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1. Introduction

The Provisional Certificate of Approval (C of A) #A170128 for the operation of the Wet/Dry Recycling Centre, now the Waste Resource Innovation Centre (WRIC), requires annual reporting of the groundwater, surface water and leachate monitoring as outlined in Section 24.1 (e). The C of A states that the City of Guelph (City) shall submit to the Ministry of Environment (MOE) an annual summary of the previous year's analytical results including an interpretation and any remedial /mitigative action undertaken. This appended section is intended to fulfill this requirement for the 2004-operating year.

In July 1997, the C of A was amended to allow the WRIC service area to be expanded. As part of the amendment, conditions 19(2) and 19(3) were added to the groundwater program Condition 19. Specifically, the City was to provide:

a) an updated shallow bedrock groundwater flow interpretation based on new and replaced monitors and decommissioning protocols for destroyed monitors - Condition 19(2); and

b) an up to date water well survey within 500 m of the Wet/Dry Recycling Centre - Condition 19(3).

Condition 19(2) was addressed in a Gartner Lee Limited Letter Report - Response to Conditions as part of the Amended Certificate of Approval No. A170128 - Wet-Dry Recycling Centre, dated August 19, 1997. Condition 19(3) was addressed by the completion of the updated Water Well Survey in December 1997.

In late 1998, a review by the MOE was completed to determine if the City had addressed all the requirements as outlined in the amended C of A as well as a review of the 1997 Annual Monitoring Report.

Based on this review, the MOE had five recommendations. The MOE generally agreed with the recommendations of the 1997 Annual Report for the reduction of the analytical parameter list and sampling frequency. These were incorporated into the 1999 annual monitoring programs. There were three remaining recommendations, which dealt with insufficient information or clarification. These remaining recommendations were completed in 2001 and 2003. Additional bedrock monitors and a site survey to X,Y,Z co-ordinates was completed in 2001. Using the additional monitoring locations, groundwater gradients were assessed in the 2002 Annual Report.

2. Background

As part of the requirements to develop and design the WRIC, a hydrogeological assessment was conducted in 1991 (Jagger Hims Limited; Hydrogeological Assessment, Proposed Wet/Dry Facility, Guelph, Ontario; Report prepared for the City of Guelph, October 1991). This included the drilling of five borehole locations and the installation of seven monitoring wells. Groundwater level measurements were obtained from these monitoring wells to assess groundwater flow direction across the proposed area to be developed. In addition, groundwater samples were collected and analyzed to determine background groundwater quality.

This report concluded that:

a) groundwater flow in the shallow subsurface is towards the northeast to the Correctional Centre pond and Clythe Creek; and

b) groundwater quality on-site meets the MOE Drinking Water Guidelines except for elevated nitrate, sodium and manganese concentrations. The elevated nitrates are likely related to agricultural practices, and elevated sodium and manganese are likely natural.

Further groundwater sampling at the proposed site was completed in 1992, 1994 and 1995 prior to the construction of the WRIC. This analysis was reported in the Groundwater Monitoring Program; Guelph Wet/Dry Recycling Facility; Draft Report completed for the City of Guelph, September 1995 (Jagger Hims Limited). This draft report concluded that the groundwater quality in the area is considered hard with calcium, magnesium, and alkalinity the dominant ions. The concentrations of the other major ions (i.e., sodium, potassium, sulphate and chloride) were found for the most part to be low. The exception to this was the 1995 sample collected from monitor 5-91, which exhibited higher than background concentrations of sodium and chloride. The source of the sodium and chloride was considered unknown at that time. The only other parameter of concern was nitrate. This was found at consistently elevated levels at monitors 1a-91, 1b-91, 2b, 91 and 3-91, from 1991 until these locations were destroyed due to construction activities.

3. Monitoring Program

The objectives of the monitoring programs are outlined in the C of A in Conditions 18, 19 and 20. These conditions provide the objectives for leachate, groundwater and surface water monitoring that is to be undertaken at the WRIC. These are:

Condition 18 (Leachate)

The City shall annually review and update the existing leachate monitoring program, which characterizes the leachate. The updated report on the leachate monitoring program changes shall be submitted to the District Manager on an annual basis.

Leachate shall be sampled and analyzed at least four (4) times per year, and monitored for quality, in accordance with the approved leachate monitoring program. As recommended in the 1998 annual monitoring report and accepted by the MOE, the sampling frequency of the leachate was reduced to (2) two times per year starting in 1999.

Due to the compost process, very little leachate is actually produced, which makes it problematic to sample. In the past, water collected on the compost pad along with any leachate produced during the composting process was sampled in the holding tank (beneath the pad). With the redesign of the storm water management system back to the original design, this water is now diverted from directly entering the sanitary sewer to the central clay-lined Detention Pond 1. Sampling of the water collected in this pond will now serve the same purpose as the original sampling conducted in the holding tank where runoff from the pad was historically collected. This new station is designated SW 3, and follows the more comprehensive surface water monitoring program. In 2004, no samples could be collected from the detention pond. The reason for this is discussed in Section 4.1.

Condition 19 (Groundwater)

Groundwater shall be sampled quarterly for one (1) year from the date of this Certificate and on semi-annual basis thereafter (spring and fall). The analysis shall seek to identify chloride, nitrate and a suite of compounds characteristic of leachate generated at the site. Sampling frequency and parameters for analysis may be adjusted upon the approval of the District Manager, as groundwater and surface water becomes available. In 1999, the sampling frequency was reduced to a semi annual basis. The analytical parameters were also adjusted in 1999 upon approval from the MOE.

Groundwater monitoring was conducted at all locations in June and November 2004.

Condition 20 (Surface Water)

The City shall annually review and update the existing surface water sampling program, designed to detect and quantify any impacts originating from the site. The updated surface water sampling program changes shall be submitted to the District Manager on an annual basis.

Surface water monitoring shall be implemented to ensure early detection of contaminants in the event that such contaminants escape the site. Surface water shall be sampled monthly for the following conventional parameters: BOD; TSS; Ammonia; TKN; total phosphorus; and phenolics (this group of parameters is called the Short List). For all other parameters surface water shall be sampled quarterly for the first year and on a semi-annual basis (spring and fall) thereafter. The analysis shall seek to identify chloride, nitrate and a suite of organic and inorganic compounds characteristic of leachate generated at the site. Sampling frequency and parameters for analysis may be adjusted upon the approval of the District Manager, as surface water and leachate monitoring becomes available. Surface water shall be sampled at the discharge location of the final surface water detention pond.

During 2004, monitoring of surface water run-off into the detention ponds was completed. However, no samples could be collected, as there was no water remained in the detention ponds after rain events or they were dry by the end of each month.

4. Summary of Analytical Results

4.1 Leachate Monitoring

Leachate monitoring is to be conducted on a semi-annual basis for the analytical parameters listed below.

Monitoring Parameter List

Leachate Indicator		
Parameters	• Biological Oxygen Demand (BOD) • Chemical Oxygen Demand (COD) • Total Kjeldahl Nitrogen (TKN) • Ammonia as Nitrogen (NH3-N) • Total Phosphorus (Total P) • Total Suspended Solids (TSS) • Total Sulphate (SO_4) • Phenols	• Chloride (Cl) • Sodium (Na) • Calcium (Ca) • Boron (B) • Total Iron (Fe) • Phosphorus (P) • Zinc (Zn)
General Parameters	• pH • Conductivity • Alkalinity	• Magnesium (Mg) • Potassium (K)
Organics	• EPA 624,625 (ATG 16+17+18 & ATG 19+20)	

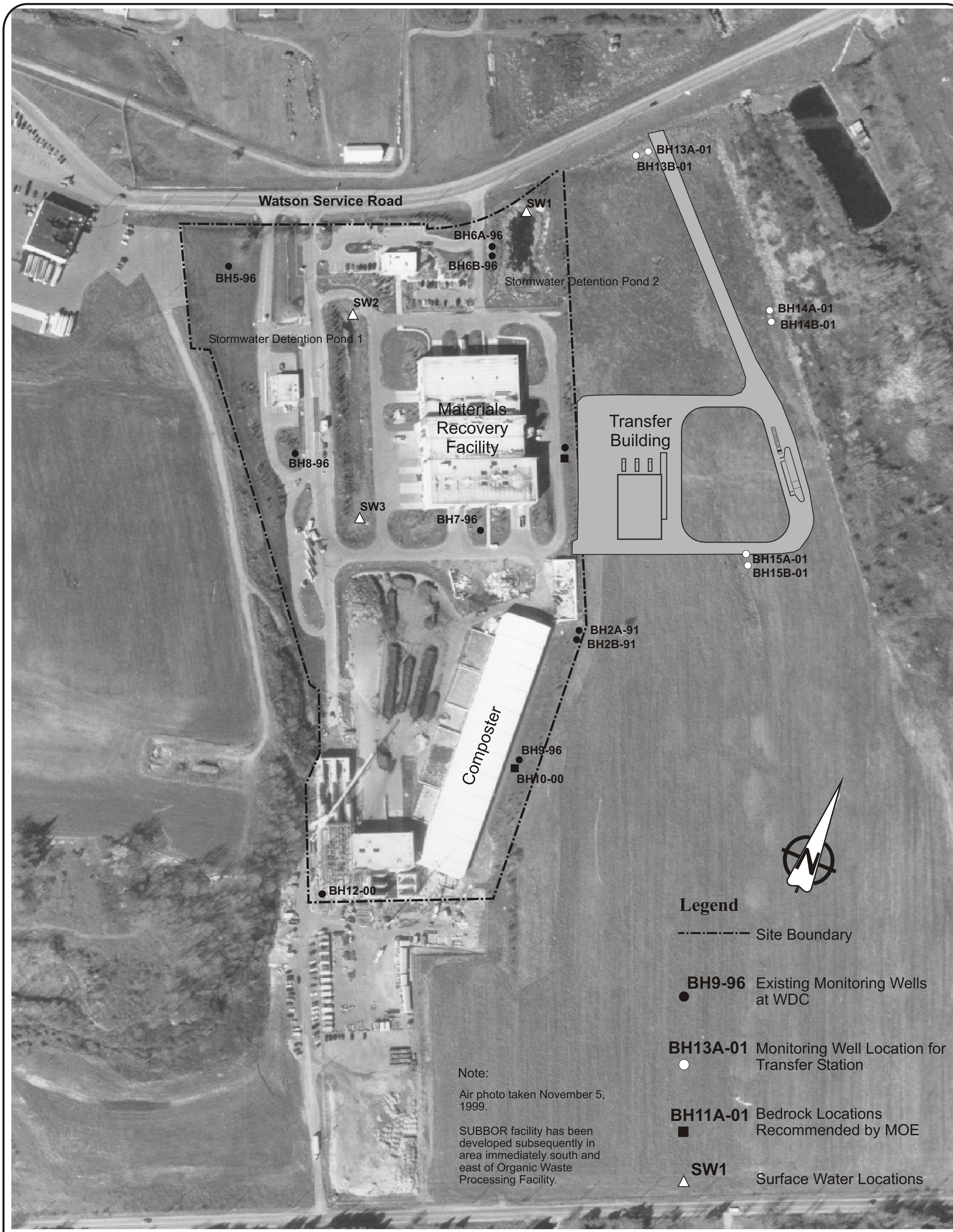
The historical leachate analytical results are appended. As discussed earlier, sampling of the actual leachate can no longer be conducted due to the small amount generated. In previous year, the leachate that was sampled was a mixture of runoff water from the compost pad and leachate produced in the composting process collected in the holding tank beneath the pad, prior to discharge to the sanitary sewer. However, starting in 2003, the collection of compost runoff into the holding tank no longer occurs. As discussed in the previous 2003 Annual Report, run-off from the compost pad is now directed to the clay lined detention pond 1. Any run-off water collected in the pond is to be tested and if it passes the water would ultimately be discharged off-site. Should it not pass, the system is set up to allow the impacted water to be slowly diverted to the sanitary sewer, so that the force main does not back up.

In 2004, no samples could be collected from the pond. It was found that the pipe that connects the sanitary sewer and the pond was left open during 2004. Therefore, any pad run-off was constantly draining so that no water remained by the time sampling was to take place. This is not considered a concern since the all pad run-off is conveyed directly to the sanitary sewer upon entering the pond. Therefore, there is no potential for any impacted surface water to leave the site.

Month	Runoff From Pad	Conditions	Sampling Date
January	None	Frozen/Snow	
February	None	Frozen/Snow	
March	None	Frozen/Snow	
April	None	Dry	
May	None	Dry	
June	None	Dry	
July	None	Dry	
August	None	Dry	
September	None	Dry	
October	None	22.8mm rain on Afternoon of Oct 15	No water found on Oct 27
November	None	Dry	
December	None	Dry	

Historical leachate concentrations, which were found to be variable due to rain events, were typified by elevated concentrations of TSS, BOD, COD, phenol, ammonia, TKN, total phosphorus, alkalinity, chloride, sulphate, calcium, sodium, potassium, iron and phosphorus as well as on occasion by boron and zinc as compared to background groundwater quality. As stated earlier, no samples could be collected in 2004 at SW 3. It is expected that the compost pad run-off that did occur, which drained directly to the sewer, would be similar to that observed in 2003. The water quality from SW 3 collected in 2003 exhibited similar elevated concentrations as those collected historically from the holding tank (leachate).

As per the requirements of the C of A, the compost runoff was to be analyzed for organics once in 2004. This could not be completed as discussed earlier.



Gartner Lee

Scale 1 : 4,000

GROUNDWATER MONITOR LOCATION MAP

Annual Monitoring Program
Waste Resource Innovation Centre
City of Guelph

FIGURE
1

Project 50-133
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4.2 Surface Water Monitoring

Monitoring of surface water at the WRIC commenced in March 1996. As required in the C of A, this monitoring was to be to be on a monthly basis for a short parameter list and on a quarterly basis for the full leachate parameter list (updated in 1999). There are two surface water sampling stations at the site, designated as SW 1 located at the off-site discharge point in Stormwater Detention Area 2 (Figure 1) and SW 2 located in the Stormwater Detention Area 1. Any surface water discharge (SW 1) that does leave the site is directed into a road-side ditch that ultimately flows into a stormwater catch basin.

There is no background surface water analysis (prior to site operations), so any impacts due to runoff from the WRIC would be difficult to determine at the discharge point SW 1, due to the potential for other sources of non-facility contamination. These sources include runoff from the surrounding agricultural lands and road systems.

During mid 1998, the surface water monitoring program was re-designed to better understand contributions from runoff directly related to the site and not stagnant pond conditions. Surface water sampling is still undertaken on a monthly basis, in accordance with the C of A. However, more detailed recordings on discharge and overall conditions (such as dry or stagnant water) are undertaken. As well, the monthly sampling is to be undertaken during runoff conditions (weather permitting), and if no event occurs are to be sampled at the end of the month regardless.

Below is a discussion of the surface water monitoring at station SW 1 during 2004. In 2004, no samples could be collected from Detention Pond 2 as there was generally no water or due to frozen conditions. No samples could be collected from Detention Pond 1 (SW 2) as the section that receives site stormwater runoff, was generally dry. Below is a table briefly outlining the surface water monitoring events for the past year at SW 1.

Month	Discharge Events	Conditions	Sampling Date
January	No Discharge	Frozen/Snow	
February	No Discharge	Frozen/Snow	
March	No Discharge	Frozen/Snow	
April	No Discharge	Dry	
May	No Discharge	Dry	
June	No Discharge	Dry	
July	No Discharge	Dry	
August	No Discharge	Dry	
September	No Discharge	Dry	
October	No Discharge	Dry	
November	No Discharge	Dry	
December	No Discharge	Dry	

As there was generally no water in the pond, no off-site surface water discharge occurred in 2004. Historical surface water analytical results are found appended.

Generally, surface water quality at SW 1 (Stormwater Detention Area 2) has been typified by slightly elevated concentrations for COD, TKN, total phosphorus, chloride and sodium.

With a greater data set being collected over the years up to 2003, COD, ammonia, TKN and total phosphorus appear to be more elevated during the drier periods, whereas, chloride and sodium appear higher in the spring period. As well, chloride and sodium can be elevated in the late fall period as observed in the past.

These types of trends would be expected. Elevated chloride and sodium in the spring and periodically in the fall (should early snow fall occur) would be related to road salting of surrounding and on-site roads. The elevated COD, ammonia, TKN and total phosphorus during drier periods would be related to the stagnant condition of the water in the pond. However, total phosphorus and TKN were elevated in 2003 immediately after a rain event (June) as observed in 2002. Although they were not the highest concentrations recorded, they were elevated during non-stagnant conditions. That these parameters are elevated after rain events suggests that they are collected in the surface water runoff. As the surrounding land use is agricultural, it is most likely the runoff from these areas is the cause and not from the WRIC. This is further supported by historical groundwater quality (prior to the construction of the facility), which has shown elevated concentrations of both of these parameters. These apparent trends will be further assessed as more seasonal data are collected each year under normal precipitation and/or rain event periods.

Surface water quality could not be assessed at SW 2 station (Stormwater Detention Area 1), as there was very little water or it was dry throughout the year as observed in the past.

As per the requirements of the C of A, the surface water was to be analyzed for organics once in 2004. As there was no surface water, organic sampling could not be completed.

In summary, no water quality analysis in the Detention Pond 2 could be completed.

It is still recommended that surface water monitoring continue to be conducted monthly until a suitable water quality database, has been achieved. Due to the lack of water to sample in 2004, it recommended that the surface water monitoring program be re-evaluated. As part of this evaluation, the reason why there continues to be a lack of surface water collected in the Detention Ponds should also be assessed to determine if this is an issue.

4.3 Groundwater Monitoring

Historical groundwater monitoring has taken place from 1991 to 1995, prior to construction at the site (monitor locations 1a-91, 1b-91, 2a-91, 2b-91, 3-91 and 5-91). Monitoring of the groundwater at the WRIC Facility commenced in April 1996 at the remaining monitoring locations that were not destroyed during construction (Figure 1). In late 1996, replacement locations for the monitors that were destroyed were completed and added to the program. The present monitoring program, initiated in 1999 after MOE approval, is twice per year in June and December. This program was followed in 2004.

In late 2000 and early 2001, additional bedrock monitoring locations were installed as recommended by the MOE. These locations were added to the monitoring program in early 2001. The intent of these locations is to better define groundwater flow in the bedrock. At that time, monthly water level measurements commenced at all locations to build up a data set for these new locations. In the fall of 2001, three new monitoring locations were completed on the adjacent property east of the WRIC, as part of an application by the City to build a transfer station. As these monitors were also installed into the bedrock, they have been added to the WRIC monitoring program to further define the groundwater flow and water quality in the bedrock.

4.3.1 Groundwater Elevation and Flow Directions

Groundwater elevations were measured at 11 locations that included a total of 21 monitors. These monitors are outlined below with the geological unit they are measuring. Groundwater elevations are appended. Hydrographs for each location are also appended.

Monitor	Geological Unit	Groundwater Zone
2a-91	Sandy Silt Till	Not Used
2b-91	Sandy Outwash	Water Table
5-96	Dolostone Bedrock	Water Table/Bedrock
6a-96	Dolostone Bedrock	Bedrock
6b-96	Sandy Outwash	Water Table
7-96	Sandy Outwash	Water Table
8-96	Dolostone Bedrock	Water Table/Bedrock
9-96	Sandy Outwash	Water Table
10-00[1]	Dolostone Bedrock	Bedrock
11a-01[1]	Dolostone Bedrock	Bedrock
11b-00[1]	Gravelly Outwash	Water Table
12a-00	Dolostone Bedrock	Bedrock
12b-00	Gravelly Outwash	Water Table
13a-01*	Dolostone Bedrock	Bedrock
13b-01*	Gravelly Outwash	Water Table
14a-01*	Dolostone Bedrock	Bedrock
14b-01*	Gravelly Outwash	Water Table
15a-01*	Dolostone Bedrock	Bedrock
15b-01*	Gravelly Outwash	Water Table

Notes: (1) Locations recommended by MOE
** Locations on Transfer Station Property*

In general, the shallow groundwater flow is similar to previous years. Shallow groundwater flow beneath the majority of the site is still in northeasterly direction (Figure 2). To the west of the site, groundwater flows out of a bedrock high into the outwash beneath the site before being directed to the northeast. As well, flow is directed from the east into the site.

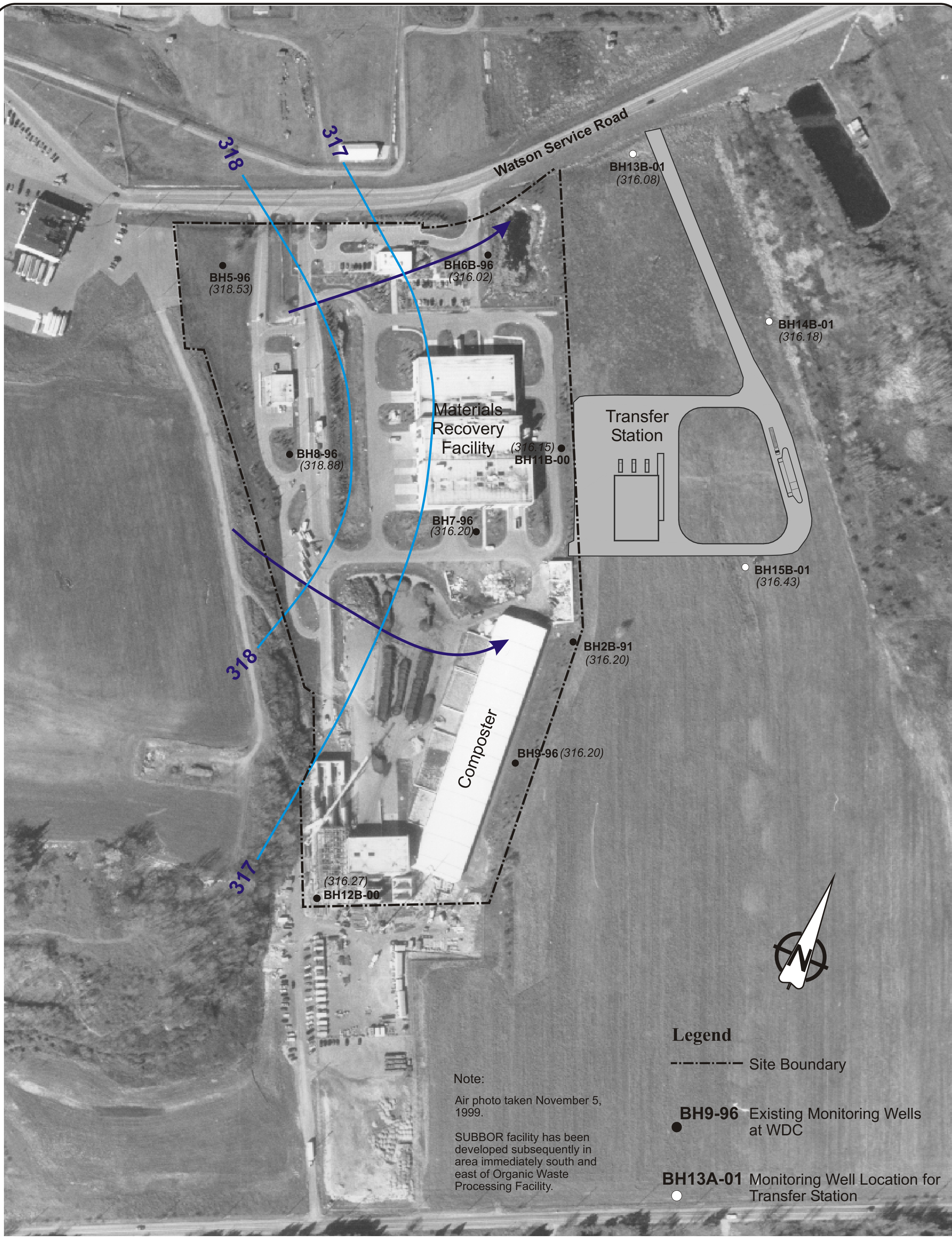
As stated previously, the MOE recommended that further bedrock monitors be completed to better define bedrock groundwater flow conditions. These locations were completed as discussed earlier. As well, three bedrock monitors were installed in the adjacent property to the east in the fall of 2001. These monitors were added to the program as they provide additional information on bedrock groundwater flow in the area. Groundwater flow patterns using all locations available are discussed below.

The bedrock groundwater flow pattern is similar to the overlying shallow groundwater system (Figure 3). Groundwater flow is still found to be west to east across the WRIC site, as observed in the past. With the addition of the monitors completed in 2001, the groundwater now appears to flow radially from the bedrock high to the west, therefore, showing some component of flow moving southeast. This similar flow pattern was once again confirmed in 2004. There is also some component of flow from the east back towards the WRIC and to the south. It is expected that these flows will ultimately become northerly as observed with the shallow groundwater system, and based on the assessment of the bedrock surface topography, which suggests that the bedrock is deepening to the north. This is important as earlier hydrogeological assessments suggest that the bedrock low observed in this area is a former paleo river valley (incised bedrock low) that trends to the north. Therefore, it would be expected that the groundwater flow would follow this feature. It is recommended that a monitoring nest (bedrock and overburden) be placed to the south and east of the facility (on City lands). The intent of this location is to confirm the geology and groundwater flow in this area to determine if the groundwater flow in the bedrock does ultimately move to the north.

4.3.2 Groundwater Quality

Groundwater sampling was conducted in June and November 2004. Groundwater testing results are appended.

To understand the groundwater quality in the area and below the site, the difference in the water quality within the two main geological units beneath and surrounding the site must be examined. These are the sandy outwash and the bedrock below the site along with an associated bedrock high to the west of the site. In general, there are three types of groundwater quality that have been identified within these units, based on the shallow groundwater flow regime. These are background outwash, bedrock and bedrock influenced outwash water quality.



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Scale 1 : 4,000

SHALLOW GROUNDWATER FLOW (June 8, 2004)

Annual Monitoring Program
Waste Resource Innovation Centre
City of Guelph

FIGURE

2

Project 50-133
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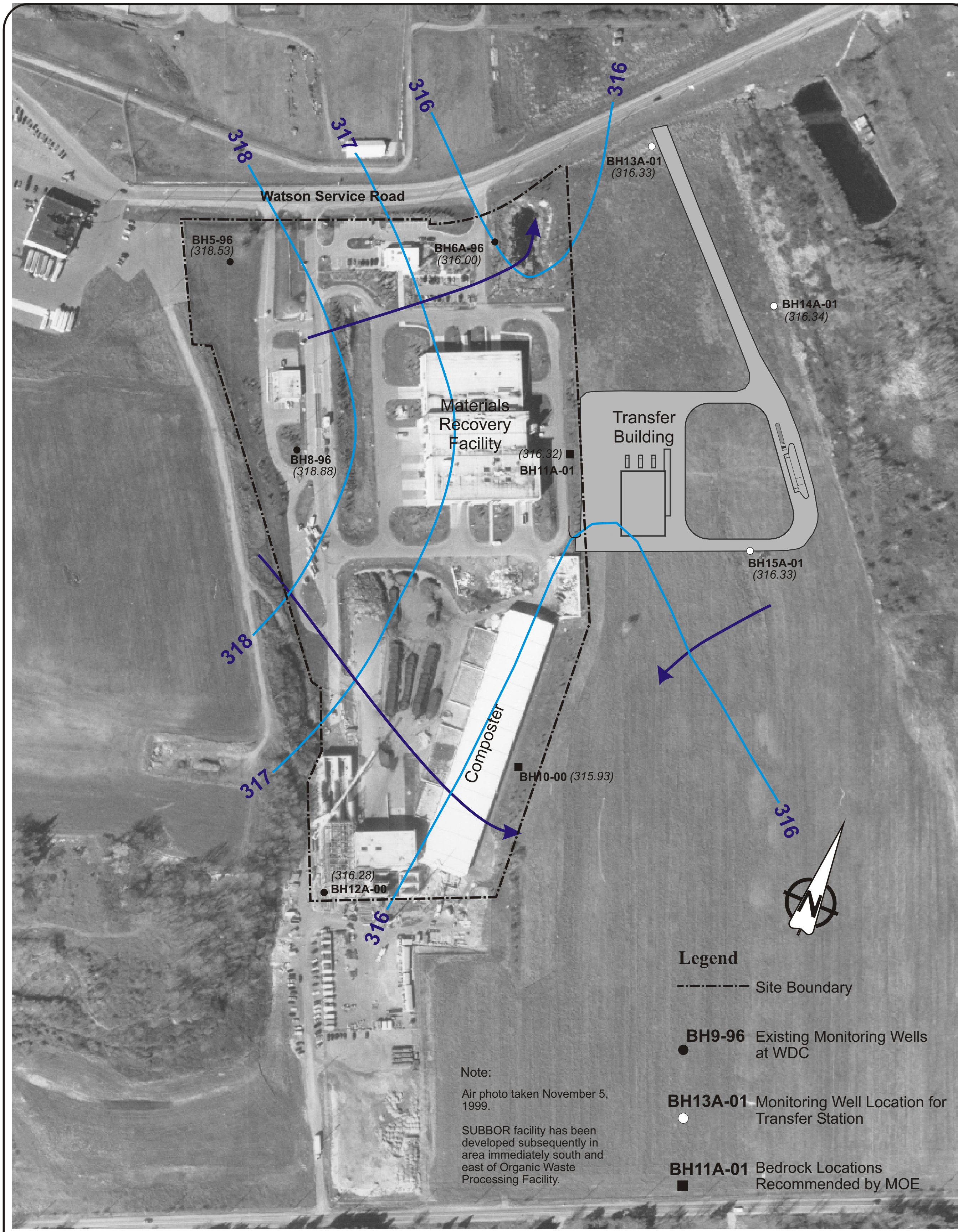

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Scale 1 : 4,000

BEDROCK GROUNDWATER FLOW (June 8, 2004)

Annual Monitoring Program
Waste Resource Innovation Centre
City of Guelph

FIGURE

3

Project 50-133
(2005\Final\Images\Bedrock-F.cdr)

Background Outwash Water Quality

Background outwash groundwater quality can be measured at monitors 2b-91, 9-96 on the eastern extent of the property, and at locations 14 and 15 on the adjacent eastern property. Groundwater flow is directed towards the site from these areas.

Groundwater quality at these locations is generally typified by lower concentrations of the major ions (Alk, Cl, Na, Ca, Mg and K). The average concentrations of these parameters during 2004, along with historical ranges for each location, are provided below. Water quality at monitor 14b-01 and 15b-01 generally falls within or are similar to the range based on the short-term historical average. When compared to the longer-term historical average from 9-96, 14b-01 continues to exhibit slightly higher alkalinity, chloride, sodium and calcium.

Chloride and sodium concentrations also continue to be slightly higher when compared to the historical ranges (prior to 2003) in monitor 9-96 even though they have decreased over the elevated concentration observed in 2003. This difference in water quality is discussed separately below.

Monitor		Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
2b-91	Historical Range	166 - 190	4.8 - 17	1.8 - 4	52.2 - 74.8	21.8 - 26.8	0.69 – 1
	2004 Average	256	8.4	2.1	90.0	31.2	1
9-96	Historical Range*	171 - 251	6.34 –33.5	1.48 - 20.2	68.6 - 93.2	14.7 - 29	0.3 - 1.3
	2004 Average	255	40.5	23.5	88.7	20	1
14b-01	Historical Range	270 - 342	22.3 - 101	7.7 - 40.4	95.4 - 114	26.2 - 30.3	1 – 2
	2004 Average	346	81	34	126	29.6	1.1
15b-01	Historical Range	200 - 291	5.2 - 24.4	2 - 10.7	73.4 - 103	21.1 - 29.4	1 – 2
	2004 Average	222	26.4	3.7	78.5	20.3	1

Note: Historical Ranges includes all data from 1997 up to 2003.
** Historical Ranges only includes date from 1997 up to 2002 due to high chloride and sodium values in 2003.*

Background Bedrock Water Quality

Historically, background bedrock groundwater quality was measured at locations 5-96 (northwest) and 8-96 (west) on the bedrock high along the western portion of the site from where groundwater flows into the site. As well groundwater quality in the bedrock below the site was measured at location 6a-96. This groundwater quality is typically hard with more elevated concentrations of the major ions, most noticeably alkalinity and calcium. These types of concentrations are associated with dolostone, which is made up of calcium and magnesium carbonate. The average concentrations of these parameters observed in 2004, along with the historical ranges, at these locations are provided below. Also, provided in this table are 2004 averages from the more recent bedrock WRIC monitors (10-00, 11a-01 and 12a-00) along with the bedrock monitors (13a-01, 14a-01 and 15a-01) installed on the adjacent property in late 2001. Due to possible outside impacts since 2002 (discussed below), historical averages were not calculated for 12a-00.

Monitor		Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
5-96	Historical Range	278 - 380	112 - 474	71.9 - 263	83.7 - 134	24.2 - 38.4	3.9 – 6
	2003 Average.	298	528*	284*	105	27	4.3
8-96	Historical Range	264 - 356	37.2 - 332*	17.6 - 171*	92 - 116	32.1 - 43.4	1.73 - 3.1
	2003 Average	301	140	73.4	110	34.4	2.4
6a-96	Historical Range	237 - 420	158 - 333*	70 - 176*	94.6 - 158	28.3 - 37.1	2 - 16.4
	2003 Average	251	255	95	131	33	3.0
10-00	Historical Range	236 - 267	21.5 - 44.9	9.2 - 12	84.4 - 95.1	28.2 - 31.5	1 – 2
	2003 Average	242	28	10.1	87.3	28	1.5
11a-01	Historical Range	231 - 263	4 - 7.1	5.6 - 25.9	64.4 - 83.2	23.6 - 25.3	1.6 – 3
	2003 Average	239	6.8	5.3	73.2	24	1
13a-01	Historical Range	248 - 272	83.9 - 97.1	38 – 41	97.7 - 109	34.5 - 38.8	2 - 2.9
	200 Average	254	99.1	40.3	105	34.1	2.1
14a-01	Historical Range	215 - 263	4.8 - 26.6	11.5 - 27.4	63.5 - 84	22.4 - 27.9	1 – 2
	2003 Average	235	13.5	14.4	68.7	25.1	1
15a-01	Historical Range	245 - 260	48.3 - 60.7	7.7 - 12.2	103 - 107	32.5 - 36	1 – 2
	2003 Average	258	62	13.4	115	34.3	1
12a-00	2002 Average	359	622.2	391.8	116	40.85	15.0
	2004 Average	320	42	19.7	102	37.4	13.5

*Notes: * Road salt impact*
Historical Ranges includes all data up to 2003.

As shown on the table above, the average concentrations generally fall within the historical ranges. It should be noted the some of the elevated chloride and sodium concentration at location 5-96 could be attributed to road salting of the surrounding area. These effects are found to be seasonal with slightly elevated concentrations noted during the spring sampling period. In 2004, this is the cause of the higher chloride and sodium, most noticeably, in the spring at 5-96. As well, there have been historical road salt effects observed at location 6a-96. However, since 2000 both chloride and sodium concentrations have generally decreased and were no longer exhibited any observable seasonal effects. Although in the fall of 2004, chloride did exhibited an increase once again in 6a-96.

When the water quality from the most recent monitors located along the eastern boundary (10-00, 11a-01) and in the adjacent eastern property (13a-01, 14a-01, 15a-01) are compared to the historical monitors to the west, there is a difference in bedrock water quality observed. With the exception of alkalinity, the concentrations of the major ions are lower indicating a less mineralized water. This difference in water quality is attributed to the bedrock units they are completed in. As stated earlier, there is a bedrock high to the west of the site. This high is dominated by the dolostone units of the Guelph formation. The bedrock topography dips steeply to the east, across the site, towards a deeply incised bedrock valley low.

This valley cuts into the underlying Amabel formation. The recent monitors are installed in this formation or at the contact of this formation at the eastern boundary of the facility. Overall, water quality from this lower formation is found to be less mineralized, which is confirmed by the recent monitors.

The water quality collected initially at monitor 12a-00, in 2001, was found to be similar to 5-96 and 8-96, although it had lower chloride and sodium with slightly higher potassium concentrations. However, in 2002 chloride and sodium were found to be significantly elevated in the December sample. This change in water quality was discussed in the previous annual report. The only sample collected in 2003, was found to be similar to the initial water quality prior to December 2002. Since 2003, the water quality at 12a-00 has become similar to that observed in 2001.

Bedrock/Outwash Water Quality

The last type of water quality measured beneath the site is the bedrock-impacted groundwater. This is observed in the outwash at monitors 6b-96 (northeast corner) and 7-96 (central) as well as at the historical monitor 3-97 (southwest corner), which was destroyed during the construction of the SUBBOR pilot facility and replaced with monitor 12b-00. These locations are along the flow path that trends from the southwest to the northeast and receives groundwater inputs from the topographic high to the east and the bedrock high to the west. This water quality is typified by concentrations of the major ions that are elevated above the background outwash but for the most part lower than the bedrock concentrations. This is anticipated as the more ionized water from the bedrock to west would mix with the less ionized waters coming from the overburden high to the east. It should be noted that monitor 6b-96 has, on occasion, higher concentrations of chloride and sodium then observed in the bedrock at monitor 5-96. These concentrations always show a seasonal trend, usually highest in the early spring, suggesting they are attributed to road salting of the surrounding area and on-site roads. Below is a table comparing the average concentrations of the above monitors to monitors 5-96 (bedrock) and 9-96 (outwash). As well, historical ranges for 6b-96 and 7-96 have also been provided for long-term comparisons. Monitor 12b-00 has not been included as it has exhibited impacts since 2002, as discussed separately below.

Monitor	Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
9-96 (Outwash)	255	40.5	23.5	88.7	20	1
5-96 (Bedrock)	298	528*	284*	105	27	4.3
Bedrock Impacted Groundwater						
Historical Range	246 – 410	97 - 815*	75 - 467*	95 - 168	22.5 - 45	5.36 - 18
6b-96	302	251	134	155	30.5	8.1
Historical Range	224 – 365	54.3 – 397	28.7 - 212	95.1 - 167	29.6 - 52.7	9.06 - 27
7-96	352	333	177	188	46.1	21

Notes: ** Road salt impact.*
Historical Ranges includes all data up to 2003.

Generally, the average concentrations from 2004 fall within the historical ranges for this water type. As discussed in previous annual reports, this table continues to shows the anomalously elevated potassium concentrations at location 7-96. These potassium concentrations remained relatively stable since sampling began in February 1997 as seen by the historical ranges. Further, 6b-96 also discussed in previous reports, had similar elevated potassium. These concentrations have decreased and now appear to be comparable with location 5-96. It has been concluded that these elevated potassium concentrations are naturally occurring. This was based on the fact that the historical location 1b-91 (which was destroyed during construction activities and replace by location 6b-96) also had similar to higher concentrations before the WRIC was built.

However, in 2002 and 2003 potassium concentrations increased in 7-96 and have remained at these higher concentrations throughout 2004. This increased concentration could still be natural as the actual concentrations observed are below the maximum historical concentrations observed at location 3. A further discussion of the water quality in monitor 7-96 is provide separately below.

General Discussion

Overall, the groundwater chemistry during 2004 was similar to previous years. As observed in the past, zinc concentrations continue to be naturally elevated at 5-96.

Three locations require further discussion based on the 2004 assessment and the previous assessment in the last annual report. In 2002, elevated ammonia, TKN and COD were observed at monitors 7-96, 12a-00 and 12b-00. As well, significantly elevated chloride and sodium were observed in the December 2002 sample from monitor 12a-00.

In the previous year of 2003, there was an increase in chloride and sodium at location 9-96. Further, COD continued to increase at 12b-00, along with a significant increase in BOD and iron. As well, chloride and sodium concentrations continue to be elevated at monitor 7-96.

As observed since 1999, monitor 7-96 has exhibited higher than normal chloride and sodium concentrations (road salt effects). These concentrations were comparable to those observed at monitor 6b-96. The possible reason for the increase in 1999 was the change in the shallow groundwater flow. In June 1999, the water levels suggested that groundwater flow was being directed to the south. This was attributed to the construction of the SUBBOR pilot facility. As this was the case, the higher road salt effects observed at monitor 6b-96 could be drawn towards monitor 7-96 (normally upgradient). By December 1999, the measured groundwater levels indicated that flow was once again to the northeast. However, in 2000 the chloride and sodium concentrations still remained elevated with the highest observed in June 2000. The higher concentrations still observed in 2000 may be related to residual effects from when the groundwater flow had been reversed during the construction of the SUBBOR pilot facility (i.e., higher road salt impacted water is still being drawn back now that groundwater flow has reversed to normal). Once again, these chloride and sodium concentrations remained elevate in 2001, albeit at slight lower concentrations than observed in 2000. Since 2001, concentrations have remained at these higher seasonal values. This has continued into 2004.

With the longer term database it has become apparent that a seasonal trend is being observed (higher in the late spring and lower in the late fall). It is now expected that the concentrations observed are a combination of the possible residual road salt effects discussed above along with contributions from existing road salt runoff at the WRIC.

In June 2002, a slight increase in ammonia, TKN, ammonia and COD was observed in 7-96. These concentrations, with the exception of ammonia, continued to increase into December. Discussions with WRIC staff indicated that it was possible that some runoff from the compost pad could have occurred during the spring thaw. Starting in the late fall of 2001 the containment curb around the pad was being reconstructed to better control collected runoff. However, due to winter condition it was not fully completed until the late spring of 2002. It was concluded, at the time, that the slight increase would come back down now that the berm was completed and the changes to the storm water system were initiated. Assessment of the 2003 water quality did show that the above parameters decreased to background concentrations. In 2004 these parameters appeared to increase slightly, but review of the background upgradient monitors 5-96 and 8-96 also showed similar concentrations.

At location 12, an increase in COD, ammonia, TKN, chloride and sodium was observed in 2002. This location is found at the southwest corner of the WRIC facility, which was in the area of the now former Pilot SUBBOR plant (Figure 1). Based on shallow groundwater flow, it is also upgradient of any WRIC operations. The table below shows the concentration of the above parameters since this monitor was sampled in 2001. What was apparent is that the shallow outwash monitor 12b-00 first showed an increase in concentrations in June 2002. By December 2002, they had decreased significantly. Conversely, the bedrock monitor 12a-00 become elevated in December 2002, although at lower concentrations. The only difference was that chloride and sodium were significantly higher than the June or December concentration observed in the shallow monitor. The cause of this increase was considered unknown but it appeared to have come from a surface source possibly located to the west or southwest of this location, which may have occurred during the winter or spring of 2002.

By 2003, all concentrations appear to have decreased back to normal in the bedrock monitor, however further increases were observed in the shallow monitor (12b-00) as shown on the table below. It should be noted that only the June sample could be collected at this location in 2003. The December sample could not be collected, as there was no access to this location due to a legal issue with SUBBOR. At 12b-00, the COD increased again and became higher than that observed during the previous year. As well, there was a significant increase noted for BOD and iron. Although still elevated, TKN, chloride and sodium had decreased slightly. Assessment of this water quality, at that time, indicated a shift towards a compost leachate signature similar to that observed from leachate produced at the WRIC. However, as stated earlier, this location is upgradient of any WRIC operations (i.e., the composter is downgradient to the east and the compost pad is downgradient to the north of this location).

Sampling of this location resumed in 2004. Review of this recent data indicates that there are no longer any apparent impacts in the deeper bedrock monitor 12a-00. However, monitor 12b-00 continues to have minor impacts noted, most noticeably in the summer. Slightly elevated COD, iron, ammonia and TKN continue to denote these impacts, although general decreasing trends have been observed since the initial impacts. The source of this impact is still unknown, although the most recent analysis does indicate that it appeared to have been caused by one time instance, such as a spill. As this is the case, it is expected that the minor impacts observed in 2004 will further attenuate over time.

	12A-00							**12B-00**						
	Jun-01	**Dec-01**	**Jun-02**	**Dec-02**	**Jun-03**	**Jun-04**	**Dec-04**	**Jun-01**	**Dec-01**	**Jun-02**	**Dec-02**	**Jun-03**	**Jun-04**	**Dec-04**
COD	7	16	10	**24**	11	10	13	11	12	**48**	**32**	**88**	**29**	**24**
BOD	1.2	1.2	0.6	<0.5	<0.5	<0.5	<0.5	0.9	1.2	2.9	1.2	**92**	2.1	<0.5
Iron	<0.01	<0.01	0.04	<0.1	<0.01	<0.01	<0.01	0.62	0.02	0.01	**16.7**	**22.7**	**11**	3.25
Ammonia	0.45	0.19	0.64	**4.23**	0.41	0.47	0.13	0.13	<0.03	**9.3**	0.71	0.57	**1.46**	0.43
TKN	0.92	0.75	**1.34**	**4.22**	**1.04**	0.89	0.67	0.45	0.26	**10.8**	**1.41**	**1.33**	**1.94**	**1.03**
Chloride	82.8	24.7	44.3	**1200**	55.5	45.3	38.5	40	11.7	**169**	**135**	**117**	51	22.7
Sodium	22.6	19.7	20.6	**763**	36.2	23	16.4	25.2	12.3	**94.7**	**112**	**66**	33.8	16.4

At monitor 9-96, chloride and sodium had exhibited an increasing trend throughout 2002 into 2003. Due to the increase, the noted concentrations went above the historical average. This follows a slight increase that occurred in mid to late 1999. In 2004, these concentrations have decreased when compared to those observed in 2003, but still remain slightly above the historical average.

This monitor is located in the southeast corner of the site along the access road that leads to the back door of the compost building. There are two potential sources for this increase. The most plausible source is road salt. During the building of the SUBBOR plant in 1999, an operational change occurred in that the back door to the composter was moved to face east. The eastern access road was also terminated at this point. It would be expected that with the higher truck activity in this area, since 2000, that there is now a greater potential for road salt effects either from on site-activities or brought in via the trucks.

The other potential cause of the increase in 2003 could have been a minor compost leachate spill that occurred in the spring of that year. This minor spill was caused due to flooding through the access door. WRIC staff immediately cleaned up this minor spill and completed changes to the back door to stop any future release should flooding occur again. Due to the short time frame and the fact that other more traditional compost leachate parameters were absent (BOD, COD, TKN and ammonia), it would be expected that this was not the cause of the increase noted in 9-96.

As per the requirements of the C of A, the groundwater was to be analyzed for organics once in 2004. This sample was collected in June 2004. As observed previously, organic sampling has shown that the majority of the parameters analyzed are usually found below the method detection limit. This was also the case during 2004. However, low concentrations of xylene and toluene in 12a-00 and xylene in 12b-00 were detected. Concentrations of these parameters were also detected in 2002 when impacts were first noted at this location, as discussed above. It expected that they are related to residual impacts still observed in 2004 at this location. As observed in 2001 and 2003, a similar but low concentration of 1,1,1-trichloroethane was detected at 9-96 in 2004. The reason for these low levels is unknown as 1,1,1-trichloroethane has not been observed in historical leachate samples or in the sample collected at SW 3 (compost run-off) in 2003. Sampling of this monitor should continue to assess whether these low levels persist. A low concentration of chloroform was also detected from the pond east of the transfer station (designated EPTS-01). This is considered a laboratory artifact, as this pond is upgradient of the transfer station. As this may be a sampling artifact, it is recommended that a traveling blank and field blank be collected during future organic sampling events. Based on this analysis, there are no compost leachate impacts on groundwater for organic parameters.

In conclusion, there were no observable effects attributed to the WRIC on the groundwater quality beneath the site. No effects were observed at the boundary of the site. Road salt effects continue to be observed at location 5-96, 8-96 (upgradient of site), 7-96 and 9-96 (on-site) and are related to off-site as well as potential on-site activities. Minor impacts were once again observed in 2004 at monitor 12b-00, located at the southwest corner of the site. These impacts have continued to decrease since they were first observed in 2002. This location is considered to be upgradient of any WRIC operations. The cause of the initial impact continues to be unknown but it appears to have come from a surface source possibly from the west or southwest of the site. Organic sampling once again showed that all parameters analyzed were found below their method detection limits with the exception of laboratory related detections as well as sampling artifacts. As recommended in the previous report, now that a five year database has been attained, organic sampling can be removed from the groundwater monitoring program for all historical locations, with the exception of 9-96. As well, it is recommended that a travel blank and field blank be taken during future organic sampling events to assess potential sampling artifacts. Sampling of all recent locations should continue on a yearly basis for at least two more year.

5. Conclusions

The WRIC Facility has generally complied with the requirements of the C of A for groundwater, surface water and leachate monitoring. Semi annual groundwater monitoring was conducted in June and November 2004. Monthly monitoring of surface water stations SW 1 and 2 as well as SW 3(receives compost run-off) was conducted. However, no samples could be collected at SW 1 and SW 2 as they were either dry or frozen. No samples were collected at SW 3 as well. The reason was that the connection to the sanitary sewer from this pond was left open. As this was the case, any compost run-off that entered the pond was direct into the sanitary sewer before a sample could be collected.

Based on these data, there does not appear to be impacts on the surface water from the site.

Road salt effects were noted at some up-gradient and on-site locations (5-96, 8-96 and 7-96). These are related to off-site and potential on-site activities. There were no apparent compost leachate impacts observed in the groundwater at the site boundary.

Minor impacts are still observed in the shallow monitor at location 12 during 2004. The impacts observed are considered the residual of the initial impacts first noted in 2002. It is expected that these residual impacts will continue to attenuate over time. No observable impacts were found in the deep monitor. This location is upgradient of any WRIC operations (i.e., the composter is downgradient to the east and the compost pad is downgradient to the north of this location), where any leachate would be produced and therefore, does not appear to be the cause. The cause of the initial impact continues to be unknown.

No remedial or mitigative actions were required at the WRIC Facility in 2004 based on finding from the groundwater monitoring program.

6. Recommendations

Groundwater, surface water and leachate sampling should be conducted in 2004 as originally outlined in the 1997 annual report and revised in 1999. This includes twice yearly sampling of the groundwater and leachate (where applicable). Surface water monitoring should still be taken on a monthly basis, in accordance with the C of A, at SW 1 and SW 2. Surface water samples should also be collected from the portion of Detention Pond 1 that is to receive storm water runoff from the compost pad, designated SW 3. Detailed recordings of discharge and overall conditions (such as dry or stagnant water) should be documented during each surface water event. As well, the monthly sampling is to be undertaken during runoff conditions (weather permitting), and if no runoff event occurs are to be sampled at the end of the month regardless (unless dry). All samples should be analyzed for the parameters listed in the table on the below.

Monitoring Parameter List

Leachate Indicator		
Parameters	• Biological Oxygen Demand (BOD) • Chemical Oxygen Demand (COD) • Total Kjeldahl Nitrogen (TKN) • Ammonia as Nitrogen (NH3-N) • Total Phosphorus (Total P) • Total Suspended Solids (TSS) • Total Sulphate (SO_4) • Phenols	• Chloride (Cl) • Sodium (Na) • Calcium (Ca) • Boron (B) • Total Iron (Fe) • Phosphorus (P) • Zinc (Zn)
General Parameters	• pH • Conductivity • Alkalinity	• Magnesium (Mg) • Potassium (K)
Organics	• EPA 624,625 (ATG 16+17+18 & ATG 19+20)	

Based on organic analytical results collected to date from the groundwater and leachate, consideration should be given to removing the organic analysis from the groundwater sampling program as a five-year database has now been collected. All recent locations should remain on a yearly sampling frequency for at least two more years for organic compounds. As well, if during this time organic results remain below the method detection limit, consideration should also be given to removing them from the groundwater sampling program. Travel blanks and field blanks should also be added to any organic monitoring event to aid in determining potential sampling artifacts.

It is recommended that a monitoring nest (bedrock and overburden) be placed to the south and east of the facility (on City lands). The intent of this location is to confirm the geology and groundwater flow in this area to determine if the groundwater flow in the bedrock does ultimately move to the north.

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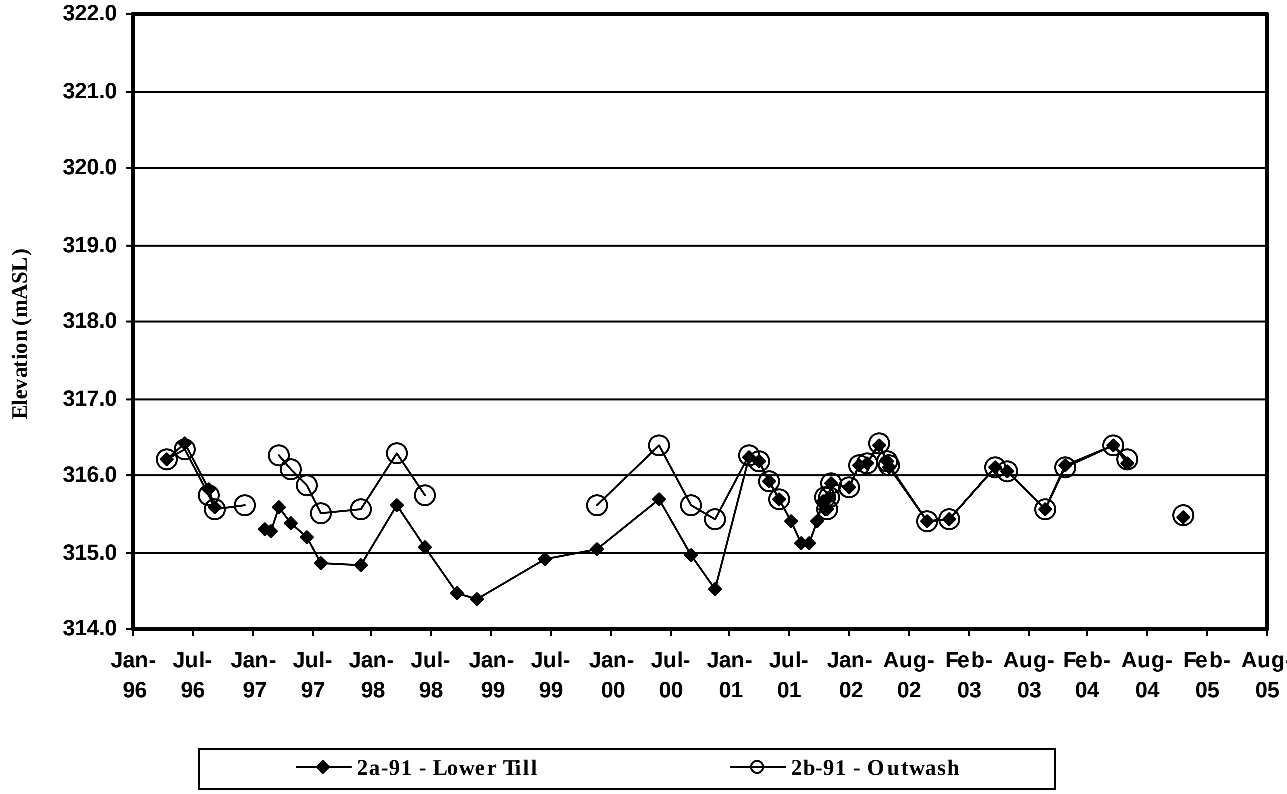
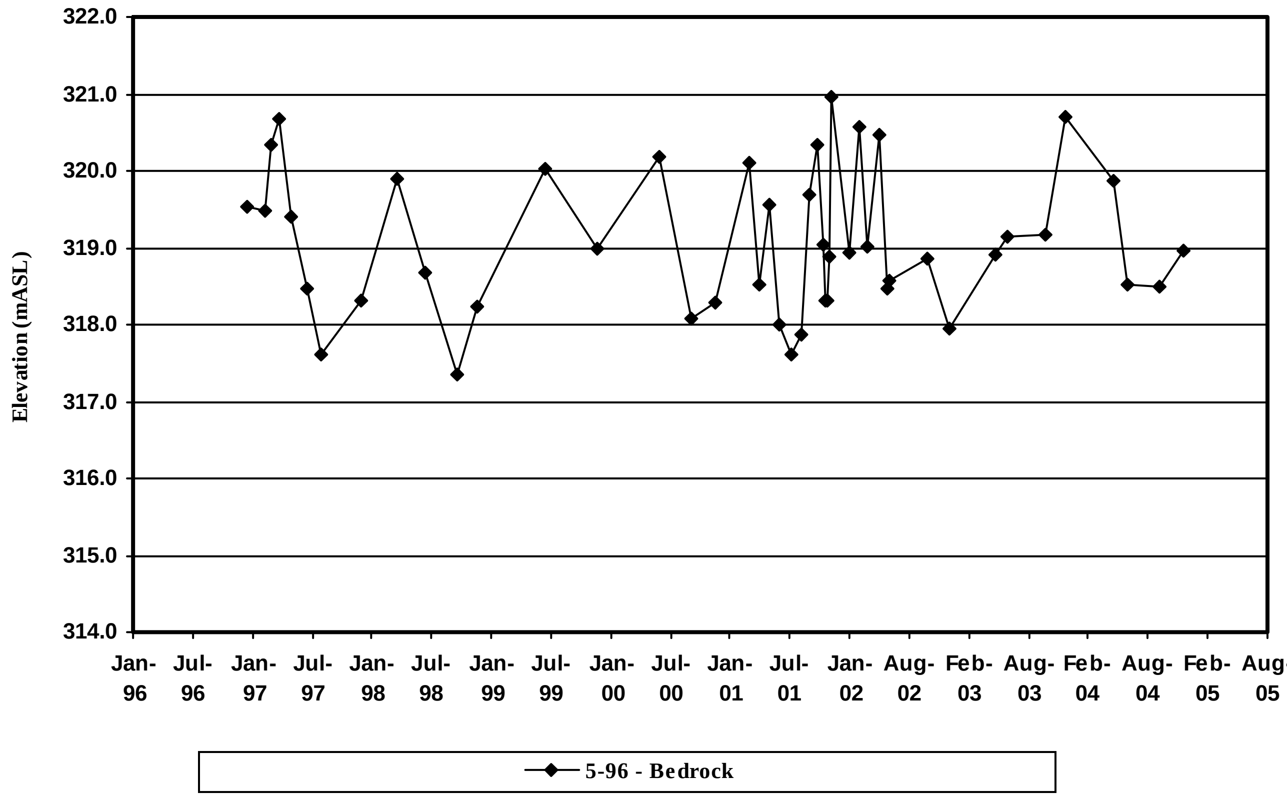
Routine Groundwater Elevations at the Waste Resources Innovation Centre

Date	2a-91	2b-91	5-96	6a-96	6b-96	7-96	8-96	9-96	10-00	11a-00	11b-00	12a-00	12b-00	13a-01	13b-01	14a-01	14b-01	15a-01	15b-01
4-Apr-91	316.00	316.02																	
14-Apr-91	315.88	315.89																	
12-May-91	315.67	315.59																	
17-May-91	315.60	315.58																	
17-May-94	316.32	316.34																	
5-May-95	315.96	316.00																	
13-Apr-96	316.22	316.20																	
13-Jun-96	316.41	316.34																	
21-Aug-96	315.81	315.75																	
9-Sep-96	315.59	315.55																	
11-Dec-96		315.62																	
20-Dec-96			319.53	315.70	315.67	315.70	318.72	315.20											
11-Feb-97	315.31		319.48	315.77	315.78	315.92	318.95	315.96											
3-Mar-97	315.26		320.34	316.37	316.38	316.57	319.37	316.62											
27-Mar-97	315.58	316.27	320.68	316.13	316.13	316.24	319.42	316.24											
6-May-97	315.38	316.08	319.39	315.86	315.86	316.02	318.72	316.04											
23-Jun-97	315.20	315.87	318.47	315.69	315.70	315.81	318.40	315.83											
8-Aug-97	314.86	315.50	317.62	315.39	315.41	315.49	317.85	315.45											
9-Dec-97	314.82	315.55	318.32	315.41	315.41	315.44	317.81	315.52											
31-Mar-98	315.62	316.28	319.90	316.08	316.15	316.22	318.94	316.26											
24-Jun-98	315.07	315.74	318.67	315.60	315.61	315.68	318.26	315.61											
29-Sep-98	314.47	Dry	317.34	315.03	315.08	315.15	317.59	315.11											
3-Dec-98	314.40	Dry	318.24	315.03	315.04	315.02	317.57	315.03											
29-Jun-99	314.91	Dry	320.03	315.51	315.55	315.54	318.33	315.46											
9-Dec-99	315.04	315.60	318.99	315.62	315.63	315.67	318.07	315.68											
21-Jun-00	315.69	316.40	320.17	316.21	316.21	316.34	318.89	316.36											
28-Sep-00	314.95	315.62	318.08	315.51	315.51	315.56	318.16	315.59											
6-Dec-00	314.52	315.43	318.29	315.32	315.32	315.34	317.98	315.35											
22-Mar-01	316.23	316.25	320.11	316.19	316.20	316.23	318.97	316.23	316.09		316.23	316.30	316.30						
26-Apr-01	316.19	316.19	318.53	316.02	316.04	316.17	318.59	316.20	316.07		316.15	316.26	316.26						
28-May-01	315.91	315.91	319.57	315.80	315.83	315.90	318.57	315.92	315.83	316.06	315.90	316.03	316.07						
27-Jun-01	315.68	315.68	318.01	315.56	315.58	315.66	318.04	315.69	315.56	315.85	315.65	315.82	315.88						

Routine Groundwater Elevations at the Waste Resources Innovation Centre

Date	2a-91	2b-91	5-96	6a-96	6b-96	7-96	8-96	9-96	10-00	11a-00	11b-00	12a-00	12b-00	13a-01	13b-01	14a-01	14b-01	15a-01	15b-01
31-Jul-01	315.39	NR	317.62	315.32	315.34	315.38	317.80	315.39	315.14	315.34	315.38	315.53	315.58						
30-Aug-01	315.11	NR	317.87	315.09	315.10	315.10	317.76	315.11	314.87	315.11	315.11	315.26	315.31						
28-Sep-01	315.11	NR	319.68	315.14	315.16	315.11	318.26	315.09	314.85	315.08	315.13	315.35	315.48						
19-Oct-01	315.40	NR	320.35	315.45	315.46	315.40	318.54	315.38	315.35	315.50	315.43	315.61	315.71						
8-Nov-01	315.66	NR	319.03	315.62	315.63	315.65	318.17	315.66	315.61	315.85	315.66			315.74	315.64	315.74	315.71	315.70	315.95
16-Nov-01	315.56	315.71	318.31	315.63	315.65	315.55	317.90	315.71	315.59	315.82	315.69	315.78	315.80	315.89	315.76	315.86	315.83	315.84	316.06
21-Nov-01	315.57	315.56	318.30	315.61	315.48	315.68	317.99	315.56	315.45	315.66	315.68	315.79	315.80	315.89	315.75	315.88	315.82	315.84	316.02
27-Nov-01	315.71	315.71	318.88	315.63	315.65	315.70	318.14	315.72	315.61	315.84	315.70	315.67	315.70	315.92	315.79	315.76	315.72	315.72	315.86
4-Dec-01	315.90	315.89	320.97	315.92	315.93	315.90	318.78	315.89	315.85	316.00	315.92	316.00	316.02	316.17	316.00	316.03	316.14	316.11	316.30
28-Jan-02	315.85	315.84	318.94	315.77	315.79	315.83	318.63	315.85	315.72	315.98	315.83	315.97	316.00	316.07	315.93	316.04	315.99	316.02	316.10
28-Feb-02	316.14	316.14	320.56	316.08	316.09	316.12	319.09	316.15	316.04	316.27	316.13	316.14	316.11	316.22	315.92	316.21	316.13	316.32	316.47
28-Mar-02	316.16	316.16	319.02	316.00	316.02	316.14	318.76	316.17	315.99	316.19	316.12	316.25	316.26	316.27	315.97	316.27	316.05	316.23	316.34
10-Apr-02														316.27	316.00	316.26	316.05	316.24	316.31
29-Apr-02	316.40	316.41	320.48	316.08	316.11	316.39	319.05	316.41	316.24	316.43	316.37	316.39	316.43	316.36	315.96	316.37	316.04	316.33	316.35
28-May-02	316.18	316.18	318.46	316.03	316.05	316.16	318.70	316.20	316.05	316.07	316.33	316.25	316.25	316.35	315.96	316.35	316.03	316.30	316.34
4-Jun-02	316.11	316.12	318.57	315.98	315.99	316.10	318.69	316.13	315.95	316.19	316.09	316.20	316.21	316.28	315.93	316.26	315.99	316.24	316.27
30-Sep-02	315.41	315.40	318.85	315.36	315.38	315.40	318.10	315.41	315.30	315.64	315.40	315.56	315.64	315.75	315.70	315.74	315.81	315.69	315.75
3-Dec-02	315.44	315.43	317.96	315.37	315.39	315.41	317.84	315.44	315.34	315.67	315.43	315.54	315.59	315.76	315.75	315.76	315.87	315.71	315.86
25-Apr-03	316.10	316.11	318.90	315.92	315.94	316.09	318.49	316.13	315.85	316.04	316.07	316.20	316.21	316.03	N/A	316.05	315.39	316.01	316.31
2-Jun-03	316.06	316.05	319.15	315.92	315.94	316.05	318.57	316.08	315.86	316.18	316.03	316.14	316.15	316.23	316.01	316.24	316.11	316.19	316.35
30-Sep-03	315.57	315.57	319.18	315.52	315.53	315.56	318.20	315.56	315.38	315.74	315.57	N/A	N/A	315.85	315.85	315.84	315.97	315.80	315.99
1-Dec-03	316.12	316.11	320.70	316.09	316.11	316.11	318.67	316.11	315.93	316.15	316.12	N/A	N/A	316.34	316.16	316.33	316.25	316.29	316.56
27-Apr-04	316.38	316.38	319.88	316.20	316.23	316.42	319.10	316.39	316.14	316.45	316.34	N/A	N/A	316.52	316.19	316.51	316.27	316.48	316.56
8-Jun-04	316.16	316.20	318.53	316.00	316.02	316.20	318.88	316.20	315.93	316.32	316.15	316.28	316.27	316.33	316.08	316.34	316.18	316.33	316.43
14-Sep-04	N/A	N/A	318.50	315.49	315.51	315.66	318.19	315.57	315.42	315.85	315.63	315.67	315.72	315.88	315.82	315.89	315.94	315.83	316.13
30-Nov-04	315.46	315.47	318.97	315.42	315.44	315.50	318.14	315.47	315.29	315.61	315.46	315.63	315.74	315.72	315.54	315.70	315.52	315.67	315.74





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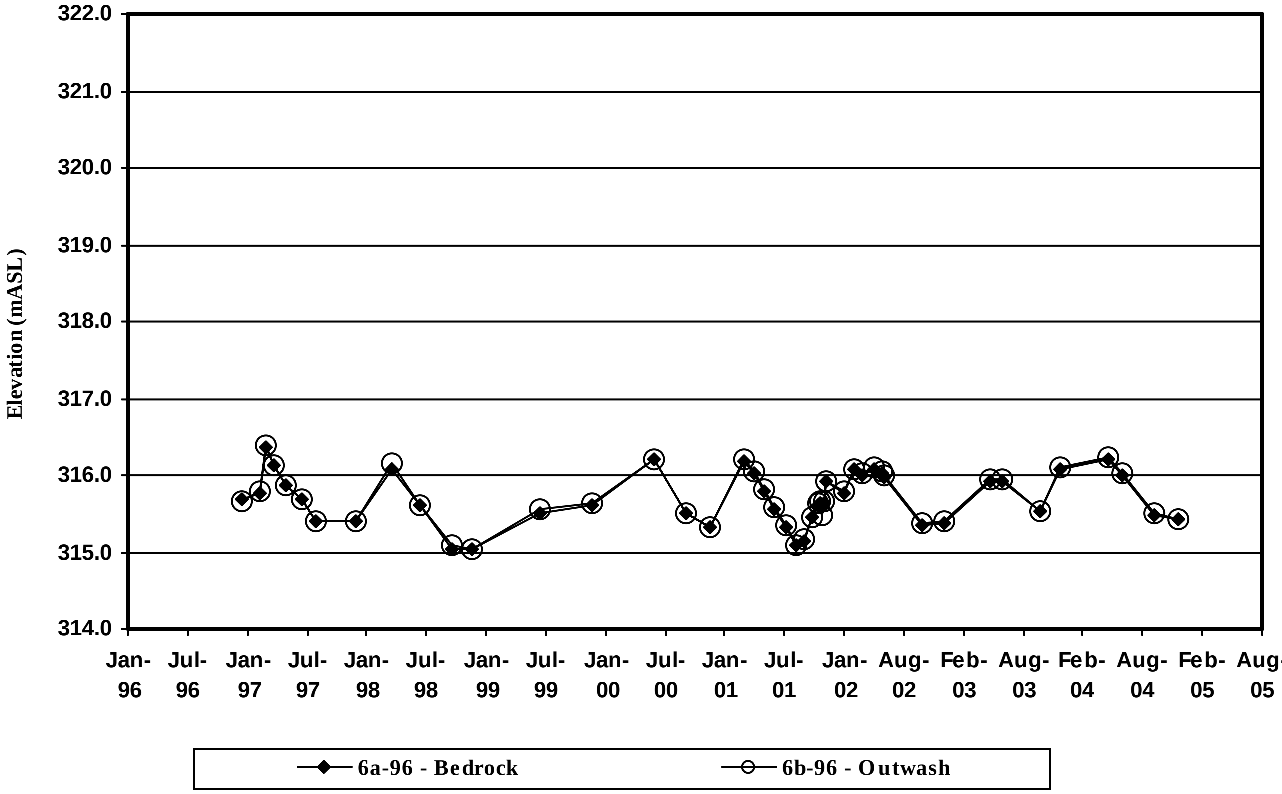
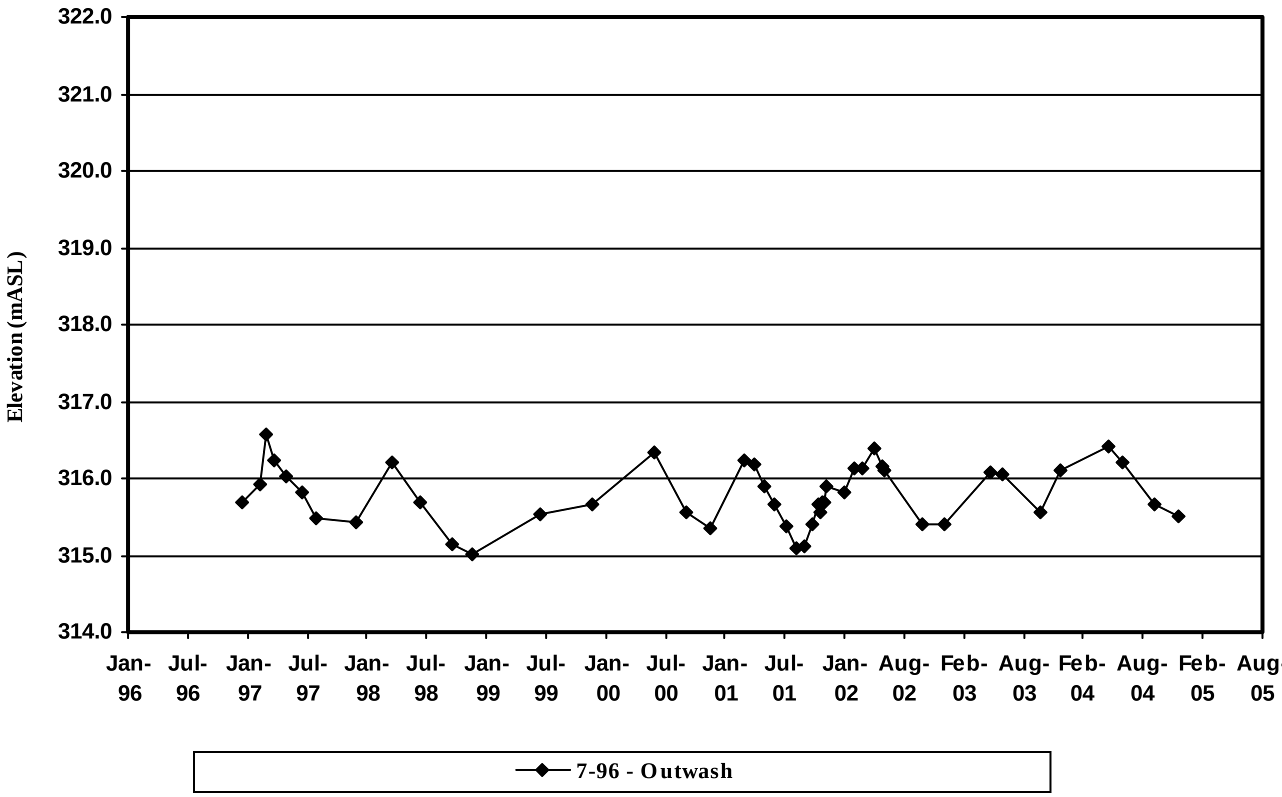
Hydrographs

FIGURE A - 1

50-133
9 Rpt Hydrographs





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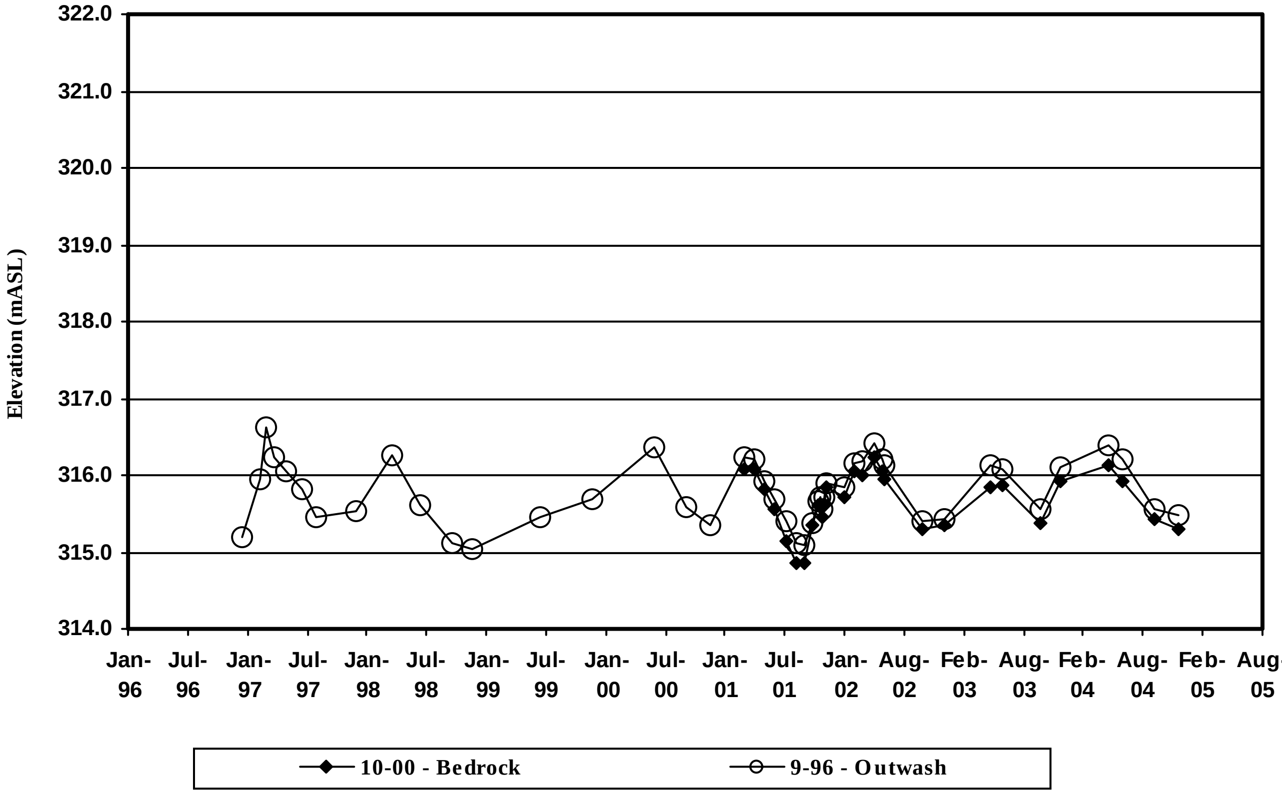
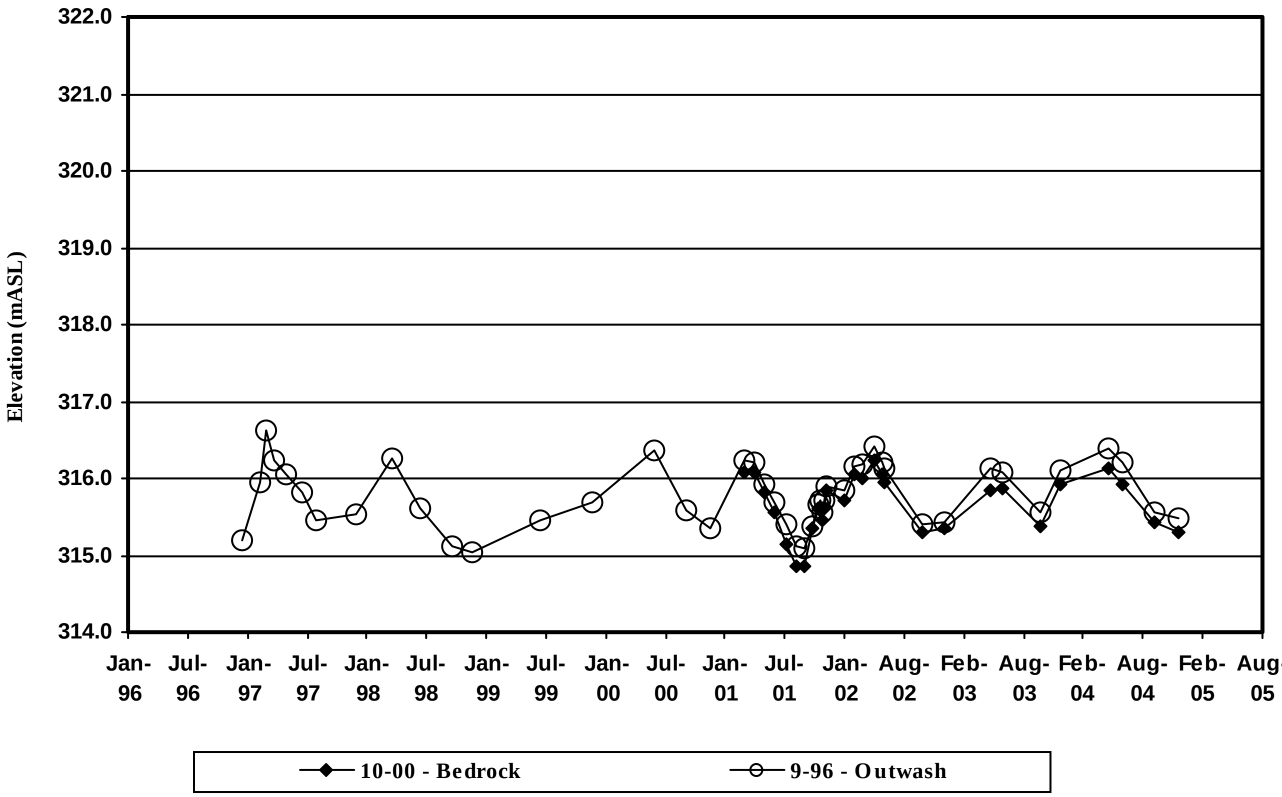
Hydrographs

FIGURE
A - 2

50-133
9 Rpt Hydrographs





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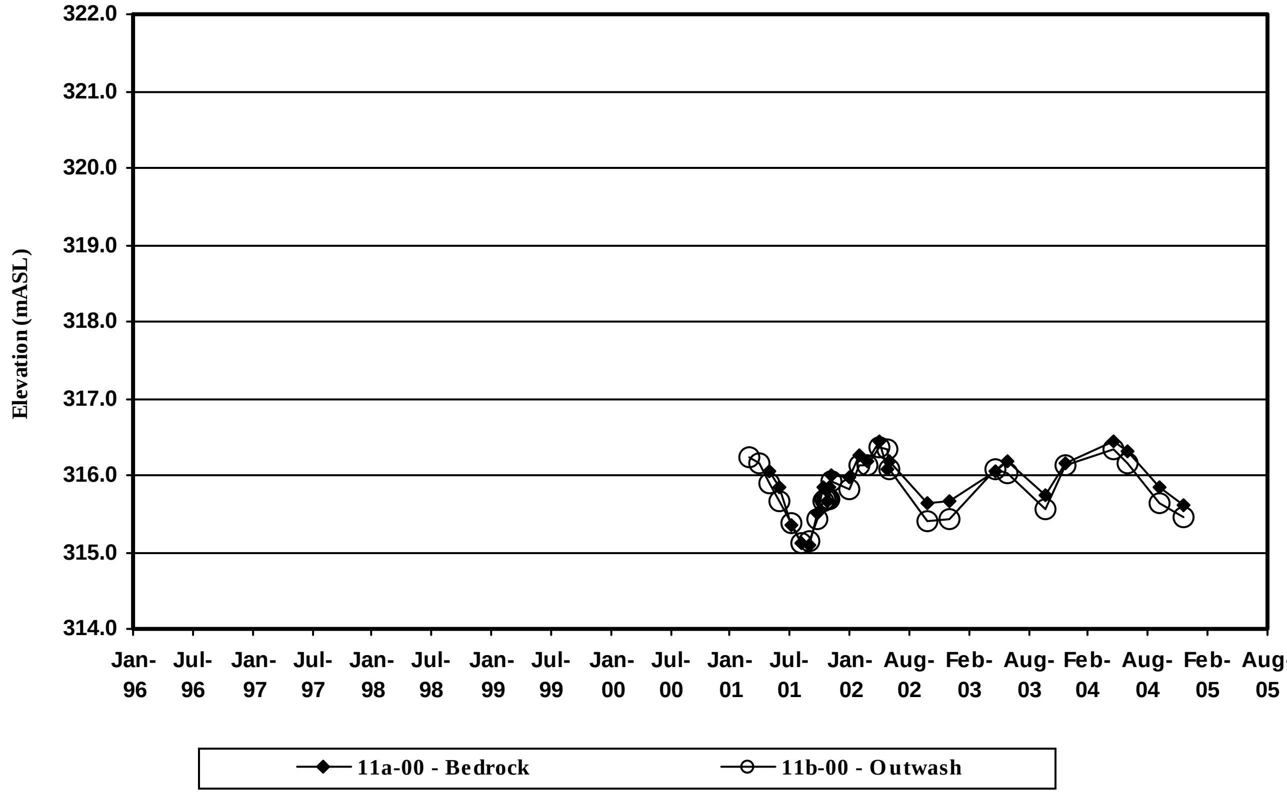
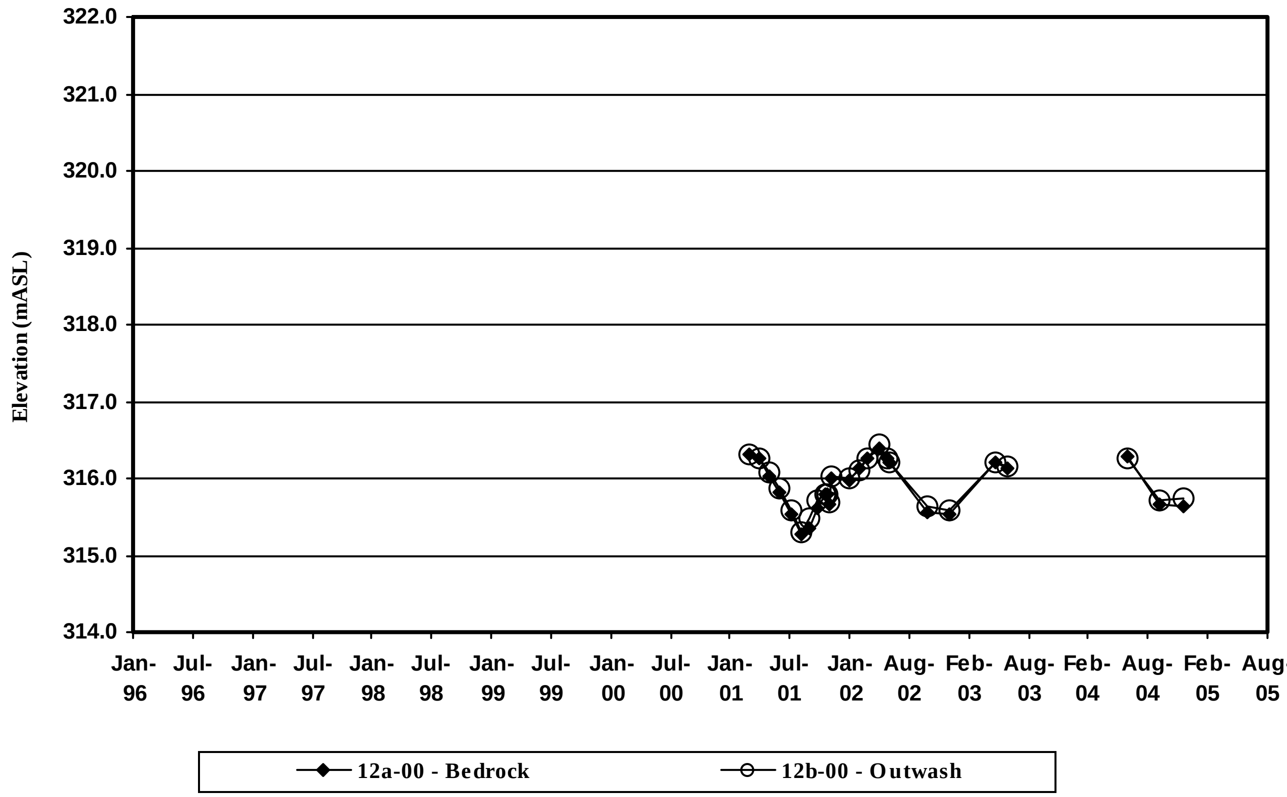
Hydrographs

FIGURE A - 3

50-133
9 Rpt Hydrographs





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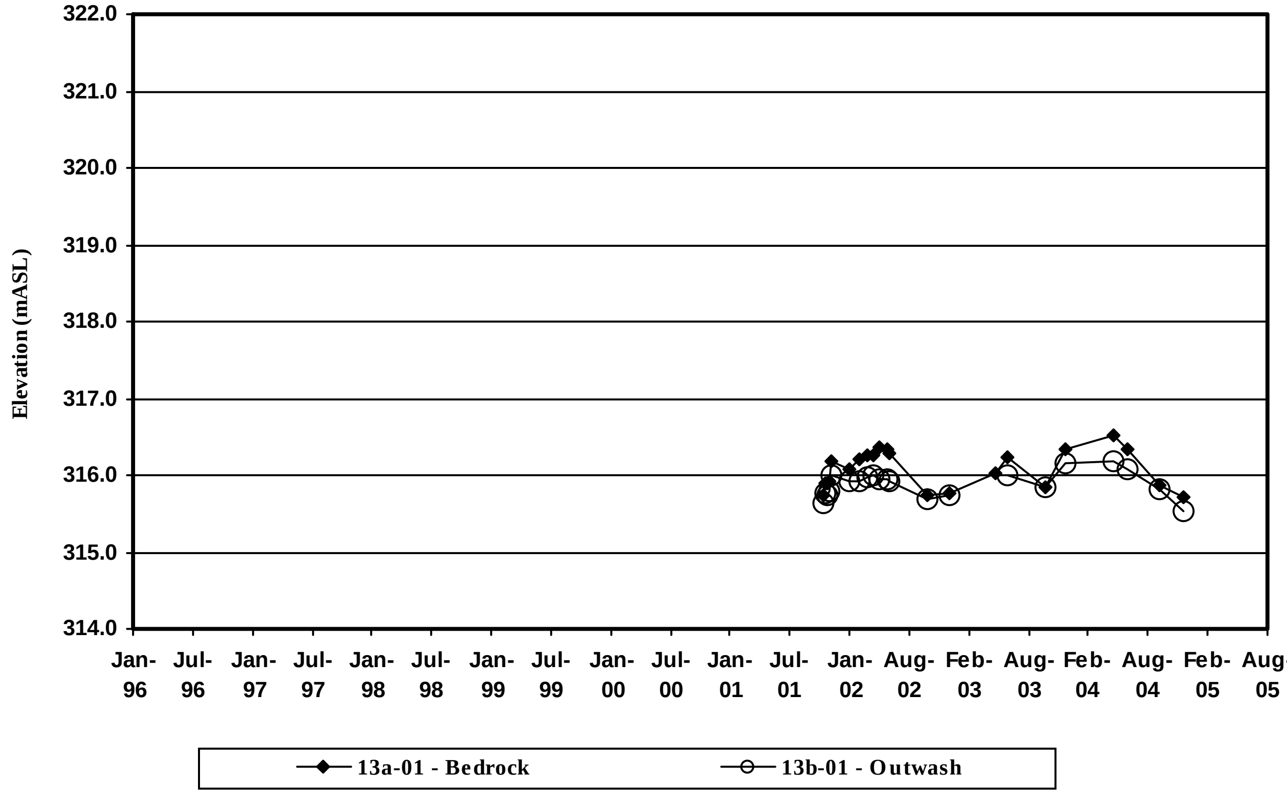
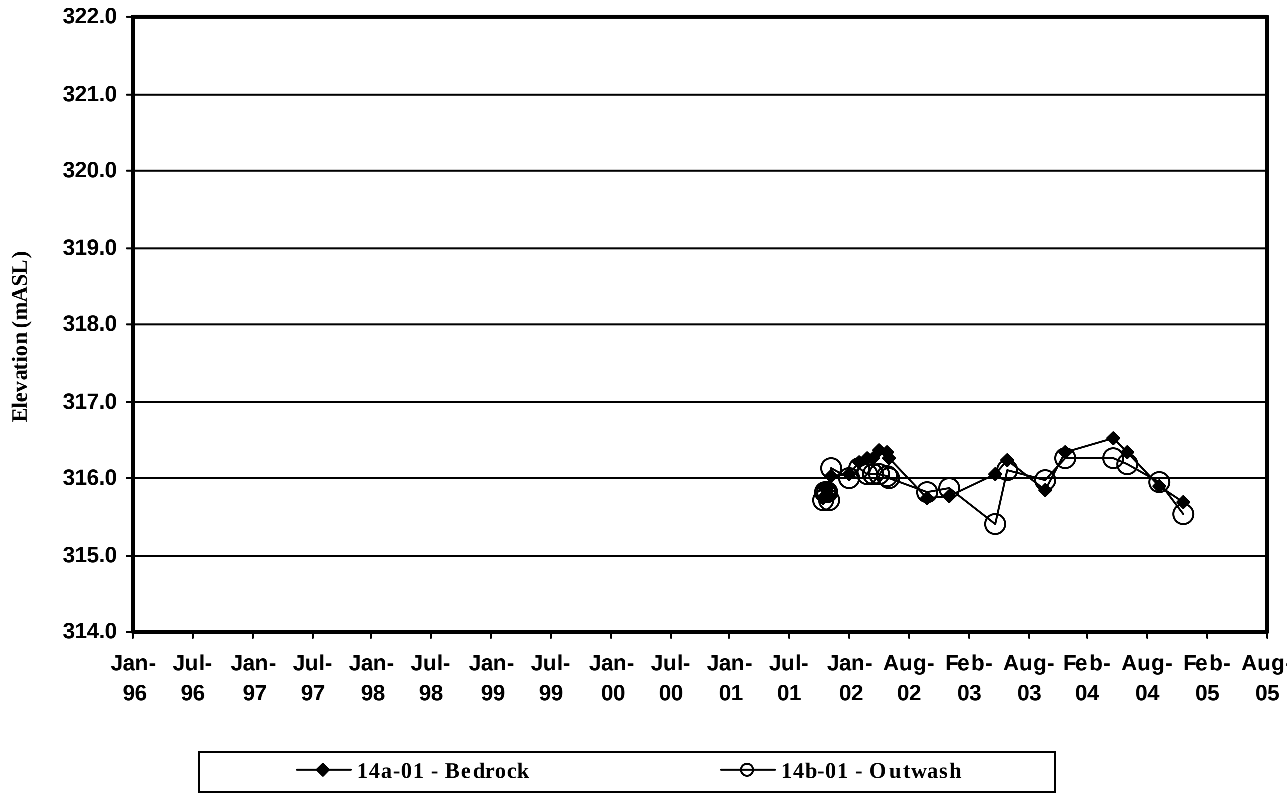
Hydrographs

FIGURE A - 4

50-133
9 Rpt Hydrographs





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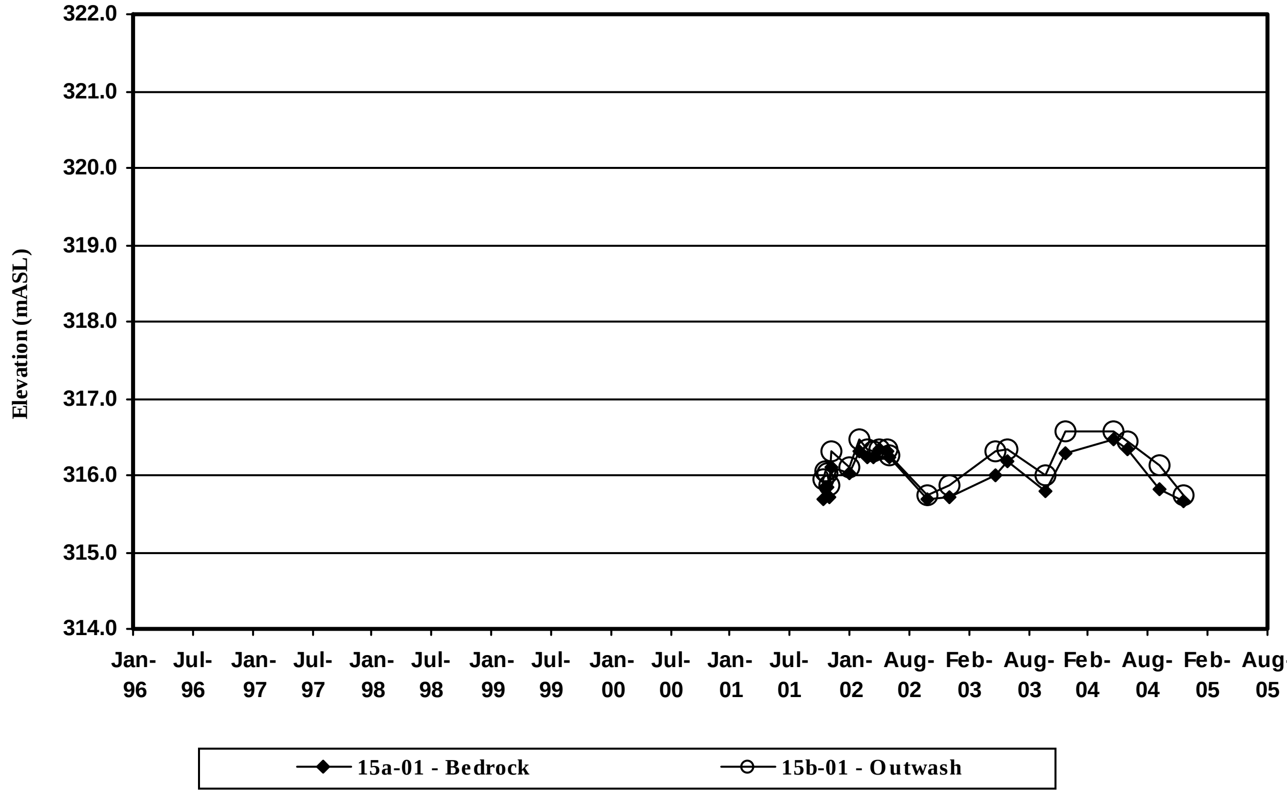
Hydrographs

FIGURE A - 5

50-133
9 Rpt Hydrographs



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Hydrographs

FIGURE A - 6

50-133
9 Rpt Hydrographs

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	07-Nov-91	EPL	7.2	609	297	32	8.1							25.6		10.5	2.9	96.7	< 0.005	0.03	< 0.09	< 0.005
1a-91	04-Mar-92	EPL	7.09	647	300	31.8	7.9							26.2		9.23	3.14	94.7	0.03	0.03	1.13	0.02
Lower Till	07-Mar-92	EPL	7.63	721	234	35.5	8.1							27.3		14.1	2.72	89.1	< 0.005	< 0.01	< 0.06	< 0.005
	17-May-94	EPL	7.76	703	242	31.6	5.5					< 0.05		28.7		12.6	2.41	97.6	0.10	0.02	< 0.06	0.02
	05-May-95	MDS	7.6	689	250	32.5	5.2					< 0.05		31.7		17.3	2.67	102	0.01	0.02	< 0.06	< 0.005
Monitor	07-Nov-91	EPL	7.3	753	280	40	15							37.4		23.9	3.5	111	0.07	0.05	< 0.09	< 0.005
1b-91	04-Mar-92	EPL	7.31	733	227	34.9	13.6							34.1		10.5	2.95	97.2	0.27	0.05	0.7	0.02
Outwash	07-Mar-92	EPL	7.64	740	224	34.1	14.6							33.6		20.7	3.01	97.8	0.02	0.04	< 0.06	0.01
	17-Mar-94	EPL	7.74	521	225	23	11.4					< 0.05		15.6		5.45	2.01	67.7	0.06	0.03	< 0.06	0.009
	05-May-95	MDS	7.85	398	138	16.4	7.4					< 0.05		19.7		26.9	10.9	46.1	0.03	0.03	< 0.06	< 0.005
Monitor	07-Nov-91	EPL	7.78	434	215	28	2.8							17.1		24.5	32	35	0.11	0.06	< 0.09	< 0.005
2a-91	04-Mar-92	EPL	7.61	494	229	28.7	3.6							20		21.3	34.7	36.9	0.31	0.07	1.14	0.009
Lower Till	07-Mar-92	EPL	7.88	479	209	28.3	1.4							16.2		15.2	30.6	36.6	0.02	0.06	< 0.06	< 0.005
	17-May-94	EPL	7.99	462	236	24.3	0.9					< 0.05		10.5		10.5	39.6	30.4	0.20	0.07	< 0.06	< 0.005
	05-May-95	MDS	8.02	437	210	20.9	1					< 0.05		11.7		8.92	45.5	28	0.05	0.07	< 0.06	< 0.005
	13-Apr-96	ENT	8.31	424	220	29	1.82				0.45			19.8	< 0.5	8.1	30	49.3	0.23	0.09		0.01
	13-Jun-96	ENT	8.27	331	234	26.5	2.61				0.159			18.9	< 0.5	7.5	32	43.3	< 0.01	0.11		< 0.01
	21-Aug-96	ENT	7.7	454	237	26.9	2.1				0.22			19.9	1	7.5	33.3	43.9	< 0.01	0.11		< 0.01
	18-Sep-96	ENT	8.11	363	226	31.4	1.9				0.03			18	< 0.5	6.4	31.4	41.1	< 0.01	0.15		< 0.01
	11-Feb-97	WBL	7.9			23.8	1.7	< 0.34	8	0.17	0.021	< 0.011	< 2	48.4	< 0.72	119	27.1	45.6	0.8	0.06	0.05	0.03
	26-Mar-97	WBL	8.18	514	235	27.7	2.29	< 0.34	17	0.16	0.089	< 0.011	< 2	25.2	< 0.72	5.8	26.2	51	0.67	0.07	< 0.03	0.02
	25-Jun-97	WBL	8.24	471	226	21.8	1.43	1.89	< 7	0.33	0.26	< 0.011	3	18.8	< 0.72	5.33	24	36.5	0.07	0.07	< 0.03	0.02
	01-Oct-97	WBL	8.1	441	227	22.6	1.63	0.66	14	0.33	0.176	< 0.011	4	16.3	< 0.72	5.13	26.9	38.6	0.48	0.06	< 0.03	0.02
	11-Dec-97	WBL	8.12	450	225	22.2	1.92	< 0.34	33	0.34	0.108	< 0.011	< 2	16.7	< 0.72	4.97	29.5	38.6	1.28	0.06	< 0.03	0.04
	31-Mar-98	WBL	8.05	455	227	21.3	1.77	1.03			0.212		< 2	16.3	< 0.72	6.47	24.2	44.8	1.14	0.06	< 0.01	0.02
	24-Jun-98	WBL	8.06	463	230	21.2	1.39	0.9			0.177		8	17	< 0.72	4.92	26.7	42	0.18	0.10	< 0.006	0.01
	02-Oct-98	CAN	8	500	240	25	< 1	2	< 5	0.17	< 0.1	0.08	4	19	< 1	4.8	31	41	0.6	0.05		0.02
	03-Dec-98	CAN	7.9	490	240	23	< 1	< 2	< 5	0.2	< 0.1	0.12	4	17	< 2	4.9	30	36	< 0.05	0.05		< 0.01
	29-Jun-99	Barr	8.45	440	220	24.2	2	1.5	9	0.33	0.24	0.025	1790	15.8		5.9	28.7	38	0.39	0.05	< 0.1	0.02
	09-Dec-99	Barr	8.04	454	221	23.2	1.4	0.7	14	0.46	0.23	0.009	2760	15	< 1	< 5	32.3	34.5	0.02	0.07	< 0.1	< 0.005
	21-Jun-00	Philip-	7.88	441	231	21.6	1.2	1	< 5	0.46	0.31	0.005	198	15.3	< 1	5.1	25.6	35.8	< 0.03	0.04	< 0.05	< 0.005
	07-Dec-00	Philip-	8.15	388	236	22.6	1.1	1.1	10	0.47	0.25	0.011	3870	17.8	< 1	5.2	27.8	35.7	0.21	0.09		0.11
	27-Jun-01	Philip-	7.9	456	236	23	1	1.9	< 5	0.34	0.22	0.018	538	22.4	< 1	4.8	29.4	38.2	0.06	0.13	< 0.1	0.14
	03-Dec-01	Philip-	8.19	457	241	20.3	1.6	1	< 5	0.23	0.07	0.028	19	18.1	< 1	4.2	30.4	33.3	0.03	0.07	< 0.1	0.04
	04-Jun-02	Philip-	8.44	443	266	23.4	1	0.6	8	0.66	0.13	0.016		15.2	< 1	3.6	25.7	39.6	< 0.01	0.06	< 0.1	0.007
	03-Dec-02	Philip-	8.27	466	230	24.4	2	< 0.5	17	0.94	0.07	0.01		14.7	< 1	3.3	27.1	42.3	0.01	0.05	< 0.1	< 0.005
	02-Jun-03	Philip-	8.14	460	220	23.7	1	< 0.5	9	0.67	0.17	< 0.001		15.7	20	4.6	25.8	40.4	< 0.01	0.06		< 0.005
	01-Dec-03	Philip-	8.21	415	225	24.5	1.1	1	6	0.25	< 0.03	0.015		20.1	< 1	4.4	24.6	40.8	0.03	0.06	< 0.1	< 0.005
	09-Jun-04	Philip-	8.11	459	234	22	< 1	0.7	6	0.36	0.07	0.01		20.9	1	5.2	36.8	36.6	< 0.01	0.06		0.03
	30-Nov-04	Philip-	8.04	452	241	23.5	1	< 0.5	5	0.23	0.03	0.005		15.5	< 1	4.3	27.5	38.4	< 0.01	0.05		< 0.005

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	07-Mar-92	EPL	8	499	154	26.3	0.4							28.1		18.1	3.56	63.8	< 0.005	< 0.01	< 0.06	< 0.005
2b-91	17-May-94	EPL	7.9	587	208	31.4	2					< 0.05		34		8.69	9.44	63.9	0.05	0.01	< 0.06	< 0.005
Outwash	05-May-95	MDS	7.95	530	179	28.3	0.6					< 0.05		25.5		8.59	3.69	68.9	0.02	< 0.01	< 0.06	< 0.005
	13-Apr-96	ENT	7.91	425	169	26.8	0.908				0.01			30.3	< 0.5	11.6	4.1	67.9	< 0.01	0.42		< 0.01
	13-Jun-96	ENT	8.34	337	177	25.1	0.8				0.016			28.2	0.1	7.5	3.9	60.3	< 0.01	0.05		< 0.01
	21-Aug-96	ENT	8.16	373	167	22.8	1.14				0.06			26.2	1	6.7	3.63	59.6	< 0.01	0.05		< 0.01
	18-Sep-96	ENT	7.93	377	216	22.9	0.9				< 0.01			26	< 0.5	6.5	2.9	60.2	< 0.01	0.07		< 0.01
	11-Dec-96	ENT	8.19	459	208	21.1	1.1				0.04			26.7	< 0.5	7.2	4.6	51	< 0.01	0.02		0.01
	27-Mar-97	WBL	8.14	543	180	26.8	0.69	< 0.34	18	0.24	< 0.01	0.014	2	25.8	< 0.72	10.5	2.4	71.9	0.09	0.03	< 0.03	0.01
	31-Mar-98	WBL	7.92	556	183	25.8	0.78	1.03			< 0.019		< 2	23.2	1.34	16.2	3.88	74.8	0.11	< 0.02	0.02	0.01
	24-Jun-98	Dry																				
	02-Oct-98	Dry																				
	03-Dec-98	Dry																				
	09-Dec-99	Barr	7.77	463	166	23.9	< 1	0.9	14	0.4	0.43	0.005	987	27	< 1	17	3.6	53.2	< 0.01	< 0.01	< 0.1	0.02
	21-Jun-00	Philip-	7.89	401	184	24.5	0.7	< 0.5	< 5	0.23	< 0.03	< 0.002	321	25.5	< 1	8.1	4	58.2	< 0.03	< 0.005	< 0.05	< 0.005
	07-Dec-00	INS																				
	27-Jun-01	INV																				
	03-Dec-01	INV																				
	04-Jun-02	Philip-	8.22	362	176	21.8	< 1	1.1	15	1.01	< 0.03	0.006		19.1	< 1	5.5	1.8	52.2	< 0.01	0.01	< 0.1	0.02
	03-Dec-02	INS																				
	02-Jun-03	Philip-	8	444	182	23.1	< 1	1.4	14	0.74	< 0.03	< 0.001		15	6	4.8	2.2	54.4	< 0.01	< 0.01		0.02
	01-Dec-03	Philip-	8.16	501	190	25	< 1	< 0.5	10	0.51	< 0.03	0.004		23	< 1	8.4	2.9	61.4	< 0.01	0.01	< 0.1	0.008
	08-Jun-04	Philip-	7.83	550	256	31.2	< 1	< 0.5	7	0.49	< 0.03	0.002		21.3	< 1	8.4	2.1	90	0.04	0.01		0.18
	30-Nov-04	INS																				
Monitor	07-Nov-91	EPL	7.2	711	278	42	1							31.7		22.6	3.2	104	0.12	0.02	< 0.09	0.3
3-91	04-Mar-92	EPL	7.49	740	308	39.9	2							33.4		15.7	3.37	96.9	0.44	0.02	0.68	0.22
Bedrock	17-May-94	EPL	7.92	802	327	40.2	2.7					< 0.05		34.2		32.1	13.2	98.5	0.01	0.02	< 0.06	0.3
	05-May-95	MDS	7.47	687	300	37.2	< 0.4					< 0.05		32.5		20.8	7.75	96.5	0.02	0.01	< 0.06	0.43
	21-Aug-96	ENT	7.75	950	363	45.2	13.4				1.09			39	1.5	8	44.1	116	< 0.01	0.12		0.46
	18-Sep-96	ENT	7.53	720	323	39.9	7.1				0.45			30.8	< 0.5	40.1	18.1	105	0.03	0.11		0.28
	11-Dec-96	ENT	8.09	918	363	32.9	1.86				0.08			35.9	< 0.5	49	17.4	85.6	< 0.01	0.06		0.74
Monitor	11-Dec-97	WBL				464	29.4		79	2.08	0.037	2.07			< 0.72		98.5	905	54.9	0.05	3.3	6.86
3-97	31-Mar-98	WBL	7.72	1270	343	30.5	6.52	1.15			< 0.019		< 2	58.6	< 0.72	165	99.3	126	0.12	0.04	0.07	0.05
Outwash	24-Jun-98	WBL	7.56	939	364	27	4.98	1.17			< 0.019		2	27.8	< 0.72	71.6	44.9	112	0.48	0.07	< 0.006	0.13
	02-Oct-98	Dry																				
	03-Dec-98	Dry																				
Monitor	07-Nov-91	EPL	7.54	589	290	35	1.8							54.2		15.8	12	88	< 0.005	0.02	< 0.09	0.05
5-91	07-Mar-92	EPL	7.51	658	282	34.7	1.1							41.4		12.3	14.8	85.3	< 0.005	0.01	< 0.06	0.29
edrock/Outwa	17-May-94	EPL	7.64	547	282	31.9	1					< 0.05		15.6		8.68	4.67	68.5	0.08	0.01	< 0.06	0.92
	05-May-95	MDS	7.37	1210	234	60.2	< 0.4					< 0.05		53		210	51.1	136	< 0.005	0.02	< 0.06	0.23

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	11-Feb-97	WBL	7.32			34.8	4.83	< 0.34	< 7	0.24	0.021	0.012	< 4	32.7	< 0.72	6.53	54.6	125	0.01	0.04	< 0.03	1.07
5-96	27-Mar-97	WBL	7.45	1390	312	35	5.16	< 0.34		0.19	0.051	< 0.011	2	39.5	< 0.72	219	88.8	130	0.01	0.03	< 0.03	1.92
Bedrock	25-Jun-97	WBL	7.58	1460	326	33.5	5.1	< 0.34	< 7	0.35	0.044	< 0.011	< 2	41.6	< 0.72	251	100	104	0.02	0.03	< 0.03	1.62
	01-Oct-97	WBL	7.26	1290	345	37.1	5.57	< 0.34	13	0.29	< 0.01	< 0.011	< 2	43.4	< 0.72	190	102	116	0.02	0.03	< 0.03	1.78
	11-Dec-97	WBL	7.34	1240	358	35.9	5.85	< 0.34	25	0.24	0.018	< 0.011	< 2	43.3	< 0.72	173	96.3	115	0.02	0.02	< 0.03	1.7
	31-Mar-98	WBL	7.18	1180	352	30.6	5.14	< 0.34			0.058		< 2	41.5	< 0.72	142	75.3	128	0.02	0.03	< 0.01	1.52
	24-Jun-98	WBL	7.38	1240	346	31.4	5.27	1.32			0.062		3	38.6	< 0.72	172	84.2	107	0.03	0.05	< 0.006	2.1
	02-Oct-98	CAN	7.3	1300	370	32	5.3	3	6	0.25	< 0.1	0.03	3	42	< 1	160	91	100	< 0.05	< 0.05		1.9
	03-Dec-98	CAN	7.3	1200	380	30	5.6	< 2	< 5	0.13	< 0.1	0.11	2	39	< 2	130	88	94	< 0.05	< 0.05		1.5
	29-Jun-99	Barr	8.01	1216	333	34.4	6	1.3	10	0.23	0.06	0.004	55	41.7		236	105	105	< 0.01	< 0.01	< 0.1	2.12
	09-Dec-99	Barr	7.32	1136	355	30.2	4.8	0.6	14	0.42	0.32	0.058	24	33	< 1	124	100	90.5	< 0.01	0.02	< 0.1	1.61
	21-Jun-00	Philip-	7.27	1056	330	29.2	5	0.6	10	0.46	< 0.03	< 0.002	29	35.8	< 1	165	95.3	100	< 0.03	0.009	< 0.05	1.42
	07-Dec-00	Philip-	7.52	910	360	27.2	4.5	0.7	11	0.45	0.04	< 0.002	9	31.5	< 1	112	71.9	83.9	< 0.03	0.02		1.66
	27-Jun-01	Philip-	7.55	1376	321	33.2	5	0.8	< 5	0.22	< 0.03	0.01	27	38	< 1	275	137	111	< 0.01	0.06	< 0.1	1.81
	03-Dec-01	Philip-	7.68	1054	343	27.4	3.9	1	6	0.32	< 0.03	0.003	< 1	33	< 1	136	93.2	89.9	< 0.01	0.05	< 0.1	1.88
	04-Jun-02	Philip-	8.38	1360	290	31.1	5	0.9	9	0.39	< 0.03	0.005		32.6	< 1	290	139	106	< 0.01	0.02	< 0.1	1.92
	03-Dec-02	Philip-	7.9	1116	316	25.9	5	< 0.5	10	0.37	< 0.03	0.013		30.4	< 1	177	118	86.1	< 0.01	0.02	< 0.1	1.56
	02-Jun-03	Philip-	7.52	2132	278	38.4	6	< 0.5	10	0.39	0.03	< 0.001		43.2	6	474	263	134	< 0.01	0.02		2.35
	01-Dec-03	Philip-	7.89	1345	299	24.2	4.3	0.9	10	0.36	< 0.03	< 0.002		35.8	< 1	284	178	83.7	< 0.01	0.02	< 0.1	1.65
	08-Jun-04	Philip-	7.46	2148	275	33.2	4.6	< 0.5	13	0.48	< 0.03	0.006		47.8	< 1	631	295	130	0.06	0.02		2.43
	30-Nov-04	Philip-	7.69	1707	321	20.8	4	< 0.5	19	0.64	0.04	0.003		41.3	< 1	425	272	79	< 0.01	0.02		1.44
Monitor	11-Feb-97	WBL	7.55			26.4	3.58	0.87	17	0.25	< 0.01	< 0.011	< 2	32.4	< 0.72	16.3	68.8	111	0.04	0.04	< 0.03	0.04
6a-96	26-Mar-97	WBL	7.76	1430	237	35.4	4.36	< 0.34		< 0.07	< 0.01	< 0.011	< 2	32.7	< 0.72	312	83.9	130	0.03	0.02	< 0.03	0.05
Bedrock	25-Jun-97	WBL	7.76	1640	238	30	4.74	0.36	< 7	< 0.07	< 0.01	< 0.011	< 2	33.4	< 0.72	312	136	104	0.03	0.03	< 0.03	0.05
	01-Oct-97	WBL	7.26	1690	420	37.1	16.4	1.44	10	0.23	< 0.01	< 0.011	3	43.1	< 0.72	216	134	158	0.02	0.06	0.04	0.15
	11-Dec-97	WBL	7.63	1700	261	33	5.53	< 0.34	15	0.22	< 0.01	< 0.011	< 2	38.3	< 0.72	333	176	116	0.02	0.02	< 0.03	0.03
	31-Mar-98	WBL	7.56	1290	246	29.1	4.87	< 0.34			< 0.019		< 2	32.9	< 0.72	199	70	133	0.02	0.02	< 0.01	0.03
	24-Jun-98	WBL	7.61	1480	239	31.5	4.76	0.66			< 0.019		2	31	< 0.72	270	122	121	0.04	0.02	< 0.006	0.05
	02-Oct-98	CAN	7.6	1500	260	33	4.8	2	8	0.24	< 0.1	0.02	2	33	< 1	250	130	110	< 0.05	< 0.05		0.04
	03-Dec-98	CAN	7.5	1600	250	33	5	< 2	< 5	0.11	< 0.1	0.12	< 1	30	< 2	280	120	110	< 0.05	< 0.05		0.07
	29-Jun-99	Barr	8.19	1210	252	33.5	5	0.9	10	0.24	0.03	0.003	23	32.3		261	111	112	< 0.01	< 0.01	< 0.1	0.04
	09-Dec-99	Barr	7.61	1344	260	31.1	4.3	0.7	11	0.14	0.02	0.006	79	30	< 1	208	129	101	< 0.01	0.02	< 0.1	0.07
	21-Jun-00	Philip-	7.52	1157	292	32	4	1.2	8	0.36	< 0.03	< 0.002	67	33.7	< 1	202	99.8	114	< 0.03	< 0.005	< 0.05	0.04
	07-Dec-00	Philip-	7.74	1116	288	28.3	3.5	0.5	9	0.35	< 0.03	< 0.002	75	32.4	< 1	194	97.3	94.6	< 0.03	0.01		0.03
	27-Jun-01	Philip-	7.73	1165	290	31.1	3	1.7	5	0.13	< 0.03	0.004	32	40	< 1	192	96	110	< 0.01	0.06	< 0.1	0.25
	03-Dec-01	Philip-	7.91	1232	286	30.7	2.7	< 0.5	< 5	0.12	< 0.03	0.005	1	36.4	< 1	206	104	106	< 0.01	0.05	< 0.1	0.1
	04-Jun-02	Philip-	8.14	1051	278	30	3	0.7	6	0.44	< 0.03	0.005		33.8	< 1	158	78.9	107	< 0.01	0.02	< 0.1	0.03
	03-Dec-02	Philip-	7.85	1143	271	29.3	4	< 0.5	8	0.41	< 0.03	0.012		33.9	< 1	179	99.2	106	< 0.01	0.01	< 0.1	0.04
	02-Jun-03	Philip-	7.58	1191	277	32.1	3	< 0.5	7	0.4	< 0.03	< 0.001		46.8	6	171	83.1	116	< 0.01	0.01		0.04
	01-Dec-03	Philip-	8.09	1098	277	31.1	2	0.8	10	0.29	< 0.03	0.004		39	< 1	167	79.4	111	< 0.01	0.02	< 0.1	0.04
	09-Jun-04	Philip-	7.77	1029	248	28.3	2.9	< 0.5	< 5	0.18	< 0.03	0.004		34.8	< 1	164	74.5	125	0.08	0.01		0.40
	30-Nov-04	Philip-	7.78	1463	253	37	3	< 0.5	8	0.24	0.05	0.004		38.3	< 1	345	115	137	< 0.01	0.02		0.03

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	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	11-Feb-97	WBL	7.39			42.2	15.3	0.42	22	0.18	0.055	< 0.011	< 4	44.3	< 0.72	621	322	167	0.04	0.05	< 0.03	0.07
6b-96	26-Mar-97	WBL	7.73	3260	260	35.2	16.3	< 0.34		0.09	< 0.01	< 0.011	2	44.1	< 0.72	815	467	146	0.07	0.06	< 0.03	0.10
Outwash	25-Jun-97	WBL	7.58	2210	323	34.8	15	0.51	< 7	< 0.07	< 0.01	< 0.011	< 2	45	< 0.72	440	198	125	0.03	0.05	< 0.03	0.14
	01-Oct-97	WBL	7.65	1740	246	36.2	5.36	4.19	56	< 0.07	< 0.01	< 0.011	< 2	35.8	< 0.72	341	164	128	0.02	0.02	0.04	0.04
	11-Dec-97	WBL	7.33	1200	333	30.6	13.1	0.75	17	0.17	< 0.01	< 0.011	< 2	39.7	< 0.72	128	80.5	120	0.15	0.05	< 0.03	0.09
	31-Mar-98	WBL	7.43	2770	270	28.8	12.6	< 0.34			< 0.019		< 2	50.9	< 0.72	649	289	168	0.11	0.03	< 0.01	0.08
	24-Jun-98	WBL	7.34	1860	308	35.5	15.4	0.48			0.047		2	43	< 0.72	279	159	163	0.02	0.08	< 0.006	0.15
	02-Oct-98	CAN	7.3	1500	410	45	15	< 2	< 5	0.34	< 0.1	< 0.02	2	40	< 1	150	92	160	< 0.05	0.05		0.14
	03-Dec-98	CAN	7.3	1300	390	35	12	< 2	< 5	< 0.1	< 0.1	0.11	4	35	< 2	120	75	120	< 0.05	< 0.05		0.1
	29-Jun-99	Barr	8.01	1550	327	34.3	11	1.9	11	0.29	< 0.02	0.003	726	44.4		338	189	125	0.01	0.03	< 0.1	0.1
	09-Dec-99	Barr	7.32	1378	332	32.1	10.5	0.6	17	0.54	0.05	0.002	96	38	< 1	155	122	121	< 0.01	0.04	< 0.1	0.11
	21-Jun-00	Philip-	7.36	1639	306	31	18	< 0.5	13	3.16	2.84	< 0.002	44	48.8	< 1	313	182	130	< 0.03	0.03	< 0.05	0.1
	07-Dec-00	Philip-	7.48	1137	352	32.9	10.2	2.5	11	0.44	0.09	< 0.002	388	43.7	< 1	163	78.3	113	< 0.03	0.04		0.10
	27-Jun-01	Philip-	7.59	1580	339	30.2	10	1.9	< 5	0.28	< 0.03	0.005	54	43	< 1	265	188	114	< 0.01	0.07	< 0.1	0.26
	03-Dec-01	Philip-	7.79	1531	379	28.6	8.9	< 0.5	11	0.42	< 0.03	0.008	< 1	56.7	< 1	252	161	116	< 0.01	0.06	< 0.1	0.14
	04-Jun-02	Philip-	8.2	1769	317	32.7	10	0.6	12	0.59	< 0.03	0.015		46.1	< 1	390	223	129	0.01	0.04	< 0.1	0.18
	03-Dec-02	Philip-	7.85	974	310	25.8	9	< 0.5	14	0.77	< 0.03	0.009		34.7	< 1	97	77.2	95	< 0.01	0.03	< 0.1	0.06
	02-Jun-03	Philip-	7.69	1538	270	25.8	7	0.7	10	0.37	0.1	< 0.001		41.9	11	350	225	101	< 0.01	0.03		0.07
	01-Dec-03	Philip-	7.96	1407	309	22.5	6.9	0.8	5	0.42	< 0.03	0.004		38.6	< 1	278	179	107	0.03	0.03	< 0.1	0.24
	09-Jun-04	Philip-	7.54	1871	314	40.4	10.2	< 0.5	8	0.3	< 0.03	0.003		65.2	< 1	412	214	217	0.21	0.04		1.31
	30-Nov-04	Philip-	7.76	791	290	20.5	6	< 0.5	13	0.6	< 0.03	0.004		23.4	< 1	90.3	53.1	85.9	< 0.01	0.02		0.05
Monitor	11-Feb-97	WBL	7.7			26.2	12.6	< 0.34	24	< 0.07	< 0.01	< 0.011	< 4	35.2	2.48	132	63.5	90.1	0.05	0.05	< 0.03	0.05
7-96	26-Mar-97	WBL	7.7	1180	256	32.5	14	< 0.34		< 0.07	< 0.01	< 0.011	3	35.5	< 0.72	131	80.6	104	0.07	0.07	< 0.03	0.08
Outwash	25-Jun-97	WBL	7.8	992	250	29.6	9.65	0.69	< 7	0.08	< 0.01	< 0.011	2	35.2	< 0.72	66.4	33.7	95.1	0.03	0.04	< 0.03	0.11
	01-Oct-97	WBL	7.57	902	251	33.2	10.2	1.44	< 7	0.1	< 0.01	< 0.011	< 2	35.7	< 0.72	54.3	28.7	110	0.04	0.06	< 0.03	0.08
	11-Dec-97	WBL	7.52	906	248	31.8	10.1	< 0.34	< 7	0.25	< 0.01	< 0.011	< 2	36.3	< 0.72	62.1	30	105	0.17	0.06	< 0.03	0.08
	31-Mar-98	WBL	7.55	1120	224	32.4	9.06	< 0.34			< 0.019		< 2	43	< 0.72	92.4	36.8	127	0.09	0.04	< 0.01	0.09
	24-Jun-98	WBL	7.77	1200	226	34.9	9.49	0.78			< 0.019		< 2	41.3	< 0.72	89.8	38.8	141	0.06	0.06	< 0.006	0.12
	02-Oct-98	CAN	7.4	1100	280	38	11	3	10	0.27	< 0.1	< 0.02	< 1	46	< 1	74	35	130	< 0.05	< 0.05		0.12
	03-Dec-98	CAN	7.5	1200	310	39	11	< 2	< 5	0.36	< 0.1	0.1	2	41	< 2	72	32	130	< 0.05	< 0.05		0.13
	29-Jun-99	Barr	8.15	1325	248	41	12	2.2	10	0.21	< 0.02	0.003	157	58.4		282	110	132	< 0.01	0.03	< 0.1	0.12
	09-Dec-99	Barr	7.39	1478	293	45.4	14.1	0.8	13	0.2	< 0.02	< 0.002	258	41	< 1	231	91.1	135	< 0.01	0.05	0.1	0.15
	21-Jun-00	Philip-	7.44	1775	255	48.8	13.9	0.6	12	0.54	< 0.03	< 0.002	160	80.9	< 1	397	172	157	< 0.03	0.04	< 0.05	0.14
	07-Dec-00	Philip-	7.5	1430	321	41	13.2	16	12	0.3	0.05	< 0.002	122	75.8	< 1	227	118	135	< 0.03	0.10		0.3
	27-Jun-01	Philip-	7.72	1768	293	44.4	13	1.7	6	0.34	< 0.03	0.006	163	105	< 1	307	176	144	< 0.01	0.09	< 0.1	0.25
	03-Dec-01	Philip-	7.73	1259	365	36.2	11.8	< 0.5	7	0.41	< 0.03	0.004	< 1	48.7	< 1	162	87.8	124	< 0.01	0.05	< 0.1	0.15
	04-Jun-02	Philip-	8.04	1863	328	46.1	20	< 0.5	11	0.77	0.42	0.006		110	< 1	378	201	146	< 0.01	0.07	< 0.1	0.18
	03-Dec-02	Philip-	7.92	1681	350	44.9	27	< 0.5	16	1.03	1.11	0.012		70.9	< 1	244	145	152	< 0.01	0.07	< 0.1	0.17
	02-Jun-03	Philip-	7.52	2122	298	52.7	23	< 0.5	11	0.99	0.41	0.002		131	12	380	212	167	< 0.01	0.06		0.2
	01-Dec-03	Philip-	8	1206	303	36.9	16.3	1.3	12	0.41	< 0.03	0.003		61.1	< 1	178	86.6	118	< 0.01	0.05	< 0.1	0.15
	08-Jun-04	Philip-	7.48	1995	336	51.6	22	0.8	13	0.57	< 0.03	0.002		129	< 1	370	196	226	0.19	0.07		0.86
	30-Nov-04	Philip-	7.71	1705	368	40.5	20	< 0.5	15	0.75	0.12	0.003		107	< 1	296	158	150	< 0.01	0.07		0.20

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	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	11-Feb-97	WBL	7.78			39.9	2.08	< 0.34	28	0.21	< 0.01	0.034	< 2	73.5	< 0.72	33	19.3	94.9	0.05	0.05	< 0.03	0.02
8-96	27-Mar-97	WBL	7.77	864	302	36.9	1.73	< 0.34	46	0.3	< 0.01	< 0.011	3	53.9	< 0.72	49.8	18.8	107	0.01	0.03	< 0.03	0.67
Bedrock	25-Jun-97	WBL	7.84	882	308	33.6	1.77	< 0.34	< 7	< 0.07	0.018	< 0.011	2	60.8	< 0.72	40.9	17.6	92	0.02	0.05	< 0.03	0.54
	01-Oct-97	WBL	7.45	838	321	37.1	1.9	0.51	51	0.2	< 0.01	< 0.011	< 2	66.2	< 0.72	37.2	19.3	111	0.02	0.02	< 0.03	0.50
	11-Dec-97	WBL	7.61	880	297	37.7	1.99	< 0.34	< 7	0.34	< 0.01	< 0.011	< 2	75.2	< 0.72	55.4	21	105	0.06	0.03	< 0.03	0.69
	31-Mar-98	WBL	7.41	997	288	33.4	2.05	1.72			< 0.019		< 2	65.6	< 0.72	102	32.9	116	0.01	0.02	< 0.01	0.54
	24-Jun-98	WBL	7.5	890	309	32.1	1.78	0.75			< 0.019		< 2	59.6	< 0.72	58.4	30.1	107	0.06	< 0.02	< 0.006	0.63
	02-Oct-98	CAN	7.4	890	320	38	2.2	< 2	< 5	0.3	< 0.1	< 0.02	< 1	73	< 1	57	31	110	< 0.05	< 0.05		0.84
	03-Dec-98	CAN	7.4	910	310	36	2.2	< 2	< 5	0.48	< 0.1	0.12	2	72	< 2	60	28	99	< 0.05	< 0.05		0.83
	29-Jun-99	Barr	8.23	976	282	40.1	3	1.7	12	0.19	< 0.02	0.003	390	68.2		146	67.7	109	< 0.01	< 0.01	< 0.1	0.75
	09-Dec-99	Barr	7.46	1358	287	43.4	2.8	0.9	9	0.49	0.03	0.004	103	64	< 1	207	103	114	< 0.01	0.01	< 0.1	0.9
	21-Jun-00	Philip-	7.43	1212	264	38.9	2.4	< 0.5	6	0.25	< 0.03	< 0.002	90	64.4	< 1	233	107	111	< 0.03	< 0.005	< 0.05	0.89
	07-Dec-00	Philip-	7.6	942	320	34.6	2	1.3	13	0.25	0.04	< 0.002	131	63.7	< 1	125	59.2	94.6	< 0.03	0.06		1.01
	27-Jun-01	Philip-	7.76	1019	317	36.3	2	1.6	< 5	0.27	0.03	0.037	< 1	63	< 1	139	76.1	105	0.02	0.05	< 0.1	1.11
	03-Dec-01	Philip-	7.66	1329	356	36	2.3	1.1	< 5	0.2	< 0.03	0.005	< 1	50	< 1	225	93.9	103	< 0.01	0.05	< 0.1	1.02
	04-Jun-02	Philip-	8.43	1024	302	35.1	3	< 0.5	12	0.75	< 0.03	0.008		56.5	< 1	138	74.1	102	< 0.01	0.01	< 0.1	0.87
	03-Dec-02	Philip-	7.97	1002	309	35.8	3	< 0.5	6	0.31	< 0.03	0.004		59.4	< 1	118	65.5	101	< 0.01	0.01	< 0.1	0.87
	02-Jun-03	Philip-	7.47	1622	276	39.9	3	< 0.5	7	0.41	< 0.03	< 0.001		55.1	9	332	171	116	< 0.01	0.01		1.08
	01-Dec-03	Philip-	7.85	1262	285	35.6	3.1	1	9	0.4	< 0.03	0.003		53.8	< 1	254	124	104	< 0.01	0.02	< 0.1	1.05
	08-Jun-04	Philip-	7.6	1036	292	35.3	1.8	< 0.5	6	0.2	< 0.03	0.003		58.4	< 1	159	80.6	123	0.11	0.01		1.43
	30-Nov-04	Philip-	7.8	981	309	33.4	3	< 0.5	17	0.7	< 0.03	0.006		58.4	< 1	121	66.2	96.3	< 0.01	< 0.01		0.92
Monitor	11-Feb-97	WBL	7.81			16.4	0.99	0.69	7	0.19	< 0.01	< 0.011	< 4	17.6	2.23	7.17	4.37	61.6	0.12	0.02	< 0.03	0.008
9-96	26-Mar-97	WBL	8.04	474	186	18.7	0.86	< 0.34	14	0.24	< 0.01	< 0.011	4	23.4	< 0.72	6.34	7.96	68.6	0.07	0.04	< 0.03	0.03
Outwash	25-Jun-97	WBL	8.01	582	205	20.7	0.95	< 0.34	< 7	< 0.07	< 0.01	< 0.011	< 2	26.7	< 0.72	6.93	7.38	71	0.03	0.03	< 0.03	0.02
	01-Oct-97	WBL	7.92	490	179	21.7	0.84	1.2	13	0.1	< 0.01	< 0.011	< 2	22.4	< 0.72	9.82	1.68	74.5	0.03	0.02	0.03	0.008
	11-Dec-97	WBL	7.85	488	171	21.8	0.67	< 0.34	< 7	0.22	< 0.01	< 0.011	< 2	20.4	< 0.72	13.6	1.48	70.3	0.03	< 0.02	0.04	0.005
	31-Mar-98	WBL	8.38	557	195	25.9	0.7	< 0.34			0.019		< 2	26.7	< 0.72	13.1	2.2	71.7	0.01	0.03	< 0.01	0.005
	24-Jun-98	WBL	7.79	536	193	21.6	0.78	1.38			< 0.019		3	26	< 0.72	12.5	2.83	76.2	0.03	0.05	< 0.006	0.007
	02-Oct-98	CAN	7.7	610	210	29	< 1	< 2	< 5	0.4	< 0.1	< 0.02	30	29	< 1	19	2	85	< 0.05	< 0.05		< 0.01
	03-Dec-98	CAN	7.6	590	230	24	< 1	< 2	< 5	0.31	< 0.1	0.17	2	23	< 2	11	2.5	79	< 0.05	< 0.05		0.01
	29-Jun-99	Barr	8.31	528	220	19.6	1	1.2	10	0.21	< 0.02	0.004	206	24.6		23.3	8.2	79.7	< 0.01	0.01	< 0.1	< 0.005
	09-Dec-99	Barr	7.65	649	251	20.2	< 1	< 0.5	6	0.16	0.06	0.004	238	17	< 1	31	14.6	93.2	0.01	0.03	< 0.1	0.02
	21-Jun-00	Philip-	7.71	414	234	14.7	0.8	< 0.5	5	0.28	< 0.03	< 0.002	81	12.2	< 1	12	8.9	77.4	< 0.03	0.01	< 0.05	< 0.005
	07-Dec-00	Philip-	7.91	408	249	15	0.3	1.1	5	0.13	0.04	< 0.002	72	13.7	< 1	13.5	8.7	69.3	< 0.03	0.06		0.17
	27-Jun-01	Philip-	7.9	570	248	18.3	< 1	1.7	< 5	0.14	< 0.03	0.004	67	25	< 1	20	14.2	86	< 0.01	0.06	< 0.1	0.21
	03-Dec-01	Philip-	7.93	482	223	15.3	1.3	0.9	< 5	0.39	< 0.03	0.008	< 1	10.8	< 1	15.7	20.2	72	0.03	0.03	< 0.1	0.18
	04-Jun-02	Philip-	8.08	517	236	16.1	1	< 0.5	5	0.43	< 0.03	0.005		17.1	< 1	21.7	16.7	79.2	0.01	0.05	< 0.1	< 0.005
	03-Dec-02	Philip-	8.08	595	232	20.8	1	< 0.5	5	0.3	< 0.03	0.012		15.8	< 1	33.5	10.9	84.5	< 0.01	0.03	< 0.1	0.01
	02-Jun-03	Philip-	7.76	666	229	20.6	< 1	< 0.5	7	0.45	0.03	< 0.001		11	4	64.1	20.7	90.2	< 0.01	0.04		0.01
	01-Dec-03	Philip-	8.03	701	236	21.6	< 1	< 0.5	12	0.5	< 0.03	< 0.002		13.4	< 1	83.7	29.2	87	< 0.01	0.03	< 0.1	0.02
	08-Jun-04	Philip-	7.81	591	235	20.1	< 1	0.6	6	0.28	< 0.03	0.002		28.8	< 1	39.7	18.4	89.5	< 0.01	0.05		0.07
	30-Nov-04	Philip-	7.78	671	274	19.9	1	< 0.5	9	0.34	< 0.03	0.003		27.8	< 1	41.2	28.6	87.9	< 0.01	0.02		< 0.005

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	27-Jun-01	Philip-	7.84	662	259	31.5	< 1	< 0.5	< 5	0.14	0.07	0.009	159	103	< 1	22	9.9	93.7	0.02	0.02	< 0.1	0.02
10-00	03-Dec-01	Philip-	8.01	666	267	30.7	< 1	0.8	< 5	0.19	0.04	0.01	< 1	85.8	< 1	25.8	12	95.1	0.04	0.02	< 0.1	0.06
Bedrock	04-Jun-02	Philip-	8.23	595	239	28.2	2	< 0.5	< 5	0.19	0.04	0.013		76	< 1	21.5	9.2	84.4	0.02	0.02	< 0.1	< 0.005
	03-Dec-02	Philip-	8	660	255	29.5	1	< 0.5	7	0.42	0.06	0.013		76.8	< 1	26.9	11.3	87.7	0.03	0.01	< 0.1	< 0.005
	02-Jun-03	Philip-	7.78	659	242	29.1	< 1	< 0.5	< 5	0.17	0.05	< 0.001		25.2	11	44.9	10	87	0.03	0.01		< 0.005
	01-Dec-03	Philip-	8.09	626	236	28.2	1.1	0.8	< 5	0.21	< 0.03	0.009		78.5	< 1	27.6	10.2	85.2	0.04	0.02	< 0.1	0.02
	09-Jun-04	Philip-	7.78	600	238	28.2	< 1	< 0.5	< 5	0.13	0.08	0.005		82.4	< 1	27.8	9.7	91	0.07	0.02		0.13
	30-Nov-04	Philip-	7.89	626	245	27.7	2	< 0.5	< 5	0.13	0.03	0.005		77.7	< 1	28.1	10.4	83.5	0.04	0.02		< 0.005
Monitor	27-Jun-01	Philip-	8.13	528	263	25.3	2	2.9	< 5	0.28	0.13	0.03	45	46.8	< 1	7.1	25.9	68.7	0.34	0.1	< 0.1	0.14
11a-00	03-Dec-01	Philip-	7.99	512	262	24.9	2	1.2	< 5	0.32	0.12	0.007	< 1	34.9	< 1	5.1	12	83.2	0.04	0.04	< 0.1	0.25
Bedrock	04-Jun-02	Philip-	8.13	454	241	23.7	2	0.9	< 5	0.41	0.13	0.01		26.7	< 1	5	6	64.4	0.04	0.03	< 0.1	< 0.005
	03-Dec-02	Philip-	8.12	500	253	24.3	3	< 0.5	< 5	0.33	0.12	0.009		25.9	< 1	4	6.1	67	< 0.01	0.03	< 0.1	0.01
	02-Jun-03	Philip-	7.71	515	231	24.7	2	< 0.5	< 5	0.38	0.11	< 0.001		31.8	9	6.3	5.8	67.5	< 0.01	0.03		< 0.005
	01-Dec-03	Philip-	8.02	507	233	23.6	1.6	1	9	0.52	< 0.03	0.004		35.9	< 1	7	5.6	64.8	0.02	0.04	< 0.1	< 0.005
	08-Jun-04	Philip-	7.81	478	236	24.2	1	< 0.5	6	0.26	0.1	0.003		33.4	< 1	6.9	5.4	80.3	0.05	0.03		0.19
	30-Nov-04	Philip-	7.96	494	241	23.8	1	< 0.5	10	0.53	0.13	0.007		29.4	< 1	6.7	5.1	66	< 0.01	0.02		< 0.005
Monitor	27-Jun-01	Philip-	7.99	798	264	25.6	2	7.2	5	0.22	< 0.03	0.017	2400	55	< 1	54	54.1	83.1	0.03	0.07	< 0.1	0.11
11b-00	03-Dec-01	Philip-	7.98	1081	266	28.4	2.2	1.4	6	0.28	< 0.03	0.023	13	50.4	< 1	155	92.8	100	< 0.01	0.04	< 0.1	0.01
Outwash	04-Jun-02	Philip-	8.02	751	252	24.7	1	0.9	6	0.39	< 0.03	0.005		35	< 1	69.3	40.3	91.4	< 0.01	0.09	< 0.1	0.02
	03-Dec-02	Philip-	8	813	250	28.2	2	< 0.5	6	0.37	< 0.03	0.022		42.2	< 1	68.9	26.8	103	< 0.01	0.15	< 0.1	0.06
	02-Jun-03	Philip-	7.72	873	226	28.1	2	0.6	5	0.37	0.04	< 0.001		48.5	7	70.6	37.2	101	< 0.01	0.41		0.03
	01-Dec-03	Philip-	8.1	629	185	13.1	1.1	< 0.5	12	0.51	< 0.03	0.005		43	< 1	58.8	58.9	51.6	0.02	0.58	< 0.1	0.01
	08-Jun-04	Philip-	7.9	887	192	18.3	< 1	0.7	23	0.97	0.03	0.007		37.7	< 1	165	93.4	79.2	0.02	1.09		0.13
	30-Nov-04	Philip-	8	781	212	15.1	1	< 0.5	7	0.26	< 0.03	0.002		29.4	< 1	118	83.2	60.6	< 0.01	0.57		0.01
Monitor	27-Jun-01	Philip-	7.5	888	390	43.6	14	1.2	7	0.92	0.45	0.006	178	96.2	< 1	82.8	22.6	109	< 0.01	0.07	< 0.1	1.44
12a-00	03-Dec-01	Philip-	7.77	920	389	44.7	10.1	1.2	16	0.75	0.19	0.008	< 1	50.6	< 1	24.7	19.7	110	< 0.01	0.06	< 0.1	1.17
Bedrock	04-Jun-02	Philip-	8.33	889	346	40.5	15	0.6	10	1.34	0.64	0.007		44.5	< 1	44.3	20.6	123	0.04	0.02	< 0.1	1.51
	03-Dec-02	Philip-	7.78	4365	372	41.2	15	< 0.5	24	4.22	4.23	0.012		55.7	< 1	1200	763	109	< 0.1	< 0.1	< 1	0.96
	02-Jun-03	Philip-	7.37	915	350	40.4	18	< 0.5	11	1.04	0.41	0.002		46.3	10	55.5	36.2	103	< 0.01	0.02		1.17
	01-Dec-03	No Ac																				
	08-Jun-04	Philip-	7.53	845	319	37	13.9	< 0.5	10	0.89	0.47	0.009		45.5	< 1	45.3	23	106	< 0.01	0.02		1.15
	30-Nov-04	Philip-	7.57	823	321	37.7	13	< 0.5	13	0.67	0.13	0.002		50.5	< 1	38.5	16.4	98.4	< 0.01	0.02		1
Monitor	27-Jun-01	Philip-	7.77	760	354	27.2	4	0.9	11	0.45	0.13	0.026	1730	48.9	< 1	40	25.2	106	0.62	0.1	< 0.1	0.37
12b-00	03-Dec-01	Philip-	7.83	435	204	12.8	3.5	1.2	12	0.26	< 0.03	0.042	35	21.3	< 1	11.7	12.3	54.8	0.02	0.07	< 0.1	0.21
Outwash	04-Jun-02	Philip-	8.51	1144	353	25.6	11	2.9	48	10.8	9.3	0.053		30.1	< 1	169	94.7	97	0.01	0.09	< 0.1	0.35
	03-Dec-02	Philip-	7.76	1187	420	37.2	5	1.2	32	1.41	0.71	0.239		35.4	< 1	135	112	110	16.7	0.05	0.3	0.006
	02-Jun-03	Philip-	7.38	1108	398	33.7	3	92	88	1.33	0.57	0.004		4.5	157	117	66	118	22.7	0.11		0.02
	01-Dec-03	No Ac																				
	08-Jun-04	Philip-	7.56	710	339	24.9	4.1	2.1	29	1.94	1.46	0.151		20.1	< 1	51	33.8	118	11	0.09		0.34
	30-Nov-04	Philip-	7.62	687	341	24.4	4	< 0.5	24	1.03	0.43	0.046		32.3	< 1	22.7	16.4	96.7	3.25	0.08		0.08

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	03-Dec-01	Philip-	7.95	913	272	38.8	2.9	0.8	< 5	0.21	0.09	0.008	2	105	< 1	83.9	39.9	106	0.77	0.04	< 0.1	0.11
13a-01	04-Jun-02	Philip-	8.08	851	259	35	2	< 0.5	< 5	0.24	0.1	0.005		107	< 1	85.5	38	97.7	0.96	0.04	< 0.1	< 0.005
Bedrock	03-Dec-02	Philip-	7.99	902	262	35.6	2	< 0.5	< 5	0.24	0.1	0.008		104	< 1	85.3	40.3	99.8	0.81	0.03	< 0.1	< 0.005
	02-Jun-03	Philip-	7.77	921	248	35.2	2	< 0.5	< 5	0.23	0.11	< 0.001		111	9	88.5	41	100	0.45	0.03		0.02
	01-Dec-03	Philip-	8.15	853	250	34.5	2.3	< 0.5	6	0.25	< 0.03	0.004		110	< 1	97.1	39	109	0.74	0.05	< 0.1	0.19
	09-Jun-04	Philip-	7.81	854	254	34.3	2.1	< 0.5	< 5	0.19	0.14	0.007		119	< 1	97.1	39.7	112	0.64	0.04		0.12
	30-Nov-04	Philip-	7.96	897	254	33.9	2	< 0.5	6	0.25	0.1	0.006		115	< 1	101	40.8	98.8	0.65	0.04		< 0.005
Monitor	03-Dec-01	Philip-	7.93	655	296	29.7	2.2	1.4	< 5	0.23	< 0.03	0.223	338	50.4	< 1	14.9	4.8	84.7	0.01	0.02	< 0.1	0.02
13b-01	04-Jun-02	Philip-	8.17	576	299	30.4	2	0.7	11	0.75	< 0.03	0.006		38	< 1	7	5	88	< 0.01	0.08	< 0.1	0.08
Outwash	03-Dec-02	Philip-	7.93	683	300	31.6	2	< 0.5	< 5	0.18	< 0.03	0.213		50.4	< 1	17.4	7.2	92.8	0.01	0.01	< 0.1	0.02
	02-Jun-03	Philip-	7.65	699	287	33.6	1	0.7	9	0.56	< 0.03	< 0.001		53.8	12	23.3	4.9	97.2	< 0.01	0.01		0.04
	01-Dec-03	Philip-	7.8	665	375	35.8	1.4	0.8	5	0.2	< 0.03	0.036		29.4	< 1	11.9	7.5	103	0.05	0.1	< 0.1	0.06
	09-Jun-04	Philip-	7.72	610	291	30.4	< 1	< 0.5	7	0.48	< 0.03	0.004		44.8	< 1	16.7	5.7	105	0.05	0.02		0.25
	30-Nov-04	Philip-	7.71	810	369	35.4	2	< 0.5	20	0.91	< 0.03	0.002		29.8	< 1	51.8	19.9	110	< 0.01	0.04		0.06
Monitor	04-Dec-01	Philip-	7.95	674	263	27.9	< 1	2	10	0.23	< 0.03	0.011	19	64.8	< 1	26.6	27.4	84	0.25	0.04	< 0.1	0.13
14a-01	04-Jun-02	Philip-	8.44	556	240	22.4	2	1.4	8	0.5	< 0.03	0.006		56.1	< 1	10.7	24.9	63.5	< 0.01	0.04	< 0.1	0.007
Bedrock	03-Dec-02	Philip-	8.01	519	240	23.7	< 1	< 0.5	< 5	0.25	< 0.03	0.006		38.8	< 1	4.8	11.5	65.3	< 0.01	0.01	< 0.1	0.007
	02-Jun-03	Philip-	7.82	489	215	23.3	1	1.1	15	0.13	0.03	< 0.001		49.7	29	7	20	64.6	0.13	0.02		0.006
	01-Dec-03	Philip-	8.18	542	232	23.7	< 1	0.7	7	0.24	< 0.03	0.003		53.1	< 1	12	18.2	72.9	0.05	0.03	< 0.1	0.08
	09-Jun-04	Philip-	8.04	527	234	25.7	< 1	< 0.5	19	0.86	0.03	0.004		61.2	< 1	14.2	19.6	69.3	0.01	0.02		< 0.005
	30-Nov-04	Philip-	7.92	527	236	24.4	1	< 0.5	< 5	0.06	< 0.03	< 0.002		48.6	< 1	12.8	9.1	68.1	0.03	< 0.01		< 0.005
Monitor	04-Dec-01	Philip-	7.94	716	336	30.3	< 1	1.3	12	0.3	< 0.03	0.009	6	62.9	< 1	22.3	8.2	114	0.15	0.05	< 0.1	0.27
14b-01	04-Jun-02	Philip-	8.41	776	279	30.2	2	1	21	0.34	0.06	1.11		89.4	< 1	58.4	20.9	100	< 0.01	0.02	< 0.1	0.2
Outwash	03-Dec-02	Philip-	8.07	680	277	29.7	2	0.7	12	0.68	< 0.03	0.005		58.1	< 1	24.1	7.7	95.4	0.01	< 0.01	< 0.1	0.08
	02-Jun-03	Philip-	7.59	845	270	26.2	2	0.8	18	0.62	0.04	< 0.001		33.7	13	85.8	32.7	104	0.37	0.02		0.12
	01-Dec-03	Philip-	7.84	895	342	30.1	< 1	< 0.5	27	0.9	0.22	0.005		29.6	< 1	101	40.4	112	0.73	0.02	< 0.1	0.25
	09-Jun-04	Philip-	7.55	771	327	27.9	1.2	< 0.5	20	0.7	0.14	0.002		39.2	2	70.6	33.8	129	0.8	0.01		0.51
	30-Nov-04	Philip-	7.65	878	364	31.3	< 1	< 0.5	34	1.37	0.15	0.004		30.6	< 1	91.4	34.2	123	1.22	0.02		0.37
Monitor	04-Dec-01	Philip-	7.95	754	259	35.1	< 1	0.6	< 5	0.16	< 0.03	0.006	< 1	92.4	< 1	48.3	7.7	104	0.27	< 0.01	< 0.1	< 0.005
15a-01	04-Jun-02	Philip-	8.13	718	254	34.9	1	< 0.5	< 5	0.15	< 0.03	0.086		94.1	< 1	52.8	8.3	103	0.4	< 0.01	< 0.1	< 0.005
Bedrock	03-Dec-02	Philip-	8.06	794	260	35.7	2	< 0.5	8	0.49	0.03	0.011		92.3	< 1	57.6	10.6	106	0.47	< 0.01	< 0.1	< 0.005
	02-Jun-03	Philip-	7.87	789	246	36	1	< 0.5	6	0.15	< 0.03	< 0.001		99	15	56.2	12.2	107	0.5	< 0.01		< 0.005
	01-Dec-03	Philip-	8.17	754	245	32.5	< 1	< 0.5	7	0.19	< 0.03	0.007		101	< 1	60.7	11.5	103	0.5	< 0.01	< 0.1	0.07
	09-Jun-04	Philip-	7.85	734	258	34.9	< 1	< 0.5	6	0.16	< 0.03	0.004		105	< 1	62.4	13	129	0.55	0.01		0.34
	30-Nov-04	Philip-	7.97	754	257	33.7	1	< 0.5	< 5	0.16	< 0.03	0.005		105	< 1	61.5	13.7	101	0.52	< 0.01		< 0.005
Monitor	04-Dec-01	Philip-	8.16	646	252	27	< 1	4.4	13	0.27	< 0.03	0.014	14	26.2	< 1	24.4	6.2	77.7	< 0.01	0.08	< 0.1	0.14
15b-01	04-Jun-02	Philip-	8.1	475	215	21.1	1	0.9	11	0.79	< 0.03	0.008		13.8	< 1	6.9	2	73.4	< 0.01	< 0.01	< 0.1	0.007
Outwash	03-Dec-02	Philip-	7.95	723	200	29.4	2	0.9	12	0.75	< 0.03	0.012		14.3	< 1	9.1	2	103	< 0.01	0.01	< 0.1	0.009
	02-Jun-03	Philip-	7.95	534	214	22.4	< 1	1.4	12	0.66	< 0.03	0.002		37.1	10	5.2	5	77.2	< 0.01	0.01		0.009
	01-Dec-03	Philip-	8.08	661	291	27.5	1.1	< 0.5	25	0.74	< 0.03	0.003		40.5	< 1	7.9	10.7	95	< 0.01	0.04	< 0.1	0.01
	09-Jun-04	Philip-	7.94	478	204	18.7	< 1	< 0.5	11	0.45	< 0.03	0.002		24.2	< 1	24.8	4	74	0.01	< 0.01		0.05
	30-Nov-04	Philip-	7.99	558	240	21.8	< 1	< 0.5	12	0.58	< 0.03	0.002		22.4	< 1	27.9	3.3	83	< 0.01	0.01		0.008

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
13-Apr-96	ENT	7.6	310	60						392		123		< 0.5	59.4				0.02		
29-May-96	ENT	7.8			4.74	5.32	< 10	22	1	0.04	0.22	21	14.1	7	42.2	29.8	32.4	0.51	0.06	0.2	0.08
03-Jul-96	ENT						13		2.4	0.19	0.08	73		1							
22-Aug-96	ENT	7.82			0.46	13.1	< 10	< 10	0.56	0.27	0.23	10	7.4	< 0.5	19.7	20.5	38.6	0.25	0.3	0.18	< 0.0004
18-Sep-96	ENT						< 10		2	0.13	0.07	6		< 0.5							
16-Oct-96	ENT						< 10		2	0.13	0.01	1		< 1							
20-Nov-96	ENT						< 10		3	0.08	0.15	7		15							
11-Dec-96	ENT	7.94			6.84	9.6	< 10	93	1.34	0.08	0.18	4	12.6	1	272	155	41.7	0.59	0.02	0.15	0.02
08-Apr-97	WBL	8.64	2840	118	8.09	18.3	9.24	170	2.73	< 0.01	0.206	19	18	< 0.72	732	434	49.7	1.05	< 0.02	< 0.03	0.03
06-May-97	WBL	8.29	1450	81	4.47	9.81	5.7	134	1.37	0.067	0.174	39	13.2	1.15	423	236	27.3	1.73	0.02	0.16	0.07
26-Jun-97	WBL	9.23	826	111	3.86	11.1	4.11	57	1.35	< 0.01	0.124	5	14.3	< 0.72	164	114	26.3	0.74	0.06	0.13	0.02
31-Jul-97	WBL	9.53	1460	123	4.79	13.1	2.82	88	3.51	0.119	0.234	4	15	0.99	394	245	24.2	0.87	0.05	0.23	0.02
11-Sep-97	WBL	8.73	527	94.1	4.47	12.3	2.17	71	1.48	0.017	0.072	< 6	14.7	< 0.72	89.6	76	25.4	0.56	0.1	0.1	0.02
26-Nov-97	WBL	7.6	960				3.12		1.72	0.084	0.139	542		< 0.72							
09-Dec-97	WBL	7.79	970	132	7.02	12.5	1.94	59	1.6	0.014	0.095	3	13.9	< 0.72	198	140	45.7	0.38	0.02	0.08	0.01
08-Jan-98	WBL	7.65	545				6.3		1	0.2	0.31	357		7							
28-Feb-98	Froze																				
31-Mar-98	WBL	8.32	1480	121	3.48	6.75	2.53		1.52	0.023	0.107	5	12.7	< 0.72	443	250	35.5	0.54	0.05	0.11	0.007
30-Apr-98	Dry																				
12-May-98	WBL	7.55	1420				8.52		4.02	0.795	0.3	840		0.72							
24-Jun-98	WBL	9.52	597	112	4.14	9.73	5.58		2.73	0.058	0.245	< 2	10.9	< 0.72	109	72.8	27.7	0.64	0.06	0.25	0.02
31-Jul-98	Dry																				
31-Aug-98	Dry																				
30-Sep-98	Dry																				
31-Oct-98	Dry																				
30-Nov-98	Dry																				
31-Dec-98	Dry																				
31-Jan-99	Froze																				
28-Feb-99	Froze																				
31-Mar-99	Barr	8.01	1624	142	7.49	13	6.7	68	3.6	0.37	0.27	21	33	< 2	441	298	52.7	0.5	0.05	0.4	0.03
30-Apr-99	Dry																				
31-May-99	Dry																				
29-Jun-99	Barr	7.91	307	77	2.9	9	6.4	51	1.72	0.84	0.057	12	15		41.9	34.3	20.6	0.12		0.4	0.02
31-Jul-99	Dry																				
31-Aug-99	Dry																				
30-Sep-99	Dry																				
31-Oct-99	Dry																				
30-Nov-99	Dry																				
14-Dec-99	Barr	8.01	716	168	16.7	18	19.4	49	2.77	1.05	0.11	40	46.9	< 1	57.4	42.5	65.5	0.01	0.04	0.2	0.02
30-Jan-00	Froze																				
28-Feb-00	Froze																				
31-Mar-00	Philip-	7.37	2380	123	10.2	15	9.1	87	3.31	0.07	0.224	17	21	< 1	634	370	59.7	0.62	0.03		0.03
27-Apr-00	Philip-	7.13	2595	140	29.8	43	16.5	117	115	104	0.423	23	35.8	1	123	85.7	146	0.36	0.06	0.5	0.04
23-May-00	Philip-	7.46	1930	142	25.9	53	3.2	137	66.3	68.2	0.47	13	35.3	< 1	96.5	70.2	120	0.42	0.09	0.6	0.07
30-Jun-00	Philip-	7.33	88	241	3.7	10	27	60	1.92	0.19	0.286	5	6.6	< 1	23.6	19	24.9	0.36		0.4	0.03

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
30-Jul-00	Dry																				
29-Aug-00	Dry																				
28-Sep-00	Philip-	7.81	374	97	4.32	12.4	12.8	57	2.5	0.08	0.194	128	15.5	< 1	51.8	40.1	30.5	0.16	0.03	0.23	0.04
30-Oct-00	Dry																				
28-Nov-00	Philip-	7.63	778	90	7.41	16.8	6	57	2.54	0.08	0.5	29	24.4	< 1	193	109	73.7	0.96	0.02	0.7	0.11
07-Dec-00	Froze																				
31-Jan-01	Froze																				
28-Feb-01	Froze																				
31-Mar-01	Froze																				
24-Apr-01	Philip-	7.9	747	175	6.13	11	2.2	65	3.16	0.17	0.12	6	9.8	2	140	122	34.4	0.83		0.4	0.02
28-May-01	Philip-	7.29	333	119	3.93	9	8.3	77	2.4	0.11	0.288	10	13.2	< 1	39.4	46	49.4	0.58	0.03	0.4	0.05
30-Jun-01	Dry																				
25-Jul-01	Philip-	7.3	322	105	4.82	15	8.1	143	5.3	0.3	0.765	21	21.7	< 1	30.3	29.7	56.9	0.96	0.06	1	0.10
31-Aug-01	Dry																				
27-Sep-01	Philip-	7.5	383	128	5.48	15	3	57	1.64	0.07	0.318	2	19	< 1	33.8	31.7	30.5	0.09	0.03	0.3	0.02
18-Oct-01	Philip-	7.84	304	125	4.94	9	3.4	50	2.94	< 0.03	0.294	7	4.3	< 1	19.3	24.8	31.7	0.91	0.04	0.4	0.04
30-Nov-01	Philip-	7.48	104	39	1.72	4	1.3	24	0.87	0.03	0.3	11	1.5	< 1	4.5	6.8	9.38	0.54	< 0.01	0.2	0.03
04-Dec-01	Philip-	7.57	153	61	3.04	6.3	3.1	26	0.68	< 0.03	0.128	1	2.7	< 1	6.5	8.8	19.2	0.31	0.01	0.4	0.04
31-Jan-02	Froze																				
28-Feb-02	Froze																				
29-Mar-02	Froze																				
29-Apr-02	Philip-	7.52	398	77	2.9	5	5.6	58	1.88	0.06	0.456	11	7.3	< 1	69.3	57.4	30.8	0.57	0.02	0.5	0.36
31-May-02	Dry																				
05-Jun-02	Philip-	7.8	228	55	2.46	4	5.2	75	2.19	0.14	0.438	16	5.6	< 1	28.9	26.4	18.1	0.87	0.02	0.6	0.1
31-Jul-02	Dry																				
30-Aug-02	Dry																				
27-Sep-02	Dry																				
31-Oct-02	Dry																				
29-Nov-02	Dry																				
20-Dec-02	Dry																				
31-Jan-03	Froze																				
28-Feb-03	Froze																				
29-Mar-03	Froze																				
30-Apr-03	Dry																				
31-May-03	Dry																				
05-Jun-03	Philip-	6.99	240	68	2.89	4	6.1	51	6	0.16	0.934	118	6.1	< 1	26.1						
31-Jul-03	N/A																				
30-Aug-03	N/A																				
27-Sep-03	Dry																				
31-Oct-03	Dry																				
29-Nov-03	Dry																				
01-Dec-03	Philip-	7.21	256	52	3.16	4	4.2	24	0.63	< 0.03	0.146	12	6	< 1	49.7	28.9	18.8	0.54	< 0.01	0.3	0.07

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 2		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
08-Apr-97	WBL	7.68	2050	120	7.79	35.1	17.3	380	4.91	0.329	0.495	37	20.8	< 0.72	497	293	42.6	2.14	< 0.02	0.58	0.05
06-May-97	WBL	7.98	1600	102	4.5	19.2	13	160	2.59	0.071	0.256	41	18.7	0.83	448	251	29.4	2.18	0.03	0.29	0.07
26-Jun-97	WBL	8.15	796	110	3.12	13.2	4.89	63	3.04	1.16	0.433	7	13.3	1.92	167	119	23.3	5.88	0.18	1.59	0.06
31-Jul-97	WBL	8.56	1020	137	3.74	15.7	14.9	145	5.36	0.079	0.88	54	33.3	1.05	196	154	26.2	2.97	0.06	0.88	0.03
11-Sep-97	WBL	7.43	376	83.4	2.98	13.2	2.83	54	1.85	0.38	0.342	9	26.6	< 0.72	42.5	46	22.8	2.45	0.27	0.49	0.26
26-Nov-97	WBL	7.73	340				3.15		1.12	< 0.01	0.08	220		< 0.72							
09-Dec-97	WBL	7.68	570	85	4.15	7.14	2.78	33	1.16	0.104	0.033	11	39.6	< 0.72	94.7	58	32.8	0.72	0.02	0.06	0.02
08-Jan-98	WBL	7.81	537				4.62		0.8	0.1	0.17	319		2							
28-Feb-98	Dry																				
31-Mar-98	WBL	7.84	1530	87.5	2.67	5.65	15.4		1	0.026	0.118	33	23.2	< 0.72	430	274	31.1	0.81	0.05	0.12	0.03
30-Apr-98	Dry																				
12-May-98	WBL	7.74	1120				5.55		2.32	1.22	0.13	654		0.72							
24-Jun-98	WBL	7.51	450	94.7	3.33	7.83	21.1		2.79	0.027	0.259	30	40.5	< 0.72	52.2	43.4	39.4	1.65	0.06	0.26	0.04
31-Jul-98	Dry																				
31-Aug-98	Dry																				
30-Sep-98	Dry																				
31-Oct-98	Dry																				
30-Nov-98	Dry																				
31-Dec-98	Dry																				
31-Jan-99	Froze																				
28-Feb-99	Froze																				
31-Mar-99	Dry																				
30-Apr-99	Dry																				
31-May-99	Dry																				
29-Jun-99	Dry																				
31-Jul-99	Dry																				
31-Aug-99	Dry																				
30-Sep-99	Dry																				
31-Oct-99	Dry																				
30-Nov-99	Dry																				
14-Dec-99	Dry																				
30-Jan-00	Froze																				
28-Feb-00	Froze																				
31-Mar-00	Dry																				
27-Apr-00	Dry																				
23-May-00	Dry																				
30-Jun-00	Dry																				
30-Jul-00	Dry																				
29-Aug-00	Dry																				
28-Sep-00	Dry																				
30-Oct-00	Dry																				
28-Nov-00	Dry																				
07-Dec-00	Froze																				
31-Jan-02	Dry																				
28-Feb-02	Dry																				

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 2		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
29-Mar-02	Dry																				
30-Apr-02	Standi																				
31-May-02	Dry																				
28-Jun-02	Standi																				
31-Jul-02	Dry																				
30-Aug-02	Dry																				
27-Sep-02	Dry																				
31-Oct-02	Dry																				
29-Nov-02	Dry																				
20-Dec-02	Dry																				
31-Jan-03	Froze																				
28-Feb-03	Froze																				
29-Mar-03	Froze																				
30-Apr-03	Dry																				
31-May-03	Dry																				
05-Jun-03	Dry																				
31-Jul-03	N/A																				
30-Aug-03	N/A																				
27-Sep-03	Dry																				
31-Oct-03	Dry																				
29-Nov-03	Dry																				
20-Dec-03	Dry																				

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
EPTS-01		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
09-Jun-04	Philip-	8	583	236	20.8	< 1	1.3	7	0.27	0.07	0.003		19.4	< 1	52.3	24.9	93.5	0.09	0.02		0.43
30-Nov-04	Philip-	8.11	665	244	22.4	2	< 0.5	8	0.18	< 0.03	0.003		21.3	< 1	60.3	23.6	83.4	< 0.01	0.01		0.08

Routine Leachate Quality - General Analysis -Waste Resource Innovation Centre

Station	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	S04 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 3	31-Jan-02	Dry																				
	28-Feb-02	Dry																				
	29-Mar-02	Dry																				
	30-Apr-02	Dry																				
	31-May-02	Dry																				
	28-Jun-02	Dry																				
	31-Jul-02	Dry																				
	30-Aug-02	Dry																				
	27-Sep-02	Dry																				
	31-Oct-02	Dry																				
	29-Nov-02	Dry																				
	20-Dec-02	Dry																				
	31-Jan-03	Froze																				
	28-Feb-03	Froze																				
	29-Mar-03	Froze																				
	30-Apr-03	Dry																				
	31-May-03	Dry																				
	05-Jun-03	Philip-	6.75	1129	184	10.8	102	172	102	31	5.65	4.3	84	72	6	140						
	31-Jul-03	Dry																				
	30-Aug-03	Dry																				
	27-Sep-03	Dry																				
	31-Oct-03	Dry																				
	29-Nov-03	Dry																				
	01-Dec-03	Philip-	5.8	6243	459	73	179	1420	4900	65.8	9	23.4	639	65.8	1180	1880	979	218	8.7	0.14	21.1	0.47
CL-1	29-May-96	ENT	7.64			106.6	1130	4444	9828	650	368.7	17.28	255	398.1	144	1804	1160	339	6.21	0.84	8.8	1.04
	04-Sep-96	ENT	6.36			31.1	219	976	2027	38.6	18.54	9.56	198	145	56	418	212	118	2.8	2.41	6.55	1.69
	16-Oct-96	ENT	7.59			27.7	166	148	542	55.7	13.54	2.45	32	85.3	2	248	124	83.9	1.43	0.19	1.57	0.28
	20-Nov-96	ENT	7.13			50.1	5.69	720	1626	1.46	46.7	10.4	107	95.7	3050	824	265	168	2.48	0.23	5.55	0.2
	11-Dec-96	ENT	7.45			49.4	218	240	584	52.6	22	7.01	27	106	13	3978	2200	158	2.05	0.16	4.49	0.25
	27-Mar-97	WBL	7.91	7690	609	107	263	143	1320	248	228	3.72	108	112	13.3	441	367	667	1.54	0.26	3.16	0.38
	06-May-97	WBL	8.44	3580	1050	43.3	344	969	2110	173	105	6.36	750	50.3	304	441	262	136	5.99	0.28	5.6	0.48
	27-Jun-97	WBL	7.15	5590	1440	64.1	653	1890	3500	165	127	18.9	410	5.2	614	586	266	194	5.17	0.45	15.2	0.48
	11-Sep-97	WBL	8.25	6640	1870	97.1	925	541	1100	201	124	15.4	220	51.9	179	913	615	147	39.9	1.32	39.5	6.84
	01-Oct-97	WBL	8.12	17900	4190	214	1820	2090	7190	560	467	14.7	90	114	1240	2860	1800	370	8.68	1.81	29.6	2.44
	09-Dec-97	WBL	7.68	15200	2830	258	1380	570	4450	686	374	13.6	1740	188	745	2070	1360	865	1.44	0.97	12.8	0.45
	01-Apr-98	WBL	8.18	5910	1230	79.6	472	193			134		180	217	183	797	501	183	1.72	0.34	13.7	0.33
	24-Jun-98	WBL	7.54	3780	1490	70.4	316	771			61.6		388	125	81.1	331	216	326	8.25	0.27	7.39	2.53
	02-Oct-98	CAN	7.7	2000	420	38	160	52	370	38	6.5	3.4	40	130	9	210	130	110	2.8	0.18		0.43
	03-Dec-98	CAN	7.6	1800	490	37	110	64	520	45	6.8	3.4	210	97	35	170	110	98	1.5	0.14		0.36
	14-Dec-99	Barr	7.02	7051	2300	85.1	514	2870	5002	339	286	10.4	282	77.8	1130	734	571	181	0.37	0.52	7.4	0.04
	21-Jun-00	Philip-	7.72	16840	1030	322	627	42.3	1393	918	930	6.7	489	363	< 1	1100	623	1270	4.57	0.76	6.8	1.01
	07-Dec-00	Philip-	7.71	32400	5430	264	2210	5320	1E+04	672	627	11.2	785	42	2020	8770	6740	240	12.2	1.67		1.94
	27-Jun-01	Philip-	8.07	28200	5370	213	3200	311	4719	2100	1490	12	2870	390	< 30	3580	2970	138	24.5	2.64	19	3.31
	04-Dec-01	Philip-	7.67	1931	297	35.4	96.1	7.3	524	82	66.9	3.5	262	72	7	119	74.1	133	6.29	0.08	3.5	1.3
	05-Jun-02	Philip-	7.93	365	99	9.01	12	134	121	8.11	0.75	1.4	311	21.8	3	37.4	26.1	36.3	2.98	0.02	1.7	0.37

ORGANIC ANALYSIS - VOC'S - Waste Resources Innovation Centre -2004

Parameters	2a-91 09-Jun-04	2b-91 09-Jun-04	5-96 09-Jun-04	6a-96 09-Jun-04
1,1,1-Trichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene				
1,2-Dibromoethane	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichloropropane	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloroethylvinyl ether				
Acrolein	< 10	< 10	< 10	< 10
Acrylonitrile	< 5	< 5	< 5	< 5
Benzene	< 0.1	< 0.1	< 0.1	< 0.1
Bromodichloromethane	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane	< 0.5	< 0.5	< 0.5	< 0.5
Carbon tetrachloride	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
Chloroethane	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	< 0.1	< 0.1	< 0.1	< 0.1
Chloromethane	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.1	< 0.1	< 0.1	< 0.1
Methylene chloride	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	< 0.1	< 0.1	< 0.1	< 0.1
Tetrachloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	< 0.2	< 0.2	< 0.2	< 0.2
Trans-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride	< 0.2	< 0.2	< 0.2	< 0.2
m-Xylene and p-Xylene	< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene	< 0.1	< 0.1	< 0.1	< 0.1

ORGANIC ANALYSIS - VOC'S - Waste Resources Innovation Centre -2004

Parameters	6b-96 09-Jun-04	7-96 09-Jun-04	8-96 09-Jun-04	9-96 09-Jun-04
1,1,1-Trichloroethane	< 0.1	< 0.1	< 0.1	1.1
1,1,2,2-Tetrachloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene				
1,2-Dibromoethane	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichloropropane	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloroethylvinyl ether				
Acrolein	< 10	< 10	< 10	< 10
Acrylonitrile	< 5	< 5	< 5	< 5
Benzene	< 0.1	< 0.1	< 0.1	< 0.1
Bromodichloromethane	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane	< 0.5	< 0.5	< 0.5	< 0.5
Carbon tetrachloride	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
Chloroethane	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	< 0.1	< 0.1	< 0.1	< 0.1
Chloromethane	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.1	< 0.1	< 0.1	< 0.1
Methylene chloride	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	< 0.1	< 0.1	< 0.1	< 0.1
Tetrachloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	< 0.2	< 0.2	< 0.2	< 0.2
Trans-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride	< 0.2	< 0.2	< 0.2	< 0.2
m-Xylene and p-Xylene	< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene	< 0.1	< 0.1	< 0.1	< 0.1

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Parameters	10-00 09-Jun-04	11a-00 09-Jun-04	11b-00 09-Jun-04	12a-00 09-Jun-04
1,1,1-Trichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene				
1,2-Dibromoethane	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichloropropane	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloroethylvinyl ether				
Acrolein	< 10	< 10	< 10	< 10
Acrylonitrile	< 5	< 5	< 5	< 5
Benzene	< 0.1	< 0.1	< 0.1	< 0.1
Bromodichloromethane	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane	< 0.5	< 0.5	< 0.5	< 0.5
Carbon tetrachloride	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
Chloroethane	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	< 0.1	< 0.1	< 0.1	< 0.1
Chloromethane	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.1	< 0.1	< 0.1	< 0.1
Methylene chloride	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	< 0.1	< 0.1	< 0.1	< 0.1
Tetrachloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	< 0.2	< 0.2	< 0.2	0.2
Trans-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride	< 0.2	< 0.2	< 0.2	< 0.2
m-Xylene and p-Xylene	< 0.1	< 0.1	< 0.1	0.1
o-Xylene	< 0.1	< 0.1	< 0.1	< 0.1

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Parameters	12b-00 09-Jun-04	13a-01 09-Jun-04	13b-01 09-Jun-04	14a-01 09-Jun-04
1,1,1-Trichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene				
1,2-Dibromoethane	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichloropropane	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloroethylvinyl ether				
Acrolein	< 10	< 10	< 10	< 10
Acrylonitrile	< 5	< 5	< 5	< 5
Benzene	< 0.1	< 0.1	< 0.1	< 0.1
Bromodichloromethane	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane	< 0.5	< 0.5	< 0.5	< 0.5
Carbon tetrachloride	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
Chloroethane	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	< 0.1	< 0.1	< 0.1	< 0.1
Chloromethane	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.1	< 0.1	< 0.1	< 0.1
Methylene chloride	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	< 0.1	< 0.1	< 0.1	< 0.1
Tetrachloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	< 0.2	< 0.2	< 0.2	< 0.2
Trans-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride	< 0.2	< 0.2	< 0.2	< 0.2
m-Xylene and p-Xylene	0.1	< 0.1	< 0.1	< 0.1
o-Xylene	< 0.1	< 0.1	< 0.1	< 0.1

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Parameters	14b-01 09-Jun-04	15a-01 09-Jun-04	15b-01 09-Jun-04	EPTS-01 09-Jun-04
1,1,1-Trichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene				
1,2-Dibromoethane	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichloropropane	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloroethylvinyl ether				
Acrolein	< 10	< 10	< 10	< 10
Acrylonitrile	< 5	< 5	< 5	< 5
Benzene	< 0.1	< 0.1	< 0.1	< 0.1
Bromodichloromethane	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane	< 0.5	< 0.5	< 0.5	< 0.5
Carbon tetrachloride	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1
Chloroethane	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	< 0.1	< 0.1	< 0.1	0.9
Chloromethane	< 0.5	< 0.5	< 0.5	< 0.5
Cis-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.1	< 0.1	< 0.1	< 0.1
Methylene chloride	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	< 0.1	< 0.1	< 0.1	< 0.1
Tetrachloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	< 0.2	< 0.2	< 0.2	< 0.2
Trans-1,2-Dichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride	< 0.2	< 0.2	< 0.2	< 0.2
m-Xylene and p-Xylene	< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene	< 0.1	< 0.1	< 0.1	< 0.1

ORGANIC ANALYSIS (Base neutral Extractables) - Waste Resources Innovation Centre -2004

Parameters	2a-91 09-Jun-04	2b-91 09-Jun-04	5-96 09-Jun-04	6a-96 09-Jun-04
1-Chloronaphthalene	< 0.5	< 0.5	< 0.5	< 0.5
1-Methylnaphthalene	< 0.2	< 0.2	< 0.2	< 0.2
2,3,4,5-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol	< 2	< 2	< 2	< 2
2,4-Dinitrotoluene	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene	< 0.5	< 0.5	< 0.5	< 0.5
2-Chloronaphthalene	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorophenol	< 0.3	< 0.3	< 0.3	< 0.3
2-Methylnaphthalene	< 0.2	< 0.2	< 0.2	< 0.2
4,6-Dinitro-o-cresol	< 2	< 2	< 2	< 2
4-Bromophenyl phenyl ether	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorophenyl phenyl ether	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	< 2	< 2	< 2	< 2
5-Nitroacenaphthene	< 1	< 1	< 1	< 1
Acenaphthene	< 0.2	< 0.2	< 0.2	< 0.2
Acenaphthylene	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)pyrene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)fluoranthene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)fluoranthene	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl butyl phthalate	< 0.5	< 0.5	< 0.5	< 0.5
Biphenyl	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethoxy)methane	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-ethylhexyl)phthalate	< 2	< 2	< 2	< 2
Camphene	< 1	< 1	< 1	< 1
Chrysene	< 0.2	< 0.2	< 0.2	< 0.2
Di-n-butylphthalate	< 2	< 2	< 2	< 2
Di-n-octylphthalate	< 2	< 2	< 2	< 2
Dibenzo(a,h)anthracene	< 0.2	< 0.2	< 0.2	< 0.2
Diphenyl ether	< 0.5	< 0.5	< 0.5	< 0.5
Diphenylamine				
Fluoranthene	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)pyrene	< 0.2	< 0.2	< 0.2	< 0.2
Indole	< 1	< 1	< 1	< 1
N-Nitrosodi-n-propylamine	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodiphenylamine	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2
Pentachlorophenol	< 1	< 1	< 1	< 1
Perylene	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene	< 0.2	< 0.2	< 0.2	< 0.2
Phenol	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	< 0.2	< 0.2	< 0.2	< 0.2
m-Cresol				
o-Cresol	< 0.5	< 0.5	< 0.5	< 0.5
p-Cresol				
m-,p-Cresol	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (Base neutral Extractables) - Waste Resources Innovation Centre -2004

Parameters	6b-96 09-Jun-04		7-96 09-Jun-04		8-96 09-Jun-04		9-96 09-Jun-04	
1-Chloronaphthalene	<	0.5	<	0.5	<	0.5	<	0.5
1-Methylnaphthalene	<	0.2	<	0.2	<	0.2	<	0.2
2,3,4,5-Tetrachlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,3,4,6-Tetrachlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,3,4-Trichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,3,5,6-Tetrachlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,3,5-Trichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,4,5-Trichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,4,6-Trichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,4-Dichlorophenol	<	0.3	<	0.3	<	0.3	<	0.3
2,4-Dimethylphenol	<	0.5	<	0.5	<	0.5	<	0.5
2,4-Dinitrophenol	<	2	<	2	<	2	<	2
2,4-Dinitrotoluene	<	0.5	<	0.5	<	0.5	<	0.5
2,6-Dichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,6-Dinitrotoluene	<	0.5	<	0.5	<	0.5	<	0.5
2-Chloronaphthalene	<	0.5	<	0.5	<	0.5	<	0.5
2-Chlorophenol	<	0.3	<	0.3	<	0.3	<	0.3
2-Methylnaphthalene	<	0.2	<	0.2	<	0.2	<	0.2
4,6-Dinitro-o-cresol	<	2	<	2	<	2	<	2
4-Bromophenyl phenyl ether	<	0.5	<	0.5	<	0.5	<	0.5
4-Chloro-3-methylphenol	<	0.5	<	0.5	<	0.5	<	0.5
4-Chlorophenyl phenyl ether	<	0.5	<	0.5	<	0.5	<	0.5
4-Nitrophenol	<	2	<	2	<	2	<	2
5-Nitroacenaphthene	<	1	<	1	<	1	<	1
Acenaphthene	<	0.2	<	0.2	<	0.2	<	0.2
Acenaphthylene	<	0.2	<	0.2	<	0.2	<	0.2
Anthracene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(a)anthracene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(a)pyrene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(b)fluoranthene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(g,h,i)perylene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(k)fluoranthene	<	0.2	<	0.2	<	0.2	<	0.2
Benzyl butyl phthalate	<	0.5	<	0.5	<	0.5	<	0.5
Biphenyl	<	0.5	<	0.5	<	0.5	<	0.5
Bis(2-chloroethoxy)methane	<	0.5	<	0.5	<	0.5	<	0.5
Bis(2-chloroethyl)ether	<	0.5	<	0.5	<	0.5	<	0.5
Bis(2-chloroisopropyl)ether	<	0.5	<	0.5	<	0.5	<	0.5
Bis(2-ethylhexyl)phthalate	<	2	<	2	<	2	<	2
Camphene	<	1	<	1	<	1	<	1
Chrysene	<	0.2	<	0.2	<	0.2	<	0.2
Di-n-butylphthalate	<	2	<	2	<	2	<	2
Di-n-octylphthalate	<	2	<	2	<	2	<	2
Dibenzo(a,h)anthracene	<	0.2	<	0.2	<	0.2	<	0.2
Diphenyl ether	<	0.5	<	0.5	<	0.5	<	0.5
Diphenylamine								
Fluoranthene	<	0.2	<	0.2	<	0.2	<	0.2
Fluorene	<	0.2	<	0.2	<	0.2	<	0.2
Indeno(1,2,3-cd)pyrene	<	0.2	<	0.2	<	0.2	<	0.2
Indole	<	1	<	1	<	1	<	1
N-Nitrosodi-n-propylamine	<	0.5	<	0.5	<	0.5	<	0.5
N-Nitrosodiphenylamine	<	0.5	<	0.5	<	0.5	<	0.5
Naphthalene	<	0.2	<	0.2	<	0.2	<	0.2
Pentachlorophenol	<	1	<	1	<	1	<	1
Perylene	<	0.2	<	0.2	<	0.2	<	0.2
Phenanthrene	<	0.2	<	0.2	<	0.2	<	0.2
Phenol	<	0.5	<	0.5	<	0.5	<	0.5
Pyrene	<	0.2	<	0.2	<	0.2	<	0.2
m-Cresol								
o-Cresol	<	0.5	<	0.5	<	0.5	<	0.5
p-Cresol								
m-,p-Cresol	<	0.5	<	0.5	<	0.5	<	0.5

ORGANIC ANALYSIS (Base neutral Extractables) - Waste Resources Innovation Centre -2004

Parameters	10-00 09-Jun-04		11a-00 09-Jun-04		11b-00 09-Jun-04		12a-00 09-Jun-04	
1-Chloronaphthalene	<	0.5	<	0.5	<	0.5	<	0.5
1-Methylnaphthalene	<	0.2	<	0.2	<	0.2	<	0.2
2,3,4,5-Tetrachlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,3,4,6-Tetrachlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,3,4-Trichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,3,5,6-Tetrachlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,3,5-Trichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,4,5-Trichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,4,6-Trichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,4-Dichlorophenol	<	0.3	<	0.3	<	0.3	<	0.3
2,4-Dimethylphenol	<	0.5	<	0.5	<	0.5	<	0.5
2,4-Dinitrophenol	<	2	<	2	<	2	<	2
2,4-Dinitrotoluene	<	0.5	<	0.5	<	0.5	<	0.5
2,6-Dichlorophenol	<	0.5	<	0.5	<	0.5	<	0.5
2,6-Dinitrotoluene	<	0.5	<	0.5	<	0.5	<	0.5
2-Chloronaphthalene	<	0.5	<	0.5	<	0.5	<	0.5
2-Chlorophenol	<	0.3	<	0.3	<	0.3	<	0.3
2-Methylnaphthalene	<	0.2	<	0.2	<	0.2	<	0.2
4,6-Dinitro-o-cresol	<	2	<	2	<	2	<	2
4-Bromophenyl phenyl ether	<	0.5	<	0.5	<	0.5	<	0.5
4-Chloro-3-methylphenol	<	0.5	<	0.5	<	0.5	<	0.5
4-Chlorophenyl phenyl ether	<	0.5	<	0.5	<	0.5	<	0.5
4-Nitrophenol	<	2	<	2	<	2	<	2
5-Nitroacenaphthene	<	1	<	1	<	1	<	1
Acenaphthene	<	0.2	<	0.2	<	0.2	<	0.2
Acenaphthylene	<	0.2	<	0.2	<	0.2	<	0.2
Anthracene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(a)anthracene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(a)pyrene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(b)fluoranthene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(g,h,i)perylene	<	0.2	<	0.2	<	0.2	<	0.2
Benzo(k)fluoranthene	<	0.2	<	0.2	<	0.2	<	0.2
Benzyl butyl phthalate	<	0.5	<	0.5	<	0.5	<	0.5
Biphenyl	<	0.5	<	0.5	<	0.5	<	0.5
Bis(2-chloroethoxy)methane	<	0.5	<	0.5	<	0.5	<	0.5
Bis(2-chloroethyl)ether	<	0.5	<	0.5	<	0.5	<	0.5
Bis(2-chloroisopropyl)ether	<	0.5	<	0.5	<	0.5	<	0.5
Bis(2-ethylhexyl)phthalate	<	2	<	2	<	2	<	2
Camphene	<	1	<	1	<	1	<	1
Chrysene	<	0.2	<	0.2	<	0.2	<	0.2
Di-n-butylphthalate	<	2	<	2	<	2	<	2
Di-n-octylphthalate	<	2	<	2	<	2	<	2
Dibenzo(a,h)anthracene	<	0.2	<	0.2	<	0.2	<	0.2
Diphenyl ether	<	0.5	<	0.5	<	0.5	<	0.5
Diphenylamine								
Fluoranthene	<	0.2	<	0.2	<	0.2	<	0.2
Fluorene	<	0.2	<	0.2	<	0.2	<	0.2
Indeno(1,2,3-cd)pyrene	<	0.2	<	0.2	<	0.2	<	0.2
Indole	<	1	<	1	<	1	<	1
N-Nitrosodi-n-propylamine	<	0.5	<	0.5	<	0.5	<	0.5
N-Nitrosodiphenylamine	<	0.5	<	0.5	<	0.5	<	0.5
Naphthalene	<	0.2	<	0.2	<	0.2	<	0.2
Pentachlorophenol	<	1	<	1	<	1	<	1
Perylene	<	0.2	<	0.2	<	0.2	<	0.2
Phenanthrene	<	0.2	<	0.2	<	0.2	<	0.2
Phenol	<	0.5	<	0.5	<	0.5	<	0.5
Pyrene	<	0.2	<	0.2	<	0.2	<	0.2
m-Cresol								
o-Cresol	<	0.5	<	0.5	<	0.5	<	0.5
p-Cresol								
m-,p-Cresol	<	0.5	<	0.5	<	0.5	<	0.5

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Parameters	12b-00 09-Jun-04	13a-01 09-Jun-04	13b-01 09-Jun-04	14a-01 09-Jun-04
1-Chloronaphthalene	< 0.5	< 0.5	< 0.5	< 0.5
1-Methylnaphthalene	< 0.2	< 0.2	< 0.2	< 0.2
2,3,4,5-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol	< 2	< 2	< 2	< 2
2,4-Dinitrotoluene	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene	< 0.5	< 0.5	< 0.5	< 0.5
2-Chloronaphthalene	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorophenol	< 0.3	< 0.3	< 0.3	< 0.3
2-Methylnaphthalene	< 0.2	< 0.2	< 0.2	< 0.2
4,6-Dinitro-o-cresol	< 2	< 2	< 2	< 2
4-Bromophenyl phenyl ether	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorophenyl phenyl ether	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	< 2	< 2	< 2	< 2
5-Nitroacenaphthene	< 1	< 1	< 1	< 1
Acenaphthene	< 0.2	< 0.2	< 0.2	< 0.2
Acenaphthylene	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)pyrene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)fluoranthene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)fluoranthene	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl butyl phthalate	< 0.5	< 0.5	< 0.5	< 0.5
Biphenyl	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethoxy)methane	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-ethylhexyl)phthalate	< 2	< 2	< 2	< 2
Camphene	< 1	< 1	< 1	< 1
Chrysene	< 0.2	< 0.2	< 0.2	< 0.2
Di-n-butylphthalate	< 2	< 2	< 2	< 2
Di-n-octylphthalate	< 2	< 2	< 2	< 2
Dibenzo(a,h)anthracene	< 0.2	< 0.2	< 0.2	< 0.2
Diphenyl ether	< 0.5	< 0.5	< 0.5	< 0.5
Diphenylamine				
Fluoranthene	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)pyrene	< 0.2	< 0.2	< 0.2	< 0.2
Indole	< 1	< 1	< 1	< 1
N-Nitrosodi-n-propylamine	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodiphenylamine	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2
Pentachlorophenol	< 1	< 1	< 1	< 1
Perylene	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene	< 0.2	< 0.2	< 0.2	< 0.2
Phenol	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	< 0.2	< 0.2	< 0.2	< 0.2
m-Cresol				
o-Cresol	< 0.5	< 0.5	< 0.5	< 0.5
p-Cresol				
m-,p-Cresol	< 0.5	< 0.5	< 0.5	< 0.5

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Parameters	14b-01	15a-01	15b-01	EPTS-01
	09-Jun-04	09-Jun-04	09-Jun-04	09-Jun-04
1-Chloronaphthalene	< 0.5	< 0.5	< 0.5	< 0.5
1-Methylnaphthalene	< 0.2	< 0.2	< 0.2	< 0.2
2,3,4,5-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol	< 2	< 2	< 2	< 2
2,4-Dinitrotoluene	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dichlorophenol	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene	< 0.5	< 0.5	< 0.5	< 0.5
2-Chloronaphthalene	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorophenol	< 0.3	< 0.3	< 0.3	< 0.3
2-Methylnaphthalene	< 0.2	< 0.2	< 0.2	< 0.2
4,6-Dinitro-o-cresol	< 2	< 2	< 2	< 2
4-Bromophenyl phenyl ether	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorophenyl phenyl ether	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	< 2	< 2	< 2	< 2
5-Nitroacenaphthene	< 1	< 1	< 1	< 1
Acenaphthene	< 0.2	< 0.2	< 0.2	< 0.2
Acenaphthylene	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)pyrene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)fluoranthene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)fluoranthene	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl butyl phthalate	< 0.5	< 0.5	< 0.5	< 0.5
Biphenyl	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethoxy)methane	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-ethylhexyl)phthalate	< 2	< 2	< 2	< 2
Camphene	< 1	< 1	< 1	< 1
Chrysene	< 0.2	< 0.2	< 0.2	< 0.2
Di-n-butylphthalate	< 2	< 2	< 2	< 2
Di-n-octylphthalate	< 2	< 2	< 2	< 2
Dibenzo(a,h)anthracene	< 0.2	< 0.2	< 0.2	< 0.2
Diphenyl ether	< 0.5	< 0.5	< 0.5	< 0.5
Diphenylamine				
Fluoranthene	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)pyrene	< 0.2	< 0.2	< 0.2	< 0.2
Indole	< 1	< 1	< 1	< 1
N-Nitrosodi-n-propylamine	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodiphenylamine	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2
Pentachlorophenol	< 1	< 1	< 1	< 1
Perylene	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene	< 0.2	< 0.2	< 0.2	< 0.2
Phenol	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	< 0.2	< 0.2	< 0.2	< 0.2
m-Cresol				
o-Cresol	< 0.5	< 0.5	< 0.5	< 0.5
p-Cresol				
m-,p-Cresol	< 0.5	< 0.5	< 0.5	< 0.5