0256	0.338	1.166	0.0	0.458	
12	MW8D	2.795	0.823	0.357	0.0614	0.197	4.999	0.0	0.687	
13	MW15S	0.649	0.197	0.148	0.0102	0.113	0.833	0.0	0.167	

Plot Data:

No.	Label	Ca(2+)	Mg(2+)	Na+ & K+	Cl-	CO3(2-) & HCO3 (2-)	SO4(2-)	Comment
1	MW11	78	13	8	1	96	2	
2	MW12S	57	24	17	1	87	10	
3	MW12D	36	31	31	0	97	2	
4	MW14	84	10	4	0	97	2	
5	MW3D	87	6	5	1	88	9	
6	MW1D	70	18	10	9	78	11	
7	MW2	71	12	15	0	97	2	
8	MW5S	58	23	18	3	96	0	
9	MW5D	60	12	27	1	93	4	
10	MW7D	46	21	32	2	67	30	

11	MW8S	59	14	26	17	59	23
12	MW8D	69	20	10	3	84	11
13	MW15S	64	19	15	10	74	14