

SPRING 2011 SEMI-ANNUAL MONITORING REPORT

**WASTE MANAGEMENT OF CANADA
RICHMOND LANDFILL
TOWN OF GREATER NAPANEE, ONTARIO**

Prepared for:

WASTE MANAGEMENT OF CANADA
1271 Beechwood Road
Napanea, ON K7R 3L1

Prepared by:



WESA Inc.
4 Cataraqui Street
The Tower, The Woolen Mill
Kingston ON K7K 1Z7

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1.0 INTRODUCTION

The purpose of this document is to present results and to provide an interpretation of the data that were collected during the spring 2011 semi-annual monitoring event at the Waste Management of Canada Corporation (WM) Richmond Landfill.

The WM Richmond Landfill is approved as a 16.2 hectare waste disposal (landfilling) facility within a total site area of 138 hectares, located on parts of Lots 1, 2 and 3, Concession IV of the former Township of Richmond, now in the Town of Greater Napanee, Ontario.

2.0 MONITORING PROGRAM

2.1 PROGRAM METHODOLOGY

The spring 2011 semi-annual monitoring event was conducted in accordance to the updated Environmental Monitoring Plan for the site dated June 29, 2010 (herein referred to as the "EMP"). The EMP was submitted to the Ontario Ministry of the Environment (MOE) as required by the Amendment to Provisional Certificate of Approval (C of A) issued by the MOE on March 31, 2010. While the EMP is still under review by the MOE, the amended C of A stipulates (Condition 8(b)) that "*Pending final approval of the EMP by the Director, the Owner shall implement the EMP upon submission to Director.*"

The site layout and monitoring locations are shown on Figure 1. The groundwater and leachate monitoring program is summarized in Table 1. Construction of the two new groundwater monitoring wells (M105 and M106) specified in Table 1 of the EMP (intermediate bedrock groundwater zone) was completed during the fall 2010; consequently these wells were available for the first time in spring 2011 to record water levels and for groundwater quality sampling.

The spring monitoring event was conducted between April 20 and May 4, 2011. A total of 41 groundwater monitors were sampled from 37 locations. Three (3) groundwater monitoring wells could not be sampled because they (a) had insufficient recovery for sampling after purging (M29 and M39), or (c) were damaged (the standpipe in M58-4 was broken below the ground surface and contained bentonite). Samples were analyzed for the suite of groundwater inorganic and general parameters.

Eight (8) off-site domestic water supply wells were sampled on April 20, 2011. Water samples from private supply wells were analyzed for groundwater inorganic and general parameters, as well as for VOCs.

Spring surface water sampling was conducted on May 2, 2011 from locations S2, S3, S4R, S5 and S8R. Surface water samples were analyzed for the surface water inorganic and general parameters.

Landfill gas migration monitoring was conducted on May 3, 2011. Field measurements were made with a RKI Eagle probe calibrated to methane gas response at six (6) gas monitors (GM1 and GM3 to GM6).

Additionally, seven (7) field duplicate samples, three (3) field blanks, and three (3) trip blank were collected during the spring sampling event, for a total of 13 Quality Assurance/Quality Control (QA/QC) samples. Deionised water for analysis of blank samples was supplied by the laboratory.

2.2 WATER/LEACHATE SAMPLE COLLECTION AND LABORATORY ANALYSIS

Groundwater and surface water samples were collected in accordance with accepted industry protocols. Groundwater samples were collected using dedicated Waterra inertial lift pumps connected to dedicated polyethylene tubing. Between one and three casing volumes of water were removed from each monitoring well prior to the collection of groundwater samples. During purging, readings for pH, conductivity and temperature were recorded on a regular basis. The stabilization of the parameters was used to assess when well purging was complete. Low producing wells were purged dry and allowed to recover prior to sampling. If the monitoring well had not recovered sufficiently for sampling within 24 hours, the monitor was considered dry and a sample was not collected.

Domestic supply wells were sampled at an access point before any treatment system. A typical sampling location was a tap or access located near the pressure tank or when access to the treatment system was not available, the sample was collected from the kitchen tap (with the aerator screen removed). Prior to collecting the water sample, the water was allowed to run for a minimum of five but more typically closer to 10 minutes to ensure the volume of the pressure tank and supply line was purged and that the sample would be representative of well water conditions.

Surface water samples were collected using a clean bottle where water depth was sufficient; at sampling locations where water depth was an issue, a 50 cc syringe was used to carefully collect the surface water as not to disturb the bottom sediments. Surface water sampling locations were sampled from downstream to upstream to prevent any re-suspension of sediment impacting the downstream sampling locations. The pH, temperature, and conductivity of the surface water were obtained in the field at all surface water sampling points while minimizing disturbance of the bottom sediment.

Leachate samples are were collected from the North Chamber and South Chamber collection sumps. The North Chamber sample was collected by lowering a 20L bucket into the vault allowing it to fill and then lifting it to surface. The sample was placed in laboratory supplied preserved bottles by filling one of the non-preserved bottles and carefully decanting into the smaller sampling bottles. The South Chamber sample was collected from the pump out valve system at surface. The flow valve was partially opened to fill one of the non preserved bottles provided by the laboratory, and used to decant into the other sampling bottles.

All water/leachate samples were placed in bottles supplied and prepared by the laboratory. The samples were packed in coolers with ice and shipped by courier to the laboratory. All samples were analysed by Maxxam Analytics Inc. of Mississauga, ON, which is accredited by the *Canadian Association for Laboratory Accreditation Inc. (CALA)*. Table 2 presents a summary of groundwater, surface water and leachate analytical parameters.

2.3 GROUNDWATER ELEVATIONS

Prior to collecting groundwater samples, water levels were recorded to the nearest 0.01 m using an electronic water level meter. Table 3 presents groundwater elevation monitoring locations. Water levels could not be recorded from groundwater monitors M82-2 (flowing artesian conditions) or OW57 (damaged and inaccessible).

3.0 MONITORING RESULTS AND DISCUSSION

Background information concerning the site geology and hydrogeology was described in detail in the Site Conceptual Model (SCM) report¹, and is summarized here. The SCM report describes the groundwater flow conditions at the Richmond Landfill. Based on the results from extensive studies conducted previously at the site, the basic hydrogeological framework for the facility has been defined as follows:

- the active groundwater flow zone at the site extends to a depth of approximately 30 metres below the top of bedrock;
- the shallow groundwater flow zone is conceptualized as the overburden, the overburden-bedrock contact and the upper one to two metres of bedrock;
- the direction of groundwater flow in the shallow flow zone is strongly influenced by topography;
- the intermediate bedrock flow zone extends from one to two metres below top of bedrock to a depth of approximately 30 metres below top of bedrock;

¹ *Site Conceptual Model Report, WM Richmond Landfill*, prepared by Dr. B.H. Kueper and WESA Inc., October 2009

- groundwater flows through a well-connected network of fractures in the upper 30 metres of bedrock;
- the dominant fracture orientation is horizontal to sub-horizontal; however, vertical to subvertical fractures are present providing hydraulic connection between horizontal fractures;
- hydraulic connection of fractures exists in the intermediate bedrock flow zone to the west, south and east of the site (horizontal and vertical connections);
- intermediate bedrock flownets show that groundwater generally flows to the west from the western edge of the landfill, to the south-southeast from the southern edge of the landfill, to the southwest from the southwest corner of the landfill and north to northwest from the northwest portion of the landfill;
- the hydraulic conductivity of the intermediate bedrock is lower to the north and east of the landfill compared to other areas of the site, implying that the rate of groundwater flow is lower than in areas south, southeast and west of the landfill; and
- flow directions in the intermediate bedrock zone are variable with season.

3.1 LEACHATE RESULTS

The leachate chemistry results for May 3, 2011 are summarized in Table 4. Leachate at the Richmond Landfill is characterized by elevated concentrations of general water quality parameters such as alkalinity, ammonia, conductivity, DOC, hardness, toluene, and TKN, as well as selected VOCs for both the North and South Chamber samples. In general, the parameters that characterize the leachate are more elevated in the samples collected from the South Chamber compared to the North Chamber.

3.2 GROUNDWATER RESULTS

3.2.1 *Groundwater Elevations*

Groundwater elevations from program monitoring wells were measured on April 28, 2011 and are presented in Table 5. The groundwater flow direction within the shallow and intermediate bedrock groundwater flow zones are shown on Figures 2 and 3, respectively. The groundwater flow directions were inferred by interpolating the hydraulically responsive wells screened within the corresponding groundwater flow zone, and are consistent with historical results.

The spring 2011 shallow groundwater flownet (Figure 2) is consistent with historical results and shows that the Empey Hill drumlin southwest from the landfill creates a flow divide with shallow groundwater being directed both to the north and the south. The northerly flowing groundwater is oriented toward Marysville Creek, while shallow groundwater to the south flows towards Beechwood Ditch. Shallow groundwater south of Beechwood Road flows locally to the north-

northwest, towards an area of lower hydraulic head that may be influenced by the pond system in the south part of the site (see Figure 2). Shallow groundwater east of the landfill is influenced by a local zone of higher water levels in the vicinity of monitoring well M96. Shallow groundwater north of M96 flows to the north while groundwater south of M96 flows to the south-southeast.

The spring 2011 intermediate bedrock zone flownet is presented on Figure 3. Water levels from four (4) intermediate bedrock monitors identified as “responsive” in the 2009 SCM report were not used to prepare the spring 2011 flownet. The wells were excluded from the interpolation on the basis of: (a) integrity concerns with the bentonite seal (M57); (b) anomalous groundwater elevation (flowing artesian conditions), inconsistent with historical hydrographs (M82-2); and (c) water levels were not static, still recovering from the fall 2010 sampling event (M70-1 and M82-1). Groundwater in the intermediate bedrock flow zone generally flows to the north, west, and south relative to the landfill. Overall, the directions of groundwater flow within the intermediate flow zone are consistent with the regional directions of groundwater flow, towards the south.

3.2.2 Groundwater Analytical Results

Results from the groundwater monitoring wells sampled in spring 2011 are presented in Table 6. Groundwater quality data for the spring 2011 monitoring event are similar to historical results, and discussed in this section.

Slightly elevated concentrations of a number of water quality parameters (e.g., alkalinity, chloride, conductivity, DOC, iron, manganese, sodium and/or TDS) were observed in some shallow groundwater zone monitoring wells located northwest and north of the unlined Phase 1 landfill footprint (M66-2, M101, M102 and M103). All VOCs were below the laboratory reporting limit, with the exception of low but detectable levels of 1,1,1-TCA (M54-4) and 1,1,-DCA (M54-4 and M103). In other areas of the site, there is no evidence of groundwater impacts away from the landfill footprint in the shallow groundwater flow zone. Isolated occurrences of elevated concentrations of water quality parameters (i.e., one or two parameters per sample) are seen elsewhere on the Site, particularly immediately adjacent to the landfill footprint (e.g., at M41). No indications of elevated concentrations related to impacts are identified at the property boundary in the shallow flow zone.

Analytical results from intermediate bedrock groundwater monitors sampled in spring 2011 show that groundwater quality in this groundwater flow zone is highly variable across the site. VOCs were below the laboratory reporting limit at most intermediate bedrock monitors, with the exception of select VOCs such as 1,1,1-TCA, 1,1-DCA, 1,1-DCE, chloroethane, dichloroethane and/or BTEX at some locations (e.g., M6-3, M9-3, M10-1, M57, M70-1, M80-1, M82-1, M95-1, M105 and M106).

These findings are consistent with historical results. Intermediate bedrock zone groundwater and surface water chemistry conditions south of the landfill were reviewed in a technical memorandum submitted to the MOE² (dated June 14, 2010). This study investigated the apparently increasing concentrations of some parameters (e.g., alkalinity, ammonia, COD, iron, chloride, sodium, etc.) over time at selected monitoring wells installed in the intermediate bedrock flow zone south (M9-2, M9-3, M10-1, M49-1, M49-2 and M71) and north/northwest (M5-2 and M6-3) of the site. It was concluded that the groundwater chemistry changes seen at these monitoring wells are most likely related to surface water infiltration and off-site sources. Wells immediately south of the landfill, such as M9-2 and M9-3, may have historically shown effects from leachate; however, there are no indications that these concentrations have resulted in off-site impact. Additional investigative work related to this observed chemistry is ongoing at this time.

Continued monitoring of the groundwater chemistry in the monitoring wells around the landfill and in the low head areas is warranted to assess any temporal trends in the groundwater conditions.

3.2.3 Off-Site Domestic Water Supply Well Results

Results from off-site private water supply wells sampled in spring 2011 are presented in Table 7.

Comparison with Ontario Drinking Water Quality Objectives and Guidelines (ODWSOG, 2006) revealed all parameters were below their respective maximum acceptable concentrations (MAC) or interim maximum acceptable concentrations (IMAC) as specified in Table 2 of the ODWSOG. Some inorganic parameters (general chemistry and dissolved metals) were measured at concentrations exceeding their respective aesthetic objective (AO) or operational guideline (OG) from Table 4 of the ODWSOG.

As was the case in previous sampling events, most volatile organic compounds (VOCs) in off-site supply wells were reported below the laboratory reporting limit (RL) at all locations, with the exception of some VOCs that were detected in measurable quantities above the RL at some locations. In all cases, VOC concentrations were below the MAC or AO.

The moderate mineralization observed at the private water supply wells sampled (elevated alkalinity, hardness, TDS and sodium) is consistent with the local hydrogeological setting (carbonate aquifer with documented saline groundwater at depth). The origin of the elevated concentration in some dissolved metals (iron, manganese) and DOC at some locations is

² *On-Site Groundwater and Surface Water Quality Assessment, Waste Management (WM) Richmond Landfill*, technical memorandum to Chris Prucha (WM), June 14, 2010.

unknown. The low levels of VOCs observed at some locations adjacent to 1252 Beechwood Road are likely attributable to the historical release of VOCs at this location (former abattoir).

3.2.4 Groundwater Chemistry Quality Assurance / Quality Control (QA/QC)

An evaluation of the QA/QC data (from duplicate and blank samples) is included in Appendix A, where analytical results are compared between regular samples and their corresponding field duplicate samples, submitted to the laboratory without identifying the location they were collected from. A standard margin of error of 20% (relative percent difference (RPD) between regular sample and duplicate) was deemed acceptable for field duplicates. In general, the comparison between samples and duplicates shows very good correlation for the majority of analyzed constituents. All parameters for groundwater duplicate QA/QC sampling were well within the 20% margin of error with few exceptions as summarized in Appendix A. Of these few that had RPD greater than 20%, all except five (DOC at M81; boron and dissolved organic carbon at M96; and sodium at M58-3 and M82-2) were measured at low concentrations (less than 5 times the MDL) and are therefore within acceptable margin of error. All parameters were near or below the MDL in equipment and field blanks.

3.3 SURFACE WATER RESULTS

The two water courses that may receive surface water/storm water runoff from the Richmond Landfill are Marysville Creek to the north of the waste mound and Beechwood Ditch to the south (Figure 1). The Beechwood Ditch is a man-made surface water course that flows from the east onto WM property. It then flows west across a portion of the site before again crossing Beechwood Road and travelling southwest to cross County Road 10, and joins Marysville Creek east of Highway 49 and north of Highway 401. Both the Beechwood Ditch and Marysville Creek flow intermittently in the vicinity of the landfill. Marysville Creek has some base flow locally, and flows on a continuous basis west of County Road 10 (Deseronto Road). Marysville Creek eventually discharges into the Bay of Quinte at Hungry Bay.

All surface water monitoring locations are shown on Figure 1.

3.3.1 Surface Water Flow Rates

Visual observations of surface water flow and general water characteristics for the spring sampling program are summarized in Table 8. In general, surface water flow rates were variable, ranging from negligible (at S4R) to 0.13 m³/s (at S3).

3.3.2 Surface Water Analytical Results

The results from the surface water locations sampled in spring 2011 are presented in Table 9, and are similar to historical results.

Surface water quality from samples collected in spring 2011 was compared to the Provincial Water Quality Objectives (PWQO) (see Table 9). Upstream surface water quality is monitored from station S2 for Marysville Creek, while background surface water quality for Beechwood Ditch was recorded at station S5. Storm water runoff from the existing landfill area flows to one of three storm water sedimentation retention ponds, located to the northeast, northwest and south of the landfill footprint. The retention pond located south of the landfill was reconstructed in 2008 and now has an increased storage volume and, as a result, an increased retention time.

All constituents analysed in surface water samples were below their respective PWQO, with the exception of (a) iron at downstream location S8R (1.2 mg/L compared to the PWQO of 0.3 mg/L); (b) phosphorus which was detected at concentrations slightly exceeding the PWQO of 0.03 mg/L at all upstream and downstream locations except S4R (downstream), ranging between 0.031 mg/L and 0.065 mg/L; and Field pH at S3, measured at 5.87, slightly more acidic than the PWQO range (6.5-8.5).

Results from spring 2011 indicate that the landfill is not causing adverse impacts to surface water quality.

3.3.3 Surface Water Quality Assurance / Quality Control (QA/QC)

An evaluation of the QA/QC data (from duplicate and blank samples) is included in Appendix A, where analytical results are compared between regular samples and their corresponding field duplicate samples, submitted to the laboratory without identifying the location they were collected from. A standard margin of error of 20% was deemed acceptable for field duplicates. In general, the comparison between samples and duplicates shows very good correlation for the majority of analyzed constituents. All parameters for the surface water duplicate QA/QC sample (location S2) were well within the 20% margin of error, with the exception of total phosphorus. Total suspended solids was also above 20%, but measured at low concentrations (less than 5 times the MDL) and therefore within acceptable margin of error.

3.4 SUBSURFACE GAS SAMPLING

On May 3, 2011, WESA inspected the subsurface gas monitoring probes and obtained measurements at all locations. Measurements were made using a RKI Eagle probe calibrated to methane gas response. The location and condition of the gas monitors and the measurement

results are shown in Table 10. Readings were 0 ppm at all locations except GM6 (15 ppm, well below the lower explosive limit (LEL) of 5% or 50,000 ppm).

4.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The spring 2011 monitoring program included the collection of groundwater and surface water samples, as well as landfill gas monitoring, in accordance with the site groundwater monitoring requirements outlined in the revised EMP dated June 29, 2010, as specified in the C of A amendment issued on March 31, 2010.

The following were completed between April 20 and May 4, 2011:

- Water levels were measured from 69 groundwater monitoring wells (40 in the shallow groundwater flow zone and 29 in the intermediate bedrock flow zone)).
- 41 groundwater monitors (17 completed in the shallow zone and 24 in the intermediate bedrock) were sampled for analytical testing.
- Eight (8) off-site domestic water supply wells located along Beechwood Road were sampled for analytical testing.
- Five (5) surface water locations were sampled for analytical testing.
- A total of 13 Quality Assurance/Quality Control (QA/QC) samples were collected (7 field duplicates, 3 field blanks and 3 trip blanks).
- Subsurface gas concentrations were recorded from six on-site gas monitoring wells at five locations.

4.1 GROUNDWATER

- Groundwater flow directions interpreted from monitors known to be hydraulically active were consistent with historical flownets:
 - Shallow groundwater flow is influenced by local topographic highs in the southwestern (Empey Hill Drumlin) and eastern (M96 area) portions of the site, and is characterized by a flow divide with shallow groundwater being directed both to the north (toward Marysville Creek) and the south (toward Beechwood Ditch).
 - Groundwater in the intermediate bedrock flow zone generally flows to the north, west, and south relative to the landfill. Overall, the directions of groundwater flow within the intermediate flow zone are consistent with the regional directions of groundwater flow, towards the south.
- Groundwater quality data from spring 2011 are generally consistent with historical results.
- Slightly elevated concentrations of a number of water quality parameters are seen in the shallow groundwater zone northwest and north of the Phase 1 landfill footprint. In other

areas of the site, there is no evidence of groundwater impact away from the landfill footprint in the shallow groundwater flow zone.

- The geochemical results for the intermediate bedrock groundwater flow zone indicate higher concentrations of water quality parameters south of the landfill relative to the concentrations west and north of the landfill. The higher concentrations are downgradient from the landfill footprint and occur in monitoring wells that are known to be hydraulically connected to each other. These concentrations may reflect minor groundwater impacts from site activities.
- The moderate mineralization observed at the off-site private water supply wells along Beechwood Road (elevated alkalinity, hardness, TDS and sodium) is consistent with the local hydrogeological setting (carbonate aquifer with documented saline groundwater at depth). The origin of the elevated concentration in some dissolved metals (iron, manganese) and DOC at some locations is unknown. The low levels of VOCs observed at some locations adjacent to 1252 Beechwood Road are likely attributable to the historical release of VOCs at this location (former abattoir).
- Continued groundwater monitoring within the shallow and intermediate bedrock groundwater flow zones between the landfill footprint and the low-head areas is warranted in order to further examine groundwater quality and any trends over time.
- It is recommended that the following groundwater monitoring wells be removed from the monitoring program for the reasons stated below, as these wells have become unreliable for water level and/or quality monitoring as a result of these issues:
 - M29 and M39: low recovery small diameter (2.54 cm) overburden monitors that are often dry and/or cannot be sampled after being purged dry;
 - M57 and M75: integrity concerns with the bentonite seals (presence of bentonite in purge water); and
 - M58-4 and OW57: damaged monitors.

4.2 SURFACE WATER

- The concentrations observed are within the range of historical monitoring results.
- Similar to historic surface water quality, concentrations of total phosphorous exceeded the PWQO objective during the spring 2011 sampling event at all upstream and downstream locations, except S4R (downstream). Iron and Field pH were also above the PWQO at downstream locations S8R and S3.
- The results indicate that surface water runoff from the site or discharge of contaminated groundwater is not affecting Marysville Creek or Beechwood Ditch.
- It is recommended to add sampling locations S6 and S7 to the surface water monitoring program; this was requested by the MOE in a letter dated June 23, 2011 in their review of the 2010 Annual Monitoring Report.

4.3 SUBSURFACE GAS

- All measurements for methane gas were below the LEL of 5%, or 50,000 ppm.

5.0 LIMITING CONDITIONS

The spring 2011 monitoring program involved the collection of groundwater (from on-site monitoring wells and off-site domestic supply wells), surface water and sub-surface gas for analyses at the site monitoring locations. The data collected during this investigation represent the conditions at the sampled locations only.

The conclusions presented in this report represent our professional opinion, in light of the terms of reference, scope of work, and any limiting conditions noted herein.

Respectfully submitted,



François A. Richard, Ph.D, P.Geo.
Senior Hydrogeologist



David Harding, M.Sc. P.Eng.
Senior Consulting Engineer

TABLES

Table 1: Summary of Environmental Monitoring Program

Monitoring Locations		Parameter Suite	Monitoring Frequency
<i>Shallow Groundwater Flow Zone Monitors</i>			
M12, M14, M15, M16, M18, M19, M23, M27, M28, M29, M30, M31, M35, M38, M39, M41, M47-3, M53-4, M54-4, M58-4, M60-4, M66-2, M67-2, M68-4, M70-3, M77, M80-2, M81, M87-2, M88-2, M89-2, M96, M97, M98, M99-2, M100, M101, M102, M103, OW37-s, OW57		Groundwater Elevations	Semi-annual: Spring and Fall
M29, M39, M41, M53-4, M54-4, M58-4, M66-2, M67-2, M68-4, M70-3, M80-2, M81, M87-2, M96, M97, M99-2, M101, M102, M103, OW37-s		Groundwater Inorganic & General	Semi-annual: Spring and Fall
M41, M58-4, M96, M97, M53-4, M54-4, M66-2, M67-2, M70-3, M80-2, M87-2, M101, M102, M103, OW37-s		VOCs	Annual: Spring
<i>Intermediate Bedrock Groundwater Flow Zone Monitors</i>			
M3A-3, M9-3, M10-1, M49-1, M50-3, M56-2, M57, M58-3, M59-2, M59-3, M59-4, M60-1, M63-2, M64-2, M70-1, M71, M72, M73, M74, M80-1, M82-1, M82-2, M91-1, M95-1, M105, M106, OW54-i, OW54-d		Groundwater Elevations	Semi-annual: Spring and Fall
M5-3, M6-3, M9-3, M10-1, M49-1, M56-2, M57, M58-3, M59-2, M59-3, M59-4, M70-1, M71, M72, M74, M75, M80-1, M82-1, M82-2, M91-1, M95-1, M105, M106, OW54-d		Groundwater Inorganic & General	Semi-annual: Spring and Fall
M5-3, M6-3, M9-3, M10-1, M49-1, M56-2, M57, M59-3, M70-1, M74, M75, M80-1, M82-1, M82-2, M91-1, M95-1		VOCs	Annual: Spring
<i>Surface Water Sampling Locations</i>			
Beechwood Ditch	S5, S4R and S8R	Surface Water Inorganic and General	Semi-annual: Spring and Fall
	S8R	VOCs	Annual: Spring
Marysville Creek	S2 and S3	Surface Water Inorganic and General	Semi-annual: Spring and Fall
	S2 and S3	VOCs	Annual: Spring
<i>Leachate Monitoring Locations</i>			
North Chamber and South Chamber		Groundwater Inorganic & General VOCs	Annual: Spring
<i>Landfill Gas Monitoring Wells</i>			
GM1, GM2, GM3, GM4-1, GM4-2, GM5, GM6		% methane by volume	Semi-annual: Spring and Fall
<i>Off-site Domestic Water Supply Wells</i>			
1097 Beechwood Road 1121 Beechwood Road 1144 Beechwood Road 1181 Beechwood Road	1206 Beechwood Road 1250 Beechwood Road 1252 Beechwood Road 1264 Beechwood Road	Groundwater Inorganic & General, VOCs	Semi-annual: Spring and Fall

Table 2. Analytical Parameters for Water and Leachate Samples

Groundwater Inorganic and General Parameters		
Alkalinity	Conductivity	Nitrite
Ammonia (total)	Copper	pH
Arsenic	Dissolved organic carbon	Phenols
Barium	Hardness	Phosphorus (total)
Biological oxygen demand	Iron	Potassium
Boron	Lead	Sodium
Cadmium	Magnesium	Sulphate
Calcium	Manganese	Total dissolved solids
Chemical oxygen demand	Mercury	Total Kjeldahl Nitrogen
Chloride	Naphthalene	Zinc
Chromium (total)	Nitrate	
Surface Water Inorganic and General Parameters		
Alkalinity	Cyanide (free)	Total dissolved solids
Ammonia (total)	Hardness	Total kjeldahl nitrogen
Arsenic	Iron	Total phosphorus
Barium	Lead	Total suspended solids
Biological oxygen demand	Magnesium	Zinc
Boron	Mercury	
Cadmium	Naphthalene	
Calcium	Nitrate	<i>Field measured:</i>
Chemical oxygen demand	Nitrite	conductivity
Chloride	Phenols	dissolved oxygen
Chromium (total)	Potassium	estimated flow rate
Conductivity	Sodium	pH
Copper	Sulphate	temperature
Volatile Organic Compounds (VOCs)		
1,1,1,2-Tetrachloroethane	Benzene	m&p-Xylene
1,1,1-Trichloroethane	Bromodichloromethane	o-Xylene
1,1,2,2-Tetrachloroethane	Bromoform	Styrene
1,1,2-Trichloroethane	Bromomethane	Toluene
1,1-Dichloroethane	Carbon tetrachloride	Trans-1,2-Dichloroethylene
1,1-Dichloroethylene	Chlorobenzene	Trans-1,3-Dichloropropylene
1,2-Dibromoethane	Chloroethane	Tetrachloroethylene
1,2-Dichlorobenzene	Chloroform	Trichloroethylene
1,2-Dichloroethane	Chloromethane	Trichlorofluoromethane
1,2-Dichloropropane	Cis-1,2-Dichloroethylene	Vinyl chloride
1,3,5-Trimethylbenzene	Cis-1,3-Dichloropropylene	
1,3-Dichlorobenzene	Dichloromethane (methylene chloride)	
1,4-Dichlorobenzene	Ethylbenzene	

Table 3. Groundwater Elevation Monitoring Locations

Location	Shallow Groundwater Flow Zone			Intermediate Groundwater Flow Zone		
West of landfill footprint	M27 M28 M29 M30 M31 M38	M58-4 M67-2 M87-2 M88-2 M89-2 M97	M98 M99-2 M100 M101 M102 OW37-5	M3A-3 M56-2 M58-3 M59-2 M59-3	M59-4 M72 M73 M74	M82-1 M82-2 M91-1 M95-1
North of landfill footprint	M35 M39 M60-4	M66-2 M103		M60-1		
South of landfill footprint	M12 M14 M15 M16	M18 M41 M53-4 M54-4	M80-2 M81 OW57	M9-3 M10-1 M49-1 M57 M63-2	M64-2 M71 M80-1 OW54-i OW54-d	M105 M106
East of landfill footprint	M19 M23 M47-3	M68-4 M70-3 M77	M96	M50-3 M70-1		

Table 4: Leachate Chemistry Results - May 3, 2011

Constituent	Units	North Chamber	South Chamber
1,1,1,2-Tetrachloroethane	mg/L	< 0.002	< 0.002
1,1,1-Trichloroethane	mg/L	< 0.002	< 0.002
1,1,2,2-Tetrachloroethane	mg/L	< 0.004	< 0.004
1,1,2-Trichloroethane	mg/L	< 0.004	< 0.004
1,1-Dichloroethane	mg/L	0.002	< 0.002
1,1-Dichloroethylene	mg/L	< 0.002	< 0.002
1,2-Dibromoethane	mg/L	< 0.004	< 0.004
1,2-Dichlorobenzene (o)	mg/L	< 0.004	< 0.004
1,2-Dichloroethane	mg/L	< 0.004	< 0.004
1,2-Dichloropropane	mg/L	< 0.002	< 0.002
1,3,5-Trimethylbenzene	mg/L	0.008	0.007
1,3-Dichlorobenzene (m)	mg/L	< 0.004	< 0.004
1,4-Dichlorobenzene (p)	mg/L	0.009	0.01
Alkalinity	mg/L	2520	4050
Ammonia	mg/L	334	765
Arsenic	mg/L	0.006	0.05
Barium	mg/L	0.23	0.31
Benzene	mg/L	0.009	0.007
Biochemical Oxygen Demand	mg/L	55	320
Boron	mg/L	2.9	6.2
Bromodichloromethane	mg/L	< 0.002	< 0.002
Bromoform	mg/L	< 0.004	< 0.004
Bromomethane	mg/L	< 0.01	< 0.01
Cadmium	mg/L	< 0.0001	< 0.0005
Calcium	mg/L	200	130
Carbon Tetrachloride	mg/L	< 0.002	< 0.002
Chemical Oxygen Demand	mg/L	630	2100
Chloride	mg/L	610	1400
Chlorobenzene	mg/L	0.005	0.002
Chloroethane	mg/L	< 0.004	< 0.004
Chloroform	mg/L	< 0.002	< 0.002
Chloromethane	mg/L	< 0.01	< 0.01
Chromium	mg/L	0.046	0.15

Table 4: Leachate Chemistry Results - May 3, 2011

Constituent	Units	North Chamber	South Chamber
Cis-1,2-Dichloroethylene	mg/L	< 0.002	< 0.002
Cis-1,3-Dichloropropylene	mg/L	< 0.004	< 0.004
Conductivity	$\mu S/cm$	6530	11500
Copper	mg/L	0.003	< 0.005
Dichloromethane	mg/L	< 0.01	< 0.01
Dissolved Organic Carbon	mg/L	142	484
Ethylbenzene	mg/L	0.041	0.042
Hardness	mg/L	880	790
Iron	mg/L	23	4.4
Lead	mg/L	0.0024	< 0.003
m+p-Xylene	mg/L	0.1	0.094
Magnesium	mg/L	95	110
Manganese	mg/L	0.92	0.54
Mercury	mg/L	< 0.0002	< 0.0002
Naphthalene	mg/L	< 0.01	0.026
Nitrate	mg/L	< 1	< 1
Nitrite	mg/L	< 0.1	< 0.1
o-Xylene	mg/L	0.031	0.035
pH (Lab)	unitless	7.3	7.79
Phenols	mg/L	0.038	0.43
Phosphorus (total)	mg/L	1.9	7.3
Potassium	mg/L	170	340
Sodium	mg/L	530	1300
Styrene	mg/L	< 0.004	< 0.004
Sulphate	mg/L	43	< 20
Tetrachloroethylene	mg/L	< 0.002	< 0.002
Toluene	mg/L	0.027	0.026
Total Dissolved Solids	mg/L	3890	7300
Total Kjeldahl Nitrogen	mg/L	320	720
Trans-1,2-dichloroethylene	mg/L	< 0.002	< 0.002
Trans-1,3-dichloropropene	mg/L	< 0.004	< 0.004
Trichloroethylene	mg/L	< 0.002	< 0.002
Trichlorofluoromethane	mg/L	< 0.004	< 0.004
Vinyl Chloride	mg/L	< 0.004	< 0.004
Zinc	mg/L	0.04	0.031

Table 5: Groundwater Elevations - April 28, 2011

Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)
Shallow Groundwater Flow Zone							
M12	125.86	M31	124.16	M67-2	122.99	M98	130.39
M14	127.44	M35	124.40	M68-4	124.33	M99-2	130.82
M15	125.86	M38	125.70	M70-3	127.36	M100	125.59
M16	124.39	M39	123.88	M77	126.94	M101	124.26
M18	127.51	M41	125.67	M80-2	123.83	M102	124.36
M19	129.33	M47-3	124.99	M81	124.68	M103	124.17
M23	127.72	M53-4	125.65	M87-2	124.80	OW37-s	122.45
M27	126.98	M54-4	124.57	M88-2	129.15	OW57	DAMAGED
M28	126.65	M58-4	125.31	M89-2	130.08		
M29	123.76	M60-4	124.66	M96	129.35		
M30	124.70	M66-2	123.51	M97	126.16		
Intermediate Bedrock Groundwater Flow Zone							
M3A-3	125.38	M59-2	123.68	M72	123.41	M105	125.08
M9-3	125.73	M59-3	123.65	M73	123.48	M106	123.60
M10-1	124.65	M59-4	123.64	M74	124.12	M107	127.58
M49-1	125.06	M60-1	123.17	M80-1	123.69	M108	125.35
M50-3	125.25	M63-2	121.82	M82-2*	> 124.63	OW54-d	125.15
M56-2	123.60	M64-2	119.25	M91-1	123.62	OW54-i	125.14
M57	119.87	M70-1	111.18	M91-1	123.62		
M58-3	123.62	M71	125.65	M95-1	123.48		

* M82-2: Flowing artesian conditions

Table 7: Water Quality Results from Off-Site Domestic Supply Wells - April 20, 2011

		1097 Beechwood Rd	1121 Beechwood Rd	1144 Beechwood Rd	1181 Beechwood Rd	1206 Beechwood Rd	1250 Beechwood Rd	1252 Beechwood Rd	1264 Beechwood Rd
Inorganic and General Parameters									
Alkalinity (as CaCO ₃)	mg/L	264	233	489	364	212	355	384	423
Ammonia	mg/L	< 0.05	< 0.05	0.88	0.98	< 0.05	0.41	0.46	0.33
Arsenic	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.005	< 0.001
Barium	mg/L	0.086	0.061	0.026	0.074	0.034	0.14	0.19	0.071
Biochemical Oxygen Demand	mg/L	< 2	< 2	< 2	4	< 2	< 2	< 2	< 2
Boron	mg/L	0.047	0.023	0.25	0.54	0.011	0.13	0.19	0.26
Cadmium	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Calcium	mg/L	96	78	150	86	72	110	110	100
Chemical Oxygen Demand	mg/L	8	7	25	15	11	18	22	19
Chloride	mg/L	6	8	140	160	6	41	74	83
Chromium	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Conductivity	µS/cm	562	520	1390	1200	445	829	968	1050
Copper	mg/L	0.005	0.001	< 0.001	0.002	0.008	< 0.001	0.009	< 0.001
Dissolved Organic Carbon	mg/L	2.4	1.6	5.4	3.2	3.2	3.9	4.5	4.4
Hardness (as CaCO ₃)	mg/L	300	270	570	340	230	360	380	370
Iron	mg/L	< 0.1	< 0.1	< 0.1	0.55	< 0.1	15	25	13
Lead	mg/L	< 0.0005	< 0.0005	< 0.0005	0.0006	< 0.0005	< 0.0005	0.0014	< 0.0005
Magnesium	mg/L	14	18	46	31	11	23	26	27
Manganese	mg/L	< 0.002	0.004	0.002	0.003	< 0.002	0.93	0.58	0.47
Mercury	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Naphthalene	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Nitrate	mg/L	2.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
pH (Lab)	unitless	8.01	7.98	7.63	7.99	7.91	7.65	7.69	7.75
Phenols	mg/L	< 0.001	< 0.001	0.007	0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus (total)	mg/L	0.03	0.03	0.05	0.02	0.04	0.03	0.04	0.02
Potassium	mg/L	8	2.1	11	9.5	3	3.4	4.1	5.4
Sodium	mg/L	7.4	11	76	130	6.4	46	61	77
Sulphate	mg/L	19	31	37	21	13	16	18	12
Total Dissolved Solids	mg/L	336	294	818	736	270	498	568	638
Total Kjeldahl Nitrogen	mg/L	7.1	0.3	1.5	6.7	1.5	5.6	1	3.9
Zinc	mg/L	0.012	0.038	< 0.005	< 0.005	< 0.005	0.017	0.035	0.005

Table 7: Water Quality Results from Off-Site Domestic Supply Wells - April 20, 2011

		1097 Beechwood Rd	1121 Beechwood Rd	1144 Beechwood Rd	1181 Beechwood Rd	1206 Beechwood Rd	1250 Beechwood Rd	1252 Beechwood Rd	1264 Beechwood Rd
Volatile Organic Compounds (VOC)									
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0007	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0037	0.0043	0.0008
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0003	0.0002
1,2-Dibromoethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,2-Dichloropropane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Benzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002
Bromodichloromethane	mg/L	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Bromoform	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Bromomethane	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Carbon Tetrachloride	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chlorobenzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chloroethane	mg/L	< 0.0002	< 0.0002	0.0005	< 0.0002	< 0.0002	0.0016	0.0066	0.01
Chloroform	mg/L	0.0012	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chloromethane	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cis-1,3-Dichloropropylene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Dichloromethane	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
m+p-Xylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
o-Xylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Styrene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Toluene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trans-1,3-dichloropropene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Trichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trichlorofluoromethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002

Table 8: Surface Water Characteristics - May 2, 2011

Date	Parameter		Surface Water Station				
			S2	S3	S4R	S5	S8R
02-May-11	Velocity:	m/s	0.09	0.41	NM	0.08	0.1
	Depth:	m	0.20	0.40	0.08	0.15	0.1
	Width:	m	2.00	0.80	1.50	1.00	0.4
	Estimated Flow Rate:	m ³ /s	0.04	0.13	NM	0.01	0.004

Ponded water present at S5. No flow.

NM: Not Measured (flow was insufficient to register on the flow meter - very small flow observed)

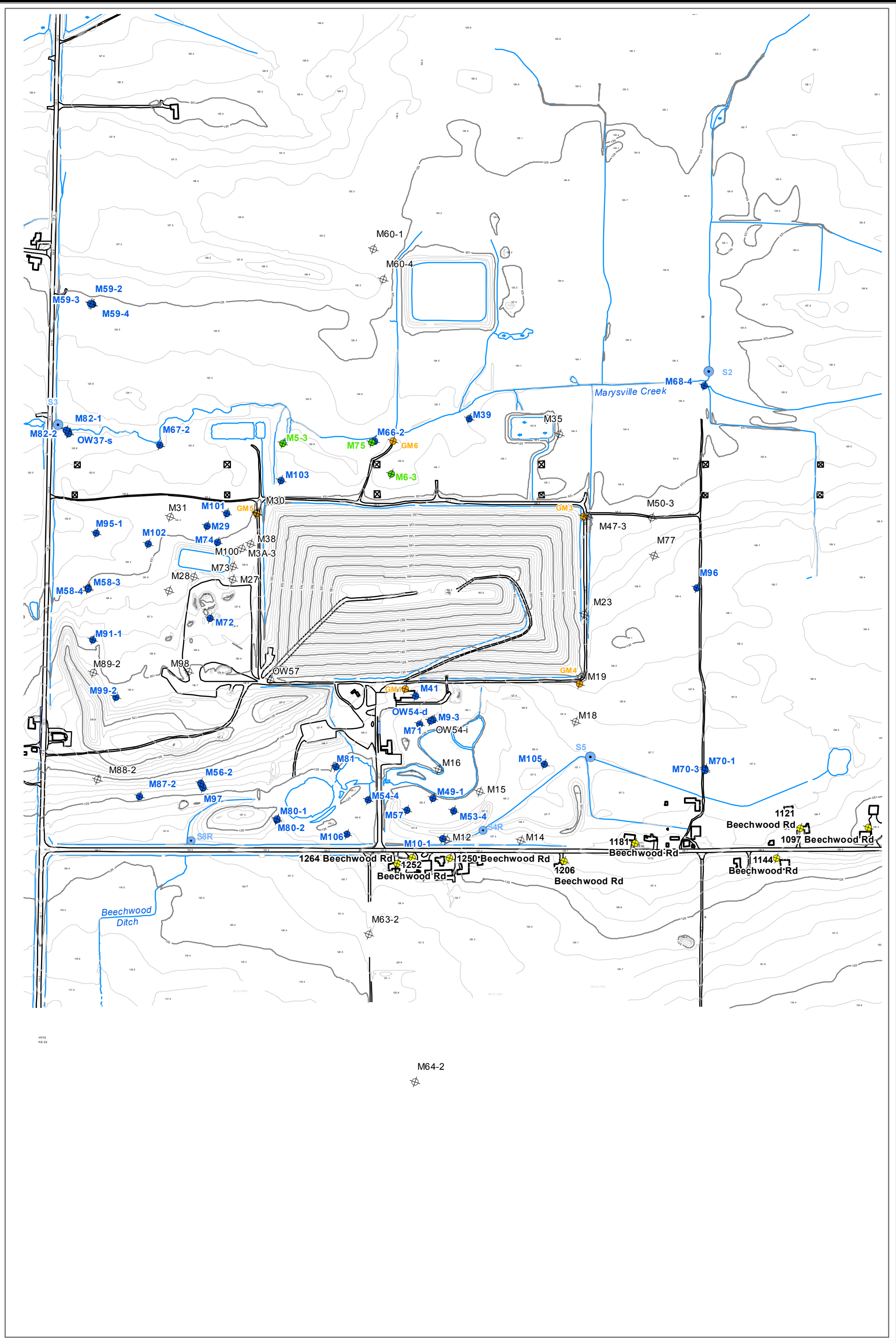
Table 9: Surface Water Quality Results - May 2, 2011

			Marysville Creek		Beechwood Ditch		
			S2	S3	S5	S4R	S8R
			(upstream)	(downstream)	(upstream)	(downstream)	(downstream)
Reading Name	Units	Date	02/05/2011	02/05/2011	02/05/2011	02/05/2011	02/05/2011
	PW/QO						
Inorganic and General Parameters							
Alkalinity	mg/L		198	201	237	321	226
Ammonia	mg/L		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ammonia (unionized)	mg/L	0.02	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Arsenic	mg/L	0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Barium	mg/L		0.054	0.046	0.043	0.053	0.06
Biochemical Oxygen Demand	mg/L		< 2	< 2	< 2	< 2	2
Boron	mg/L	0.2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Cadmium	mg/L	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Calcium	mg/L		75	73	81	110	85
Chemical Oxygen Demand	mg/L		35	30	22	22	24
Chloride	mg/L		24	21	4	8	3
Chromium	mg/L	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Conductivity	µS/cm		458	455	462	661	437
Copper	mg/L	0.005	< 0.002	< 0.002	< 0.002	< 0.002	0.003
Cyanide (free)	mg/L	0.005	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness	mg/L		210	200	240	310	220
Iron	mg/L	0.3	0.29	0.12	< 0.1	< 0.1	1.2
Lead	mg/L	0.025	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0006
Magnesium	mg/L		9.5	9.9	13	20	12
Mercury	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Naphthalene	mg/L	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Nitrate	mg/L		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	mg/L		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus (total)	mg/L	0.03	0.038	0.034	0.031	0.019	0.065
Potassium	mg/L		3	2.6	1.9	3.1	2
Sodium	mg/L		14	13	4.3	19	4.7
Sulphate	mg/L		< 1	< 1	< 1	29	6
Total Dissolved Solids	mg/L		272	272	270	388	252
Total Kjeldahl Nitrogen	mg/L		0.8	< 0.7	< 0.7	< 0.7	0.7
Total Suspended Solids	mg/L		3	< 1	< 1	< 1	32
Zinc	mg/L	0.03	< 0.01	0.013	< 0.01	< 0.01	< 0.01
VOCs							
1,1,1,2-Tetrachloroethane	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,1,1-Trichloroethane	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1,2-Trichloroethane	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1-Dichloroethane	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,1-Dichloroethylene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,2-Dibromoethane	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,2-Dichlorobenzene (o)	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,2-Dichloroethane	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,2-Dichloropropane	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,3,5-Trimethylbenzene	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,3-Dichlorobenzene (m)	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,4-Dichlorobenzene (p)	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Benzene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Bromodichloromethane	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Bromoform	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Bromomethane	mg/L		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Carbon Tetrachloride	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chlorobenzene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chloroethane	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chloroform	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chloromethane	mg/L		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cis-1,2-Dichloroethylene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cis-1,3-Dichloropropylene	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Dichloromethane	mg/L		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
m&p-xylene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
o-Xylene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Styrene	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Toluene	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Trans-1,2-dichloroethylene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trans-1,3-dichloropropylene	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Tetrachloroethylene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trichloroethylene	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trichlorofluoromethane	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Vinyl Chloride	mg/L		< 0.01	0.013	< 0.01	< 0.01	< 0.01
Field Measured							
Conductivity (Field)	µS/cm		452	453	463	679	432
Dissolved Oxygen (Field)	mg/L		5.19	6.44	5.49	8.14	10.88
pH (Field)	unitless	6.5-8.5	6.92	5.87	6.64	6.85	7.8
Temperature (Field)	°C		12.30	12.38	11.77	11.97	11.43

Table 10: Subsurface Gas Monitoring Results - May 3, 2011

Gas Monitor	Location	Reading (ppm)
GM1	North of garage area, south of waste mound	0
GM3	North-east corner of waste mound	0
GM4-1	South-east corner of waste mound	0
GM4-2		0
GM5	North-west corner of waste mound	0
GM6	North of waste mound	15

FIGURES

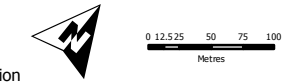


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**Figure 1:
Site Plan and Monitoring Locations**

- M35 Monitoring Well Used to Measure Water Level (Not Sampled)
- M53-4 Monitoring Well Used to Measure Water Level and Sampled for Chemistry
- M5-3 Monitoring Well Sampled for Chemistry (Not used for Water Levels)
- 1097 Beechwood Domestic Water Supply Well Sampled for Chemistry
- GM1 Gas Monitoring Well
- S2 Surface Water Monitoring Location

Project : K-B9479-00-04
Data Source: WM Canada, WESA,
HPA Ltd. Base Mapping 2009
Date: July 2011



Prepared by:
WESA Geomatics
Units:
UTM NAD 83 Zone 18
Scale: 1:6000



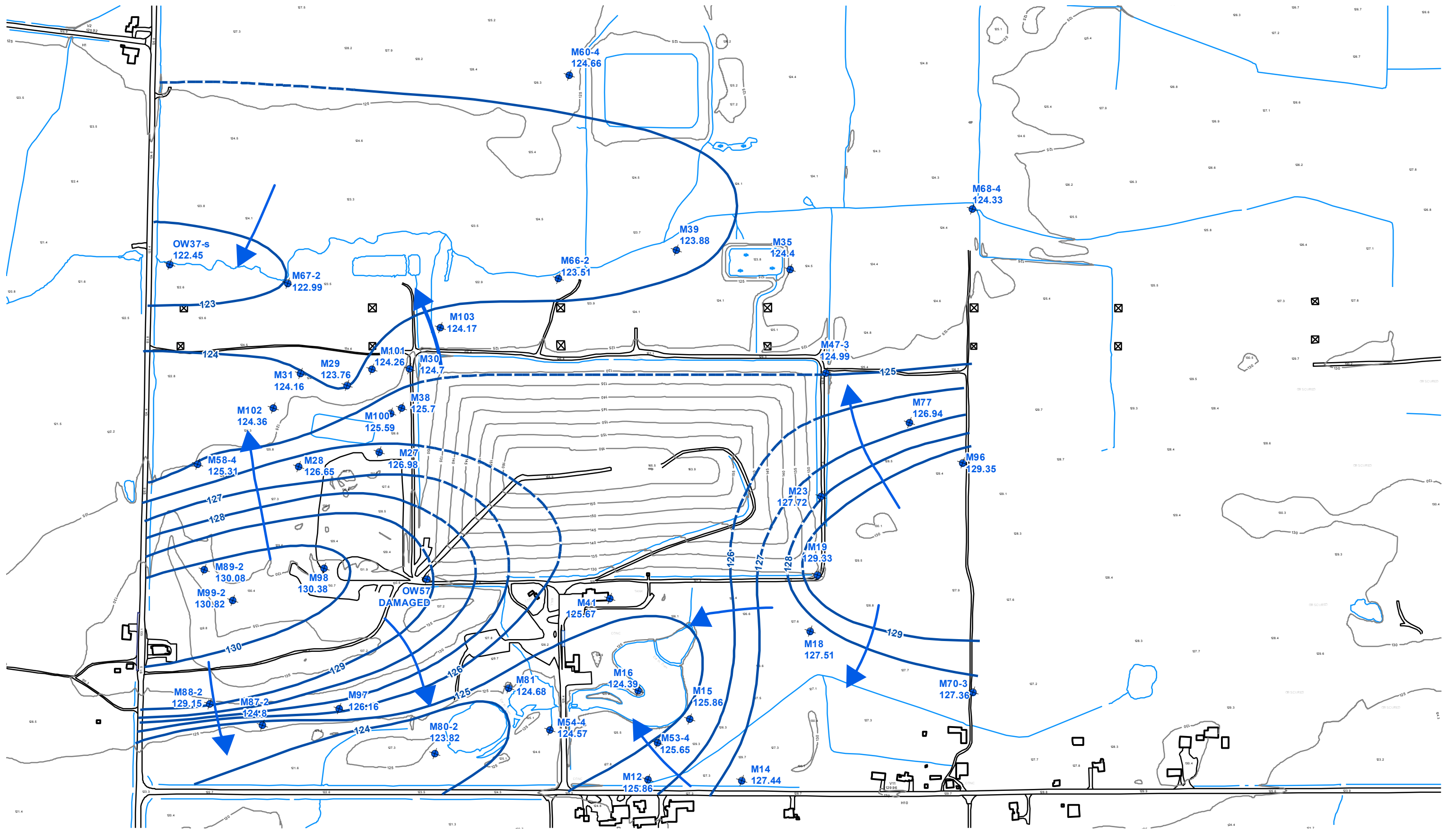


Figure 2:
 Shallow Groundwater Flow Zone Potentiometric Surface - April 28, 2011

- M58-4 Shallow Groundwater Zone Elevation Monitor
- Topographic Contour Lines
- Surface Water
- Hydro Tower
- Potentiometric Surface (masl)
- ➔ Inferred Groundwater Flow Direction

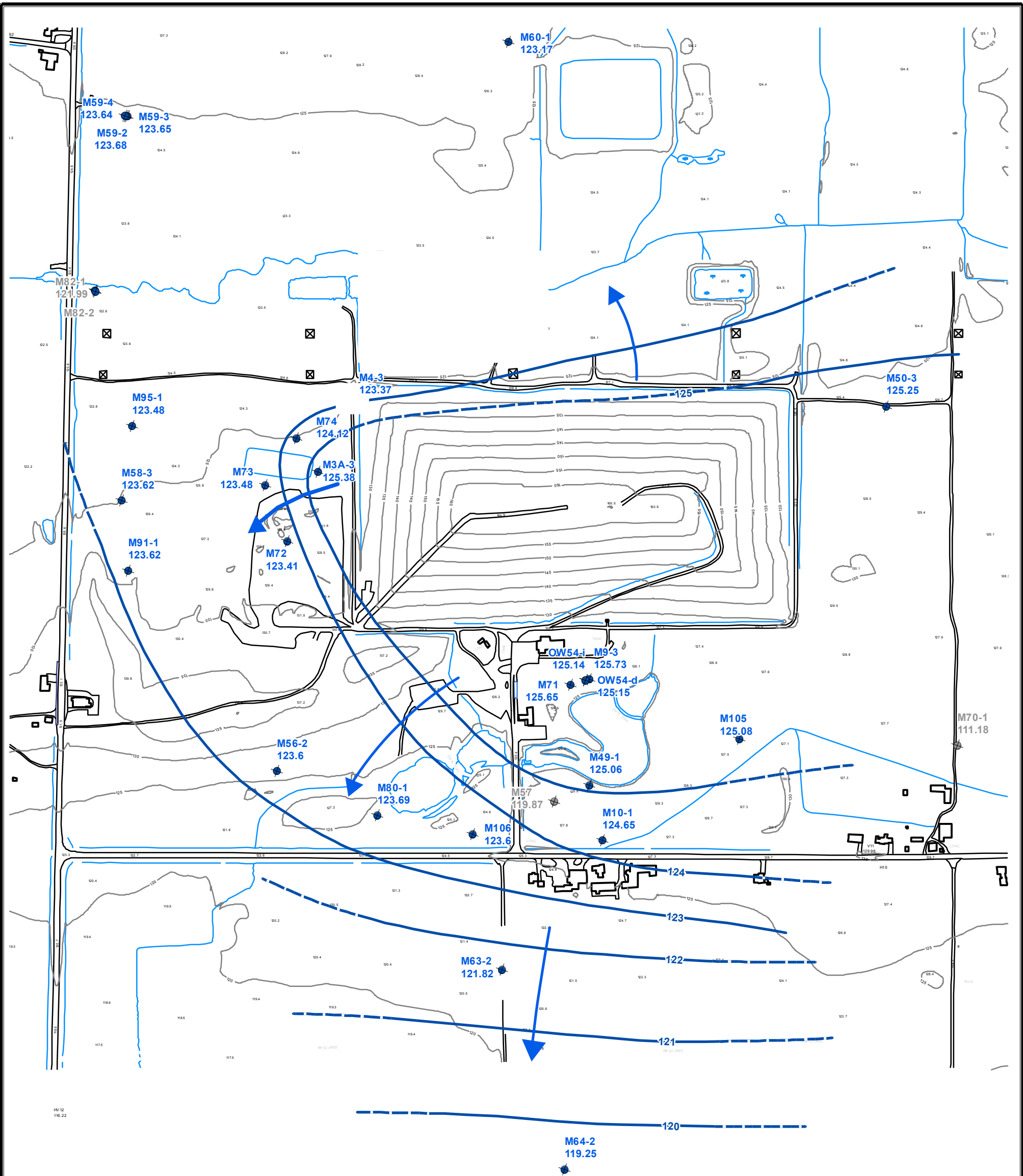
Project : K-B9479-00-04
 Data Source : WM Canada, WESA,
 HPA Ltd. Base Mapping 2009
 Date: July 2011







0 12.5 25 50 75 100
 Meters



Prepared by:
 WESA Geomatics
 Units:
 UTM NAD 83 Zone 18
 Scale: 1:5000





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-  M58-3 Intermediate Groundwater Zone Elevation Monitor
-  Topographic Contour Lines
-  Potentiometric Surface (masi)
-  Inferred Groundwater Flow Direction

-  Hydro Tower
-  Surface Water

**Note: M82-2: Flowing artesian conditions
M57, M70-1, M82-1, M82-2: Not
used in contouring (see text for details)**

**Project : K-B9479-00-04
Data Source: WM Canada, WESA,
HPA Ltd. Base Mapping 2009**

Date: July 2011



**Prepared by:
WESA Geomatics**

**Units:
UTM NAD 83 Zone 18**

Scale: 1:5000



**Figure 3:
Intermediate Bedrock Groundwater Flow Zone Potentiometric Surface - April 28, 2011**

APPENDIX A

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Summary of Results with Relative Percent Difference (RPD¹) greater than 20%

Well	Parameter	Unit	Regular Sample	Field Duplicate	RPD (%)	MDL ²	Comment
M101	Chemical Oxygen Demand	mg/L	21	17	21.05	4	Less than ~5 x MDL
M101	Total Kjeldahl Nitrogen	mg/L	0.8	1	22.22	0.7	Less than ~5 x MDL
M105	Phenols	mg/L	0.005	0.004	22.22	0.001	Less than ~5 x MDL
M105	Total Kjeldahl Nitrogen	mg/L	2	1.2	50.00	0.7	Less than ~5 x MDL
M58-3	Sodium	mg/L	8.4	6	33.33	0.1	
M81	Boron	mg/L	0.045	0.034	27.85	0.01	Less than ~5 x MDL
M81	Dissolved Organic Carbon	mg/L	1.7	1.3	26.67	0.2	
M82-2	Chemical Oxygen Demand	mg/L	8	6	28.57	4	Less than ~5 x MDL
M82-2	Phenols	mg/L	0.001	0.003	100.00	0.001	Less than ~5 x MDL
M82-2	Sodium	mg/L	17	21	21.05	0.1	
M96	Boron	mg/L	0.064	0.079	20.98	0.01	
M96	Chloride	mg/L	4	5	22.22	1	Less than ~5 x MDL
M96	Dissolved Organic Carbon	mg/L	1.8	1.4	25.00	0.2	
S2	Phosphorus (total)	mg/L	0.038	0.05	27.27	0.002	
S2	Total Suspended Solids	mg/L	3	6	66.67	1	Less than ~5 x MDL

Note 1: RPD (%) = 100 * ABS (Regular Sample - Duplicate Sample) / ([Regular Sample + Duplicate Sample] / 2)

Note 2: MDL = Laboratory Method Detection Limit

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011

Parameter	Units	M101 (Regular Sample)	M101 (Field Duplicate)	RPD (%)
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
1,2-Dibromoethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloropropane	mg/L	< 0.0001	< 0.0001	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	0.00
Alkalinity	mg/L	361	359	0.56
Ammonia	mg/L	< 0.15	< 0.15	0.00
Arsenic	mg/L	< 0.001	0.001	0.00
Barium	mg/L	0.15	0.15	0.00
Benzene	mg/L	< 0.0001	< 0.0001	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.12	0.13	8.00
Bromodichloromethane	mg/L	< 0.0001	< 0.0001	0.00
Bromoform	mg/L	< 0.0002	< 0.0002	0.00
Bromomethane	mg/L	< 0.0005	< 0.0005	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	160	160	0.00
Carbon Tetrachloride	mg/L	< 0.0001	< 0.0001	0.00
Chemical Oxygen Demand	mg/L	21	17	21.05
Chloride	mg/L	130	130	0.00
Chlorobenzene	mg/L	< 0.0001	< 0.0001	0.00
Chlorodibromomethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroform	mg/L	< 0.0001	< 0.0001	0.00
Chloromethane	mg/L	< 0.0005	< 0.0005	0.00
Chromium	mg/L	0.006	0.007	15.38
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Cis-1,3-Dichloropropylene	mg/L	< 0.0002	< 0.0002	0.00
Conductivity	µS/cm	1290	1290	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011 (continued)

Parameter	Units	M101 (Regular Sample)	M101 (Field Duplicate)	RPD (%)
Copper	mg/L	< 0.001	< 0.001	0.00
Dichloromethane	mg/L	< 0.0005	< 0.0005	0.00
Dissolved Organic Carbon	mg/L	5.5	5.4	1.83
Ethylbenzene	mg/L	< 0.0001	< 0.0001	0.00
Hardness	mg/L	640	650	1.55
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
m+p-Xylene	mg/L	< 0.0001	< 0.0001	0.00
Magnesium	mg/L	60	60	0.00
Manganese	mg/L	0.059	0.06	1.68
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrate + Nitrite	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	0.04	0.04	0.00
o-Xylene	mg/L	< 0.0001	< 0.0001	0.00
pH (Lab)	unitless	7.75	7.76	0.13
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	0.23	0.23	0.00
Potassium	mg/L	5.3	5.5	3.70
Sodium	mg/L	21	22	4.65
Styrene	mg/L	< 0.0002	< 0.0002	0.00
Sulphate	mg/L	140	140	0.00
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Toluene	mg/L	< 0.0002	< 0.0002	0.00
Total Dissolved Solids	mg/L	790	802	1.51
Total Kjeldahl Nitrogen	mg/L	0.8	1	22.22
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trans-1,3-dichloropropene	mg/L	< 0.0002	< 0.0002	0.00
Trichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trichlorofluoromethane	mg/L	< 0.0002	< 0.0002	0.00
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	0.00
Zinc	mg/L	< 0.005	< 0.005	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011

Parameter	Units	M105 (Regular Sample)	M105 (Field Duplicate)	RPD (%)
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
1,2,3-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dibromoethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloropropane	mg/L	< 0.0001	< 0.0001	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	0.00
Acetone	mg/L	< 0.01	< 0.01	0.00
Alkalinity	mg/L	548	551	0.55
Ammonia	mg/L	0.8	0.76	5.13
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.19	0.19	0.00
Benzene	mg/L	< 0.0001	< 0.0001	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.32	0.34	6.06
Bromodichloromethane	mg/L	< 0.0001	< 0.0001	0.00
Bromoform	mg/L	< 0.0002	< 0.0002	0.00
Bromomethane	mg/L	< 0.0005	< 0.0005	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	130	130	0.00
Carbon Tetrachloride	mg/L	< 0.0001	< 0.0001	0.00
Chemical Oxygen Demand	mg/L	16	18	11.76
Chloride	mg/L	110	100	9.52
Chlorobenzene	mg/L	< 0.0001	< 0.0001	0.00
Chlorodibromomethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroethane	mg/L	0.0008	0.0007	13.33
Chloroform	mg/L	< 0.0001	< 0.0001	0.00
Chloromethane	mg/L	< 0.0005	< 0.0005	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Cis-1,3-Dichloropropylene	mg/L	< 0.0002	< 0.0002	0.00
Conductivity	µS/cm	1330	1330	0.00
Copper	mg/L	< 0.001	< 0.001	0.00
Dichlorodifluoromethane	mg/L	< 0.0005	< 0.0005	0.00
Dichloromethane	mg/L	< 0.0005	< 0.0005	0.00
Dissolved Organic Carbon	mg/L	6	5.9	1.68
Ethylbenzene	mg/L	< 0.0001	< 0.0001	0.00
Hardness	mg/L	560	550	1.80
Hexane	mg/L	< 0.0005	< 0.0005	0.00
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
m+p-Xylene	mg/L	< 0.0001	< 0.0001	0.00
Magnesium	mg/L	57	57	0.00
Manganese	mg/L	0.007	0.007	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011 (continued)

Parameter	Units	M105 (Regular Sample)	M105 (Field Duplicate)	RPD (%)
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Methyl Ethyl Ketone	mg/L	< 0.005	< 0.005	0.00
Methyl Isobutyl Ketone	mg/L	< 0.005	< 0.005	0.00
Methyl Tert Butyl Ether	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrate + Nitrite	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
o-Xylene	mg/L	< 0.0001	< 0.0001	0.00
pH (Lab)	unitless	7.86	7.94	1.01
Phenols	mg/L	0.005	0.004	22.22
Phosphorus (total)	mg/L	0.03	0.03	0.00
Potassium	mg/L	8.5	8.1	4.82
Sodium	mg/L	78	77	1.29
Styrene	mg/L	< 0.0002	< 0.0002	0.00
Sulphate	mg/L	23	23	0.00
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Toluene	mg/L	< 0.0002	< 0.0002	0.00
Total Dissolved Solids	mg/L	786	816	3.75
Total Kjeldahl Nitrogen	mg/L	2	1.2	50.00
Total Xylenes	mg/L	< 0.0001	< 0.0001	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trans-1,3-dichloropropene	mg/L	< 0.0002	< 0.0002	0.00
Trichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trichlorofluoromethane	mg/L	< 0.0002	< 0.0002	0.00
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	0.00
Zinc	mg/L	< 0.005	< 0.005	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011

Parameter	Units	M58-3 (Regular Sample)	M58-3 (Field Duplicate)	RPD (%)
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
1,2-Dibromoethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloropropane	mg/L	< 0.0001	< 0.0001	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	0.00
Alkalinity	mg/L	299	300	0.33
Ammonia	mg/L	< 0.15	< 0.15	0.00
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.14	0.14	0.00
Benzene	mg/L	< 0.0001	< 0.0001	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	< 0.01	< 0.01	0.00
Bromodichloromethane	mg/L	< 0.0001	< 0.0001	0.00
Bromoform	mg/L	< 0.0002	< 0.0002	0.00
Bromomethane	mg/L	< 0.0005	< 0.0005	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	89	87	2.27
Carbon Tetrachloride	mg/L	< 0.0001	< 0.0001	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011 (continued)

Parameter	Units	M58-3 (Regular Sample)	M58-3 (Field Duplicate)	RPD (%)
Chemical Oxygen Demand	mg/L	< 4	< 4	0.00
Chloride	mg/L	5	5	0.00
Chlorobenzene	mg/L	< 0.0001	< 0.0001	0.00
Chlorodibromomethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroform	mg/L	< 0.0001	< 0.0001	0.00
Chloromethane	mg/L	< 0.0005	< 0.0005	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Cis-1,3-Dichloropropylene	mg/L	< 0.0002	< 0.0002	0.00
Conductivity	µS/cm	645	646	0.15
Copper	mg/L	< 0.001	< 0.001	0.00
Dichloromethane	mg/L	< 0.0005	< 0.0005	0.00
Dissolved Organic Carbon	mg/L	0.8	0.8	0.00
Ethylbenzene	mg/L	< 0.0001	< 0.0001	0.00
Hardness	mg/L	350	350	0.00
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
m+p-Xylene	mg/L	< 0.0001	< 0.0001	0.00
Magnesium	mg/L	32	31	3.17
Manganese	mg/L	< 0.002	< 0.002	0.00
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	0.3	0.3	0.00
Nitrate + Nitrite	mg/L	0.3	0.3	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
o-Xylene	mg/L	< 0.0001	< 0.0001	0.00
pH (Lab)	unitless	7.86	7.93	0.89
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	0.03	< 0.03	0.00
Potassium	mg/L	1.7	1.5	12.50
Sodium	mg/L	8.4	6	33.33
Styrene	mg/L	< 0.0002	< 0.0002	0.00
Sulphate	mg/L	38	37	2.67
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Toluene	mg/L	< 0.0002	< 0.0002	0.00
Total Dissolved Solids	mg/L	392	402	2.52
Total Kjeldahl Nitrogen	mg/L	< 0.7	< 0.7	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trans-1,3-dichloropropene	mg/L	< 0.0002	< 0.0002	0.00
Trichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trichlorofluoromethane	mg/L	< 0.0002	< 0.0002	0.00
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	0.00
Zinc	mg/L	< 0.005	< 0.005	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011

Parameter	Units	M81 (Regular Sample)	M81 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	346	345	0.29
Ammonia	mg/L	< 0.15	< 0.15	0.00
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.21	0.21	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.045	0.034	27.85
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	100	100	0.00
Chemical Oxygen Demand	mg/L	< 4	5	0.00
Chloride	mg/L	47	47	0.00
Chromium	mg/L	0.007	0.008	13.33
Conductivity	µS/cm	885	877	0.91
Copper	mg/L	< 0.001	< 0.001	0.00
Dissolved Organic Carbon	mg/L	1.7	1.3	26.67
Hardness	mg/L	470	460	2.15
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	50	49	2.02
Manganese	mg/L	0.007	0.007	0.00
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrate + Nitrite	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
pH (Lab)	unitless	8.05	8.05	0.00
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	0.27	0.26	3.77
Potassium	mg/L	2.2	2.2	0.00
Sodium	mg/L	11	10	9.52
Sulphate	mg/L	46	49	6.32
Total Dissolved Solids	mg/L	540	538	0.37
Total Kjeldahl Nitrogen	mg/L	< 2	< 1	0.00
Zinc	mg/L	< 0.005	< 0.005	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011

Parameter	Units	M82-2 (Regular Sample)	M82-2 (Field Duplicate)	RPD (%)
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
1,2-Dibromoethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloropropane	mg/L	< 0.0001	< 0.0001	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	0.00
Alkalinity	mg/L	328	322	1.85
Ammonia	mg/L	0.27	0.25	7.69
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.11	0.13	16.67
Benzene	mg/L	< 0.0001	< 0.0001	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.13	0.15	14.29
Bromodichloromethane	mg/L	< 0.0001	< 0.0001	0.00
Bromoform	mg/L	< 0.0002	< 0.0002	0.00
Bromomethane	mg/L	< 0.0005	< 0.0005	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	95	110	14.63
Carbon Tetrachloride	mg/L	< 0.0001	< 0.0001	0.00
Chemical Oxygen Demand	mg/L	8	6	28.57
Chloride	mg/L	28	29	3.51
Chlorobenzene	mg/L	< 0.0001	< 0.0001	0.00
Chlorodibromomethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroform	mg/L	< 0.0001	< 0.0001	0.00
Chloromethane	mg/L	< 0.0005	< 0.0005	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Cis-1,3-Dichloropropylene	mg/L	< 0.0002	< 0.0002	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011 (continued)

Parameter	Units	M82-2 (Regular Sample)	M82-2 (Field Duplicate)	RPD (%)
Conductivity	µS/cm	819	824	0.61
Copper	mg/L	< 0.001	< 0.001	0.00
Dichloromethane	mg/L	< 0.0005	< 0.0005	0.00
Dissolved Organic Carbon	mg/L	2.6	2.6	0.00
Ethylbenzene	mg/L	< 0.0001	< 0.0001	0.00
Hardness	mg/L	340	400	16.22
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
m+p-Xylene	mg/L	< 0.0001	< 0.0001	0.00
Magnesium	mg/L	25	30	18.18
Manganese	mg/L	0.015	0.018	18.18
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrate + Nitrite	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
o-Xylene	mg/L	< 0.0001	< 0.0001	0.00
pH (Lab)	unitless	8	7.92	1.01
Phenols	mg/L	0.001	0.003	100.00
Phosphorus (total)	mg/L	< 0.03	< 0.03	0.00
Potassium	mg/L	3.5	4.2	18.18
Sodium	mg/L	17	21	21.05
Styrene	mg/L	< 0.0002	< 0.0002	0.00
Sulphate	mg/L	67	69	2.94
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Toluene	mg/L	< 0.0002	< 0.0002	0.00
Total Dissolved Solids	mg/L	488	486	0.41
Total Kjeldahl Nitrogen	mg/L	< 0.7	< 0.7	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trans-1,3-dichloropropene	mg/L	< 0.0002	< 0.0002	0.00
Trichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trichlorofluoromethane	mg/L	< 0.0002	< 0.0002	0.00
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	0.00
Zinc	mg/L	< 0.005	< 0.005	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011

Parameter	Units	M96 (Regular Sample)	M96 (Field Duplicate)	RPD (%)
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
1,2,3-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dibromoethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloropropane	mg/L	< 0.0001	< 0.0001	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	0.00
Acetone	mg/L	< 0.01	< 0.01	0.00
Alkalinity	mg/L	298	302	1.33
Ammonia	mg/L	< 0.15	< 0.15	0.00
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.11	0.11	0.00
Benzene	mg/L	< 0.0001	< 0.0001	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.064	0.079	20.98
Bromodichloromethane	mg/L	< 0.0001	< 0.0001	0.00
Bromoform	mg/L	< 0.0002	< 0.0002	0.00
Bromomethane	mg/L	< 0.0005	< 0.0005	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	71	71	0.00
Carbon Tetrachloride	mg/L	< 0.0001	< 0.0001	0.00
Chemical Oxygen Demand	mg/L	< 4	< 4	0.00
Chloride	mg/L	4	5	22.22
Chlorobenzene	mg/L	< 0.0001	< 0.0001	0.00
Chlorodibromomethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroform	mg/L	< 0.0001	< 0.0001	0.00
Chloromethane	mg/L	< 0.0005	< 0.0005	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Cis-1,3-Dichloropropylene	mg/L	< 0.0002	< 0.0002	0.00
Conductivity	µS/cm	652	652	0.00
Copper	mg/L	< 0.001	< 0.001	0.00
Dichlorodifluoromethane	mg/L	< 0.0005	< 0.0005	0.00
Dichloromethane	mg/L	< 0.0005	< 0.0005	0.00
Dissolved Organic Carbon	mg/L	1.8	1.4	25.00
Ethylbenzene	mg/L	< 0.0001	< 0.0001	0.00
Hardness	mg/L	320	320	0.00
Hexane	mg/L	< 0.0005	< 0.0005	0.00
Iron	mg/L	< 0.1	< 0.1	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011 (continued)

Parameter	Units	M96 (Regular Sample)	M96 (Field Duplicate)	RPD (%)
Lead	mg/L	< 0.0005	< 0.0005	0.00
m+p-Xylene	mg/L	< 0.0001	< 0.0001	0.00
Magnesium	mg/L	34	34	0.00
Manganese	mg/L	< 0.002	< 0.002	0.00
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Methyl Ethyl Ketone	mg/L	< 0.005	< 0.005	0.00
Methyl Isobutyl Ketone	mg/L	< 0.005	< 0.005	0.00
Methyl Tert Butyl Ether	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	2.2	2.2	0.00
Nitrate + Nitrite	mg/L	2.2	2.2	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
o-Xylene	mg/L	< 0.0001	< 0.0001	0.00
pH (Lab)	unitless	8.04	8.07	0.37
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	0.06	0.07	15.38
Potassium	mg/L	4.5	4.5	0.00
Sodium	mg/L	27	27	0.00
Styrene	mg/L	< 0.0002	< 0.0002	0.00
Sulphate	mg/L	38	37	2.67
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Toluene	mg/L	< 0.0002	< 0.0002	0.00
Total Dissolved Solids	mg/L	404	404	0.00
Total Kjeldahl Nitrogen	mg/L	< 0.7	< 0.7	0.00
Total Xylenes	mg/L	< 0.0001	< 0.0001	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trans-1,3-dichloropropene	mg/L	< 0.0002	< 0.0002	0.00
Trichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trichlorofluoromethane	mg/L	< 0.0002	< 0.0002	0.00
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	0.00
Zinc	mg/L	< 0.005	< 0.005	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011

Parameter	Unit	S2 (Regular Sample)	DUP7-511 (Field Duplicate)	
1,1,1,2-Tetrachloroethane	mg/L	<0.0001	<0.0001	0.00
1,1,1-Trichloroethane	mg/L	<0.0001	<0.0001	0.00
1,1,2,2-Tetrachloroethane	mg/L	<0.0002	<0.0002	0.00
1,1,2-Trichloroethane	mg/L	<0.0002	<0.0002	0.00
1,1-Dichloroethane	mg/L	<0.0001	<0.0001	0.00
1,1-Dichloroethylene	mg/L	<0.0001	<0.0001	0.00
1,2-Dibromoethane	mg/L	<0.0002	<0.0002	0.00
1,2-Dichlorobenzene (o)	mg/L	<0.0002	<0.0002	0.00
1,2-Dichloroethane	mg/L	<0.0002	<0.0002	0.00
1,2-Dichloropropane	mg/L	<0.0001	<0.0001	0.00
1,3,5-Trimethylbenzene	mg/L	<0.0002	<0.0002	0.00
1,3-Dichlorobenzene (m)	mg/L	<0.0002	<0.0002	0.00
1,4-Dichlorobenzene (p)	mg/L	<0.0002	<0.0002	0.00
Acetone	mg/L	<0.01	<0.01	0.00
Alkalinity	mg/L	198	200	1.01
Aluminum	mg/L	0.11	0.094	15.69
Ammonia	mg/L	<0.15	<0.15	0.00
Ammonia (unionized)	mg/L	<0.02	<0.02	0.00
Antimony	mg/L	<0.001	<0.001	0.00
Arsenic	mg/L	<0.001	<0.001	0.00
Barium	mg/L	0.054	0.051	5.71
Benzene	mg/L	<0.0001	<0.0001	0.00
Beryllium	mg/L	<0.0006	<0.0006	0.00
Biochemical Oxygen Demand	mg/L	<2	<2	0.00
Boron	mg/L	<0.02	<0.02	0.00
Bromodichloromethane	mg/L	<0.0001	<0.0001	0.00
Bromoform	mg/L	<0.0002	<0.0002	0.00
Bromomethane	mg/L	<0.0005	<0.0005	0.00
Cadmium	mg/L	<0.0001	<0.0001	0.00
Calcium	mg/L	75	72	4.08
Carbon Tetrachloride	mg/L	<0.0001	<0.0001	0.00
Chemical Oxygen Demand	mg/L	35	34	2.90
Chloride	mg/L	24	24	0.00
Chlorobenzene	mg/L	<0.0001	<0.0001	0.00
Chlorodibromomethane	mg/L	<0.0002	<0.0002	0.00
Chloroethane	mg/L	<0.0002	<0.0002	0.00
Chloroform	mg/L	<0.0001	<0.0001	0.00
Chloromethane	mg/L	<0.0005	<0.0005	0.00
Chromium	mg/L	<0.005	<0.005	0.00
Cis-1,2-Dichloroethylene	mg/L	<0.0001	<0.0001	0.00
Cis-1,3-Dichloropropylene	mg/L	<0.0002	<0.0002	0.00
Cobalt	mg/L	<0.0005	<0.0005	0.00
Conductivity	µS/cm	458	460	0.44
Copper	mg/L	<0.002	<0.002	0.00
Cyanide (free)	mg/L	<0.002	<0.002	0.00
Dichlorodifluoromethane	mg/L	<0.0005	<0.0005	0.00
Dichloromethane	mg/L	<0.0005	<0.0005	0.00
Ethylbenzene	mg/L	<0.0001	<0.0001	0.00
Field Temperature	°C	12.3	12.3	0.00
Hardness	mg/L	210	210	0.00
Iron	mg/L	0.29	0.26	10.91
Lead	mg/L	<0.0005	<0.0005	0.00
m+p-Xylene	mg/L	<0.0001	<0.0001	0.00
Magnesium	mg/L	9.5	9.2	3.21
Manganese	mg/L	0.079	0.074	6.54
Mercury	mg/L	<0.0002	<0.0002	0.00

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Duplicate vs. Regular Samples - Spring 2011

Parameter	Unit	S2 (Regular Sample)	DUP7-511 (Field Duplicate)	
Methyl Ethyl Ketone	mg/L	<0.005	<0.005	0.00
Methyl Isobutyl Ketone	mg/L	<0.005	<0.005	0.00
Methyl Tert Butyl Ether	mg/L	<0.0002	<0.0002	0.00
Molybdenum	mg/L	<0.002	<0.002	0.00
Naphthalene	mg/L	<0.0005	<0.0005	0.00
Nickel	mg/L	<0.001	<0.001	0.00
Nitrate	mg/L	<0.1	<0.1	0.00
Nitrite	mg/L	<0.01	<0.01	0.00
o-Xylene	mg/L	<0.0001	<0.0001	0.00
Phenols	mg/L	<0.001	<0.001	0.00
Phosphorus (total)	mg/L	0.038	0.05	27.27
Potassium	mg/L	3	3	0.00
Selenium	mg/L	<0.005	<0.005	0.00
Silver	mg/L	<0.0004	<0.0004	0.00
Sodium	mg/L	14	14	0.00
Strontium	mg/L	0.18	0.17	5.71
Styrene	mg/L	<0.0002	<0.0002	0.00
Sulphate	mg/L	<1	<1	0.00
Tetrachloroethylene	mg/L	<0.0001	<0.0001	0.00
Thallium	mg/L	<0.0002	<0.0002	0.00
Tin	mg/L	<0.002	<0.002	0.00
Titanium	mg/L	0.007	0.006	15.38
Toluene	mg/L	<0.0002	<0.0002	0.00
Total Dissolved Solids	mg/L	272	266	2.23
Total Kjeldahl Nitrogen	mg/L	0.8	0.9	11.76
Total Suspended Solids	mg/L	3	6	66.67
Total Xylenes	mg/L	<0.0001	<0.0001	0.00
Trans-1,2-dichloroethylene	mg/L	<0.0001	<0.0001	0.00
Trans-1,3-dichloropropene	mg/L	<0.0002	<0.0002	0.00
Trichloroethylene	mg/L	<0.0001	<0.0001	0.00
Trichlorofluoromethane	mg/L	<0.0002	<0.0002	0.00
Uranium	mg/L	0.0013	0.0012	8.00
Vanadium	mg/L	<0.001	<0.001	0.00
Vinyl Chloride	mg/L	<0.0002	<0.0002	0.00
Zinc	mg/L	<0.01	<0.01	0.00

Detailed Results from Field Blank Sample - Spring 2011

Parameter	Units	2011-05-02 Field Blank
1,3,5-Trimethylbenzene	mg/L	< 0.0002
Alkalinity	mg/L	1
Ammonia	mg/L	< 0.15
Arsenic	mg/L	< 0.001
Barium	mg/L	< 0.005
Biochemical Oxygen Demand	mg/L	< 2
Boron	mg/L	< 0.01
Cadmium	mg/L	< 0.0001
Calcium	mg/L	< 0.2
Chemical Oxygen Demand	mg/L	< 4
Chloride	mg/L	< 1
Chromium	mg/L	< 0.005
Conductivity	µS/cm	2
Copper	mg/L	< 0.001
Dissolved Organic Carbon	mg/L	0.3
Hardness	mg/L	< 1
Iron	mg/L	< 0.1
Lead	mg/L	< 0.0005
Magnesium	mg/L	< 0.05
Manganese	mg/L	< 0.002
Mercury	mg/L	< 0.0002
Naphthalene	mg/L	< 0.0005
Nitrate	mg/L	< 0.1
Nitrate + Nitrite	mg/L	< 0.1
Nitrite	mg/L	< 0.01
pH (Lab)	unitless	6.77
Phenols	mg/L	< 0.001
Phosphorus (total)	mg/L	< 0.03
Potassium	mg/L	< 0.2
Sodium	mg/L	< 0.1
Sulphate	mg/L	< 1
Total Dissolved Solids	mg/L	< 10
Total Kjeldahl Nitrogen	mg/L	< 0.7
Zinc	mg/L	< 0.005

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Blank Sample - Spring 2011

Reading Name	Units	2011-05-03 Field Blank
Alkalinity	mg/L	2
Aluminum	mg/L	< 0.005
Ammonia	mg/L	< 0.15
Antimony	mg/L	< 0.0005
Arsenic	mg/L	< 0.001
Barium	mg/L	< 0.005
Beryllium	mg/L	< 0.0005
Biochemical Oxygen Demand	mg/L	< 2
Bismuth	mg/L	< 0.001
Boron	mg/L	< 0.01
Cadmium	mg/L	< 0.0001
Calcium	mg/L	0.21
Chemical Oxygen Demand	mg/L	< 4
Chloride	mg/L	< 1
Chromium	mg/L	< 0.005
Chromium	mg/L	< 0.005
Cobalt	mg/L	< 0.0005
Conductivity	µS/cm	2
Copper	mg/L	< 0.001
Dissolved Organic Carbon	mg/L	1.5
Hardness	mg/L	< 1
Iron	mg/L	< 0.1
Lead	mg/L	< 0.0005
Lithium	mg/L	< 0.005
Magnesium	mg/L	< 0.05
Manganese	mg/L	< 0.002
Mercury	mg/L	< 0.0002
Molybdenum	mg/L	< 0.001
Naphthalene	mg/L	< 0.0005
Nickel	mg/L	< 0.001
Nitrate	mg/L	< 0.1
Nitrate + Nitrite	mg/L	< 0.1
Nitrite	mg/L	< 0.01
pH (Lab)	unitless	7.23
Phenols	mg/L	< 0.001
Phosphorus	mg/L	< 0.1
Phosphorus (total)	mg/L	< 0.03
Potassium	mg/L	< 0.2
Selenium	mg/L	< 0.002
Silicon	mg/L	< 0.05
Silver	mg/L	< 0.0001
Sodium	mg/L	< 0.1
Strontium	mg/L	< 0.001
Sulphate	mg/L	< 1
Tellurium	mg/L	< 0.001
Thallium	mg/L	< 0.00005
Thorium	mg/L	< 0.002
Tin	mg/L	< 0.001
Titanium	mg/L	< 0.005
Total Dissolved Solids	mg/L	< 10
Total Kjeldahl Nitrogen	mg/L	< 0.7
Tungsten	mg/L	< 0.001
Uranium	mg/L	< 0.0001
Vanadium	mg/L	< 0.001
Zinc	mg/L	< 0.005
Zirconium	mg/L	< 0.001

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Field Blank Sample - Spring 2011

Reading Name	Units	2011-05-04 Field Blank
1,3,5-Trimethylbenzene	mg/L	< 0.0002
Alkalinity	mg/L	1
Ammonia	mg/L	< 0.15
Arsenic	mg/L	< 0.001
Barium	mg/L	< 0.005
Biochemical Oxygen Demand	mg/L	< 2
Boron	mg/L	< 0.01
Cadmium	mg/L	< 0.0001
Calcium	mg/L	0.54
Chemical Oxygen Demand	mg/L	< 4
Chloride	mg/L	< 1
Chromium	mg/L	< 0.005
Conductivity	µS/cm	1
Copper	mg/L	< 0.001
Dissolved Organic Carbon	mg/L	0.2
Hardness	mg/L	2
Iron	mg/L	< 0.1
Lead	mg/L	< 0.0005
Magnesium	mg/L	0.086
Manganese	mg/L	< 0.002
Mercury	mg/L	< 0.0002
Naphthalene	mg/L	< 0.0005
Nitrate	mg/L	< 0.1
Nitrate + Nitrite	mg/L	< 0.1
Nitrite	mg/L	< 0.01
pH (Lab)	unitless	6.6
Phenols	mg/L	< 0.001
Phosphorus (total)	mg/L	< 0.03
Potassium	mg/L	< 0.2
Sodium	mg/L	0.29
Sulphate	mg/L	< 1
Total Dissolved Solids	mg/L	< 10
Total Kjeldahl Nitrogen	mg/L	< 0.7
Zinc	mg/L	< 0.005

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Trip Blank Sample - Spring 2011

Reading Name	Units	2011-05-03 Trip Blank
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001
1,1,1-Trichloroethane	mg/L	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002
1,1,2-Trichloroethane	mg/L	< 0.0002
1,1-Dichloroethane	mg/L	< 0.0001
1,1-Dichloroethylene	mg/L	< 0.0001
1,2,3-Trimethylbenzene	mg/L	< 0.0002
1,2-Dibromoethane	mg/L	< 0.0002
1,2-Dichlorobenzene (o)	mg/L	< 0.0002
1,2-Dichloroethane	mg/L	< 0.0002
1,2-Dichloropropane	mg/L	< 0.0001
1,3,5-Trimethylbenzene	mg/L	< 0.0002
1,3-Dichlorobenzene (m)	mg/L	< 0.0002
1,4-Dichlorobenzene (p)	mg/L	< 0.0002
Acetone	mg/L	< 0.01
Benzene	mg/L	< 0.0001
Bromodichloromethane	mg/L	< 0.0001
Bromoform	mg/L	< 0.0002
Bromomethane	mg/L	< 0.0005
Carbon Tetrachloride	mg/L	< 0.0001
Chlorobenzene	mg/L	< 0.0001
Chlorodibromomethane	mg/L	< 0.0002
Chloroethane	mg/L	< 0.0002
Chloroform	mg/L	< 0.0001
Chloromethane	mg/L	< 0.0005
Cis-1,2-Dichloroethylene	mg/L	< 0.0001
Cis-1,3-Dichloropropylene	mg/L	< 0.0002
Dichlorodifluoromethane	mg/L	< 0.0005
Dichloromethane	mg/L	< 0.0005
Ethylbenzene	mg/L	< 0.0001
Hexane	mg/L	< 0.0005
m+p-Xylene	mg/L	< 0.0001
Methyl Ethyl Ketone	mg/L	< 0.005
Methyl Isobutyl Ketone	mg/L	< 0.005
Methyl Tert Butyl Ether	mg/L	< 0.0002
Naphthalene	mg/L	< 0.0005
o-Xylene	mg/L	< 0.0001
Styrene	mg/L	< 0.0002
Tetrachloroethylene	mg/L	< 0.0001
Toluene	mg/L	< 0.0002
Total Xylenes	mg/L	< 0.0001
Trans-1,2-dichloroethylene	mg/L	< 0.0001
Trans-1,3-dichloropropene	mg/L	< 0.0002
Trichloroethylene	mg/L	< 0.0001
Trichlorofluoromethane	mg/L	< 0.0002
Vinyl Chloride	mg/L	< 0.0002

Detailed Results from Trip Blank Sample - Spring 2011

Reading Name	Units	2011-05-03
		Trip Blank
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001
1,1,1-Trichloroethane	mg/L	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002
1,1,2-Trichloroethane	mg/L	< 0.0002
1,1-Dichloroethane	mg/L	< 0.0001
1,1-Dichloroethylene	mg/L	< 0.0001
1,2,3-Trimethylbenzene	mg/L	< 0.0002
1,2-Dibromoethane	mg/L	< 0.0002
1,2-Dichlorobenzene (o)	mg/L	< 0.0002
1,2-Dichloroethane	mg/L	< 0.0002
1,2-Dichloropropane	mg/L	< 0.0001
1,3,5-Trimethylbenzene	mg/L	< 0.0002
1,3-Dichlorobenzene (m)	mg/L	< 0.0002
1,4-Dichlorobenzene (p)	mg/L	< 0.0002
Acetone	mg/L	< 0.01
Benzene	mg/L	< 0.0001
Bromodichloromethane	mg/L	< 0.0001
Bromoform	mg/L	< 0.0002
Bromomethane	mg/L	< 0.0005
Carbon Tetrachloride	mg/L	< 0.0001
Chlorobenzene	mg/L	< 0.0001
Chlorodibromomethane	mg/L	< 0.0002
Chloroethane	mg/L	< 0.0002
Chloroform	mg/L	< 0.0001
Chloromethane	mg/L	< 0.0005
Cis-1,2-Dichloroethylene	mg/L	< 0.0001
Cis-1,3-Dichloropropylene	mg/L	< 0.0002
Dichlorodifluoromethane	mg/L	< 0.0005
Dichloromethane	mg/L	< 0.0005
Ethylbenzene	mg/L	< 0.0001
Hexane	mg/L	< 0.0005
m+p-Xylene	mg/L	< 0.0001
Methyl Ethyl Ketone	mg/L	< 0.005
Methyl Isobutyl Ketone	mg/L	< 0.005
Methyl Tert Butyl Ether	mg/L	< 0.0002
Naphthalene	mg/L	< 0.0005
o-Xylene	mg/L	< 0.0001
Styrene	mg/L	< 0.0002
Tetrachloroethylene	mg/L	< 0.0001
Toluene	mg/L	< 0.0002
Total Xylenes	mg/L	< 0.0001
Trans-1,2-dichloroethylene	mg/L	< 0.0001
Trans-1,3-dichloropropene	mg/L	< 0.0002
Trichloroethylene	mg/L	< 0.0001
Trichlorofluoromethane	mg/L	< 0.0002
Vinyl Chloride	mg/L	< 0.0002

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Detailed Results from Trip Blank Sample - Spring 2011

Reading Name	Units	2011-05-04 Trip Blank
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001
1,1,1-Trichloroethane	mg/L	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002
1,1,2-Trichloroethane	mg/L	< 0.0002
1,1-Dichloroethane	mg/L	< 0.0001
1,1-Dichloroethylene	mg/L	< 0.0001
1,2-Dibromoethane	mg/L	< 0.0002
1,2-Dichlorobenzene (o)	mg/L	< 0.0002
1,2-Dichloroethane	mg/L	< 0.0002
1,2-Dichloropropane	mg/L	< 0.0001
1,3,5-Trimethylbenzene	mg/L	< 0.0002
1,3-Dichlorobenzene (m)	mg/L	< 0.0002
1,4-Dichlorobenzene (p)	mg/L	< 0.0002
Benzene	mg/L	< 0.0001
Bromodichloromethane	mg/L	< 0.0001
Bromoform	mg/L	< 0.0002
Bromomethane	mg/L	< 0.0005
Carbon Tetrachloride	mg/L	< 0.0001
Chlorobenzene	mg/L	< 0.0001
Chlorodibromomethane	mg/L	< 0.0002
Chloroethane	mg/L	< 0.0002
Chloroform	mg/L	< 0.0001
Chloromethane	mg/L	< 0.0005
Cis-1,2-Dichloroethylene	mg/L	< 0.0001
Cis-1,3-Dichloropropylene	mg/L	< 0.0002
Dichloromethane	mg/L	< 0.0005
Ethylbenzene	mg/L	< 0.0001
m+p-Xylene	mg/L	< 0.0001
o-Xylene	mg/L	< 0.0001
Styrene	mg/L	< 0.0002
Tetrachloroethylene	mg/L	< 0.0001
Toluene	mg/L	< 0.0002
Trans-1,2-dichloroethylene	mg/L	< 0.0001
Trans-1,3-dichloropropene	mg/L	< 0.0002
Trichloroethylene	mg/L	< 0.0001
Trichlorofluoromethane	mg/L	< 0.0002
Vinyl Chloride	mg/L	< 0.0002