

City of Guelph

2010 Annual Report – Solid Waste Transfer Station, #9241 – 5DTRD9 & Wet-Dry Recycling Centre, C of A (Waste Disposal Site) No. A170128

Prepared by: AECOM 300 – 300 Town Centre Boulevard Markham, ON, Canada L3R 5Z6 905 477 1456 fax www.aecom.com

Project Number: 60191193

Date: March, 2011

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March 29, 2011

Mr. Dean Wyman, Manager Solid Waste Services Division City of Guelph Works Department 59 Carden Street Guelph, ON N1H 3A1

Dear Mr. Wyman:

Project No: 60191193

Regarding: 2010 Annual Report – Solid Waste Transfer Station, #9241 – 5DTRD9 & Wet-Dry Recycling Centre, C of A (Waste Disposal Site) No. A170128

Enclosed, please find our final report for this project, addressing the requirements of the WRIC and Transfer Station's Certificate of Approvals and the MOE reporting recommendations from the Design and Operations Report for the Transfer Station.

Please do not hesitate to call me should you have any questions about this report. Thank you for allowing AECOM to be of continued service to the City of Guelph.

Sincerely, AECOM Canada Ltd.

Terry La Chapelle, B.Sc., P.Geo. Senior Geologist *terry lachapelle*@aecom.com

TLC/PW:mf Attach.

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Executive Summary

The City of Guelph Solid Waste Transfer Station and the Wet-Dry Recycling Centre are adjacent facilities that operate under two separate Ministry of Environment Provisional Certificate of Approvals. Due to their close proximity, there is overlap in the monitoring requirements for the site. At the request of the MOE, the annual monitoring reports have been consolidated here to produce one monitoring report for both the sites. In June 2010, a comprehensive Certificate of Approval (No. 5015-856HHF) was obtained covering both the sites.

Solid Waste Transfer Station

The following table presents a summary of the 2010 Annual Report for the City of Guelph Solid Waste Transfer Station. The Transfer Station is operated under Ministry of Environment Provisional Certificate of Approval (Waste Disposal Site) No. 9241-5DTRD9. This report also includes additional items as listed in Section 9.2 (MOE Reporting) of the City of Guelph Solid Waste Transfer Station Design and Operations Report, prepared by Gartner Lee Limited (2002). The Certificate of Approval (C of A) and the Design and Operations Report specifies annual reporting requirements. These have been outlined in the left-hand column below, while the right hand column provides a reference to the section of this report where the reader will find further details.

A. Provisional C of A

(Waste Disposal Site) No. 9241-5DTRD9

	C of A Reporting Requirement	Report Reference and Summary			
30(a)	A detailed monthly summary of the type, quantity, and origin of all wastes received and transferred from the Site, including the destination, type, and quantity of waste destined for final disposal and also including any reconciliations on mass balance made.	 Table 7 (Section 4.1) provides details on the incoming and outgoing waste. Most of the waste accepted at the Transfer Station is of domestic origin. Most of the outgoing waste is shipped off-site to the St. Thomas Landfill in Elgin County. By the end of 2010, there was a surplus of 370 tonnes of waste. 			
30(b)	Any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the Site and during the facility inspections and any mitigative actions taken.	 Based on the 2010 information provided to us by the City of Guelph and the results of the ground and surface water monitoring, there are no environmental impacts from the operation of the Site (Sections 5, 6,7) 			
30(c)	A statement as to the compliance with all Terms and Conditions of this Certificate and with the inspection and reporting requirements of the conditions herein.	 Section 9 of the report briefly discusses site compliance. A compliance statement from the City of Guelph is presented in Appendix F. 			
30(d)	Any recommendations to minimize environmental impacts from the operation of the Site and to improve Site operations and monitoring programs in this regard.	 The site design and operations are such that environmental impacts are minimized. 			
30(e)	A detailed section showing the results, interpretation of the results, and timetable for implementing recommendations from the approved groundwater monitoring program referred to in Condition 28.	 Section 5 discusses the results of the groundwater monitoring program. No groundwater impacts from the operation of the Transfer Station were detected or are expected in the future due to site design and operations. 			

B. Additional Reporting

(Recommended in the Design and Operations Report)

	Reporting Requirement		Report Reference and Summary
9.2a)	A monthly summary of the wastes received at the site, including quantity and source.	•	Table 7 (Section 4.1) See above discussion on Condition 30(a).
9.2b)	A monthly summary of wastes transferred off- site including quantity, destination.	•	Table 7 (Section 4.1).

B. Additional Reporting (Recommended in the Design and Operations Report)

Reporting Requirement			Report Reference and Summary
9.2c)	A monthly summary of any waste loads	•	There were no rejected or suspect loads received during 2010 (Section 4.1).
	rejected, and any suspect waste loads received.		
9.2d)	A summary of the routine maintenance	•	Section 4.2 discusses routine maintenance conducted on the site including litter pick-
	procedures undertaken.		up, dust control and rodent control.
9.2c) 9.2d) 9.2e)	A monthly summary of any waste loads rejected, and any suspect waste loads received. A summary of the routine maintenance procedures undertaken. An annual summary of the analytical results for the groundwater and surface water monitoring program including an interpretation of the results relative to appropriate groundwater and surface water quality guidelines, and any proposed changes to the monitoring program.	•	There were no rejected or suspect loads received during 2010 (Section 4.1). Section 4.2 discusses routine maintenance conducted on the site including litter pick- up, dust control and rodent control. Section 5.3 discusses groundwater quality. Groundwater monitoring results indicate road salt effects at some up-gradient groundwater monitoring locations (5-96, 8-96, 18b-08, 19b-08, 20b-08). These are related to off-site winter road salting of the adjacent major roadways. Road salt impacts are detected in some on-site downgradient groundwater monitors (6b-96, 7-96, 13b-01, 17b-01, 17b-08). Monitors 5-96, 15b-01 and 17b-08 exceeded ODWS for sodium and/or chloride in 2010 as a result of road salt impacts. There were no apparent leachate impacts observed in the groundwater at the site boundary. Nitrates at monitor 6a-96, 6b-96 and 7-96 exceeded the ODWS in 2010. The elevated nitrate at 7-96 is at similar concentrations to those observed in the late 1990s, just after commissioning of the facility. Nitrates exceeded ODWS in 2010 at bedrock monitor 6a-96. This monitor has consistently exceeded the nitrate ODWS during all previous sampling events where nitrate was analyzed. Elevated nitrate concentrations were prevalent across the site at all locations prior to development of the site. Elevated nitrates are most likely a result of long-term agricultural land use in the area and are not a result of site operations. There were no other nitrate exceedances of the ODWS for the overburden and bedrock monitors in 2010. Aside from the sodium, chloride and nitrate exceedances discussed above, there were no other exceedances of the Ontario Drinking Water Standards in 2010 for the groundwater monitors sampled for the Transfer Station monitoring program. As the shallow outwash water quality is not impacted by site operations, no impacts to the deeper bedrock groundwater would be expected. No leachate impacts were detected in the bedrock monitors sampled in 2010. Section 5.5 discusses organic groundwater results. There were detectio
			recommended that Guideline B-7 be applied to this site (discussed in Section 5.8). Groundwater flow is northeasterly however, there are no groundwater monitors at the downgradient northern property boundary along Dunlop Drive. The MOE recommends installation of a well nest along the northern downgradient property boundary to be utilized for an impact assessment with respect to the requirements of Guideline B-7. The nest is to include overburden and bedrock monitors to be
			Included in the ongoing monitoring program. We concur with this recommendation. The new monitoring nest should be installed in 2011 such that the Guideline B-7 analysis can be completed for the next annual monitoring report.

B. Additional Reporting (Recommended in the Design and Operations Report)

Reporting Requirement	Report Reference and Summary
	 Section 5.8 discusses surface water quality results. Monthly sampling of the stormwater management pond in the northwest corner of the site was conducted on four occasions during 2010 at the culvert on the west side of the pond (TP1) and on seven occasions at the discharge at the north end of the pond (TP1 (out)). SWM pond samples at TP1 exceeded the PWQO for zinc, iron, total phosphorus and phenols during one or more 2010 sampling events. For the SWM pond samples at TP1 (out), the PWQO was exceeded for total phosphorus, iron and zinc during one or more 2010 sampling events. The elevated total phosphorus is a result of agricultural land use and not a result of operations at the Transfer Station. Elevated zinc, total phosphorus and iron concentrations appear to be related to external factors since background surface water have also exceeded PWQO for these parameters. Metals are a common contaminant from roadway runoff. Elevated phosphorus is typical in rural and urbanized areas. No VOC analysis was conducted at TP1 and TP1 (out) during 2010. Of the two sets of samples collected in 2010 at EPTS-01 (the existing Transfer Station on-site surface water pond (East Pond)), the PWQO for zinc was exceeded during both events. The total phosphorus and iron PWQO's have been exceeded at this background surface water station in the past suggesting impacts unrelated to site operations. Zinc has consistently exceeded PWQQ in the past. All the leachate indicator parameters concentrations were within background overburden ranges. Chloroform was detected during the annual June 2010 sampling event of the East Pond. Chloroform was previously detected at low concentrations in 2009, 2008, 2007 and 2004 at EPTS-01 and has also historically been detected at low levels at monitors 6a-96, 6b-96 and 11b-00, in both the overburden and bedrock with no elevated indicator parameter concentrations indicating that these occasional detections are not a result of activities on the site. The East Pond shows no indications
9.2f) A listing of any public complaints received, the responses provided, and any mitigative action	• There were no public complaints recorded by the City regarding the Transfer Station during 2010 (Section 6).
undertaken.	
9.2g) Any remedial/mitigative action undertaken.	 No remedial or mitigative action was required at the Transfer Station during 2010 (Section 10).

Wet-Dry Recycling Centre

The following table presents a summary of the 2010 Annual Report for the City of Guelph Wet-Dry Recycling Centre. The Recycling Centre is operated under Ministry of Environment Provisional Certificate of Approval (Waste Disposal Site) No. A170128. Conditions 22, 27 and 30 of the Certificate of Approval (C of A) specify annual reporting requirements. In addition, the site has also been issued an amended C of A for Municipal and Private Sewage Works. Condition 6 of the sewage works C of A specifies monitoring and reporting requirements. The reporting requirements have been outlined in the left-hand column below, while the right hand column provides a reference to the section of this report where the reader will find further details.

A. Provisional C of A (Waste Disposal Site) No. A170128 Hazardous Household Waste (HHW) Transfer Station (Condition 22)

	C of A Reporting Requirement		Report Reference and Summary
(k)	The City shall annually review and update the existing waste	•	The City (HHW) waste screening measures are discussed in Section 3.1. Only authorized HHW (as described in the C of A) is
	approved by this Certificate are received at this facility.		accepted from homeowners from the City of Guelph and County
(1)	The updated report on the waste screening measures shall be		of Wellington. All materials must be clearly labelled. The City will
	submitted to the District Manager on an annual basis.		reject materials that are not acceptable under the C of A.

Contingency Plans (Condition 27)

	C of A Reporting Requirement		Report Reference and Summary			
<i>(i)</i>	Measures to be undertaken in the event of a spill.	•	Section 8.1 summarizes the Spills Handling and Reporting procedure. The procedure defines spills: minor, major, moderate and hazardous materials. The Spills procedure then outlines how to clean up a minor spill and who must be notified in the case of moderate or major spills.			
(ii)	Fire protection systems, control and safety devices.	•	Section 8.2 summarizes the Fire Safety Plan The Fire Safety Plan includes site mapping, floor plans for each of the on-site buildings (including locations of fire alarms and extinguishers), procedures to be followed in the event of a fire/emergency, staff responsibilities and contacts in the event of a fire/emergency, procedures for fire drills, prevention and monitoring equipment maintenance.			
(iii)	An emergency plan outlining the action to be undertaken in the event of a fire or other such emergency.	•	Section 8.2 summarizes the Emergency Plan. The Emergency Plan includes many of the elements incorporated into the Fire Safety Plan plus emergency communications procedures, locations of emergency supplies, emergency equipment information and procedures related to specific emergency situations.			
(iv)	Measures to be undertaken in the event of a composter process upset and/or failure.	•	The Organic Waste Processing Facility ceased service in May 2006. A comprehensive contingency plan will be developed in the event that the facility re-opens.			
(V)	Measures to be undertaken in the event of a power and/or equipment failure.	•	Section 8.4 summarizes the procedures as related to power or equipment failure. If electricity is unavailable for more than a 24-hour period, the WRIC would be required to re-direct waste materials.			
(vi)	Measures to be undertaken in the event of a biological filter upset and/or failure.	•	The Organic Waste Processing Facility ceased service in May 2006. A comprehensive contingency plan will be developed in the event that the facility reopens.			
(vii)	Measures to be undertaken in the event odour problems develop at the Site.	•	Section 8.5 summarizes the procedures as related to an odour problem. Odour complaints from the public are investigated through the WRIC Environmental Complaint Investigation Procedure in compliance with Condition 31 of the C of A. Control measures may include closing doors, cleaning up standing water and/or spills, other housekeeping measures, making changes to the processes or removal of the odour source to the landfill. If the odour persists, a portion of the operation or the entire site may be closed until the issue is resolved.			

Contingency Plans (Condition 27)

C of A Reporting Requirement			Report Reference and Summary			
(viii)	Measures to be undertaken in the event fog problems develop from the composter or the processed compost piles (curing piles).	•	The Organic Waste Processing Facility ceased service in May 2006. A comprehensive contingency plan will be developed in the event that the facility reopens.			
(viii)	Measures to be undertaken in the event hazard to aircraft problems develop or there is a net increase in birds at the Site.	•	Section 8.6 summarizes the procedures as related to aircraft hazards. The most obvious aircraft hazard, as it relates to the operation of the WRIC, is the nuisance bird population. Daily bird monitoring occurs as part of the site inspections. Continual housekeeping measures, such as litter pick up around the site, occur at the site to deter the attraction of birds and vermin. Should nuisance birds become an issue at the site, trained birds-of-prey or other mitigative measures will be considered. If necessary, the site operations may cease until the issue is resolved. Dust, steam, smoke or any airborne vapour may pose an aircraft hazard due to decreased visibility. Operations are conducted in a manner to minimize emissions.			
(x)	Measures to be undertaken in the event any unauthorized non-hazardous or hazardous waste appears at the Site.	•	Section 8.7 summarizes the procedures undertaken regarding un-authorized waste. Non-compliant loads are rejected at all areas of the site, if found. If un-authorized, hazardous or inappropriate waste is inadvertently accepted, the material will be loaded back on the vehicle (if it has not left the site) or the material will be placed in the appropriate bin for removal by a licensed hauler to an appropriate disposal site. The waste will be transported off-site as soon as arrangements can be made with a certified disposal company. If possible, the vehicle that brought the non-compliant load will be charged for the disposal fee.			
(xi)	Measures to be undertaken in the event of groundwater and/or surface water contamination.	•	Section 8.8 summarizes the procedures to be undertaken in the event of ground or surface water contamination. Should water quality results suggest that there are impacts to the ground or surface water, the monitor locations/surface water stations will be re-sampled within a reasonable period of time to confirm results. As well, an inspection of the area immediately adjacent and upgradient of the impacted location will be inspected for possible contaminant sources. Equipment and floor drains may also be inspected to determine if repairs are required. These repairs will be completed immediately. Should the repairs be such that normal operation is not possible, this portion of the operation will be shut down until maintenance is complete. If the contamination is a result of failure in the infrastructure that cannot be repaired under normal maintenance procedures, a remedial plan will be developed to prevent further impacts.			
(xii)	Measures to be undertaken in the event of quality/fungal contamination.	•	Section 8.9 discusses air quality or fungal contamination. The appropriate qualified professional will be contracted to investigate the cause and recommend remedial measures, as required. Remedial measures may include a change/alteration of operations or suspension of operations in the affected area(s).			

Annual Report (Condition 30)

	C of A Reporting Requirement		Report Reference and Summary
(a)	A monthly summary of wastes and/or recyclable materials received at the site, including quantity, source, and Ontario Regulation 347 waste classes.	•	Table 3 (Section 3.2) provides details on the incoming materials. 37,023 tonnes of material was received by the WRIC. Of the materials received, organic yard waste materials constituted 6,058 tonnes (16%), recyclables and mixed dry materials constituted 24,535 tonnes (66%) and non-recyclable materials made up the remaining 6,429 tonnes. Materials were accepted from the City of Guelph and the County of Wellington. The Regulation 347 waste classes received at the site are summarized on Table 4 (Section 3.3).
(b)	A monthly summary of wastes and/or recyclable materials processed at the site, including quantity, and Ontario Regulation 347 waste classes.	•	Section 3.3 of the report provides details on the processed wastes. There were 37,495 tonnes of materials processed and transferred off the WRIC site to markets or for disposal. 370 tonnes of material remained in inventory at the end of 2010. Materials that are accepted by the site are either diverted to be re-used or sent to the landfill for disposal.

Annual Report (Condition 30)

	C of A Reporting Requirement	Report Reference and Summary			
(c)	A monthly summary of wastes and/or recyclable materials transferred off-site, including quantity, destination, and Ontario Regulation 347 waste classes.	 Table 5 (Section 3.3) provides details on the outgoing materials. Of the 23,505 tonnes (63% of the total outgoing materials) of marketable material transferred off the site in 2010, 6,058 tonnes (26%) was brush, yard waste and leaves, 13,021 tonnes (55%) was paper-based goods such as cardboard and newsprint, 3,781 tonnes (16%) was cans, plastic bottles and mixed resin containers and the remaining 645 tonnes (3%) was other recyclable materials such as scrap metal, tires, electronics and clothing. As reflected in the volumes above, the majority of the marketable materials sold were paper products. During 2010, a total of 13,990 tonnes of non-recyclable materials was sent to the Solid Waste Transfer Station for disposal. HHW materials were shipped by the haulers identified in Section 3.3 for disposal or re-use. 			
(d)	 A monthly summary description of the composting facility operations including: i) A colloquial description of the temperature of the compost material (daily readings) and the curing piles (weekly readings). Temperature graphs are not to be included in the report, but are to be kept on file and provided to the Ministry upon request; ii) the quantity, by weight and volume of compost and residues produced and the quantity of compost and residues removed from the facility; and iii) a description of the compost 	 The composting facility suspended operations in 2006. No composting was conducted on-site during 2010. 			
(e)	An annual summary of the analytical results for the groundwater, surface water and leachate monitoring program including an interpretation of the results and any remedial/mitigative action undertaken.	 Section 5 discusses the results of the groundwater, surface water and leachate monitoring programs. There were no observable effects attributed to the WRIC on the groundwater quality beneath the site. Surface water at the site is impacted by runoff from the areas immediately surrounding the surface water stations. 			
(f)	An annual summary of any deficiencies, items of non-compliance or process aberrations that occurred and remedial/mitigative action taken to correct them.	 Section 9 of the report briefly discusses site compliance. A compliance statement from the City of Guelph is presented in Appendix F. 			

B. Amended C of A Municipal and Private Sewage Works No. 9970-7EVLBH Monitoring and Reporting (Condition 6)

Amended Certificate of Approval 5015-856HHF, issued June 16, 2010 removed this condition from the C of A.

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1. Introduction and Background

In June 2000, Guelph's City Council made the decision to seek future solid waste disposal capacity through an agreement with a landfill owner outside of the city's corporate boundaries. Since the potential disposal site was to be distant from Guelph, the City needed a Transfer Station to facilitate waste bulking from small collection vehicles into larger transport vehicles. The City constructed the Solid Waste Transfer Station adjacent to the existing Waste Resource Innovation Centre (WRIC), formerly the Wet-Dry Recycling Centre. The WRIC was designed as a composting and multi-material recovery operation for the County of Wellington and the City of Guelph. The 10.85 ha site is located at 110 Dunlop Drive in the southeast part of Guelph. Figure 1 shows the location and layout of the Transfer Station and WRIC.

The Transfer Station has been designed to manage up to 299 tonnes/day of waste, calculated on a weekly average (six days), including municipal, industrial, commercial, and institutional wastes. The station is licensed under Ministry of Environment Provisional Certificate of Approval (Waste Disposal Site) No. 9241-5DTRD9. The Transfer Station began receiving waste on October 14, 2003.

The City carries out a number of waste management operations at the WRIC. These operations include processing of recyclables from the City's "dry" waste stream, transfer of non-compostable materials and non-recyclable waste residues to disposal off-site, a public waste drop-off area, and a household hazardous waste depot. The City discontinued the composting operations during 2006. The site is licensed to handle up to 200 tonnes of residual waste transported for disposal per day under Ministry of the Environment Provisional Certificate of Approval (C of A) #A170128.

As part of the requirements to develop and design the WRIC, a hydrogeological assessment was conducted in 1991¹. Further groundwater sampling at the proposed site was completed in 1992, 1994 and 1995 prior to the construction of the site².

The main conclusions of these reports were:

- a) groundwater flow in the shallow subsurface is towards the northeast to the Correctional Centre pond and Clythe Creek; and
- b) background 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 locations 1a-91, 1b-91 and 3-91 were destroyed due to construction activities.

In July 1997, the C of A was amended to allow the WRIC service area to be expanded.

This report also addresses the conditions of the Amended Certificate of Approval for municipal and private sewage works (#9970-7EVLBH) issued June 6, 2008. This C of A deals with discharge from the site from the stormwater management ponds.

^{1.} Jagger Hims Limited; Hydrogeological Assessment, Proposed Wet/Dry Facility, Guelph, Ontario; Report prepared for the City of Guelph, October 1991.

Jagger Hims Limited; Groundwater Monitoring Program; Guelph Wet/Dry Recycling Facility; Draft Report completed for the City of Guelph, September 1995.



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1.1 Annual Reporting Requirements

Transfer Station

Section G, Condition 30 of the Provisional Certificate of Approval states that "by March 31st, 2004 and on an annual basis thereafter, the Municipality shall prepare and retain on-site an Annual Report covering the previous calendar year". Five items are listed in Section 30 as minimum requirements for the annual report:

- a) A detailed monthly summary of the type, quantity, and origin of all wastes received and transferred from the Site, including the destination, type, and quantity of waste destined for final disposal and also including any reconciliations on mass balance made.
- b) Any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the Site and during the facility inspections and any mitigative actions taken.
- c) A statement as to the compliance with all Terms and Conditions of this Certificate and with the inspection and reporting requirements of the conditions herein.
- d) Any recommendations to minimize environmental impacts from the operation of the Site and to improve Site operations and monitoring programs in this regard.
- e) A detailed section showing the results, interpretation of the results, and timetable for implementing recommendations from the approved groundwater monitoring program referred to in Condition 28 (described in Section 2.1).

This report includes the items listed above, as well as additional items recommended in Section 9.2 (MOE Reporting) of the City of Guelph Solid Waste Transfer Station Design and Operations Report, prepared by Gartner Lee Limited (2002):

- 1. A monthly summary of any waste loads rejected and any suspect waste loads received.
- 2. A summary of the routine maintenance procedures undertaken.
- 3. An annual summary of the analytical results for the surface water monitoring program including an interpretation of the results relative to the appropriate water quality guidelines, and any proposed changes to the monitoring program.
- 4. A list of any public complaints received, the responses provided, and any mitigative action undertaken.
- 5. Any remedial/mitigative action undertaken.

The current C of A and Sections 8 and 9 of the Design and Operations Report (Environmental Monitoring and Record Keeping and Reporting) for the Transfer Station are included in Appendix D.

WRIC

The Amended Provisional Certificate of Approval contains several conditions that have an annual reporting component. These Conditions, 22(I), 27 and 30, are addressed in this report. The details of the Conditions are reiterated below. Condition 22(k) and (I) of the C of A states:

- (k) The City shall annually review and update the existing waste screening measures for all incoming waste, to ensure only waste approved by this Certificate are received at this facility.
- (I) The updated report on the waste screening measures shall be submitted to the District Manager on an annual basis.

Condition 27 of the C of A states that *"The City shall annually review and update the existing Contingency Plan for the Site".* Thirteen items are listed in Condition 27 as minimum reporting requirements for the annual report:

- i) Measures to be undertaken in the event of a spill;
- ii) Fire protection systems, control and safety devices;
- iii) An emergency plan outlining the action to be undertaken in the event of a fire or other such emergency;
- iv) Measures to be undertaken in the event of a composter process upset and/or failure;
- v) Measures to be undertaken in the event of a power and/or equipment failure;
- vi) Measures to be undertaken in the event of a biological filter upset or failure;
- vii) Measures to be undertaken in the event odour problems develop at the Site;
- viii) Measures to be undertaken in the event fog problems develop from the composter or the processed compost piles (curing piles);
- *ix)* Measures to be undertaken in the event hazard to aircraft problems develop of there is a net increase in birds at the Site;
- *x)* Measures to be undertaken in the event any unauthorized non-hazardous or hazardous waste or unidentifiable waste appears at the Site;
- xi) Measures to be undertaken in the event of groundwater and/or surface water contamination; and
- xii) Measures to be undertaken in the event of quality/fungal contamination.

Condition 30 of the C of A states that *"The City shall submit an annual report on the operation of the site for the previous calendar year to the District Manager by March 31st of each year." Six items are listed in Condition 30 for the annual report:*

- a) a monthly summary of the wastes and/or recyclable materials received at the site, including quantity, source and Ontario Regulation 347 waste classes;
- b) a monthly summary of the wastes and/or recyclable materials processed at the site, including quantity and Ontario Regulation 347 waste classes;
- c) a monthly summary of the wastes and/or recyclable materials transferred off the site, including quantity, destination and Ontario Regulation 347 waste classes;
- d) a monthly summary description of the composting facility operations including:
 - *i)* a colloquial description of the temperature of the compost material (daily readings) and the curing piles (weekly readings). Temperature graphs are not to be included in the report, but are to be kept on file and provided to the Ministry upon request;
 - *ii)* the quantity, by weight and volume of compost and residues produced and the quantity of compost and residues removed from the facility; and
 - iii) a description of the compost distribution/markets.
- e) an annual summary of the analytical results for the groundwater, surface water and leachate monitoring program including an interpretation of the results and any remedial/mitigative action taken;
- f) an annual summary of any deficiencies, items of non-compliance or process aberrations that occurred and remedial/mitigative action taken to correct them.

There was no composting conducted at the site in 2010 therefore, there is no reporting for items iv), vi), vii) and d) above.

The current C of A for the WRIC is included in Appendix D.

2. Ground and Surface Water Monitoring Program

2.1 **Groundwater Monitoring Program**

Transfer Station

Groundwater levels are to be measured at all monitoring locations on a quarterly basis each year. During 2010, groundwater level measurements were conducted on four occasions; in April, June, September and December. Groundwater sampling was conducted two times in 2010; in June (dry period) and in December (wet period). Each sampling event is to include analyses for leachate indicator parameters and general chemistry. Organics analyses were conducted once in 2010, during the dry season (June) event. Tables 1 and 2 below summarize the groundwater monitoring program and analytical parameters, respectively.

Location	April	June	September	December
13a-01	•	S + Organics	•	S
13b-01	•	S + Organics	•	S
14a-01	•	S + Organics	•	S
14b-01	•	S + Organics	•	S
15a-01	•	S + Organics	•	S
15-b-01	•	S + Organics	•	S
16a-08	•	S + Organics	•	S
16b-08	•	S + Organics	•	S
17a-08	•	S + Organics	•	S
17b-08	•	S + Organics	•	S
18a-08	•	S + Organics	•	S
18b-08	•	S + Organics	•	S
19a-08	•	S + Organics	•	S
19b-08	•	S + Organics	•	S
20a-08	•	S + Organics	•	S
20b-08	•	S + Organics	•	S
21-08	•	S + Organics	•	S
Staff Gauge ¹	S	S + Organics	S	S

Table 1.	Groundwater	Monitorina	Program
	oroundutor	monitoring	riogram

Notes: 1. Pond located in eastern portion of property ("East Pond" on Figure 1).

Water Levels Only S

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Sampling and Water Levels

Leachate	Biological Oxygen Demand (BOD)	Chloride (Cl)
Indicator	Chemical Oxygen Demand (COD)	Sodium (Na)
Parameters	 Total Kjeldahl Nitrogen (TKN) 	Calcium (Ca)
	Ammonia as Nitrogen (NH3-N)	Boron (B)
	Total Phosphorus (Total P)	Total Iron (Fe)
	Total Suspended Solids (TSS) for surface	Phosphorus (P)
	water and leachate only	• Zinc (Zn)
	Total Sulphate (SO4)	Nitrate (NO3) and Nitrite (NO2)
	Phenols	
General	• pH	Magnesium (Mg)
Parameters	Conductivity	Potassium (K)
	Alkalinity	
Organics	• EPA 624,625 (ATG 16+17+18 & ATG 19+20)	

The organic compound parameter list for the ATG MISA Groups are as follows:

Misa Group 16	Misa G	roup 19
1,1,2,2-Tetrachloroethane	Acenaphthene	2-Methylnaphthalene
1,1,2-Trichloroethane	5-Nitroacenaphthene	Naphthalene
1,1-Dichloroethane	Acenaphthylene	Perylene
1,1-Dichloroethylene	Anthracene	Phenanthrene
1,2-Dichlorobenzene	Benzo(a)anthracene	Pyrene
1,2-Dichloroethane	Benzo(a)Pyrene	Benzyl Butyl Phthalate
1,2-Dichloropropane	Benzo(b)Fluoranthene	bis(2-ethylhexyl)Phthalate
1,3-Dichlorobenzene	Benzo(g,h,i)perylene	Di-N-butylPhthalate
1,4-Dichlorobenzene	Benzo(k)Fluoranthene	Di-N-octylPhthalate
Bromodichloromethane	Biphenyl	4-Bromophenyl phenyl Ether
Bromoform	Camphene	4-Chlorophenyl Phenyl Ether
Bromomethane	1-Chloronaphthalene	bis(2-chloroisopropyl)Ether
Carbon Tetrachloride	2-Chloronaphthalene	bis(2-Chloroethyl)Ether
Chlorobenzene	Chrysene	Diphenyl ether
Chloroform	Dibenzo(a,h)Anthracene	2,4-Dinitrotoluene
Chloromethane	Fluoranthene	2,6-Dinitrotoluene
Cis-1,3-Dichloropropylene	Fluorene	bis(2-chloroethoxy)Methane
Dibromochloromethane	Indeno(1,2,3-cd)Pyrene	Diphenylamine
1,2-Dibromoethane	Indole	N-Nitrosodiphenylamine
Methylene Chloride	1-Methylnaphthalene	N-Nitrosodi-N-propylamine
Tetrachloroethylene		
trans-1,2-Dichloroethylene		
Trans-1,3-Dichloropropylene		
Trichloroethylene		
Trichlorofluoromethane		
Vinyl chloride		
Misa Group 17	Misa G	roup 20
Benzene	2,3,4,5-Tetrachlorophenol	2,6-Dichlorophenol
Ethylbenzene	2,3,4,6-Tetrachlorophenol	4,6-Dinitro-o-Cresol
Styrene	2,3,5,6-Tetrachlorophenol	2-Chlorophenol
Toluene	2,3,4-Trichlorophenol	4-Chloro-3-methylphenol
o-Xylene	2,3,5-Trichlorophenol	4-Nitrophenol
m-Xylene and p-Xylene	2,4,5-Trichlorophenol	m-,p-Cresol
Misa Group 18	2,4,6-Trichlorophenol	o-Cresol
Acrolein	2,4-Dimethylphenol	Pentachlorophenol
Acrylonitrile	2,4-Dinitrophenol	Phenol
	2.4-Dichlorophenol	

<u>WRIC</u>

The objectives of the monitoring programs are outlined in the C of A in Conditions 23 and 24. These conditions provide the objectives for leachate and groundwater monitoring that is to be undertaken at the WRIC. These are:

Condition 23 (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. Leachate monitoring is to be conducted on a semi-annual basis for the inorganic parameters and annually for the organic parameters. The analytical parameters to be sampled are listed in Table 2.

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 stormwater 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 was to serve the same purpose as the original sampling conducted in the holding tank where runoff from the pad was historically collected. Since composting was suspended in 2006, no compost material is currently stored on the pad. The storm runoff from the pad is no longer considered leachate impacted and is now representative of background surface water. A surface water station (SW 3) is located within forebay of Detention Pond 1, located at the southern end of the pond. As per the recommendations of our 2008 monitoring report, monthly samples were collected at SW 3 during 2009 and 2010. The analytical results are discussed in Section 5.3.

Condition 24 (Groundwater)

Groundwater shall be sampled on semi-annual basis (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 leachate monitoring information becomes available.

In 1999, the analytical parameters were adjusted upon approval from the MOE.

Groundwater monitoring was conducted at all locations in June and December 2010. The results of the groundwater monitoring are discussed in Sections 5.4 to 5.7.

2.2 Surface Water Monitoring Program

Transfer Station

Surface water sampling is to be undertaken on a monthly basis in the stormwater management pond (SWM) for the parameters (excluding organics) shown in Table 2. Organics are to be sampled once per year only. During each month, sampling will be undertaken when surface water runoff conditions occur (weather permitting). If no surface water events occur, sampling will be undertaken at the end of the month regardless. Measurements of discharge, surface water runoff events and overall conditions of the detention ponds (e.g., dry, or stagnant water) will be documented on a weekly basis throughout each month. Two surface water stations in the SWM pond were established by the City staff; TP1, located at the culvert along the western shore of the pond adjacent to the access road and TP1 (out), located at the discharge at the north end of the pond. Sampling for organic parameters was conducted in June 2010 at both the SWM surface water stations but was inadvertently not submitted for analysis such that there are no 2010 results. 2010 monthly inorganic samples were collected from TP1 in April, September, November and December and from TP1 (out) in March, April, July, August, September, November and December. No inorganic samples were collected from the SWM pond locations in the remaining months due to frozen, dry or snow-laden conditions.

The existing surface water pond ("East Pond" in Figure 1) is to be sampled on a quarterly basis (as recommended in the Design and Operations report) for the inorganic parameters (excluding organics) shown on Table 2, together with the groundwater monitoring. Sampling for inorganic parameters was conducted in June and December 2010 only. Organic sampling was completed at the East Pond (EPTS-01) in June 2010. The East Pond setting is similar to the Transfer Station SWM and the WRIC ponds (influenced by road salting and within similar overburden soils) though it is within a different catchment area. As suggested by the MOE, surface water quality from the samples collected from the staff gauge in the East Pond (designated EPTS-01) can be considered as background surface water quality as it is upstream of both facilities³ and will be used as comparison to the on-site surface water features.

A ditch located between the stormwater management pond and the East Pond is designed to receive pond overflow and direct it in a northwesterly direction beneath Dunlop Drive.

WRIC

The objectives of the surface water monitoring program are outlined in the C of A in Condition 26. These are:

Condition 26 (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.

A surface water sampling program 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, SS, ammonia, nitrogen, TKN, total phosphorus and phenolics (this group of parameters is called the Short List). For all other parameters surface water shall be sampled on a semi-annual basis (spring and fall). 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 Director, as surface water and leachate monitoring information become available. Surface water shall be sampled at the discharge location of the final surface water detention pond.

During 2010, monthly monitoring of surface water runoff into Detention Ponds 1 (SW2, SW3) and 2 (SW1) was completed. However, samples were only collected in March and April at SW1 and in March, April, July, September and December at SW3 from Detention Pond 1 and in March and December from Detention Pond 2. For the remaining months in 2010, no water remained in the detention ponds after rain events or they were dry by the end of each month or they were snow laden. The results of the surface water monitoring are discussed in Section 5.8.

^{3.} Memorandum from Lynnette Latulippe (MOE) to Bill Shields (City of Guelph), Re: Annual Monitoring Report – 2009 Guelph Wet-Dry Recycling Centre and Waste Transfer Station, dated February 7, 2011.

3. Wet-Dry Recycling Facility Summary

3.1 HHW Waste Screening Procedures and Acceptance Criteria

Condition 22(k) and (l) of the C of A requires a review and update of the waste screening measures, as discussed below. The information presented in this section was reported by the City of Guelph. Household hazardous waste materials can only be received at the City of Guelph Depot in accordance with the conditions specified on Certificate of Approval A170128.

Purpose

This procedure is designed to assist the employees at the Household Hazardous Waste (HHW) Depot in the screening of waste that is brought to the depot and to prevent the acceptance of items not permitted by Certificate of Approval A170128. Adherence to these conditions is mandatory in order to ensure the operating permit is not revoked as a result of non-compliance issues.

Scope

These procedures are for employees at the Household Hazardous Waste (HHW) Depot and their Supervisor. The Depot is restricted to accepting only spent household consumer commodity goods that are widely available to the general public in quantities and concentrations typically found at conventional retail outlets.

Definitions

Household Hazardous Waste Depot	A collection centre which accepts household hazardous waste from residents, which consist of but not limited to, paint, waste oil, thinners, household cleansers, etc., with a capacity of less than fifty-five (55) drums of waste.
Industrial/Commercial/Institutional Waste	Waste from businesses, medical centres, etc. Such waste is not accepted at the HHW.
PCBs	Polychlorinated biphenyls. The import, manufacturing and re-sale of materials containing PCB's was banned in the Canada in 1977, but legislation allowed the continued use of previously acquired products until the end of their functional life.
Residential Waste	Waste generated by an individual or a family at the place where the individual or the family lives.
TDG	Transportation of Dangerous Goods. This is a set of rules to follow regarding the transportation of dangerous substances, including how the materials are to be contained and labelled.
WHMIS	The Workplace Hazardous Materials Information System (WHMIS) is Canada's national hazard communication standard. The key elements of the system are cautionary labelling of containers of WHMIS "controlled products", the provision of material safety data sheets (MSDSs) and worker education and training programs.

Conditions

- 1. The Depot is restricted to accepting HHW waste from residents within the City of Guelph or County of Wellington only. This information shall be documented on the Waste Ticket Form prior to acceptance of the HHW materials and must include all contact information necessary to validate residency status.
- 2. Spent consumer commodity goods that are widely available to the general public in quantities and concentrations typically found at conventional retails outlets, examples include:
 - Canadian Tire products; and
 - Home Depot products.
- 3. No industrial, commercial or institutional hazardous waste shall be received at this facility. Waste materials originating from these sources are items that would not be readily available to the general public nor would be considered consumer commodity. Examples include:
 - Laboratory reagents from the local University;
 - Large pesticide containers typically sold to farmers; and
 - Chemical agents in containers greater than 20 L in capacity.
- 4. The following are not acceptable under any circumstance:
 - Radioactive wastes;
 - Explosives and ammunition;
 - Pathological wastes (sharps however, are permitted if they are placed in a rigid plastic container, soaked in bleach overnight, drained, and labelled);
 - Unknown wastes; and
 - Polychlorinated biphenyls (PCBs).
- 5. Any unacceptable materials inadvertently received at the HHW or other areas on the WRIC site, must be handled and disposed of in accordance with applicable legislation. The HHW Co-ordinator is to be contacted immediately upon discovery for processing and handling of these unacceptable materials.

Additional Information

- 1. All waste received shall be clearly identified either by the labels of the original consumer packaging or if no labels are present, by the resident dropping the material off. The materials must be in a clear container and the contents identifiable by the HHW attendant. Materials identified by the homeowner will be labelled by City of Guelph staff prior to acceptance and laboratory packing.
- 2. Only propane in containers typically available to the public is acceptable [Small 1 kg tanks up to barbeque size containers (20 kg)].
- 3. The City of Guelph HHW depot reserves the right to reject any waste materials which if received could jeopardize the operational permits held by the site.

Procedures

- 1. Always wear the appropriate PPE (personal protective equipment) to handle the waste items.
- 2. All waste containers brought to the Depot shall be sealed prior to acceptance and must be surrendered by the resident. Unacceptable activities include:
 - Decanting gasoline for the purpose of returning jerry-cans to the homeowner; and
 - Decanting pesticides from small portable pumps.

- 3. Hazardous waste material characteristic ranking will determine the order in which waste is handled. Many items will have the properties of two or more hazards and items with more than one hazard must be placed in the highest hazards characteristic class. Use the following in order of highest to lowest precedence of hazard:
 - 1. Radioactive;
- 7. Pyrophoric materials;
- 2. Poisonous gases;
- 8. Self-reactive;
- 3. Flammable gases;
- 9. Flammable liquids;
- Non-flammable gases;
 Biohazardous materials
- 10. Flammable solids;
- Biohazardous materials;
 Poisonous liquid;
- 11. Combustible materials; and
- 12. Miscellaneous hazardous materials.
- 4. Refused items shall be recorded in the Waste Rejection section of the HHW Waste Ticket Form with reasons for the refusal documented. Offer the resident a list of Alternate Disposal Options. (See HHW Operations Manual).
- 5. Abandoned wastes will be recorded on an Unacceptable Waste Log. (See HHW Operations Manual).
- 6. Items of concern (extremely dangerous, toxic, explosive, biohazardous, infectious, or radioactive materials) shall be brought to the attention of the Supervisor of Governance and Compliance.
- 7. The resident will be contacted within three days in order to trace the whereabouts of any items of concern and to ensure that the material was properly disposed of. If required, the Ministry of Environment, City of Guelph Police Department, Fire Department or the Community Emergency Management Co-ordinator may also need to be notified.
- 8. Wastes containing PCB's or suspect PCB materials are not acceptable at the City of Guelph HHW depot, however should such material be suspected or identified after drop-off or in the case of illegal dumping, the following steps shall be taken:
 - 1. The PCB or suspect PCB waste materials shall be set aside in a secure area, along with the ticket identifying the resident that brought these materials to the depot if it was not illegally dumped.
 - 2. The material must be sampled and set for analysis to an accredited laboratory to determine the PCB concentration.
 - 3. Analytical results over 50 ppm confirm the waste to be PCBs.
 - 4. Upon confirmation of the presence of PCB waste, The City of Guelph shall obtain Directors Instructions from the Ministry of the Environment after which arrangements shall be made for removal and disposal.

Training

All HHW employees must be trained in WHMIS, TDG, Spills Response, Competent Person, and First Aid to perform these procedures.

Applicable Legislation and References

- OHSA Regulation 860 Workplace Hazardous Material Information System.
- O. Reg. 347 General Waste Management Transportation of Dangerous Goods Act, 2002.

3.2 Summary of Wastes/Recyclables Received

The Table 3 is a summary of the incoming materials received at the WRIC during 2010.

As shown on Table 3, 37,023 tonnes of material were received by the WRIC. Of the materials received, organics such as yard waste constituted 6,058 tonnes (16% of the materials received in 2010). Recyclables and mixed dry materials constituted 24,535 tonnes (66%) of the total materials received at the site. This included 9,512 tonnes (26%) municipally collected curbside recyclables, 14,472 tonnes (39%) recyclables received from other municipalities and 551 tonnes (1.5%) miscellaneous mixed materials such as tires and scrap metal.

Additional non-recyclable materials such as mixed waste from public drop off constituted the remaining 6,429 tonnes (17%) of the total materials received at the site.

The on-site Household Hazardous Waste (HHW) depot serves residents of the City of Guelph and the County of Wellington. The depot accepted 13,310 drop offs of materials during 2010. A monthly summary of the 2010 drop off numbers are shown on the table below.

Public	Drop Offs
January	762
February	455
March	861
April	1,315
Мау	1,349
June	1,441
July	1,493
August	1,213
September	1,205
October	1,396
November	1,137
December	683
Totals	13,310

Incoming HHW is sent to hazardous waste haulers for disposal or recycling. The City's Paint Plus Re-Use Program was conducted between May and October 2010. The results of the Paint Plus Re-Use Program for 2010 are tabulated below.

Material/Month	Мау	June	July	August	September	October	Total
Paints and Coatings Non-aerosol (L)	578	1,477	1,636	1,286	642	481	6,100
Paints and Coatings Aerosol (kg)	2	0	52	125	37	4	220
Solvents (L)	30	37	98	123	28	9	325
Antifreeze (L)	18	12	5	22	3	1	61
Propane Cylinders (kg)	6	4	10	11	5	0	36
Cleaners/Detergents (L)	7	5	92	95	4	14	217
Car Products (L)	9	9	17	29	7	1	72
Non-paint Aerosols (kg)	105	43	20	0	11	3	182
Motor Oil (L)	33	22	18	27	22	0	122
Plaster/Cement/Grout (kg)	0	20	59	6	6	2	93
Client Count	95	157	161	152	86	50	701

Table 4 is a monthly summary of the amounts of HHW (separated by waste class) received at the site. A total of about 186,700 L and 21,300 kg of household special wastes were received in 2010. In addition, 417 propane tanks, 3,300 propane cylinders, 8,800 m (28,872 ft) of fluorescent tubes and 183 fire extinguishers were received in 2010. All materials accepted at the HHW depot are re-used, recycled or shipped off-site for disposal.

Table 3. WRIC Incoming Materials 2010

AECOM

Material Type	Material Detail	Jan	Feb	Mar	Apr	Мау	June	July	Aug	Sept	Oct	Nov	Dec	Total
Recyclable &	Municipal (City) - collected	837.5	710.9	907.4	829.2	772.8	751.5	725.0	722.8	826.6	737.9	831.7	858.5	9,512
Mixed Dry Material	ICI and other Municipal	1,195.5	964.0	1,070.6	1,577.7	1,249.5	1,396.0	1,116.4	1,033.3	1,171.0	1,035.9	1,153.2	1,508.9	14,472
	Sub Total	2,032.9	1,674.9	1,978.0	2,406.9	2,022.4	2,147.5	1,841.4	1,756.1	1,997.6	1,773.7	1,984.9	2,367.4	23,984
	Tires: Car and Truck	3.6	0.0	1.9	3.6	5.3	4.0	3.7	3.0	3.3	1.8	5.1	1.7	37
	Mixed Scrap Metal	29.1	28.3	49.7	46.2	61.4	46.6	49.5	57.8	35.6	47.4	38.0	24.7	514
	Sub Total	32.7	28.3	51.6	49.8	66.7	50.6	53.1	60.8	38.8	49.3	43.1	26.4	551
Organic Material	Brush/yard waste/leaves	74.9	26.6	66.5	461.7	540.8	833.2	403.5	335.9	335.3	359.7	905.7	39.8	4,383
	City Operations Leaves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,674.8	0.0	1,675
	Sub Total	74.9	26.6	66.5	461.7	540.8	833.2	403.5	335.9	335.3	359.7	2,580.4	39.8	6,058
Non-Recyclable	Mixed Waste Public drop-off	372.9	297.6	465.9	649.6	714.5	665.5	711.5	595.7	517.4	528.2	525.1	385.5	6,429
	Sub Total	372.9	297.6	465.9	649.6	714.5	665.5	711.5	595.7	517.4	528.2	525.1	385.5	6,429
	Monthly Total	2,513	2,027	2,562	3,568	3,344	3,697	3,009	2,749	2,889	2,711	5,133	2,819	37,023

Notes: Measurement in Tonnes

Table 4. WRIC 2010 Monthly Summary of Household Hazardous Waste

AECOM

Hazardous Waste		Jan.	Feb.	March	April	Мау	June	July	August	Sept.	Oct.	Nov.	Dec.	TOTALS
Paints	Liters	7,360	4,480	8,640	10,400	10,240	13,760	8,960	8,080	11,440	9,200	8,800	4,320	105,680
	# of Drums	92	56	108	130	128	172	112	101	143	115	110	54	1,321
Flammables	Liters	960	640	1280	2,320	2,480	3,760	2,320	2,160	2,400	2,320	1920	1,120	23,680
	# of Drums	12	8	16	29	31	47	29	27	30	29	24	14	296
Aerosols	Liters	240	160	280	520	560	640	440	440	440	720	880	400	5,720
	#of Drums	6	4	7	13	14	16	11	11	11	9	11	5	118
Acids	Liters	80	0	80	80	80	0	80	80	160	80	160	80	960
	#of Drums	1	0	1	1	1	0	1	1	2	1	2	1	12
Base	Liters	240	160	240	400	480	800	400	480	400	400	240	160	4,400
	#of Drums	3	2	3	5	6	10	5	6	5	5	3	2	55
Pesticides	Liters	160	160	240	240	480	640	480	400	400	320	400	320	4,240
	#of Drums	2	2	3	3	6	8	6	5	5	4	5	4	53
Oxidizers	Kgs.	160	0	160	240	160	480	240	320	240	160	240	80	2,480
	#of Drums	2	0	2	3	2	6	3	4	3	2	3	1	31
Alkaline Batteries	Kgs.	433.18	105	246.36	237.27	458	577	659	337	866	435.3	435.3	435.3	5,224
	#of Drums	2	1	1	3	2	3	2	1	3	2	2	2	24
Pharmaceuticals	Kgs.	0	0	0	80	0	80	80	0	80	0	80	0	400
	#of Drums	0	0	0	1	0	1	1	0	1	0	1	0	5
Car Batteries	Kgs.	500	530	510	830	1020	940	1610	0	1200	440	1110	1730	10,420
Motor Oil	Liters	0	2,500	0	3,345	3,705	6,320	3,323	2,820	4,355	3,975	2,845	4,640	37,828
Oil Filters	Liters	0	80	0	200	80	160	80	80	80	80	80	80	1,000
	Drums	0	1	0	2	1	2	1	1	1	1	1	1	12
Glycol	Liters	0	0	0	0	675	0	0	0	0	0	490	0	1,165
Propane Tks.	20 Lbs	55	0	0	96	0	0	0	0	50	130	0	86	417
Propane Cyl.	1 Lb	200	100	100	300	200	300	400	300	500	300	300	300	3,300
														0
Sharps	#of Boxes	0	8	0	0	16	0	0	14	0	10	10	0	58
	Kgs.	0	92.26	0	0	142.93	0	0	181.91	0	98	110.06	0	625
Rechargeable	# of Boxes	5	2	7	6	0	0	0	0	10	0	6	0	36
H/H Batteries	Kgs.	62.14	27.22	68.95	54.89	0	0	0	0	146.96	0	104.78	0	465
Cooking Oil	Liters	0	240	0	400	0	360	0	0	600	0	0	400	2,000
	#of Drums	0	3	0	2	0	3	0	0	5	0	0	2	15
Fluor. Tubes	cfls	539	0	634	652	0	747	0	770	0	755	0	565	4,662
	# of Feet	4588	0	3479	2736	0	4564	0	5011	0	4750	0	3744	28,872
MEK Peroxide	Liters	0	0	0	0	0	0	0	0	0	0	0	0	0
	# of pails	0	0	0	0	0	0	0	0	0	0	0	0	0
Benzoyl Per.	Liters	0	0	0	0	0	8	0	0	0	0	0	0	8
	# of pails	0	0	0	0	0	1	0	0	0	0	0	0	1
Mercury	Liters	0	0	0	0	0	8	0	0	0	8	0	0	16
	# of pails	0	0	0	0	0	1	0	0	0	1	0	0	2
Fire Ext.	Each	0	24	0	39	0	37	0	0	0	44	0	39	183
Compressed Gas		0	0	0	0	0	0	0	0	0	0	0	0	0
Oxygen, Welding		0	0	0	0	0	0	0	0	0	0	0	0	0

3.3 Summary of Transferred Waste/Recyclables

Table 5 is a summary of the outgoing materials shipped off the WRIC site during 2010. In 2010, 37,495 tonnes of material was shipped off-site to other destinations. About 13,990 tonnes (37%) of non-recyclable materials are shipped to the adjacent Transfer Station.

Of the 23,505 tonnes (63% of the total outgoing materials) of marketable material transferred off the site in 2010, 6,058 tonnes (26%) was brush, yard waste and leaves, 13,021 tonnes (55%) was paper-based goods such as cardboard and newsprint, 3,781 tonnes (16%) was cans, plastic bottles and mixed resin containers and the remaining 645 tonnes (3%) was other recyclable materials such as scrap metal, tires, electronics and clothing. As reflected in the volumes above, the majority of the marketable materials sold were paper products.

The WRIC achieved a 100% diversion rate for organic (yard, leaf and brush) and a 54% rate⁴ of diversion for the dry materials accepted at the site in 2010.

HHW materials were shipped by Hotz Environmental Services Inc., Hamilton (the waste removal contractor for 2010) for disposal or re-use.

Outgoing household hazardous waste materials were manifested to Hotz and disposed of by the companies identified below for recycling and re-use.

Waste Types	List of Intended Receivers	
Paints	 Hotz Environmental, Hamilton, ON Systech Environmental, Paulding, Ohio Hukill Environmental Corporation, Ohio 	 Canflow Environmental, Petrolia, ON Newalta Industrial Services Inc., Brantford, ON
Motor Oil/Oil Filters	 Safety Kleen, Breslau, ON 	 Newalta Industrial Services Inc., Brantford, ON
Antifreeze	 Fielding Chemicals, Mississauga, ON 	 Safety Kleen, Breslau, ON
Pesticides	 Clean Harbours, Thorold, ON 	
Pharmaceuticals	 Clean Harbours, Corruna, ON 	 Chemical Waste Management, New York
Petroleum Distillates	Systech Environmental, Paulding, OhioHukill Environmental Corporation, Ohio	Keystone Cement Co., Pennsylvania
Fuels	 Systech Environmental, Paulding, Ohio 	 Hotz Environmental, Hamilton, ON
Inorganic Oxidizers	Clean Harbours, Thorold, ONStablex Canada Inc., Quebec	Hotz Environmental, Hamilton, ON
Inorganic Acids	 Newalta Industrial Services Inc., Fort Erie, ON Clean Harbours, Mississauga, ON 	Stablex Canada Inc., QuebecHotz Environmental, Hamilton, ON
Inorganic Bases	 Newalta Industrial Services Inc., Fort Erie, ON Stablex Canada Inc., Quebec 	Hotz Environmental, Hamilton, ON
Miscellaneous Organics Solid/Liquid	 Systech Environmental, Paulding, Ohio Hukill Environmental Corporation, Ohio Clean Harbours, Sarnia, ON 	 Chemical Waste Management, New York Hotz Environmental, Hamilton, ON
Syringes	 Stericycle, Toronto, ON 	
Waste Dry Cell Batteries	 Chemical Waste Management, New York Newalta Industrial Services Inc., Fort Erie, ON 	 Inmelco, Elwood, PA Raw Materials Corp., Port Colbourne, ON
Fluorescent Lamps, Mercury	 Fluorescent Lamp Recyclers, Cambridge, ON 	 Bethlehem Lamp Recyclers, PA
Lead-Acid Batteries	 Tonolli Canada Ltd. 	 Raw Materials Corp., Port Colbourne, ON
Propane Tanks	 Superior Propane, ON 	 Hotz Environmental, Hamilton, ON
Disposable 1 lb Propane Cylinders	 Hotz Environmental, Hamilton, ON 	 Hotz Ferrous Inc., Hamilton, ON
Freon	 Fielding Chemicals, Mississauga, ON 	 Hotz Ferrous Inc., Hamilton, ON
Aerosols	 Hotz Environmental, Hamilton, ON Systech Environmental, Paulding, Ohio 	Hotz Ferrous Inc., Hamilton, ON
Organic Peroxides	 Newalta Industrial Services Inc., ON 	
Fire Extinguishers	Chemical Waste Management, New York	Hotz Ferrous Inc., Hamilton, ON
Gas Cylinders	Clean Harbours, ON	

 Diversion rate (excluding yard waste) = Dry Incoming (30.965 tonnes) – Outgoing to Transfer Station (13,990 tonnes)/Dry Incoming (30,965 tonnes) x 100 = 53.9%.
Table 5. WRIC Outgoing Materials 2010



Material Type	Material Detail	Jan	Feb	Mar	Apr	Мау	June	July	Aug	Sept	Oct	Nov	Dec	Total
Dry Recyclable	Old Corrugated Cardboard	468.5	370.7	397.6	476.6	390.5	424.5	423.3	390.9	448.2	349.4	508.5	425.3	5,074
Processed Material	#8 Newsprint	451.3	338.1	330.9	388.7	382.8	363.2	332.9	213.9	491.6	346.4	328.4	298.3	4,266
	#7 Newsprint	0.0	0.0	0.0	21.7	0.0	139.7	512.0	0.0	0.0	0.0	0.0	0.0	673
	#6 Newsprint	229.9	218.3	194.2	233.8	188.5	266.3	0.0	159.6	324.4	268.5	289.2	384.1	2,757
	Fine Paper	0.0	41.0	39.0	18.1	18.2	37.6	20.8	18.4	19.4	19.8	19.2	0.0	251
	Poly-Coat Tetra Pack	0.0	0.0	0.0	0.0	19.4	0.0	0.0	20.0	0.0	0.0	0.0	20.8	60
	Mixed Recyclables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.5	25
	Mixed Glass	214.5	66.5	0.0	69.3	126.1	117.6	82.1	107.8	54.9	89.4	32.2	94.2	1,055
	Steel Cans:Food & Beverage	63.9	67.0	87.7	87.5	108.2	72.4	72.3	71.1	71.1	86.6	20.4	46.2	854
	Aluminum Cans	30.7	29.2	13.7	13.5	39.6	27.3	14.3	28.4	27.6	13.9	13.0	0.0	251
	PET Bottles #1	60.0	51.9	61.6	80.5	88.5	109.4	72.9	89.7	65.3	62.3	43.3	58.7	844
	HDPE Bottles #2	21.8	40.3	21.5	35.3	38.5	34.9	35.3	17.6	40.6	34.9	16.7	30.6	368
	Mixed Plastics	0.0	0.0	0.0	0.0	31.5	0.0	21.3	0.0	0.0	20.8	0.0	0.0	74
	Tubs & Lids:Mixed Resin	20.2	19.8	19.2	19.3	0.0	34.3	19.7	36.7	19.3	17.7	19.0	25.2	250
	Mixed Scrap Metals	29.1	28.3	49.7	46.2	61.4	46.6	49.5	57.8	35.6	47.4	38.0	24.7	514
	Tires: Car and Truck	3.6	0.0	1.9	3.6	5.3	4.0	3.7	3.0	3.3	1.8	5.1	1.7	37
	Electronics	0.0	5.7	0.0	8.1	5.7	5.4	5.9	12.0	0.0	6.4	21.6	17.5	88
	Clothing	0.5	0.0	0.0	0.3	0.2	0.0	0.1	0.4	0.1	0.5	0.5	0.5	3
	Mattresses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	3
Organic	Sub Total	1,593.7	1,276.8	1,217.0	1,502.5	1,504.2	1,683.1	1,665.8	1,227.2	1,601.3	1,368.4	1,354.9	1,452.3	17,447
	Brush/yardwaste/leaves	74.9	26.6	66.5	461.7	540.8	833.2	403.5	335.9	335.3	359.7	905.7	39.8	4,383
	City Operations Leaves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,674.8	0.0	1,675
Non-Recyclable	Sub Total	74.9	26.6	66.5	461.7	540.8	833.2	403.5	335.9	335.3	359.7	2,580.4	39.8	6,058
	Mixed Waste Public drop-off	504.0	419.6	640.6	815.9	714.5	665.5	953.6	595.7	517.4	528.2	525.1	385.5	7,266
	Residue-MRF	685.6	536.9	530.9	641.3	516.7	573.2	550.2	546.4	554.1	441.3	460.4	687.5	6,724
MRF Non-recovered	Sub Total	1,189.6	956.5	1,171.5	1,457.3	1,231.2	1,238.6	1,503.8	1,142.2	1,071.5	969.5	985.5	1,073.0	13,990
	Processed:Non-recovered	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	Sub Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	Monthly Total	2,858	2,260	2,455	3,421	3,276	3,755	3,573	2,705	3,008	2,698	4,921	2,565	37,495

Notes: Measurement in Tonnes

Other hazardous waste contractors/destinations include:

Material	Destination, Major Buyers				
Fluorescent Tubes, cfls	Aevitas				
Propane Tanks (20 lbs)	Simcoe Energy & Technical Services				
Pathological Wastes/Syringes	Stericycle				
Bulk Oil/Antifreeze	Safety-Kleen				
Car Batteries	Interstate Batteries				
Cooking Oil	Rothsay				

Destinations/buyers for dry recyclable processed materials include:

Material	Destination, Major Buyers
Shredded Yard Waste	Gro-Bark Ltd.
Corrugated Cardboard	Strathcona, Atlantic Packaging, Norampac, Solvay
Newsprint	Spruce Falls Inc., Cascades, Krueger, Bowater
Fine Paper	Cascades
Steel Cans	Triple M Metals
Aluminum Cans	Connecticut Metals
PET Bottles (#1)	Plastrec, Ecotex
HDPE (#2 plastics)	Entropex
Mixed Plastic (# 4,5, 7)	Entropex
Scrap Metal/White Goods	Triple M Metals
Tires	Envirocan
Scrap Wood	Gro-Bark Ltd.
Construction and Demolition	Sittlers Environmental

3.4 Summary of Wastes/Recyclables Processed

Materials that are accepted by the site are either processed (composted), diverted to be re-used or sent to the waste Transfer Station for disposal. Tonnages of incoming and outgoing materials will not be equal as some mass is lost through evaporation and processing. Table 6 is reconciliation of the incoming and outgoing materials and materials processed from the site.

Table 6.	Summary	of Incoming,	Outgoing and	Processed Quantities
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Recyclable and Other Materials Processed in 2010	(tonnes)
Quantity Received (Table 3: Wet-Dry Incoming 2010)	37,023
Quantity in Inventory from Prior Year (2009)	842
Quantity Sold (Table 5)	23,505
Quantity Sent to Landfill/Transfer Station and MRF (Table 5)	13,990
Quantity in Inventory at the End of 2010	(37,023 + 842) - 23,505 - 13,990 = 370

The 370 tonnes of inventory remaining on the site at the end of 2010 consisted of recyclable materials ready for shipment to off-site markets.

4. Waste Transfer Station Summary

4.1 Summary of Incoming and Outgoing Waste

Table 7 is a summary of the Transfer Station material handled during 2010, based on data recorded by City staff.

As shown on Table 7, the source of the waste received by the Transfer Station was primarily of domestic origin. The total tonnage of waste accepted by the Transfer Station was 54,555 tonnes. By the end of 2010, 54,421 tonnes were shipped off-site primarily to the St. Thomas (Green Lane) Landfill in Elgin County (74%). A portion of the outbound waste was shipped to EFW in Niagara Falls, New York (12%), Sittlers Environmental (8%) and B.J. Bear Waste Management in Elmira (6%). The remaining outbound waste was shipped to Wasteco in Guelph (about 0.02%) and various other locations (about 0.06%). At the end of 2010, there was a difference of 134 tonnes⁵ of outgoing material, meaning less material was transferred off-site than what was accepted in 2010. The cause of this difference can be attributed to a number of factors including the decrease in the moisture content of the wastes leaving the site as a result of evaporation losses. Waste accepted by the Transfer Station originated mainly from the City of Guelph (83%), the City MRF (12%), the County of Wellington (3.5%), the Region of Halton (1%), Dufferin County (less than 0.5%), the Region of Hamilton (less than 0.2%), the Region of Peel (less than 0.1%) and the Region of Waterloo (less than 0.1%). The Transfer Station can accept waste from anywhere in Ontario as long as it is within the acceptable daily tonnage limit.

There were no rejected and no suspect loads received during 2010.

4.2 Facility Inspection and Routine Maintenance

The following information was reported by the City of Guelph. The facility is inspected on an ongoing basis by site employees. Corrective maintenance is carried out as required. There were no environmental or operational problems reported during 2010.

A log of all security and grounds inspection noting the condition of the fences, litter, birds, vermin and vectors and any off-site discharges is recorded daily. Routine maintenance is conducted at the site that includes litter pick-up, dust control, rodent control and clean up of external roads within 1 km of the facility. The compactor is cleaned and inspected weekly when in use. Inspection of the inside floor drains, oil and grit separator, etc., are conducted weekly. The floor drain in the loading ramp is pumped and cleaned every three weeks. Maintenance was conducted on the holding tanks, floor drains and oil and grit separator once per month. The overhead doors are oiled every three weeks. All preventative maintenance performed on equipment are filed under the equipment number (hard copy) as well as recorded electronically in the Synergen program to indicate that the required maintenance has been completed.

A log book recording the weekly inspection of the detention ponds, ditches and facility inspections is kept on-site. Weekly inspections were recorded in 2010.

4.3 Contaminant Sources

4.3.1 Site Design and Operations

To determine if the Transfer Station is having an impact on the ground and surface water in the area, it is important to examine what are the potential sources of impact. The site has been designed to minimize the possible sources of impacts and limit the risk of their emission to the environment, as discussed below.

^{5.} Tonnage received in 2010 (54,555 tonnes) – Tonnage transferred off-site in 2010 (54,421 tonnes) = Tonnage of waste at the end of 2010 (134 tonnes).

Incoming Waste	Jan Tonnes	Feb Tonnes	March Tonnes	Apr Tonnes	May Tonnes	June Tonnes	July Tonnes	Aug Tonnes	Sept Tonnes	Oct Tonnes	Nov Tonnes	Dec Tonnes	Total
Mixed Solid Waste C & D	3,570 222	3,195 149	4,251 229	4,775 339	4,631 324	4,689 534	4,373 374	4,392 369	4,375 332	4,220 330	4,604 481	3,636 159	50,712 3,844
Total	3,792	3,344	4,480	5,114	4,955	5,224	4,747	4,761	4,708	4,550	5,086	3,795	54,555
				_				_	-	-			
Outgoing	Jan	_ Feb	March	_ Apr	_May	June	July	Aug	Sept	Oct	Nov	Dec	
Outgoing Mixed Waste	Jan Tonnes	Feb Tonnes	March Tonnes	Apr Tonnes	May Tonnes	June Tonnes	July Tonnes	Aug Tonnes	Sept Tonnes	Oct Tonnes	Nov Tonnes	Dec Tonnes	Total
Mixed Waste Mixed Solid Waste	Jan Tonnes 3,015	Feb Tonnes 2,627	March Tonnes 3,422	Apr Tonnes 4,138	May Tonnes 4,009	June Tonnes 4,006	July Tonnes 3,674	Aug Tonnes 3,600	Sept Tonnes 3,888	Oct Tonnes 3,845	Nov Tonnes 4,217	Dec Tonnes 3,321	Total 43,762
Mixed Waste Mixed Solid Waste Pilot EFW (MSW)	Jan Tonnes 3,015 479	Feb Tonnes 2,627 424	March Tonnes 3,422 597	Apr Tonnes 4,138 533	May Tonnes 4,009 523	June Tonnes 4,006 566	July Tonnes 3,674 525	Aug Tonnes 3,600 588	Sept Tonnes 3,888 548	Oct Tonnes 3,845 556	Nov Tonnes 4,217 584	Dec Tonnes 3,321 476	Total 43,762 6,399
Mixed Waste Mixed Solid Waste Pilot EFW (MSW) C & D	Jan Tonnes 3,015 479 250	Feb Tonnes 2,627 424 168	March Tonnes 3,422 597 349	Apr Tonnes 4,138 533 316	May Tonnes 4,009 523 458	June Tonnes 4,006 566 653	July Tonnes 3,674 525 439	Aug Tonnes 3,600 588 450	Sept Tonnes 3,888 548 474	Oct Tonnes 3,845 556 360	Nov Tonnes 4,217 584 247	Dec Tonnes 3,321 476 95	Total 43,762 6,399 4,261

Table 7. 2010 Monthly Summary of Transfer Station's Incoming and Outgoing Waste Types/Tonnages

Note: C & D = Construction and Demolition

Pilot EFW (MSW) = Mixed Solid Waste sent to the Waste to Energy Facility in Niagara Falls, New York

AECOM

Waste is dumped from incoming collection vehicles onto an indoor tipping floor located within the transfer building. The transfer building is a steel framed, metal clad building with a reinforced, surface-hardened slab-on-grade floor. The tipping floor is curbed such that liquid discharges onto the floor cannot readily flow off of the floor to the building exterior. It is drained by floor drains and routed through an oil-water separator, with the provision to divert flows to holding tanks prior to reaching the pumping station through the sanitary sewer. Spill cleanup materials (e.g., sorbents) are kept on hand and any liquid spills on the tipping floor are cleaned up immediately. Washing of spilled materials into the floor drain system is avoided to the greatest degree possible. In the event of any potential for leachate or liquid discharge from the building, the shut-off valve for the stormwater management pond will be closed to prevent any off-site discharge.

No waste processing is undertaken in the Transfer Station, with the exception of removal of recyclable material that arrives in incoming waste loads (i.e., metal, wood, cardboard). Truck boxes (both incoming waste and transfer loads out) are tarped when outside of the transfer building to prevent odour and dust emissions as well as to prevent contact between the waste and precipitation that could potentially produce impacted runoff.

The Transfer Station building and the scale house are serviced with a connection to the City sanitary sewer. Domestic sewage from the washrooms in the transfer building and the scale house are discharged directly to the sewage pumping station. The stormwater management pond has a valved connection to the pumping station, which will permit any stormwater that becomes impacted to be discharged to the sanitary sewer system. The site is graded such that all runoff drains to the stormwater management pond. As all waste handling occurs within the Transfer Station building, runoff from the site will be initially considered to be unimpacted.

Ditches are located on both sides of the driveway to collect road runoff and to convey upstream runoff to the pond. A culvert conveys flow from the ditch on the west side of the driveway to the ditch on the east side and ultimately to the pond. MOE approved dust suppressant and road salt for the internal paved areas may be used occasionally.

4.3.2 Leachate Indicators

To determine the potential leachate quality that may be generated from the Transfer Station, the leachate quality from the City of Guelph closed Eastview Landfill was examined. Prior to closure, this landfill accepted a similar mix of waste as the Transfer Station. Groundwater monitoring has been routinely conducted on this site since 1991. Leachate quality is measured by a series of groundwater monitors in the waste and in the outwash layer beneath the waste. In general, the leachate quality is characterized by elevated concentrations of chloride, boron, phenols (critical leachate parameters), sodium, potassium, magnesium, iron, manganese, ammonia and alkalinity (leachate indicator parameters). Also, BOD, COD and oil and grease have been found to be elevated. Table 8 provides a summary of the historic leachate concentrations (1997 to 2009) for the leachate monitors.

	Parameters	Avg.	Min.	Max.
General	• pH	7.68	7.09	8.63
	 Conductivity (μS) 	14,364	3,880	21,500
	 Alkalinity (mg/L) 	6,195	2,900	9,050
	Hardness (mg/L)	2,161	1,010	2,900
Critical	Chloride (mg/L)	1,841	101	2,660
Indicators	 Boron (mg/L) 	22.8	6.22	47
	 Phenol (μg/L) 	100	0.72	830
Leachate	Calcium (mg/L)	96	33	221
Indicators	Sodium (mg/L)	1,468	424	2,300
	 Magnesium (mg/L) 	468	144	661
	 Potassium (mg/L) 	794	149	1,410
	Iron (mg/L)	11	1.1	41.4
	Manganese (mg/L)	0.10	0.027	0.688
	Ammonia (mg/L)	583	0.05	1,200

Table 8. Summary of Leachate Quality from the Waste Monitors, Eastview Landfill

The concentrations of the leachate indicator parameters vary with location across the landfill but in most cases are elevated above the background concentrations. However, it should be noted that parameters such as chloride and sodium are also elevated in the background due to other sources such as road salt. Further, parameters such as iron, manganese, and ammonia can be elevated due to natural background conditions, in either the sandy outwash (manganese) or the wetland peat (iron and ammonia). Of all the leachate indicator parameters identified, boron, chloride and phenols are considered as critical leachate indicator parameters.

Annual routine organic analysis of the leachate shows low concentrations of BTEX (benzene, toluene, ethyl benzene and xylene) and organic compounds at the closed Eastview Landfill indicating that organic compounds are not generated in significant quantities in this landfill.

With regard to the Transfer Station, downgradient water quality is compared to background water quality for the critical leachate indicator parameters, as identified above, to determine impacts from site operations.

The Transfer Station operation is not expected to generate any significant quantities of leachate because all waste handling operations are conducted in an indoor environment within the transfer building. The Design and Operations plan incorporates a number of features to protect the groundwater and surface water resources. This includes features such as a completely contained waste tipping floor and collection system and operating procedures that ensure that waste is handled indoors in a closed environment and is not stored on-site for any length of time. Nevertheless, it is still appropriate to examine water quality at the site for indicators of leachate impacts to confirm that all of the safeguards are functioning.

4.3.3 Petroleum Indicators

The Transfer Station operations do not involve the use, storage or handling of significant quantities of potential contaminants, other than machine fuel/lubricants (the only on-site equipment that requires fuelling is a front-end loader) and occasional dust suppressant chemicals. If these are handled with normal, reasonable precaution (according to the regulations) then the risk of groundwater contamination is very low. Established procedures for spills response and contingency are in place. BTEX analysis results are examined to determine if there is any indication of hydrocarbon contamination. Downgradient water quality is discussed in Sections 5.4 and 5.5.

5. Groundwater, Leachate and Surface Water

A ground and surface water monitoring program is conducted on the sites as outlined in Section 2. The monitors included in the Transfer Station program are also part of an overall monitoring program that includes groundwater, surface water and leachate sampling for the adjacent WRIC. A summary of the monitoring results for the groundwater monitors included in the C of A for the Transfer Station and the WRIC is presented below.

5.1 Groundwater Elevation and Flow Directions

Groundwater levels were collected in April, June, September and December during 2010. Groundwater elevations were measured at 17 locations that included a total of 30 monitors. These monitors are outlined below with the geological unit they are measuring. Groundwater elevations are appended. Hydrographs for each location are presented in Appendix A.

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 ²	Dolostone Bedrock	Bedrock		
12b-00	Gravelly Outwash	Water Table		
13a-01 ³	Dolostone Bedrock	Bedrock		
13b-01 ³	Gravelly Outwash	Water Table		
14a-01 ³	Dolostone Bedrock	Bedrock		
14b-01 ³	Gravelly Outwash	Water Table		
15a-01 ³	Dolostone Bedrock	Bedrock		
15b-01 ³	Gravelly Outwash	Water Table		
16a-08 ³	Dolostone Bedrock	Bedrock		
16b-08 ³	Gravelly Outwash	Water Table		
17a-08 ³	Dolostone Bedrock	Bedrock		
17b-08 ³	Gravelly Outwash	Water Table		
18a-08 ³	Dolostone Bedrock	Bedrock		
18b-08 ³	Gravelly Outwash	Water Table		
19a-08 ³	Dolostone Bedrock	Bedrock		
19b-08 ³	Gravelly Outwash	Water Table		
20a-08 ³	Dolostone Bedrock	Bedrock		
20b-08 ³	Gravelly Outwash	Water Table		
21-08	Dolostone Bedrock	Water Table/Bedrock		

Notes: (1) Locations recommended by MOE. (2) Replaces 3-97.

(3) Locations on Transfer Station Property.

In general, the shallow groundwater flow beneath the site is similar to previous years though flows have been refined based on the groundwater elevation information from the new monitors installed in 2008. Shallow groundwater flow beneath the majority of the site is in a 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. The 2008 drilling identified a bedrock high southeast of the site in the vicinity of 20a-08.

The bedrock groundwater flow pattern is similar to the overlying shallow groundwater system (Figure 3). Groundwater flow is from west to east and east to west coming into the site from both directions. It is expected that flow 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 previous hydrogeological assessments in the area 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. The 2008 monitoring nests (bedrock and overburden) were placed to the east of the facility (BH18-08, BH19-08 and BH20-08) to confirm the geology and groundwater flow in this area. Southeast of the Transfer Station, the bedrock elevation is highest at BH20-8, sloping to the northwest towards the paleo river valley. A more detailed assessment of the geology in the area incorporating the 2008 borehole data was provided in the 2009 Annual report (AECOM, 2010).



A SIZE 8.5" x 11" (215.9mm x 279.4mm)

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In their review of the 2006 Annual Monitoring report, the MOE commented that though water levels are collected four times per year, only one data set was used to plot the groundwater contour map. It should be noted that for our assessment of groundwater flow conditions, each set of water level data are plotted and reviewed. However, for reporting purposes, only one set of data are presented as flow contours from season to season (and from year to year) as flows have been quite similar. Should significant differences between the seasonal flow conditions be noted, they would be identified and discussed.

5.2 WRIC Detention Pond 1 (SW 3) Monitoring

In 2010, the pond at SW 3 was inspected monthly with samples collected when possible. The table below briefly outlines the conditions at Detention Pond 1 (SW 3) during the 2010 monthly monitoring events.

Month	Runoff From Pad	Conditions	Sampling Date
January	None	Snow covered	No Sample
February	None	Snow covered	No Sample
March	None	Sample collected at outlet	March 18, 2010
April	None	Sample collected at outlet	April 7, 2010
Мау	None	Dry	No Sample
June	None	Sample collected at outlet but not submitted for analysis	No Analysis
July	None	Sample collected at outlet	July 30, 2010
August	None	Dry	No Sample
September	None	Sample collected at outlet	September 30, 2010
October	None	Dry – area re-constructed	No Sample
November	None	Sample collected at outlet	December 2, 2010
December	None	Snow covered	No Sample

No impacts are expected at SW 3 since compost is no longer stored on the pad. In the past when the water quality was sampled at SW 3 (or CL-1 leachate), it showed elevated concentrations of conductivity, potassium, BOD, COD, TKN, ammonia, total phosphorus, chloride, sodium and iron. In 2010, SW3 parameter concentrations are generally much lower than pre-2007 concentrations in the absence of compost impacts. As suggested by the MOE, SW3 quality was compared to the water quality from the samples collected from the staff gauge in the East Pond (designated EPTS-01). The East Pond can be considered as background surface water quality as it is upstream of both facilities⁶. Except for the March 2010 results, parameter concentrations from SW3 are within the range of historic East Pond concentrations, except for potassium, BOD, COD, TKN, ammonia and total phosphorus. The March 2010 concentrations were higher than parameter concentrations for samples collected later in the year, likely due to flushing of residual leachate impacts after snowmelt/spring rains. Parameter concentrations were generally within the range of historic concentrations at this location, except for alkalinity and sulphate, which were higher. Elevated concentrations may be related to residual leachate inputs in the clay-lined pond, which is expected to continue to flush out over time. Although this was the case, all water collected from the compost pad into the pond was directed to the sanity sewer.

The compost runoff was to be analyzed for organics once per year. Though a June organics sample was collected in June at SW3, it was inadvertently not submitted to the laboratory for analysis. Therefore, no organic results for SW3 are available. Significant organic concentrations would not be expected now that there has been no composting over the past four years.

^{6.} Memorandum from Lynnette Latulippe (MOE) to Bill Shields (City of Guelph), Re: Annual Monitoring Report – 2009 Guelph Wet-Dry Recycling Centre and Waste Transfer Station, dated February 7, 2011.

5.3 Groundwater Monitoring

Transfer Station

The monitoring program for the site includes three overburden monitors (in outwash materials) 13-b-01, 14b-01 and 15b-01 and three bedrock monitors 13a-01, 14a-01 and 15a-01. The MOE completed a review of the 2004 and 2005 Annual Monitoring reports for the Eastview Landfill and the Transfer Station. The MOE recommended installation of additional monitoring locations to better address the geological setting with respect to the groundwater flow. Based on the MOE review comments, six new monitoring nest locations (BH16-08 to BH21-08) were completed in 2008, at the locations shown on Figures 1 to 3. These new monitors consist of overburden outwash (16b-08, 17b-08, 18b-08, 19b-08, 20b-08) and bedrock monitors (16a-08, 17a-08, 18a-08, 19a-08, 20a-08). These new monitors were incorporated into the routine monitoring program in 2008.

The groundwater monitoring program includes biannual (June and December) routine water quality sampling and annual (June) organic water quality sampling plus seasonal water levels.

WRIC

Baseline groundwater monitoring was conducted from 1991 to 1995, prior to construction at the WRIC 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, replacements 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 (June and December). Groundwater samples were collected in June and December in 2010.

5.3.1 Groundwater Quality

Groundwater sampling was conducted for both the Transfer Station and the WRIC in June and December 2010. Groundwater quality results are appended.

5.3.1.1 Background Outwash Water Quality

Background outwash groundwater quality has historically been measured at locations 14 and 15 on the adjacent eastern property. Location 15 is now considered a downgradient location due to the construction of the compost pad to the east. Groundwater flow is directed towards the site from these areas. Recent monitors BH18b-08, BH19b-08 and BH20b-08, located southeast of the Transfer Station and 16b-08, located north of the Transfer Station are also representative of background outwash conditions based on the groundwater flow patterns in this area. Monitors 18B-08 and 19B-08 had insufficient volume of water to sample in 2010. Water quality for the indicator parameters are summarized in the table below.

Monitor		Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
14b-01	Historical Range	Historical Range 267 – 438		7.7 – 170	95.4 – 140	26.2 – 38	1 – 2.6
	2010 Average	393	140	120*	110*	27*	1.3
16b-08	2008-2009 Range 318 - 59		38 – 260	39 – 150	130 – 170	42 – 51	1.5 – 3.1
	2010 Average	480	125	83	150	45	2.2
18b-08	March 2008	284	8	270	29	12	2.1
19b-08	2008-2009 Range	289 – 499	38 – 60	350 – 480	23 – 36	10 – 14	4.5 – 8.6
20b-08	2008-2009 Range	235 – 271	8 – 110	3.5 – 57	82 – 99	25 – 30	1.2 – 3.3
	2010 Average	264	91	32	102	30	1.7

Note: Historical Ranges include all data up to and including 2009, except where specified. *June 2010 concentration only.

Monitors 18b-08, 19b-08 and 20b-08 have chemistry similar to monitors 14b-01, located northeast of the WRIC though a few parameters at 19b-08 were notably higher than the other overburden background monitors. Monitor 19b-08 showed elevated concentrations of conductivity, potassium, TKN, ammonia, sulphate, sodium and boron. COD and sulphate concentrations were also elevated at monitor 18b-08 though this monitor was only sampled in March 2008 due to persistent dry conditions. The cause of these elevated concentrations is unknown, however, since these monitors are upgradient of the site, the elevated concentrations are not a result of site activities. Monitor 20b-08, located upgradient from 18b-08 and 19b-08, shows parameter concentrations similar to the historic overburden background monitors.

Further, these three monitors also show that the background overburden has elevated sodium and chloride concentrations, as high as 480 mg/L sodium at 19b-08 and 170 mg/L chloride at 20b-08. The sodium concentrations are higher than sodium concentrations at monitor BH15b-01, which also has been exhibiting elevated chloride and sodium, suggesting that the upgradient background monitors are closer to the source than monitor 15b-01. The most likely source of the elevated sodium and chloride is winter road salting of the adjacent major roadways. Sodium and chloride concentrations are highest at 19b-08. The cause of the high sodium and chloride impacts at this monitor may be due to a component of shallow groundwater flow to this area from both Watson Parkway and Stone Road which may result in greater impacts in this area (i.e., two sources of road salt - Stone Road East and Watson Parkway). Nevertheless, the high sodium and chloride concentrations in the upgradient background monitors confirm that site operations are not the cause of these impacts.

The 2010 parameter concentrations at monitor 20b-08 are generally within their historic ranges, except for conductivity, chloride and calcium, which were higher than their historic maximum concentrations and sulphate, which was lower than its historic minimum concentration.

The 2010 parameter concentrations at monitor 14b-01 were within the historic range of concentrations at this monitor for both sampling events, except for magnesium, sodium, calcium, zinc and nitrate. The December 2010 monitor 14b-01 concentrations of magnesium, sodium, chloride and zinc are suspect as they are all lower than the laboratory detection limits for these parameters. For example, chloride has a historical range of 95.4 mg/L to 140 mg/L yet is reported as less than 0.2 mg/L in December 2010. The nitrate concentration at monitor 14b-01 in December 2010 is reported as 4 mg/L when historically nitrate has been at low concentrations of less than 0.5 mg/L. The results for these five parameters are considered anomalous and will be checked against future results from this monitor to further assess their validity. COD concentrations at 14b-01 are showing a decreasing trend since peaking in 2004-2003 such that concentrations are currently lower than 2001 concentrations. Monitor 14b-01 has shown increasing sodium and chloride over time from about 20 mg/L and 40 mg/L, respectively in 2001-2003 to 170 mg/L and 270 mg/L in 2009, though 2010 concentrations have decreased to 150 mg/L and 130 mg/L. The increasing sodium and chloride concentrations are most likely related to road salting along Watson Parkway. The average 2010 indicator parameter concentrations at monitor 14b-01 were generally lower than average 2009 concentrations.

Monitor 16b-08 is located near the northwest corner of the of the Transfer Station site by the stormwater management pond. Indicator parameter concentrations are within the range of concentrations for the other background overburden monitors though they tend to be at the high end of the range. The 2010 parameter concentrations at monitor 16b-08 are generally within their historic ranges, except for COD which is slightly higher than the historic maximum concentration. The average 2010 indicator parameter concentrations at monitor 16b-08 were generally lower than average 2009 concentrations.

5.3.1.2 Background Bedrock Water Quality

Background bedrock groundwater quality is measured at locations 5-96 (northwest) and 8-96 (west) on the bedrock high along the western portion of the WRIC site from where groundwater flows into the immediate area of the WRIC.

As well, groundwater quality in the bedrock below the site was measured at location 6a-96. Background bedrock 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 2010, along with the historical ranges at these locations are provided below. Also, provided in this table are the 2010 averages from the bedrock WRIC site monitors (10-00, 11a-00) installed in 2000, the bedrock monitors (13a-01, 14a-01 and 15a-01) installed on the Solid Waste Transfer Station property in late 2001 and the bedrock monitors (16a-08, 17a-08, 18a-08, 19a-08, 20a-08, 21-08) installed in 2008.

		Monitor	Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
	5-96	Historical Range ⁽¹⁾	278 – 380	112 – 474	71.9 – 263	83.7 – 134	24.2 - 38.4	3.9 – 6
		2010 Average	297.5	500 ⁽²⁾	360 ⁽²⁾	90	21	4.2
	8-96	Historical Range	264 – 356	37.2 – 332	17.6 – 171	87 – 123	32 - 43.4	1.73 – 3.1
		2010 Average	298	102.5	63.5	95	34	2.5
pu	14a-01	Historical Range	215 – 263	4.8 – 26.6	9.1 – 27.4	63.5 – 86	22.4 – 29	1 – 2
		2010 Average	241.5	21	14.5	76	26.5	1.1
Do 1	16a-08	2008-2009 Range	238 – 251	28 – 39	2.5 – 42	76 – 88	26 – 29	2 – 3.6
Skg		2010 Average	236	32	2.2	85.5	28	1.9
Ba	18a-08	2008-2009 Range	242 – 258	16 – 19	4.5 – 89	65 – 85	27 – 29	1.1 – 3
		2010 Average	241	18	4.6	85	30	1.2
	19a-08	2008-2009 Range	236 – 245	27 – 50	12 – 47	94 – 100	33 – 37	1.2 – 1.4
		2010 Average	235	40	18.5	105	34.5	1.3
	20a-08	2008-2009 Range	242 – 262	16 – 19	4.9 – 56	72 – 84	26 – 30	1.1 – 1.8
		2010 Average	239	27.5	5	84	29	1.2
	6a-96	Historical Range	206 – 420	158 – 345	70 – 176	94.6 – 158	28.3 – 42	2 – 16.4
		2010 Average	278	205 ⁽²⁾	130 ⁽²⁾	110	28	3.15
	10-00	Historical Range	236 – 267	17 – 44.9	7.7 – 14	79 - 95.1	27 – 32	1 – 2
	11a-00	Historical Range	231 – 263	4 – 16	4.3 - 25.9	62 - 83.2	23 – 27	1 – 3
Ţ		2010 Average	226	20	5.1	72	26.5	1.9
Idie	13a-01	Historical Range	247 – 272	83.9 – 111	38 – 49	90 – 112	32 – 38.8	2 – 2.9
gra		2010 Average	244	93.5	41.5	97.5	33	2.55
Ň	15a-01	Historical Range	245 – 271	42 - 62.4	7.7 – 20	88 – 129	29 – 37	1 – 2
ă		2010 Average	248	51.5	20	105	35.5	1.3
	17a-08	2008-2009 Range	233 – 248	27 – 36	10 – 67	64 – 80	26 – 30	1.4 – 2.2
		2010 Average	229	35	11.5	80	29.5	1.6
	21-08	2008-2009 Range	261 – 284	5 – 54	13 – 34	78 – 86	26 – 32	0.89 – 1.2
		2010 Average	270	13	16	81	27	1

Note: 1. Historical Ranges only include data from 1997 up to 2003 due to continued increasing chloride and sodium values after 2003. 2. Road salt impact.

Historical Ranges include all data up to and including 2009, except where specified.

Many of the new monitors drilled in 2008 show concentrations that appear to be slightly outside the range of concentrations from results collected in 2008 and 2009. This is expected due to the limited amount of data therefore, minor concentrations outside the new monitor ranges are not discussed below. Generally the average 2010 concentrations fall within the historical ranges, with the following exceptions. The 2010 average concentrations of sodium and chloride at monitor 5-96 continue to show significant road salt impacts. The sodium and chloride concentrations at 5-96 have shown a significant increase in recent years from less than 140 mg/L and 300 mg/L pre-2003, respectively to about 360 mg/L and 500 mg/L in 2010. The effects are found to be seasonal with the dry weather (June) sampling period showing higher sodium and chloride concentrations as compared to the wet weather sampling periods. As well, there have been historical road salt effects observed at location 6a-96 and 8-96. Sodium and chloride at monitor 5-96 exceed ODWS. Sodium and chloride are elevated (but within ODWS) at monitor 6a-96. The elevated sodium and chloride concentrations at monitors 5-96 exceed New Statement at the other same device of the concentrations at monitor 5-96. The elevated sodium and chloride concentrations at monitor 5-96. The elevated sodium and chloride concentrations at monitor 5-96 exceed New Statement concentrations at monitors 5-96 and 6a-96 are due to road salt impacts. The

2010 average magnesium concentration is slightly lower than the historic minimum concentration at 5-96. The magnesium concentration at 5-96 has been decreasing over time. The June 2010 chloride concentration at monitor 20a-08 of 37 mg/L is about double the chloride concentrations from 2008 and 2009 and from December 2010. This elevated chloride concentration is accompanied by elevated sulphate and iron and low nitrate and nitrite. The significance of the June 2010 concentrations will be assessed through further monitoring.

The June 2010 nitrate concentration exceeded ODWS at monitor 6a-96 with concentrations of 12 mg/L compared to an ODWS of 10 mg/L. This monitor has consistently exceeded the nitrate ODWS during all previous sampling events where nitrate was analyzed though the December 2010 nitrate concentration was within ODWS at 6.8 mg/L. Elevated nitrate concentrations were prevalent across the site at all locations prior to development of the site. Elevated nitrates are most likely a result of long-term agricultural land use in the area and are not a result of site operations. There were no other nitrate exceedances of the ODWS for the bedrock monitors in 2010.

When the water quality from the monitors located along the eastern boundary of the WRIC (10-00, 11a-00) and in the Transfer Station property (13a-01, 14a-01, 15a-01, 16a-08, 17a-08) 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 generally 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 WRIC site, towards a deeply incised bedrock valley low. This valley cuts into the underlying Gasport Formation (formerly the Amabel). The 2001 and 2008 monitors are installed in this formation or at the contact of this formation at the eastern boundary of the WRIC facility. Overall, water quality from this lower formation is found to be less mineralized, which is confirmed by sampling of these monitors.

Monitor 21-08 is screened within the shallow bedrock. Parameter concentrations are similar to slightly lower compared to those at 8-96 which is also installed in a similar setting in shallow bedrock with less than 0.7 m of overburden. Average 2010 sodium and chloride concentrations of 16 mg/L and 13 mg/L are lower than the 2009 averages of 23 mg/L and 26 mg/L, respectively, but within historic ranges for this monitor. The 2010 average nitrate concentration at monitor 21-08, though within ODWS, is elevated at a concentration of 4.7 mg/L, as it has been since installation of this monitor.

5.4 Downgradient Groundwater Quality

5.4.1 Shallow Outwash Groundwater Quality

Monitors along the eastern property boundary of the WRIC and within the paleo-valley in this same area are downgradient of operations at the Transfer Station and the WRIC based on shallow groundwater flows (Figure 2). The table below compares downgradient water quality at monitors 2b-01, 6b-96, 7-96, 11b-00, 13b-01, 15b-01 and 17b-08 to the Ontario Drinking Water Standards (ODWS), leachate quality (from Eastview Landfill) and background outwash water quality from monitors BH14b-01, 16b-08, 18b-08, 19b-08 and 20b-08.

Only five samples have been collected from monitor 2b-91 since 2004 due to persistently dry conditions. Alkalinity concentrations have increased in recent years compared to the pre-2003 average of 183 mg/L. The June 2010 alkalinity concentration was 286 mg/L. Sulphate concentrations have been decreasing over time from about 30 mg/L in the mid-1990s to its current 2010 concentration of 9 mg/L. No other trends in indicator parameter concentrations were noted at 2b-91. Of note are the low 2008-2010 nitrate concentrations at 0.7 mg/L to 1.2 mg/L. Historically, nitrate concentrations frequently exceeded the ODWS at 2b-91.

			Cı	ritical Leach	ate Indicators		C	ther Leach	ate Indicator	s
		Monitor	Boron (ppm)	Phenols (ppm)	Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
e		ODWS	5.0		30 – 500	250	200			
eachat		Historical Range (1997-2010)	6.22 – 47	0.72 – 830	2,900 – 9,050	101 – 2,660	424 – 2,300	33 – 221	144 – 661	149 – 1,410
-		Average (1997-2010)	22.8	100	6,195	1,842	1,481	96	467	802
	2b-91	Historical Range	< 0.005 – 0.028	< 0.72 – 6	166 – 362	3 – 17	1.8 – 5.2	52.2 – 90	21.8 – 39	0.69 – 1
		2010 Average	0.02	< 1	286	3	5.2	71	26	0.75
	6b-96	Historical Range	0.02 – 0.078	< 0.72 – 11	246 – 412	90.3 – 815	53.1 – 467	85.9 – 217	20.5 – 47	5.36 – 18
		2010 Average	0.031	< 1	293	160	117	93	22	8.2
	9-96	Historical Range	0.01 – 0.063	< 0.72 – 4	171 – 348	5 – 83.7	1.48 – 34	68.6 – 100	14.7 – 34	0.3 – 1.5
ţ	7-96	Historical Range	0.03 – 0.102	< 0.72 – 12	224 – 378	54.3 – 397	28.7 – 212	95.1 – 226	28 – 52.7	9.06 – 27
adie		2010 Average	0.045	< 1	305	132	86.5	120	32.5	11.5
ıgra	11b -00	Historical Range	0.04 – 1.9	< 1 – 7	185 – 279	54 – 192	26.8 – 150	44 – 103	12 – 28.4	1 – 2.2
0 VI		2010 Average	0.405	< 1	249	135	102.5	75	17.5	1.5
ŏ	13b-01	Historical Range	0.01 – 0.1	< 1 – 12	287 – 506	7 – 200	4.8 – 88	84.7 – 160	28 – 45	1 – 2.5
		2010 Average	0.029	< 1	380	106.5	54.5	135	30.5	2.1
	15b-01	Historical Range	< 0.01 – 0.08	< 1 – 10	200 – 544	4 – 130	2 – 98	73.4 – 190	18.7 – 53	0.92 – 2
		2010 Average	0.034	< 1	457	195	107.5	180	36.5	1.4
	17b-08	2008-2009 Range	0.015 – 0.025	< 1	304 – 357	260 – 620	170 – 330	110 – 190	32 – 48	2.3 – 3.1
		2010 Average	0.023	< 1	312	300	175	130	31.5	2.5
	14b-01	Historical Range	< 0.01 – 0.05	< 1 – 13	267 – 438	22.3 – 280	7.7 – 170	95.4 – 140	26.2 – 38	1 – 2.6
		2010 Average	0.019	< 1	392.5	140	60	55	13.5	1.3
pu	16b-08	2008-2009 Range	< 0.01 - 0.033	< 1	318 – 597	38 – 260	39 – 150	130 – 170	42 – 51	1.5 – 3.1
lo		2010 Average	0.026	< 1	479.5	124.5	83	150	45	2.2
ckç	18b-08	March 2008	0.07	< 1	284	8	270	29	12	2.1
Ba	19b-08	2008-2009 Range	0.14 – 0.27	< 1	289 – 499	38 – 60	350 – 480	23 – 36	10 – 14	4.5 – 8.6
	20b-08	2008-2009 Range	< 0.01 - 0.018	< 1	235 – 271	8 – 110	3.5 – 57	82 – 99	25 – 30	1.2 – 3.3
		2010 Average	0.012	< 1	264	91	32	101.5	26.5	1.7

Note: Historical Ranges includes all data up to and including 2009, except where specified. ODWS = Ontario Drinking Water Standards.

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, are upgradient of the WRIC and Transfer Station. These locations are along the flow path that trends from the southwest to the northeast and receives groundwater inputs from 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 the west would mix with the less ionized waters in the overburden.

With respect to monitor 6b-96, it has had on occasion, higher concentrations of chloride and sodium than observed in the background 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. Monitor 5-96 has been showing increasing chloride concentrations over time from about 200 mg/L up to 2002 to around 800 mg/L in the late-2000s, likely in response to long-term road salting in the area.

As shown on the above table, indicator parameter concentrations observed in the background and downgradient outwash monitors on the Transfer Station/WRIC property are considerably lower than typical leachate concentrations from the closed Eastview Landfill. Chloride at 15b-01 (June 2010) and 17b-08 (June and December 2010) exceeded ODWS. These exceedances are due to road salt impacts. Monitor 17b-08 is in the shallow outwash, downgradient of Transfer Station. The sodium and chloride concentrations at 17b-08 are within the more recent range of concentrations

of the background WRIC bedrock monitors 5-96 and 6a-96, which have been impacted by road salt. Elevated sodium and chloride at 17b-08 suggests road salt impacts by lateral dispersion at this location. Other leachate indicator parameter concentrations are within background outwash ranges for the Transfer Station indicating no impacts.

Nitrates at monitor 6b-96 and 7-96, once again, exceeded the ODWS in 2010. This has been observed historically, as well as prior to the start up of the WRIC facility and is most likely a result of past agricultural land use. There were no other exceedances of ODWS for the shallow groundwater monitors in 2010 for the parameters tested.

At 13b-01, both sodium and chloride have shown increasing trends since 2004, peaking in 2008 and slowly declining since then. These elevated concentrations are likely due to road salt impacts as this monitor is located adjacent to the access road to the Transfer Station and Dunlop Road. The average 2010 chloride concentration of 107 mg/L was lower than the average 2009 concentration of 140 mg/L whereas the average 2008 sodium concentration of 180 mg/L was slightly higher than the average 2007 concentration of 120 mg/L. Since indicator parameter concentrations at monitor 13b-01 remain within background concentrations, it has been concluded that there are no leachate impacts.

The June 2010 conductivity (1,720 µmhos), chloride (270 mg/L) and calcium (210 mg/L) concentrations and the December 2010 sodium concentration at monitor 15b-01 were higher than historic maximum concentrations at this monitor. Since 2006, the average chloride concentration at monitor 15b-01 has increased from a 2006 average concentration of 6 mg/L to a 2010 average concentration of 195 mg/L. Sodium and chloride showed a noticeable increase in concentrations in 2010 with a 2010 average of 108 mg/L and 195 mg/L, respectively, compared to a 2009 average of 72 mg/L and 63 mg/L, a 2008 average of 92 mg/L and 76 mg/L and a 2007 average concentrations of 11 mg/L and 29 mg/L. This monitor has continued to show a general increasing trend in alkalinity in recent years. These increases are likely related to the construction of the paved pad immediately south (discussed below). COD concentrations at 15b-01 are showing a decreasing trend since peaking in 2004-2003 such that they are currently lower than 2001 concentrations. This monitor had previously been considered an upgradient background location due to its location east of the WRIC and south of the Transfer Station. However, in the mid-2000s, a large paved pad was constructed southeast of this monitor location. This pad was originally intended for storage of leaf compost but has not been used since construction. The pad is sloped such that surface water runoff is captured by a catch basin located near the middle of the pad and directed to the storm sewer. The change in water guality at this location may be due to a combination of road runoff impacts from the Transfer Station access road to the northwest, a reduction of infiltration (and therefore, dilution) with the installation of the paved pad as well as the road salt from the south as observed in the background monitors.

We conclude from this assessment, there have been no leachate impacts to the shallow groundwater in the vicinity of the WRIC and Transfer Station as a result of site operations in 2010.

5.4.2 Downgradient Bedrock Groundwater Quality

The interpreted bedrock groundwater flow directions (Figure 3) indicate that monitors 6a-96, 10-00, 11a-01, 13a-01, 15a-01 and 17a-08 are downgradient of the active Transfer Station and WRIC area, within the paleo-valley trending through the site.

The bedrock groundwater quality was compared to Ontario Drinking Water Standards (ODWS), as applicable. Sodium and chloride exceed ODWS at background bedrock monitor 5-96 due to road salt impacts. June 2010 nitrates exceeded ODWS at downgradient bedrock monitor 6a-96 with a concentration of 12 mg/L but an average 2010 concentration of 9.4 mg/L compared to an ODWS of 10 mg/L. This monitor has consistently exceeded the nitrate ODWS during all previous sampling events where nitrate was analyzed. The elevated nitrates are attributed to long-term agricultural land use in the area and are not a result of leachate impacts. There are no other exceedances of ODWS in 2010 for the bedrock groundwater monitors for the parameters tested. As the shallow outwash water quality is not impacted by site operations, no impacts to the deeper bedrock groundwater would be expected nor observed.

5.5 Groundwater Organics Results

As per the requirements of the C of A for the WRIC and for the Transfer Station and as recommended by the MOE, the groundwater was analyzed for organics once in June (dry event) at monitoring locations 2, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 and monitors 5-96, 7-96, 8-96, 9-96, 10-00 and 21a-08.

Monitors 14b-01, 18a-08 and 20a-08 had detections of bis(2-ethylhexyl) Phthalate (DEHP) in the June 2010 samples at concentrations of 50 μ g/L, 6 μ g/L and 3 μ g/L, respectively. Previously, monitors 14b-01 and 16a-08 had detections of bis(2-ethylhexyl) Phthalate (DEHP) in the June 2009 samples ranging from 2 μ g/L (14b-01) to 8 μ g/L (16a-08). DEHP was also detected during both monitoring events in 2007 at monitor 14b-01. It has historically been detected at both upgradient and downgradient monitors in 1997, 1998, 2000, 2002, 2003, 2006, 2007 and 2008. Historic DEHP detections ranged from 0.73 μ g/L to 120 μ g/L. DEHP is prevalent in the environment due to their use in plastics. There is no ODWS for DEHP. Since DEHP has sporadically been detected at monitors across the site, we have concluded that it is a result of sampling or laboratory artefact.

In 2010, m- and p-xylene was detected at 14b-01 (0.1 μ g/L) and 20a-08 (0.2 μ g/L), just at or slightly above the 0.1 μ g/L laboratory detection limit. Historically, low levels (0.1 μ g/L to 0.3 μ g/L) of m- and p-xylene have been detected at 11b-00, 12a-00, 12b-00, 13b-00, 14b-00 and 15b-00 between 2001 and 2006 in both upgradient and downgradient of the site. The ODWS for xylenes is 300 μ g/L. Concentrations detected here are well within ODWS and are not likely related to site activities.

Monitors 11b-00 and 17b-08 had detections of bromodichloromethane (1.4 μ g/L and 2.9 μ g/L) and dibromochloromethane (0.4 μ g/L and 1.1 μ g/L) in 2010. No detections have been observed historically at these locations. Bromodichloromethane and dibromochloromethane can be found in chlorinated drinking water as a disinfection by-product. In the past, they were used as a solvent, a flame retardant and in the manufacture of other chemicals. Currently, dibromochloromethane is of limited use as a laboratory reagent. Low levels (0.4 μ g/L and 0.3 μ g/L) of both have been detected in the past in the leachate (CL1) in 2002. There is no ODWS for either of these parameters.

Low concentrations of chloroform (0.2 μ g/L) were detected at monitor 6a-96 and 6b-96, 11b-00 (3.7 μ g/L) and 17b-08 (7 μ g/L) in 2010. A low concentration of chloroform (0.2 μ g/L) was detected at monitor 6a-96 in 2009. The laboratory detection limit for chloroform is 0.1 μ g/L. Low chloroform (0.3 μ g/L) was detected during 2008 and both 2007 sampling events at this same monitor. Chloroform has historically been detected at low levels at monitors 6b-96 and 11b-00, in the overburden with no elevated indicator parameter concentrations indicating that these occasional detections are not a result of activities on the site. There is no ODWS for chloroform. The low level detections of chloroform at this location are most likely a result of sampling or laboratory artefact.

Monitor 9-96 was not sampled in 2010 due to inaccessibility as a result of construction activities in the area so persistent low levels of 1,1,1-Trichloroethane at 9-96 were not able to be confirmed. Historically it has not been detected in any of the monitors on the Transfer Station or the WRIC site indicating that it is localized and is not moving beyond the monitor area. Concentrations will continue to be monitored in the future but were low in recent years and have declined since 2004 with 2009 concentration only slightly higher than the laboratory detection limit of $0.1 \,\mu$ g/L.

No other organics were detected at any of the monitors that are part of the WRIC and Transfer Station monitoring program in 2010.

Historically, there have been occasional low level detections of organics at both upgradient and downgradient monitors. Because the detection limits for organic compounds are very low, it is not unusual to have sporadic low level organic detections at sites where organic samples are frequently collected. The presence of persistent organics at one location combined with elevated indicator parameter concentrations and/or increasing trend in parameter concentrations would trigger more intense scrutiny of water quality results. This has not been the case for the organic detections at this site.

To further check the validity of future organic detections, a trip blank and a field blank should be collected with each organic monitoring event for QA/QC purposes.

5.6 General Groundwater Quality Discussion

Overall, the groundwater chemistry during 2010 was similar to previous years.

In 2007, nitrate and nitrite analysis was re-instated into the routine monitoring program for both the sites as per the MOE's recommendations. Historically, nitrates were included in the monitoring program but were removed since elevated nitrate concentrations were prevalent across the site at all locations prior to development of the site. This was once again confirmed in 2010. Monitors 6a-96, 6b-96 and 7-96 exceeded ODWS for nitrate in 2010. The 2010 nitrate concentrations at 7-96 are at 21 mg/L and 23 mg/L in June and December, respectively. These concentrations are similar to lower than the nitrate concentrations observed at this location during the late 1990s⁷ when the site was only opened for about a year⁸. Shallow background monitors 1b-91 and 6b-96 historically have also shown elevated nitrate concentrations in the early 1990s (up to 32 mg/L at 1b-91) and late 1990s (up to 44 mg/L at 6b-96) indicating that the elevated nitrates were present prior to the commencement of facility operations. If monitor 7-96 is impacted by compost leachate, other indicator parameter concentrations would also be expected to be elevated. Indicator parameters are comparable to background, confirming that the elevated nitrates are not a result of leachate impacts. Composting at the site was suspended in mid-2006.

Monitors 5-96, 15b-01 and 17b-08 exceeded ODWS for sodium and/or chloride in 2010 as a result of road salt impacts. There were no other exceedances of the Ontario Drinking Water Standards in 2010.

Road salt impacts continue to increase at 5-96, with a significant increase noted in 2006. This location is upgradient west of the sites on the bedrock high. These increasing road salt impacts may be related to increased traffic as this area becomes more developed.

Monitor 15b-01 has continued to show a slight increasing trend in alkalinity and sodium in recent years. Chloride concentrations increased significantly in 2010. This monitor was previously been considered an upgradient background location due to its location east of the WRIC and south of the Transfer Station. However, around 2004-2005, a large paved pad was constructed southeast of this monitor location. This pad was originally intended for storage of leaf compost but has not been used since construction. The pad is sloped such that surface water runoff is captured by a catchbasin located near the middle of the pad and directed to the storm sewer. The change in water quality at this location may be due to a combination of road runoff impacts from the Transfer Station access road to the northwest as well as a reduction of infiltration (and therefore, dilution) with the installation of the paved pad. Additional groundwater monitor locations located southeast of the Transfer Station show much higher concentrations of sodium than those detected at 15b-01 suggesting that there are impacts on these monitors from winter road salting along the adjacent major roadways.

^{7.} Range of 1997-1998 nitrate concentrations at 7-96 of 23 mg/L to 54 mg/L with an average nitrate concentration of 37 mg/L.

^{8.} Construction of the WRIC commenced in 1994. The site was opened in late 1995.

There were detections of DEHP, m- and p-xylene, bromodichloromethane, dibromochloromethane and chloroform in a few of the monitors during 2010. However, based on the historic detections of occasional low levels of VOC throughout the site in both upgradient and downgradient monitors, most of the 2010 VOC detections are concluded to be a result of sampling or laboratory artefact. DEHP has historically been detected at both upgradient and downgradient monitors in 1997, 1998, 2002, 2003, 2006, 2007 and 2008. DEHP is prevalent in the environment due to their use in plastics. In 2010, low levels of m- and p-xylene were reported at 14b-01 and 20a-08. Since DEHP and m- and p-xylene have sporadically been detected at monitors both upgradient and downgradient of the site, we have concluded that it is a result of sampling or laboratory artefact. Only xylenes have an ODWS. Xylene concentrations detected in 2010 are well within ODWS.

Chloroform has also historically been detected at low levels at monitors 6a-96, 6b-96 and 11b-00, in both the overburden and bedrock with no elevated indicator parameter concentrations indicating that these occasional detections are not a result of activities on the site. No other organics were detected at any of the other monitors sampled in 2010.

Historically, there have been occasional low level detections of organics at both upgradient and downgradient monitors. Because the detection limits for organic compounds are very low, it is not unusual to have sporadic low level organic detections at sites where organic samples are frequently collected. The presence of persistent organics at one location combined with elevated indicator parameter concentrations and/or increasing trend in parameter concentrations would trigger more intense scrutiny of water quality results. In previous monitoring reports, we had recommended discontinuation of the organic sampling from the groundwater monitoring program for all historical locations. The MOE review of the 2009 Annual Monitoring report (Groundwater Review), the reviewer did not support the discontinuation of the organic groundwater sampling program since an impact assessment with respect to the requirements of Guideline B-7 has not yet been completed. Organic sampling will remain in the program until this assessment has been completed. Organic sampling events should include a trip blank and a field blank should be collected with each organic monitoring event for QA/QC purposes.

In conclusion, there were no observable effects attributed to the WRIC and the Transfer Station on the groundwater quality beneath the site. No effects were observed at the site boundaries. 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. The elevated nitrate at 7-96 continues to be detected at concentrations of approximately 15 to 20 mg/L similar to those observed in the late 1990s, just after commissioning of the WRIC facility. These concentrations are not related to the facility but most likely reflect the former agricultural land use at the site. New monitors 17b-08, 19b-08 and 20b-08 also appear to show road salt impacts.

5.7 Guideline B-7 Assessment

MOE Guideline B-7 (formerly Policy 15-08 referred to as the Reasonable Use Policy) applies the reasonable use approach to groundwater quality management at waste management sites. Guideline B-7 describes acceptable levels of contaminants in the groundwater at site boundaries, based on the Ontario Drinking Water Standards (ODWS) and natural background conditions. In addition, it is used to determine whether any remedial action is warranted. The Guideline B7 limits were calculated using the formula outlined in the MOE's Procedure B-7-1 (MOEE 1994a and 1994b).

The basic methodology to assess groundwater quality in relation to Guideline B7 limits (reasonable use guidelines), is to compare the shallow downgradient groundwater quality to the calculated maximum concentrations. The leachate indicator parameters used in the assessment are either health related or aesthetic parameters specified in the ODWS. Based on the MOE reasonable use approach from Guideline B-7, the maximum concentrations (**Cm**) allowed at the site boundaries are calculated from the drinking water quality criteria (**Cr**) and background concentrations (**Cb**) based on the formula provided in Procedure B-7-1. Guideline B7 allows for some incremental impact to occur on the

neighbouring property, relative to background. Input for a given chemical parameter includes the background concentration, the Ontario Drinking Water Standards (MOE, 2000), and a safety factor that was established by the MOE based on human health and aesthetic considerations.

As part of the MOE review on the 2009 Annual Monitoring report, it was recommended that Guideline B-7 be applied to this site. Groundwater flow is northeasterly however, there are no groundwater monitors at the downgradient northern property boundary along Dunlop Drive. The MOE recommends installation of a well nest along the northern downgradient property boundary to be utilized for an impact assessment with respect to the requirements of Guideline B-7⁹. The nest is to include overburden and bedrock monitors to be included in the ongoing monitoring program. We concur with this recommendation. The new monitoring nest should be installed in 2011 such that the Guideline B-7 analysis can be completed for the next annual monitoring report.

5.8 Surface Water Monitoring

Transfer Station

The Design and Operations report (Gartner Lee, 2002) recommends monthly inorganic surface water sampling of the stormwater management pond (SWM) for the parameters shown on Table 2. The SWM pond was routinely checked during 2010. When water was present, samples were collected at the culvert on the west side of the pond (TP1 on Figure 1) and at the discharge at the north end of the pond (TP1 (out) on Figure 1) on a monthly basis. The water in the SWM pond at TP1 was sampled in March, April, and between July to September, November and December 2010. TP1 (out) was sampled in March, April and between July and December 2010.

The existing on-site surface water pond ("East Pond" on Figure 1) is also included in the monitoring program. Water quality from the East Pond is considered representative of background surface water quality as it does not receive any inputs from the facilities. East Pond surface water samples (designated EPTS-01) were to be collected on a quarterly basis but was inadvertently only sampled in June and December 2010. The 2010 surface water results for the leachate indicator parameters are tabulated below, and the testing results are presented in Appendix C.

		Critical Leachate Indicators			Other Leachate Indicators				
Location	Date	Boron	Phenols	Chloride	Alkalinity	Sodium	Calcium	Magnesium	Potassium
		(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
PWQO/		0.2	0.001	-	-	-	-	-	-
Background Overburden ⁽¹⁾		0.005 - 0.063	< 0.001 - 0.013	3 – 280	166 – 438	1.5 – 170	52 – 140	14.7 – 39	0.3 – 2.6
Background Overburden ⁽²⁾		<0.01 – 0.27	< 0.001	8 – 260	235 – 597	3.5 – 480	23 – 170	10 – 51	1.2 – 8.6
TP1	7-Apr-10	0.04	0.002	87	72	69	42	3.4	2.9
	30-Sept-10	0.02	< 0.001	43	175	43	62	9.5	7.9
	5-Nov-10	0.02	< 0.001	50	187	51	61	7.9	5.7
	2-Dec-10	0.02	0.001	56	219	65	92	27	4.7
TP1 (out)	18-Mar-10	0.01	< 0.001	92	224	73	64	12	6.4
	7-Apr-10	0.03	< 0.001	88	140	72	53	6.5	5.1
	30-Jul-10	0.04	< 0.001	20	135	19	48	4.6	3.1
	31-Aug-10	0.04	< 0.001	21	140	23	52	4.1	4.5
	30-Sept-10	0.02	<0.001	38	146	32	47	6.4	6.8
	5-Nov-10	0.02	< 0.001	51	188	51	63	8.1	5.9
	2-Dec-10	0.01	< 0.001	49	177	57	50	7.9	3
EPTS-01	24-Jun-10	0.01	0.001	40	235	24	73	21	1.3
	17-Dec-10	0.02	< 0.001	54	266	28	88	24	1.5
	Historic Range	<0.01 - 0.19	< 0.001 - 0.001	26 – 190	169 – 334	13 – 120	68 – 160	19 – 27	1 – 2

Note: (1) Range of background overburden water quality from 1997 to 2009 for monitors 2b-91, 9-96 and 14b-01.

(2) Range of background overburden water quality from 2008-2009 for monitors 16b-08, 17b-08, 18b-08, 19b-08 and 20b-08.

9. Memorandum from Lynnette Latulippe (MOE) to Bill Shields (City of Guelph), Re: Annual Monitoring Report – 2009 Guelph Wet-Dry Recycling Centre and Waste Transfer Station Groundwater Review, dated February 7, 2011.

Surface water results were compared to Provincial Water Quality Objectives (PWQO), background surface water quality (EPTS-01) and background overburden water quality. Of the June and December samples collected in 2010 at EPTS-01, the PWQO for zinc during both monitoring events. The June and December 2010 zinc concentrations at EPTS-01 were 0.05 mg/L to 0.10 mg/L, respectively, compared to a PWQO of 0.02 mg/L. Zinc has consistently exceeded PWQO in the past at this location. Total phosphorus and iron have exceeded PWQO in the past. All the leachate indicator parameters concentrations were within background overburden ranges. The East Pond shows no indications of impacts as a result of site operations.

For the SWM pond samples at TP1, the PWQO was exceeded for zinc for three of the four 2010 monitoring events, iron and total phosphorus for all four events and phenols in April only. For the SWM pond samples at TP1 (out), the PWQO was exceeded for total phosphorus for all 2010 events, iron in March, April, July, September, November and December (six of the seven 2010 events) and zinc in November only. The PWQO for total phosphorus, iron and zinc have routinely to occasionally been exceeded at these locations in the past. The elevated total phosphorus is a result of former agricultural land use and not a result of operations at the Transfer Station. Elevated zinc, total phosphorus and iron concentrations appear to be related to external factors since background surface water have also exceeded PWQO for these parameters. Metals are a common contaminant from roadway runoff. Elevated phosphorus is typical in rural and urbanized areas. Concentrations are within the range of historic background overburden quality. 2010 indicator parameter concentrations are within the range of background surface water concentrations, except for potassium, where both TP1 and TP1 (out) concentrations were all elevated. Baseline water quality information collected prior to building the WRIC had historically shown elevated total phosphorus concentrations. Therefore, the elevated total phosphorus is a result of former agricultural land use and not a result of operations at the Transfer Station.

No samples were collected from TP1 or TP1 (out) in June however December samples were collected from TP1 or TP1 (out) and EPTS-01 to allow for direct quality comparison to background. Indicator parameter concentrations are similar or less at TP1 and TP1 (out) compared to concentrations at EPTS-01, except for TP1 sodium and potassium. The December 2010 sodium concentration at TP1 of 65 mg/L is higher than the EPTS-01 concentration of 28 mg/L but within the range of historic EPTS-01 concentrations. The cause for this elevated concentration is unknown. Potassium concentrations at TP1 and TP1 (out) are 4.7 mg/L and 3 mg/L, respectively compared to 1.5 mg/L at the background surface water station. In the absence of other elevated leachate indicators and with the knowledge that the potassium concentrations are within the range of background overburden concentrations, it is concluded that the potassium levels are natural to the area and not a result of site activities.

2010 parameter concentrations at TP1 were within the range of historic concentrations, except for September potassium, November ammonia and December TSS, iron and zinc which were all greater than their historic maximums. The December elevated iron and zinc are likely related to the relatively higher TSS concentration of 130 mg/L. Metals will tend to bind to sediment in a sample resulting in higher concentrations. 2010 parameter concentrations at TP1 (out) were within the range of historic concentrations. The TP1 April phenol concentration of 0.002 mg/L was slightly higher than the PWQO of 0.001 mg/L. The phenol concentrations for the other months of the year are low suggesting that there have been no impacts to the SWM pond as a result of operations at the waste Transfer Station. The SWM Pond shows slightly elevated sodium and chloride concentrations suggesting road salt impacts from the adjacent access road.

Though organic samples were collected at TP1 and TP1 (out) in June 2010, they were inadvertently not submitted to the laboratory for analysis.

Organic samples were collected from the East Pond (EPTS-01) in June 2010. Chloroform was detected at a concentration of 0.6 μ g/L during the June 2010 sampling event of the East Pond. Chloroform was previously detected in June 2009, June 2008, March and June of 2007 and in June 2004 at EPTS-01 at low concentrations. Chloroform has also historically been detected at low levels at monitors 6a-96, 6b-96 and 11b-00, in both the overburden and bedrock with no elevated indicator parameter concentrations indicating that these occasional

detections are not a result of activities on the site. There is no PWQO for chloroform. The low level detections of chloroform at this location are most likely a result of sampling or laboratory artefact.

To effectively compare surface water samples, samples should be collected on the same day. It is recommended that the monitoring frequency of the East Pond be increased to monthly to coincide with those occasions when samples are collected from the on-site SWM ponds. If no samples are collected from the any of the SWM pond locations, no sample from the East Pond for that month is required.

In the past, measurements from the staff gauge in the East Pond are collected concurrent with the groundwater sampling. These measurements serve as a gauge to the amount of water present in the pond but were not being used for analysis. Staff gauge measurements of the East Pond can be discontinued.

<u>WRIC</u>

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 offsite discharge point in Stormwater Detention Area 2 (Figure 1) and SW 2 located in the Stormwater Detention Area 1. Surface water runoff from the site is directed to a series of on-site stormwater catch basins. Excess water from Stormwater Detention Area 1 flows to Stormwater Detention Area 2 where it ultimately discharges via a pond outlet structure in the northwest portion of the pond to the York-Watson Stormwater Detention Area.

East Pond water quality will serve as background surface water for comparison purposes. There is no baseline 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 impacts. 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 and SW 2 during 2010. Samples were collected from Detention Pond 2 (SW 1) on March 18 and December 2 and from Detention Pond 1 (SW 2) in March, April, September and December 2010. No other surface water samples were collected due to dry conditions. The table below briefly outlines the surface water monitoring events for the past year at these surface water stations.

Month	Discharge Events	Conditions	Sampling Date
January	No Discharge	SW1 and SW2 – Snow covered	No Sample
February	No Discharge	SW1 and SW2 – Snow covered	No Sample
March	No Discharge	SW1 and SW2 – Standing Water Present	March 18, 2010
April	No Discharge, Yes- SW2	SW1 Dry, SW2 – Standing Water Present	SW2 - April 17, 2010
Мау	No Discharge	Dry	No Sample
June	No Discharge	SW1 – Dry, SW2 – Standing Water Present	SW2 - June 22, 2010*
July	No Discharge	Dry	No Sample
August	No Discharge	Dry	No Sample
September	No Discharge, Yes-SW2	SW1 – Dry, SW2 – Standing Water Present	SW2 - Sept 30, 2010*
October	No Discharge	Dry	No Sample
November	No Discharge	Dry SW1 and SW2 – Standing Water Present	Dec 2, 2010
December	No Discharge	Dry	No Sample

Note: *June SW2 sample collected but inadvertently not submitted to the laboratory.

Only two samples were collected from SW1 in 2010 (March and December). The 2010 surface water quality at SW 1 (Stormwater Detention Area 2) showed elevated potassium, BOD, and total phosphorus compared to background surface water quality at the East Pond (EPTS-01). Conductivity, alkalinity, magnesium, sulphate and calcium concentrations are much lower at SW1 compared to the East Pond. 2010 SW1 parameter concentrations are within the range of historic concentrations at this location. The Provincial Water Quality Objectives (PWQO) were exceeded during both 2010 sampling events for total phosphorus and one sampling event for zinc. The total phosphorus, zinc and iron PWQO have routinely been exceeded in the past at this location. The zinc PWQO is routinely exceeded at the background surface water station. Iron and total phosphorus PWQO have only rarely been exceeded at the background surface water station. Occasionally elevated parameter concentrations at SW1 are a result of road salt impacted runoff from the adjacent internal roadways and/or occasional stagnant water conditions in the pond.

Most parameters are elevated compared to background surface water during the March and April 2010 sampling events at SW2 (Stormwater Detention Area 1). Elevated concentrations of potassium, BOD, COD and total phosphorus were reported for all four 2010 monitoring events. Spring 2010 conductivity, ammonia, chloride and sodium all showed higher concentrations that their historic maximum concentrations. The spring (March and April) concentrations were higher than the September and December concentrations, likely due to seasonal influences. Total phosphorus exceeded the PWQO during all four monitoring events in 2010. Zinc and iron exceeded the PWQO on two occasions each during 2010. These parameters have historically routinely exceeded their PWQO. The phenol PWQO was exceeded once in December 2010. The phenol PWQO was historically only exceeded on two other occasions since 1997. It is noted that background bedrock monitors 5-96 and 8-96 have consistently shown elevated zinc concentrations indicating that high zinc is natural in the area. All surface water quality results are appended.

As per the requirements of the C of A, the surface water was to be analyzed for organics once annually (typically in June). Our 2008 annual report recommended organic samples at SW 1 and SW 2 earlier in the year to avoid frequent dry conditions that typically occur in June. Organic sampling of SW1 and SW2 was not completed in 2010 as SW1 was dry and June and the SW2 samples, though collected, were inadvertently not submitted to the laboratory for analysis.

It is recommended that surface water monitoring continue to be conducted monthly until a suitable water quality database, has been achieved.

5.9 Adequacy of Program and Proposed Changes

In conclusion, there were no observable effects attributed to the WRIC and the Transfer Station on the groundwater quality beneath the site. Monitor 15b-01 showed increases sodium and chloride concentrations in recent years; however, new background overburden monitors 18b-08 and 19b-08 have much higher sodium concentrations compared to 15b-01 indicating that the site operations are not the source of these parameters.

There were detections of DEHP, m- and p-xylene, bromodichloromethane, dibromochloromethane and chloroform in a few of the monitors during 2010. However, based on the historic detections of occasional low levels of VOC throughout the site in both upgradient and downgradient monitors, most of the 2010 VOC detections are concluded to be a result of sampling or laboratory artefact.

In previous monitoring reports, we had recommended discontinuation of the organic sampling from the groundwater monitoring program for all historical locations. The MOE review of the 2009 Annual Monitoring report (Groundwater Review), the reviewer did not support the discontinuation of the organic groundwater sampling program since an impact assessment with respect to the requirements of Guideline B-7 has not yet been completed. Organic sampling will remain in the program until this assessment has been completed. Organic sampling events should include a trip blank and a field blank should be collected with each organic monitoring event for QA/QC purposes.

There are no sources of VOCs on the WRIC or Transfer station property as waste is handled within the covered buildings, truck boxes are covered when outside (preventing contact between the waste and precipitation) and no waste processing occurs on-site.

The MOE recommends installation of a well nest along the northern downgradient property boundary to be utilized for an impact assessment with respect to the requirements of Guideline B-7¹⁰. The nest is to include overburden and bedrock monitors to be included in the ongoing monitoring program. We concur with this recommendation. The new monitoring nest should be installed in 2011 such that the Guideline B-7 analysis can be completed for the next annual monitoring report.

Routine staff gauge measurements collected since 2004 are not used in our analysis and may be discontinued.

The East Pond setting is similar to the Transfer Station SWM and the WRIC ponds (influenced by road salting and within similar overburden soils) though it is within a different catchment area. The East Pond will be used as a background surface water station to water quality from the on-site surface water features. To effectively compare surface water samples, samples should be collected on the same day. It is recommended that the monitoring frequency of the East Pond be increased to monthly to coincide with those occasions when samples are collected from the on-site SWM ponds. If no samples are collected from the any of the SWM pond locations, no sample from the East Pond for that month is required.

The 2010 Transfer Station surface water monitoring program shows that there have been no leachate impacts to the SWM pond as a result of operations at the waste Transfer Station. The SWM Pond shows slightly elevated sodium and chloride concentrations suggesting road salt impacts from the adjacent access road. Potassium concentrations in the SWM pond are elevated compared to background surface water. It was concluded that the potassium levels are natural to the area and not a result of site activities. No organics analysis was completed in the SWM pond in 2010. Chloroform at a low concentration was detected during the June 2010 sampling event of the East Pond. The low level chloroform detections in the East Pond are most likely due to sampling or laboratory artefact since historically low levels of chloroform have been detected in overburden and bedrock monitors with no other elevated leachate indicator parameter concentrations. As previously discussed, the design and operation of the Transfer Station minimizes the potential for leachate generation from site activities.

The 2010 WRIC surface water monitoring program shows occasionally elevated parameter concentrations at SW2 and SW1, due to road salt impacted runoff from the adjacent internal roadways, occasional stagnant water conditions in the pond and/or seasonal influences. The total phosphorus, phenols, zinc and iron PWQO were exceeded during one or more sampling events at the Stormwater Detention Ponds, as they have occasionally to routinely been exceeded in the past. It is noted that background bedrock monitors 5-96 and 8-96 have consistently shown elevated zinc concentrations indicating that high zinc is natural in the area. No organics analysis was conducted at SW1 and SW2 during 2010.

It is concluded that the current monitoring program, as described in Section 2, is adequate for the WRIC and the Transfer Station.

6. Public Concerns

There were no public complaints recorded by the City attributed to the operation of the Transfer Station during 2010.

^{10.} Memorandum from Lynnette Latulippe (MOE) to Bill Shields (City of Guelph), Re: Annual Monitoring Report – 2009 Guelph Wet-Dry Recycling Centre and Waste Transfer Station Groundwater Review, dated February 7, 2011.

7. WRIC Certificate of Approval for Discharge

The WRIC operates under a C of A for municipal and private sewage works (number 9970-VEVLBH) for discharge off-site. Runoff generated from the site is directed to the two stormwater detention ponds located at the northwest end of the site (Detention Pond 1 and 2). Condition 6(2) of the C of A outlines the monitoring program for the site which includes sampling of the compost pad storage pond overflow during a rainfall event for a return storm of two years or greater and stormwater effluent monitoring for a rainfall event generating a depth of 25 mm or more.

Amended Certificate of Approval 5015-856HHF, issued June 16, 2010 removed this condition from the C of A.

8. WRIC Contingency Plans

The City has detailed contingency plans in place for the site prepared by the Environmental Services Department, Solid Waste Resources. The 2008 Emergency and Contingency Plan and the 2006 Contingency Plan documents (WRIC Contingency Programs, WRIC Business Continuity Plan, WRIC Emergency Plan, WRIC Fire Safety Plan) were reviewed by AECOM.

The pertinent items identified by the C of A are summarized below.

8.1 Spills

The WRIC has a Spills Handling and Reporting procedure in place. This procedure applies to all areas, employees and contractors at the WRIC. The procedure defines spills: minor, major, moderate and hazardous materials. The Spills procedure then outlines how to clean up a minor spill and who must be notified in the case of moderate or major spills.

In the event of a minor spill, the plan indicates that appropriate personal protective equipment should be worn and absorbents used to soak up the spill. Absorbed material should be transported to the Transfer Station for disposal.

The plan also covers procedures to follow in the event of a moderate or major spill. The City of Guelph Operations Department, the Environmental Protection Officer at the Wastewater Treatment Plant and the MOE Spills Action Centre must be notified, also in the event of a major spill, the Fire Department, Police, Operations Department, or City of Guelph Emergency Operations Control Group may need to be notified. The plan indicates that all necessary steps should be taken to eliminate possible ignition sources and prevent the spill from leaving the area or entering a watercourse. The plan notes that an Employee Incident Report must be completed once the cleanup is underway. Finally, the plan provides sources of additional information and applicable legislation and references.

8.2 Fire or Similar Emergency

The WRIC has comprehensive plans in place in case of fire or similar emergency documented in the WRIC Fire Safety Plan and the WRIC Emergency Plan. The Fire Safety Plan includes site mapping, floor plans for each of the on-site buildings (including locations of fire alarms and extinguishers), procedures to be followed in the event of a fire/emergency, staff responsibilities and contacts in the event of a fire/emergency, procedures for fire drills, prevention and monitoring equipment maintenance.

The Emergency Plan includes many of the elements incorporated into the Fire Safety Plan plus emergency communications procedures, locations of emergency supplies, emergency equipment information and procedures related to specific emergency situations. The original Fire Safety Plan was reviewed and approved by the City Fire Department.

8.3 Composting Facilities

The Organic Waste Processing Facility is currently not in service. A comprehensive contingency plan will be developed in the event that the facility re-opens.

8.4 Power or Equipment Failure

Procedures related to power failure are discussed in the Emergency and Contingency Plan and the WRIC Emergency Plan. In the event of a minor power outage, a portable generator is available at the closed Eastview Road Landfill site. There is currently no contract for a company to supply the WRIC with a generator in the event of a major power outage. However, arrangements are in place for an outside power generation unit for the WRIC Administration Building if it is being used as an Operations Control Centre. If electricity is unavailable for more than a 24-hour period, the WRIC would be required to re-direct waste materials. Emergency procedures have also been assessed for on-site facilities should the power failure be accompanied by flood or freezing conditions.

Procedures as a result of loss of on-site facilities are addressed in the Emergency and Contingency Plan as well as the WRIC Business Continuity Plan. Recommended procedures associated with the loss of each of the facilities is documented. Ultimately, management will assess the course of action to restore the facilities and re-gain normal operations.

8.5 Odour

Twice daily odour monitoring is conducted by qualified Solid Waste Resources (SWR) staff. Odour complaints from the public are investigated through the SWR Environmental Complaint Investigation Procedure in compliance with Condition 31 of the C of A. Control measures may include closing doors, cleaning up standing water and/or spills, other housekeeping measures, making changes to the processes or removal of the odour source to the landfill. If the odour persists, a portion of the operation or the entire site may be closed until the issue is resolved.

8.6 Aircraft Hazards/Bird Control

The Guelph Air Park is located within three km of the site. The most obvious aircraft hazard, as it relates to the operation of the WRIC, is the nuisance bird population. Daily monitoring of the number of birds occurs as part of the site inspections. A maximum number of birds on-site was determined in the bird hazard evaluation referred to in the C of A. Continual housekeeping measures, such as litter pick up around the site, at the yard waste pile and compost area, occur at the site to deter the attraction of birds and vermin. Should nuisance birds become an issue at the site, trained birds-of-prey or other mitigative measures will be considered. If necessary, the site operations may cease until the issue is resolved.

Dust, steam, smoke or any airborne vapour may pose an aircraft hazard due to decreased visibility. Operations are conducted in a manner to minimize emissions.

8.7 Un-Authorized Waste

Non-compliant loads are rejected at the scale house prior to entering the site. If un-authorized, hazardous or inappropriate waste is inadvertently accepted, the material will be loaded back on the vehicle (if it has not left the site) or the material will be placed in the appropriate bin for removal by a licensed hauler to an appropriate disposal site. The waste will be transported off-site as soon as arrangements can be made with a certified disposal company. If possible, the vehicle that brought the non-compliant load will be charged for the disposal fee.

8.8 Groundwater/Surface Water Contamination

The site and operational procedures are designed such that there will be minimal impacts on the environment. In the event of a surface water impact, the on-site SWM detention ponds have valves that can stop off-site flow. A Spills Contingency Plan (discussed in Section 8.1) is in place to handle spills. Dry and wet waste received and handled at the site are conducted in indoor covered areas with impermeable floor surfaces and materials stored outside are covered such that impacted runoff is not generated.

Nevertheless, should water quality results suggest that there are impacts to the ground or surface water, the monitor locations/surface water stations will be re-sampled within a reasonable period of time to confirm results. As well, the area immediately adjacent and upgradient of the impacted location will be inspected for possible contaminant sources. Equipment and floor drains may also be inspected to determine if repairs are required. These repairs will be completed immediately. Should the repairs be such that normal operation is not possible, this portion of the operation will be shut down until maintenance is complete. If the contamination is a result of failure in the infrastructure that cannot be repaired under normal maintenance procedures, a remedial plan will be developed to prevent further impacts.

8.9 Quality/Fungal Contamination

If issues arise regarding air quality or fungal contamination, the appropriate qualified professional will be contracted to investigate the cause and recommend remedial measures. Remedial measures may include a change/alteration of operations or suspension of operations in the affected area(s).

All staff receive and are trained on the procedures contained within the WRIC Emergency Plan and WRIC Fire Safety Plan. The WRIC Business Continuity Plan is for use only by City Management staff due to personal information within the document. Contingency Plans are available at the WRIC for review by the Ministry.

9. Overall Compliance with the Conditions of the Certificate of Approval

Transfer Station

This annual report addresses Condition 30 of the Transfer Station C of A. The ground and surface water monitoring requirements for the C of A are specified in the Design and Operations report (Gartner Lee, 2002). This report addresses all the requirements described in Condition 30 (a), (b), (d) and (e), based on information provided by the City to AECOM.

Condition 30(c) requires:

A statement as to the compliance of all Terms and Conditions of this Certificate and with the inspection and reporting requirements of the Conditions therein.

A compliance statement from the City of Guelph (Appendix F) reports that the waste transfer facility operated in compliance with all Terms and Conditions of Provisional Certificate of Approval number 9241-5DTRD9 including the inspection and reporting requirements of the conditions as presented in this report for the 2010 period.

<u>WRIC</u>

This annual report addresses Conditions 27 and 30 of the WRIC C of A. This section is based on the information provided to AECOM by the City. The waste screening measures that the City implements to ensure compliance of incoming waste is discussed in Section 4.1, as per Condition 22(k) and (I). Monthly summaries of the wastes and/or recyclables and information on the composting facility (which is currently not in operation) have been provided in Sections 4.2 to 4.4 of this report, as stipulated sub-sections a), b) c) and d) of Condition 30. Section 5 discusses the results of the annual groundwater, surface water and leachate monitoring program as per Condition 30(e) of the C of A. Section 8 provides a review and summary of the Contingency Plans for the site, specified in Condition 27 of the C of A.

A compliance statement from the City of Guelph (Appendix F) reports that the WRIC operated in compliance with all Terms and Conditions of Provisional Certificate of Approval number A170128 including the inspection and reporting requirements of the conditions as presented in this report for the 2010 period.

10. Conclusions

The following conclusions are provided based on the findings of the 2010 program:

Operations

- a) The total tonnage of waste accepted by the Transfer Station in 2010 was 54,555 tonnes. By the end of 2010, 54,421 tonnes were shipped off-site primarily to the St. Thomas (Green Lane) Landfill in Elgin County.
- b) The total tonnage of materials received at the WRIC site in 2010 was 37,023 tonnes. It consisted of 6,058 tonnes (16%) organics such as yard waste, 24,535 tonnes (66%) of recyclables and mixed dry materials and 6,429 tonnes (17%) of non-recyclable materials. The WRIC stopped receiving compost material in 2006.
- c) There were 37,495 tonnes of materials processed and transferred off the WRIC site to markets or for disposal. 370 tonnes of material remained in inventory at the end of 2010. Materials that are accepted by the site are either diverted to be re-used or sent to the landfill for disposal.
- d) The Emergency and Contingency Plan for the site were reviewed and the items pertinent to the C of A are summarized in this document.
- e) No remedial or mitigative actions were required at the WRIC Facility or the Transfer Station in 2010 based on findings from the monitoring program.

Groundwater Elevations and Flows

- a) Shallow groundwater flow beneath the majority of the site is in a northeasterly direction. 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. The 2008 drilling identified a bedrock high southeast of the site in the vicinity of 20a-08.
- b) The bedrock groundwater flow pattern is similar to the overlying shallow groundwater system. Groundwater flow is from west to east and east to west coming into the site area from both directions and ultimately to the north following the former paleo river valley (incised bedrock low) that trends to the north.

Leachate

a) Historically, WRIC Monitoring results from SW3 was used the characterize leachate inputs. SW3 receives mostly runoff from the compost pad. However, as composting was suspended in 2006, SW3 is no longer representative of leachate. In the past SW3 (or CL-1 leachate), showed elevated concentrations of conductivity, potassium, BOD, COD, TKN, ammonia, total phosphorus, chloride, sodium and iron. In 2010, SW3 parameter concentrations are generally much lower than pre-2007 concentrations in the absence of compost impacts. Except for the March 2010 results, parameter concentrations from SW3 are within the range of historic background surface water (East Pond) concentrations, except for potassium, BOD, COD, TKN, ammonia and total phosphorus. The March 2010 concentrations were higher than parameter concentrations for samples collected later in the year, likely due to flushing of residual leachate impacts after snowmelt/spring rains. No organic results for SW3 are available. No leachate impacts would be expected now that there has been no composting over the past four years.

Groundwater

- a) Groundwater monitoring results indicate road salt effects at some up-gradient groundwater monitoring locations (5-96, 8-96, 18b-08, 19b-08, 20b-08). These are related to off-site winter road salting of the adjacent major roadways. Road salt impacts are detected in some on-site downgradient groundwater monitors (6b-96, 7-96, 13b-01, 15b-01, 17b-08). Monitors 5-96, 15b-01 and 17b-08 exceeded ODWS for sodium and/or chloride in 2010 as a result of road salt impacts. There were no apparent leachate impacts observed in the groundwater at the site boundary.
- b) Nitrates at monitor 6b-96 and 7-96 exceeded the ODWS in 2010. The elevated nitrates at 7-96 are at similar concentrations to those observed in the late 1990s, just after commissioning of the facility. Nitrates exceeded ODWS in June 2010 at bedrock monitor 6a-96. This monitor has consistently exceeded the nitrate ODWS during all previous sampling events where nitrate was analyzed. Elevated nitrate concentrations were prevalent across the site at all locations prior to development of the site. Elevated nitrates are most likely a result of long-term agricultural land use in the area and are not a result of site operations. There were no other nitrate exceedances of the ODWS for the overburden and bedrock monitors in 2010.
- c) Aside from the sodium, chloride and nitrate exceedances discussed above, there were no other exceedances of the Ontario Drinking Water Standards in 2010 for the groundwater monitors sampled for the WRIC and Transfer Station monitoring programs.
- As the shallow outwash water quality is not impacted by site operations, no impacts to the deeper bedrock groundwater would be expected. No leachate impacts were detected in the bedrock monitors sampled in 2010.
- e) The 2010 organic sampling showed there were detections of DEHP, m- and p-xylene, bromodichloromethane, dibromochloromethane and chloroform in a few of the monitors during 2010. However, based on the historic detections of occasional low levels of VOC throughout the site in both upgradient and downgradient monitors, most of the 2010 VOC detections are concluded to be a result of sampling or laboratory artefact. There are no sources of VOCs on the WRIC or Transfer station property as waste is handled within the covered buildings, truck boxes are covered when outside (preventing contact between the waste and precipitation) and no waste processing occurs on-site.
- f) No other organics were detected at any of the other groundwater monitors sampled during 2010.

Surface Water Monitoring

- a) Monthly monitoring of the stormwater management pond in the northwest corner of the site was conducted, with samples collected at the culvert on the west side of the pond (TP1) on four occasions and at the discharge at the north end of the pond (TP1 (out)) on seven occasions in 2010. SWM pond samples at TP1 exceeded the PWQO for zinc, iron, total phosphorus and phenols during one or more 2010 sampling events. For the SWM pond samples at TP1 (out), the PWQO was exceeded for total phosphorus, iron and zinc during one or more 2010 sampling events. The elevated total phosphorus is a result of agricultural land use and not a result of operations at the Transfer Station. Elevated zinc, total phosphorus and iron concentrations appear to be related to external factors since background surface water have also exceeded PWQO for these parameters. Metals are a common contaminant from roadway runoff. Elevated phosphorus is typical in rural and urbanized areas. No VOC analysis was conducted at TP1 and TP1 (out) during 2010.
- b) Of the two sets of samples collected in 2010 at EPTS-01 (the existing Transfer Station on-site surface water pond (East Pond)), the PWQO for zinc was exceeded during both events. The total phosphorus and iron PWQO's have been exceeded at this background surface water station in the past suggesting impacts unrelated to site operations. Zinc has consistently exceeded PWQO in the past at this location. Total phosphorus and iron have exceeded PWQO in the past. All the leachate indicator parameters concentrations were within background overburden ranges. Chloroform was detected during the annual June 2010 sampling event of the East Pond. Chloroform was previously detected at low concentrations in 2009, 2008, 2007 and 2004 at EPTS-01 and has also historically been detected at low levels at monitors 6a-96, 6b-96 and 11b-00, in both the overburden and bedrock with no elevated indicator parameter concentrations indicating that these occasional detections are not a result of activities on the site. The East Pond shows no indications of impacts as a result of site operations.
- c) The 2010 surface water quality at SW1 (Stormwater Detention Area 2) showed elevated potassium, BOD, and total phosphorus compared to background surface water during both 2010 sampling events. Total phosphorus exceeded the PWQO during both monitoring events in 2010. Zinc exceeded the PWQO on one occasions during 2010. These parameters have historically routinely exceeded their PWQO. The phenol PWQO was exceeded once in December 2010. The phenol PWQO was historically only. It is noted that background bedrock monitors 5-96 and 8-96 have consistently shown elevated zinc concentrations indicating that high zinc is natural in the area. Occasionally elevated parameter concentrations at SW1 are a result of road salt impacted runoff from the adjacent internal roadways and/or occasional stagnant water conditions in the pond.
- d) The SW 2 (Stormwater Detention Area 1) samples at the WRIC showed most parameters are elevated compared to background surface water during the March and April 2010 sampling events. Elevated concentrations of potassium, BOD, COD and total phosphorus were reported for all four 2010 monitoring events. Spring 2010 conductivity, ammonia, chloride and sodium all showed higher concentrations that their historic maximum concentrations. The spring (March and April) concentrations were higher than the September and December concentrations, likely due to seasonal influences. Total phosphorus exceeded the PWQO during all four monitoring events in 2010. Zinc and iron exceeded the PWQO on two occasions each during 2010. These parameters have historically routinely exceeded their PWQO. The phenol PWQO was exceeded once in December 2010. The phenol PWQO was historically only exceeded on two other occasions since 1997.
- e) No organics analysis was conducted at SW1 and SW2 during 2010.

11. Recommendations

The following recommendations are provided for consideration:

- a) Records pertaining to details of the incoming and outgoing waste/materials, environmental and operational problems should continue to be kept up to date for the WRIC and the Transfer Station.
- b) The approved ground and surface water monitoring program should be continued for the Transfer Station during 2011 for the site with the inclusion of the new monitoring locations drilled during 2008. As previously recommended by the MOE, additional annual VOC sampling of monitors 5-96, 7-96, 9-96, 12b-00 and nitrate and nitrite analysis have been included in the monitoring program for the site. The monitoring program for both the sites is summarized on Table 9.
- c) Groundwater, surface water and leachate sampling should be continued for the WRIC in 2011 as originally outlined in the 1997 annual report and revised in 1999.
- d) All samples should be analyzed for the parameters listed in the table below.

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) for surface water and leachate. Total Sulphate (SO4) Phenols Nitrate (NO3) and Nitrite (NO2) 	 Chloride (Cl) Sodium (Na) Calcium (Ca) Boron (B) Total Iron (Fe) Phosphorus (P) Zinc (Zn) 					
General Parameters	 pH Conductivity Alkalinity	Magnesium (Mg)Potassium (K)					
• EPA 624,625 (ATG 16+17+18 & ATG 19+20)							

Monitoring Parameter List

- e) During organic sampling events a trip blank and a field blank should be collected and submitted for QA/QC purposes.
- f) A well nest should be installed along the northern downgradient property boundary to be utilized for an impact assessment with respect to the requirements of Guideline B-7, as recommended by the MOE. The nest should include overburden and bedrock monitors and should be incorporated in the ongoing monitoring program. The new monitoring nest should be installed in 2011 such that the Guideline B-7 analysis can be completed for the next annual monitoring report.
- g) East Pond staff gauge measurements may be discontinued.
- h) The East Pond will be used as a background surface water station to water quality from the on-site surface water features. To effectively compare surface water samples, samples should be collected on the same day. It is recommended that the monitoring frequency of the East Pond be increased to monthly to coincide with those occasions when samples are collected from the on-site SWM ponds. If no samples are collected from the any of the SWM pond locations, no sample from the East Pond for that month is required.
- i) Should composting operations resume at the site, all equipment should be lubricated and carefully inspected to ensure that it is in proper working order. A comprehensive contingency plan should be developed prior to re-activation of the Organic Waste Processing Facilities.
Table 9. Monitoring Program Summary City of Guelph WRIC

Groundwater Monitoring Locations and Sampling Frequency

Formation	Monitor I	_ocations	Sampling Frequency	Water Levels *
Sandy Silt Till	2a-91	7-96	Semi Annually -	Semi Annually (June,
			Inorganics (June,	December)
Sandy	2b-91	9-96	Semi Annually -	Semi Annually (June,
Outwash	6b-96		Inorganics (June,	December)
Gravelly	11b-00	12b-00	Semi Annually -	Semi Annually (June,
Outwash			Inorganics (June,	December)
Dolostone	5-96	10-00	Semi Annually -	Semi Annually (June,
Bedrock	6a-96	11a-00	Inorganics (June,	December)
	8-96	12a-00		

Leachate Monitoring Location and Sampling Frequency

Monitor Locations	Sampling Frequency	Leachate Level Sampling
SW3 - Forbay (Southern	Semi Annually** - Inorganics	Monthly * - Discharge
end) of Detention Pond 1	Annually** - Organics	
(Scalehouse)		

Surface Water Monitoring Stations and Sampling Frequency

Monitor Locations	Sampling Frequency	SW Level Sampling
SW1 - Downstream	Monthly** - Inorganics	Monthly ** - Discharge
outflow of Detention Pond	Annually** - Organics	
2		
SW2 - Downstream	Monthly** - Inorganics	Monthly ** - Discharge
outflow of Detention Pond	Annually** - Organics	
1		

* C of A requirements for Wet-Dry is semi-annual. Recommend quarterly water levels collected to compare to Waste Transfer Station locations, which have quarterly requirements.

** After a rain event or if no rain, at end of sampling period

City of Guelph Transfer Station

Groundwater Monitoring Locations and Sampling Frequency

Formation	Monitor L	ocations	Sampling Program
Gravelly	13b-01	18b-08	Semi Annually - Inorganics
Outwash	14b-01	19b-08	(June, December)
	15b-01	20b-08	Annually - Organics (June)
	16b-08		
	17b-08		
Dolostone	13a-01	18a-08	Semi Annually - Inorganics
Bedrock	14a-01	19a-08	(June, December)
	15a-01	20a-08	Annually - Organics (June)
	16a-08	21a-08	
	17a-08	EPTS-01	

Groundwater Levels

Formation	Monitor L	ocations	Sampling Program					
Gravelly	13b-01	18b-08	Quarterly (June,					
Outwash	14b-01	19b-08	December)					
	15b-01	20b-08						
	16b-08							
	17b-08							
Dolostone	13a-01	18a-08	Quarterly (June,					
Bedrock	14a-01	19a-08	December)					
	15a-01	20a-08						
	16a-08	21a-08						
	17a-08							

Surface Water Monitoring Stations and Sampling Frequency

Monitor Locations	Sampling Program
TP1	Monthly*** - Inorganics
	Annually*** - Organics
TP (out)	Monthly*** - Inorganics
	Annually*** - Organics
East Pond (EPTS-01)	Quarterly*** - Inorganics
	Annually*** - Organics

*** After a rain event or if no rain, at end of sampling period

AECOM

12. References

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2008 Annual Report – Guelph Wet-Dry Recycling Centre (MOE Site No. A170128). Prepared for the City of Guelph, March 2009. AECOM Project 111409.

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Gartner Lee Limited, 2002:

City of Guelph, Solid Waste Transfer Station Design and Operations Report. Prepared for the City of Guelph, January 2002. GLL Project 21-141.

Gartner Lee Limited, 2003:

2002 Annual Report Eastview Road Landfill Site. Prepared for the City of Guelph, June 2003. GLL 23-131.

Gartner Lee Limited, 2004:

2003 Groundwater, Surface Water and Leachate Annual Monitoring Requirements. Prepared for the City of Guelph, March 2004. GLL Project 40-133.

Gartner Lee Limited, 2005:

2004 Groundwater, Surface Water and Leachate Annual Monitoring Requirements. Prepared for the City of Guelph, March 2005. GLL Project 50-133.

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2005 Groundwater, Surface Water and Leachate Annual Monitoring Requirements. Prepared for the City of Guelph, March 2006. GLL Project 60-133.

Gartner Lee Limited, 2007:

2006 Annual Report – Guelph Wet-Dry Recycling Centre (MOE Site No. A170128). Prepared for the City of Guelph, March 2007. GLL Project 70-133.

Gartner Lee Limited, 2008:

2007 Annual Report – Guelph Wet-Dry Recycling Centre (MOE Site No. A170128). Prepared for the City of Guelph, March 2008. GLL Project 80-133.

Ministry of the Environment and Energy (MOEE), 1994a:

Procedure B-7-1 "Determination of Contaminant Limits and Attenuation Zones", MOEE, 1994.

Ministry of the Environment and Energy (MOEE), 1994b:

Guideline B-7 "Incorporation of the Reasonable Use Concept into More Groundwater Management Activities", MOEE, 1994.



Appendix A

Groundwater Elevations and Hydrographs

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
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	215.02	215 74	219.90	215.60	215 61	215.69	218.94	215 61									
24-Juli-98	214 47	515.74 Drv	217.24	215.00	215.09	215 15	217.50	215.11									
29-Sep-98	314.47	Dry	318.24	315.03	315.00	315.02	317.59	315.03									
20 Jun 00	314.40	Dry	320.03	315.05	315.04	315.02	318.33	315.05									
9-Dec-99	315.04	315.60	318.99	315.62	315.63	315.67	318.07	315.40									
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				
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
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
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
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
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
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
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
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



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
10-Apr-02														316.27	316.00	316.26	316.05
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
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
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
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
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
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
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
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
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
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
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
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
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
18-Apr-05	316.33	316.35	318.85	316.14	316.16	316.36	318.83	316.37	316.08	316.32	316.29	316.44	316.44	316.40	315.85	316.38	315.82
1-Jun-05	N/A	315.28	318.11	315.34	315.35	315.44	318.08	315.43	315.26	315.57	315.39	315.56	315.63	315.67	315.44	315.66	315.44
30-Sep-05	315.48	315.47	320.58	315.48	315.51	315.52	318.45	315.46	315.36	315.66	315.50	315.69	315.83	315.77	315.63	315.74	315.62
28-Nov-05	315.44	315.48	318.45	315.42	315.44	315.52	317.88	315.49	315.34	315.72	315.49	315.65	315.73	315.77	315.54	315.74	315.54
20-Apr-06	316.12	316.12	319.06	315.96	315.98	316.14	318.87	316.13	315.93	316.23	316.08	316.23	316.24	316.27	315.77	316.26	315.75
1-Jun-06	315.98	315.96	318.51	315.81	315.82	315.99	318.76	N/A	315.77	316.02	315.93	316.11	316.13	316.11	315.64	315.58	315.09
27-Sep-06	315.53	315.52	319.32	315.47	315.49	315.55	318.35	315.53	315.41	315.72	315.51	315.68	315.78	315.83	315.58	315.94	315.48
4-Dec-06	316.39	316.38	320.16	316.35	316.37	316.43	318.84	316.40	316.20	316.20	316.38	316.52	316.49	316.58	316.06	316.55	316.01
30-Mar-07	316.28	316.28	320.23	316.17	316.25	316.32	319.22	316.30	316.15	316.40	316.26	316.44	316.44	316.52	315.90	316.49	315.87
26-Apr-07	316.14	316.15	319.03	315.98	316.01	316.17	318.95	316.16	316.00	316.22	316.10	316.27	316.28	316.32	315.80	316.31	315.80
14-Jun-07	315.77	315.79	318.11	315.66	315.67	315.81	318.66	315.81	315.68	315.93	315.75	315.92	315.95	316.03	315.78	316.02	315.88
27-Sep-07	315.18	Dry	318.11	315.12	315.14	315.21	317.90	315.18	315.08	315.39	315.18	315.30	315.33	315.51	315.49	315.49	315.55
5-Dec-07	315.36	Dry	320.31	315.36	315.37	315.40	318.65	315.35	315.26	315.58	315.37	315.57	315.72	315.69	315.65	315.68	315.70
25-Apr-08	316.84	316.84	319.02	316.54	316.63	316.82	319.31	316.86	316.62	316.86	316.76	316.91	316.87	316.98	316.16	316.96	316.12
25-Jun-08	316.05	316.04	320.44	316.05	316.10	316.10	318.74	315.53	315.94	316.28	316.07	316.19	316.27	316.41	315.89	316.38	315.92
18-Sep-08	316.03	315.98	319.68	315.95	316.01	316.03	318.72	316.03	315.94	316.24	315.98	316.09	316.13	316.37	315.81	316.36	315.82
9-Dec-08	315.83	315.78	318.91	315.75	315.77	315.82	318.47	315.80	315.76	316.04	315.78	315.89	315.96	316.22	315.70	316.19	315.70
2-Apr-09	316.29	316.29	319.06	316.14	316.18	316.31	319.14	316.31	316.16	316.43	316.24	316.41	316.40	316.56	316.86	316.55	315.84
24-Jun-09	315.83	315.83	318.36	315.63	315.66	315.85	318.85	315.83	315.31	315.38	315.79	315.98	316.01	315.18	315.54	315.22	315.56
10-Sep-09	315.53	315.52	317.84	315.42	315.52	315.56	318.05	315.53	315.50	315.82	315.51	315.62	315.67	316.00	damaged	315.98	315.51
15-Dec-09	315.45	315.48	319.73	315.44	315.49	315.50	318.25	315.51	315.40	315.76	315.48	315.63	315.75	315.91	314.55	315.86	315.57
22-Apr-10	316.17	316.16	318.71	315.98	316.01	316.00	318.54	N/A	N/A	316.30	316.11	316.27	316.26	316.41	315.73	316.38	315.76
1-Jun-10	315.91	315.91	317.59	315.78	315.80	315.97	318.40	N/A	N/A	316.08	315.88	315.97	316.01	316.21	315.65	315.77	315.67
1-Sep-10	315.49	315.50	320.13	315.44	315.44	315.54	318.37	N/A	N/A	315.74	315.50	315.61	315.73	315.86	315.56	315.83	315.60
16-Dec-10	315.62	315.61	318.17	315.53	315.55	315.66	318.00	N/A	N/A	315.85	315.59	316.50	315.77	315.98	315.53	315.95	315.53



Date	15a-01	15b-01	16a-08	16b-08	17a-08	17b-08	18a-08	18b-08	19a-08	19b-08	20a-08	20b-08	21a-08
4-Apr-91													
14-Apr-91													
12-May-91													
17-May-91													
17-May-94													
5-May-95													
13-Apr-96													
13-Jun-96													
21-Aug-96													
9-Sep-96													
11-Dec-96													
20-Dec-96													
11-Feb-97													
3-Mar-97													
27-Mar-97													
6-May-97													
23-Jun-97													
8-Aug-97													
9-Dec-97													
31-Mar-98													
24-Jun-98													
29-Sep-98													
3-Dec-98													
29-Jun-99													
9-Dec-99													
21-Jun-00													
28-Sep-00													
6-Dec-00													
22-Mar-01													
26-Apr-01													
28-May-01													
27-Jun-01													
31-Jul-01													
30-Aug-01													
28-Sep-01													
19-Oct-01													
8-Nov-01	315.70	315.95											
16-Nov-01	315.84	316.06											
21-Nov-01	315.84	316.02											
27-Nov-01	315.72	315.86											
4-Dec-01	316.11	316.30											
28-Jan-02	316.02	316.10											
28-Feb-02	316.32	316.47											
28-Mar-02	316.23	316.34											



Date	15a-01	15b-01	16a-08	16b-08	17a-08	17b-08	18a-08	18b-08	19a-08	19b-08	20a-08	20b-08	21a-08
10-Apr-02	316.24	316.31											
29-Apr-02	316.33	316.35											
28-May-02	316.30	316.34											
4-Jun-02	316.24	316.27											
30-Sep-02	315.69	315.75											
3-Dec-02	315.71	315.86											
25-Apr-03	316.01	316.31											
2-Jun-03	316.19	316.35											
30-Sep-03	315.80	315.99											
1-Dec-03	316.29	316.56											
27-Apr-04	316.48	316.56											
8-Jun-04	316.33	316.43											
14-Sep-04	315.83	316.13											
30-Nov-04	315.67	315.74											
18-Apr-05	316.36	316.34											
1-Jun-05	315.62	315.59											
30-Sep-05	315.70	315.66											
28-Nov-05	315.72	315.66											
20-Apr-06	316.23	316.17											
1-Jun-06	315.54	316.00											
27-Sep-06	315.77	315.72											
4-Dec-06	316.54	316.48											
30-Mar-07	316.48	316.37											
26-Apr-07	316.27	316.19											
14-Jun-07	315.96	315.99											
27-Sep-07	315.45	315.52											
5-Dec-07	315.65	315.72											
25-Apr-08	316.92	316.77	316.30	316.09	316.33	316.62	317.72	317.07	316.19	316.89	318.01	316.22	
25-Jun-08	316.35	316.12	316.00	315.95	316.18	316.02	318.17	316.21	316.31	316.03	318.01	316.23	
18-Sep-08	316.31	316.16	316.01	315.78	316.05	315.95	317.03	316.22	316.18	316.02	318.01	316.27	316.23
9-Dec-08	316.16	316.00	315.88	315.69	315.83	315.79	316.98	316.21	315.95	315.98	318.01	316.25	315.96
2-Apr-09	316.51	316.34	316.05	315.82	316.15	316.17	317.42	317.56	316.43	316.36	318.01	316.20	316.64
24-Jun-09	315.28	315.86	315.40	315.55	314.82	315.67	316.79	316.21	315.62	316.03	317.59	316.14	316.17
10-Sep-09	315.92	315.73	315.63	315.50	315.62	315.49	316.57	316.21	315.88	315.78	317.64	316.10	315.75
15-Dec-09	315.83	315.76	315.61	315.56	315.54	315.46	316.59	316.20	315.80	315.53	318.01	316.22	315.70
22-Apr-10	316.35	316.23	315.13	315.71	316.05	316.07	317.40	316.54	316.36	316.24	318.01	316.16	316.48
1-Jun-10	316.15	316.10	315.77	315.65	315.88	315.84	317.00	316.22	316.11	315.98	318.01	316.15	316.15
1-Sep-10	315.80	315.77	315.66	315.56	315.57	315.51	317.00	316.20	315.79	315.56	318.01	316.17	315.75
16-Dec-10	315.92	315.81	315.64	315.51	315.69	315.58	317.02	316.22	315.87	315.81	318.01	316.14	315.73





















Guelph WRIC & Waste Transfer Station

FIGURE

A - 9

Hydrographs

A<u>=</u>COM

60191193 9 Rpt Hydrographs



Appendix B

Groundwater Chemistry and Time-Concentration Plots – Routine and Organics

	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	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	< 0.03	18
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	< 0.03	18
Lower Til	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	< 0.03	28
	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	< 0.03	23
	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	< 0.03	21
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	< 0.03	33
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	< 0.03	32
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	< 0.03	27
	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	< 0.03	8.8
	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	< 0.03	5.0

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station



	Date	Lab	pН	Cond-	Alk	Mg	К	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
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	< 0.03	1
22-01	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	0.4	1.7
Lower Til	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	0.2	2
Lower III	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	< 0.03	0.08
	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	< 0.03	0.5
	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	< 0.06	< 0.05
	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	< 0.06	0.4
	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	< 0.06	1.3
	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	< 0.06	1.1
	11-Feb-97	WBL	7.9			23.8	1.7	< 0.34	8	0.17	0.021	< 0.011	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	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	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	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	16.7	< 0.72	4.97	29.5	38.6	1.28	0.06	< 0.03	0.04		0.2
	31-Mar-98	WBL	8.05	455	227	21.3	1.77	1.03			0.212		16.3	< 0.72	6.47	24.2	44.8	1.14	0.06	< 0.01	0.02		0.6
	24-Jun-98	WBL	8.06	463	230	21.2	1.39	0.9			0.177		17	< 0.72	4.92	26.7	42	0.18	0.10	< 0.006	0.01		0.8
	02-Oct-98	CAN	8	500	240	25	< 1	2	< 5	0.17	< 0.1	0.08	19	< 1	4.8	31	41	0.6	0.05		0.02		0.7
	03-Dec-98	CAN	7.9	490	240	23	< 1	< 2	< 5	0.2	< 0.1	0.12	17	< 2	4.9	30	36	< 0.05	0.05		< 0.01		0.4
	29-Jun-99	Barr	8.45	440	220	24.2	2	1.5	9	0.33	0.24	0.025	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	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	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	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	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	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	< 0.2	0.7
	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		
	03-Aug-05	N/A																					
	28-Nov-05	Maxx	8.24	433	233	25		< 2	14	0.8	0.14	< 0.02	15	< 1	4	32	4	< 0.05	0.06	< 0.05	0.005		
	01-Jun-06	MAX	8.2	510	254	27	1.4	< 2	6	0.8	0.24	< 0.02	15	< 1	7	28	48	< 0.02	0.06	< 0.05	< 0.005		
	04-Dec-06	MAX	8.2	511	256	26	1.3	< 2	< 4	0.5	0.23	< 0.02	18	< 1	6	30	43	< 0.02	0.06	< 0.05	< 0.005		
	30-Mar-07	MAX	8.3	477	241	22	1.2	< 2	4	0.4	0.21	< 0.02	16	< 1	6	32	39	< 0.02	0.06	< 0.05	< 0.005		
	14-Jun-07	MAX	8.3	501	249	28	1.4	2	5	0.3	0.16	0.04	19	< 1	6	37	42	< 0.02	0.07	< 0.05	< 0.005		
	05-Dec-07	MAX	8.3	448	229	23	1.3	< 2	8	0.2	0.12	< 0.02	13	< 1	4	24	40	< 0.02	0.05	< 0.1	< 0.005	< 0.01	0.1
	25-Jun-08	MAX	8.4	446	226	23	1.4		13	0.5	0.25	< 0.02	13	< 1	5	33	38	< 0.02	0.06	< 0.1	< 0.005	< 0.01	0.1
	09-Dec-08	MAX	8.1	460	236	21	1.1	< 2	4	0.3	0.09	0.03	16	< 1	3	29	39	< 0.02	0.06	< 0.1	< 0.005	< 0.01	< 0.1
	25-Jun-09	MAX	8.1	486	244	27	1.4	< 2	6	0.5	0.25	< 0.02	16	< 1	4	31	44	< 0.02	0.07	< 0.1	< 0.005	< 0.01	0.8
	16-Dec-09	MAX	8.2	439	227	24	1.3	< 2	4	0.4	0.2	< 0.02	10	< 1	3	22	42	< 0.02	0.06	< 0.1	< 0.005	< 0.01	< 0.1
	29-Jun-10	MAX	8.1	456	226	23	1.2	< 2	11	0.6	0.29	< 0.02	12	< 1	4	25	40	< 0.02	0.06	< 0.1	< 0.005	< 0.01	0.4
	22-Dec-10	MAX	8.07	452	238	26	1.2	< 2	< 4	0.2	< 0.05	< 0.02	7	< 1	4	22	45	< 0.02	0.05	< 0.1	0.01	< 0.01	0.1

ĺ	Date	Lab	pН	Cond-	Alk	Mg	K	1	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	1	ng/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	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	< 0.03	13
2h-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	< 0.03	< 0.03
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		17
outmuon	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	< 0.06	< 0.05
	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	< 0.06	11
	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	< 0.06	11
	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	< 0.06	12
	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	< 0.06	11
	27-Mar-97	WBL	8.14	543	180	26.8	0.69	<	0.34	18	0.24	< 0.01	0.014	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		23.2	1.34	16.2	3.88	74.8	0.11	< 0.02	0.02	0.01		16
	24-Jun-98	Dry																						
	02-Oct-98	Dry																						
	03-Dec-98	Dry		1.00	1.55	22.0					0.4	0.40	0.005	07		47		50.0	0.04	0.04		0.00		
	09-Dec-99	Barr	7.77	463	166	23.9	< 1		0.9	14	0.4	0.43	0.005	27	< 1	1/	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	25.5	< 1	8.1	4	58.2	< 0.03	< 0.005	< 0.05	< 0.005		
	27 Jun 01	INS																						
	03-Dec-01	INV																						
	04-Jun-02	Philip	8 22	362	176	21.8	- 1		11	15	1.01	- 0.03	0.006	10 1	< 1	55	1.8	52.2	- 0.01	0.01	- 01	0.02		
	03-Dec-02	INS	0.22	502	170	21.0	` '			10	1.01	< 0.05	0.000	10.1		0.0	1.0	02.2	\$ 0.01	0.01	\$ 0.1	0.02		
	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	< 0.2	9.2
	30-Nov-04	INS																						
	03-Aug-05	INS																						
	28-Nov-05	INS																						
	01-Jun-06	INS																						
	04-Dec-06	INS																						
	30-Mar-07	MAX	8.1	764	362	39	0.84	<	2	5	0.3	0.06	< 0.02	15	< 1	10	2.5	78	< 0.02	0.02	< 0.05	< 0.005		
	14-Jun-07	INS																						
	05-Dec-07	INS																						
	25-Jun-08	MAX	8.3	494	228	26	0.79			< 4	0.3	0.05	< 0.02	10	< 1	4	2.6	64	< 0.02	0.02	< 0.1	0.02	< 0.01	0.7
	09-Dec-08	INS	0	514	270	27	0.79		2		0.2	. 0.05	. 0.00	0	. 1	2	5.0	74	. 0.02	0.00	. 01	0.02	. 0.01	0.7
	25-Jun-09	MAA	8	514	270	27	0.78	<	2	< 4	0.5	< 0.05	< 0.02	9	< 1	3	5.2	71	< 0.02	0.02	< 0.1	0.02	< 0.01	0.7
	20 Jun 10	MAY	8	558	286	26	0.75	_	2	7	0.2	- 0.05	- 0.02	٩	- 1	з	5.2	75	< 0.02	0.02	- 01	0.02	~ 0.01	12
	22-Dec-10	INS	0	550	200	20	0.75	Ì	2	'	0.2	< 0.05	< 0.0Z	5		0	0.2	10	< 0.02	0.02	< 0.1	0.02	< 0.01	1.2
Monitor	07-Nov-91	EPL	7.2	711	278	42	1	T						31 7		22.6	32	104	0.12	0.02	< 0.09	0.3	< 0.03	27
2 01	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	< 0.03	22
3-91 Bodrock	17-May-94	EPL	7.92	802	327	40.2	2.7	1					< 0.05	34.2		32.1	13.2	98.5	0.01	0.02	< 0.06	0.3	< 0.03	10
Deulock	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	< 0.03	9.3
	21-Aug-96	ENT	7.75	950	363	45.2	13.4	1				1.09		39	1.5	8	44.1	116	< 0.01	0.12		0.46	< 0.06	15
	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	< 0.06	9.3
	11-Dec-96	ENT	8 09	918	363	32.9	1.86	1			1	0.08	1	35.9	< 05	49	17 4	85.6	< 0.01	0.06		0 74	< 0.06	18



	Date	Lab	pН	Cond-	Alk	Mg	Κ	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
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		58.6	< 0.72	165	99.3	126	0.12	0.04	0.07	0.05		3.7
Outwash	24-Jun-98	WBL	7.56	939	364	27	4.98	1.17			< 0.019		27.8	< 0.72	71.6	44.9	112	0.48	0.07	< 0.006	0.13		2.4
	02-Oct-98	Dry																					
ļ	03-Dec-98	Dry																				<u> </u>	┝────┦
<u>Monitor</u>	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	< 0.03	1.8
5-91	07-Mar-92	EPL	7.51	658	282	34.7	1.1					0.05	41.4		12.3	14.8	85.3	< 0.005	0.01	< 0.06	0.29	0.1	6.4
edrock/Outv	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	< 0.03	0.9
	11 E-h 07	MDS	7.37	1210	234	24.9	< 0.4	. 0.24	. 7	0.24	0.021	< 0.05	22	. 0.72	210	51.1	130	< 0.005	0.02	< 0.06	0.23	< 0.03	12
<u>Monitor</u>	11-Feb-9/ 27 Mar 07	WEL	7.52	1200	212	34.8 25	4.85	< 0.34	< 1	0.24	0.021	0.012	32.7	< 0.72	0.03	04.0	120	0.01	0.04	< 0.03	1.07		
5-96	27-Mai-97 25-Jun-97	WBL	7.45	1390	326	33.5	5.10	< 0.34	< 7	0.19	0.031	< 0.011	39.3 41.6	< 0.72	219	100	104	0.01	0.03	< 0.03	1.92		
Bedrock	01-Oct-97	WBL.	7.26	1290	345	37.1	5 57	< 0.34	13	0.35	< 0.044	< 0.011	43.4	< 0.72	190	100	116	0.02	0.03	< 0.03	1.02		
	11-Dec-97	WBL	7.34	1240	358	35.9	5.85	< 0.34	25	0.24	0.018	< 0.011	43.3	< 0.72	173	96.3	115	0.02	0.02	< 0.03	1.7		2.3
	31-Mar-98	WBL	7.18	1180	352	30.6	5.14	< 0.34			0.058		41.5	< 0.72	142	75.3	128	0.02	0.03	< 0.01	1.52		2
	24-Jun-98	WBL	7.38	1240	346	31.4	5.27	1.32			0.062		38.6	< 0.72	172	84.2	107	0.03	0.05	< 0.006	2.1		1.8
	02-Oct-98	CAN	7.3	1300	370	32	5.3	3	6	0.25	< 0.1	0.03	42	< 1	160	91	100	< 0.05	< 0.05		1.9		0.5
	03-Dec-98	CAN	7.3	1200	380	30	5.6	< 2	< 5	0.13	< 0.1	0.11	39	< 2	130	88	94	< 0.05	< 0.05		1.5		0.5
	29-Jun-99	Barr	8.01	1216	333	34.4	6	1.3	10	0.23	0.06	0.004	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	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	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	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	38	< 1	275	137	111	< 0.01	0.06	< 0.1	1.81		
	03-Dec-01	Philip	/.68	1054	343	27.4	3.9	1	0	0.32	< 0.03	0.003	33	< 1	136	93.Z	89.9 106	< 0.01	0.05	< 0.1	1.88		
	04-Juli-02	Philip	0.30 7 0	1300	290	25.0	5	0.9	9 10	0.39	< 0.03	0.003	30.4		290 177	139	86.1	< 0.01	0.02	< 0.1	1.92		
	02-Jun-03	Philip	7.52	2132	278	38.4	6	< 0.5	10	0.39	0.03	< 0.010	43.2	6	474	263	134	< 0.01	0.02	< 0.1	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	< 0.2	1
	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		
	03-Aug-05	Maxx	7.97	3500	283	40	7.7	< 2	27	1.2	< 0.05	< 0.02	47	< 1	952	710	160	< 0.5	< 0.1	< 0.5	2.9		
	28-Nov-05	Maxx	8.1	2780	333	25		< 2	17	0.5	< 0.05	< 0.02	49	< 1	661	53	97	< 0.05	0.02	< 0.05	1.6		
	01-Jun-06	MAX	8	3480	302	31	5.9	< 2	15	0.6	0.07	< 0.02	41	< 1	908	590	120	< 0.02	0.02	< 0.05	2.1		
	04-Dec-06	MAX	7.9	2190	341	19	4.6	< 2	6	0.3	0.09	< 0.02	41	< 1	470	390	73	< 0.02	0.02	< 0.05	1.4		
ļ	30-Mar-07	MAX	8	2610	297	22	4.6	< 2	11	0.4	0.12	< 0.02	38	< 1	630	410	97	< 0.02	0.02	< 0.05	1.5	ļ	
	14-Jun-07	MAX	8.1	2900	284	29	5.3	< 2	12	0.3	0.1	< 0.02	40	< 1	700	490	110	< 0.02	0.02	< 0.05	2.2		
	05-Dec-07	MAX	8.1	2460	307	23	5.4	< 2	24	0.2	0.06	< 0.02	39	< 1	580	420	94	< 0.02	0.02	< 0.1	1.7	0.01	0.2
	25-Jun-08	MAX	8.1 o	3810	270	30 16	5.5 4.2		29	0.4	< 0.05	< 0.02	44	< 1	970 570	200	140	< 0.02	< 0.01	< 0.1	2.2	< 0.01	0.5
	25 Jun 00		0 78	2030	219 289	10 27	4.2	< 2 < 2	1∠ 12	0.5	< 0.05	< 0.02	39 12	× 1	740	390	70 110	< 0.02	0.03	< 0.1	1.5	< 0.01	0.3
	25-5uii-09	MAX	7.0 7.7	2190	200 307	27 19	45	14	1∠ 22	2	1 4	< 0.02 0.00	33	12	480	390	76	0.02	0.02	0.12	0.14	< 0.01	0.4
	24-Jun-10	MAX	7.9	2560	263	24	4.4	< 2	4	0.5	< 0.05	< 0.02	32	< 1	610	390	100	< 0.02	0.02	< 0.1	1.4	< 0.01	0.7
	17-Dec-10	MAX	7.9	1940	296	18	4	< 2	10	0.2	< 0.05	< 0.02	28	< 1	390	330	79	< 0.02	0.03	< 0.1	0.97	< 0.01	0.4

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

]	Date	Lab	pН	Cond-	Alk	Mg	К	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	11-Feb-97	WBL	7.55			26.4	3.58	0.87	17	0.25	< 0.01	< 0.011	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	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	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	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	38.3	< 0.72	333	176	116	0.02	0.02	< 0.03	0.03		15
	31-Mar-98	WBL	7.56	1290	246	29.1	4.87	< 0.34			< 0.019		32.9	< 0.72	199	70	133	0.02	0.02	< 0.01	0.03		17
	24-Jun-98	WBL	7.61	1480	239	31.5	4.76	0.66			< 0.019		31	< 0.72	270	122	121	0.04	0.02	< 0.006	0.05		13
	02-Oct-98	CAN	7.6	1500	260	33	4.8	2	8	0.24	< 0.1	0.02	33	< 1	250	130	110	< 0.05	< 0.05		0.04		16
	03-Dec-98	CAN	7.5	1600	250	33	5	< 2	< 5	0.11	< 0.1	0.12	30	< 2	280	120	110	< 0.05	< 0.05		0.07		12
	29-Jun-99	Barr	8.19	1210	252	33.5	5	0.9	10	0.24	0.03	0.003	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	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	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	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	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	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	2/1	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	1000	277	32.1	3	< 0.5	10	0.4	< 0.03	< 0.001	40.0	0	1/1	70.4	110	< 0.01	0.01	. 01	0.04		
	01-Dec-03	Philip	8.09	1098	2//	31.1	2	0.6	10	0.29	< 0.03	0.004	39	< 1	107	79.4	111	< 0.01	0.02	< 0.1	0.04		10
	09-Jun-04	Philip	1.11	1029	248	28.5	2.9	< 0.5	< 5	0.18	< 0.03	0.004	34.0	< 1	104 345	74.5 115	120	0.08	0.01		0.40	< 0.2	10
	03 Aug 05	Моуу	8.02	1403	235	29	20	< 0.0	5	0.24	0.05	< 0.004	34		233	130	130	< 0.01	0.02	0.07	0.03		
	28-Nov-05	Махх	8.02	1510	255	40	2.0	~ 2	8	0.5	< 0.05	< 0.02	42		256	140	140	< 0.05	0.01	< 0.07	0.00		
	01-Jun-06	ΜΔΧ	8.00	1510	252	35	27	~ 2	7	0.9	< 0.05	0.02	30	1	230	130	120	< 0.00	0.02	< 0.05	0.04		
	04-Dec-06	MAX	7.9	1620	273	42	3.2	< 2	6	< 0.5	0.09	0.02	56	< 1	210	140	150	< 0.02	0.02	< 0.05	0.04		
	30-Mar-07	MAX	81	1530	270	34	3.1	< 2	5	0.1	0.05	< 0.02	55	< 1	180	110	130	< 0.02	0.02	< 0.05	< 0.005		
	14-Jun-07	MAX	8.2	1330	206	38	3.4	< 2	5	< 0.1	0.1	< 0.02	56	< 1	190	130	130	< 0.02	0.03	< 0.05	0.04		
	05-Dec-07	MAX	8	1610	267	38	3.3	< 2	17	0.3	< 0.05	< 0.02	46	< 1	230	140	140	< 0.02	0.02	< 0.1	0.04	< 0.2	34
	25-Jun-08	MAX	8.2	1660	257	32	3.1		< 4	0.4	0.09	< 0.02	42	< 1	280	160	120	0.04	0.02	< 0.1	0.04	< 0.1	26
	09-Dec-08	MAX	8	1740	268	38	3.6	< 2	9	< 0.1	0.09	< 0.02	54	< 1	260	150	140	< 0.02	0.02	< 0.1	0.04	< 0.01	37
	25-Jun-09	MAX	7.9	1700	273	39	4.4	< 2	5	0.1	< 0.05	< 0.02	50	< 1	240	160	150	< 0.02	0.03	< 0.1	0.04	< 0.01	46
	15-Dec-09	MAX	7.8	1520	280	33	3.9	< 2	4	0.2	< 0.05	0.04	41	< 1	220	140	120	< 0.02	0.03	< 0.1	0.04	< 0.01	22
	23-Jun-10	MAX	8	1340	277	28	3.4	< 2	< 4	0.4	< 0.05	< 0.02	37	< 1	200	130	110	< 0.02	0.03	< 0.1	0.03	< 0.01	12
	20-Dec-10	MAX	7.86	1340	279	28	2.9	< 2	5	0.2	< 0.05	< 0.02	33	< 1	210	130	110	0.06	0.02	< 0.1	0.04	< 0.01	6.8

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

]	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	11-Feb-97	WBL	7.39			42.2	15.3	0.42	22	0.18	0.055	< 0.011	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	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	45	< 0.72	440	198	125	0.03	0.05	< 0.03	0.14		
o utilidoni	01-Oct-97	WBL	7.65	1740	246	36.2	5.36	4.19	56	< 0.07	< 0.01	< 0.011	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	39.7	< 0.72	128	80.5	120	0.15	0.05	< 0.03	0.09		14
	31-Mar-98	WBL	7.43	2770	270	28.8	12.6	< 0.34			< 0.019		50.9	< 0.72	649	289	168	0.11	0.03	< 0.01	0.08		17
	24-Jun-98	WBL	7.34	1860	308	35.5	15.4	0.48			0.047		43	< 0.72	279	159	163	0.02	0.08	< 0.006	0.15		44
	02-Oct-98	CAN	7.3	1500	410	45	15	< 2	< 5	0.34	< 0.1	< 0.02	40	< 1	150	92	160	< 0.05	0.05		0.14		37
	03-Dec-98	CAN	7.3	1300	390	35	12	< 2	< 5	< 0.1	< 0.1	0.11	35	< 2	120	75	120	< 0.05	< 0.05		0.1		15
	29-Jun-99	Barr	8.01	1550	327	34.3	11	1.9	11	0.29	< 0.02	0.003	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	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	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	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	43	< 1	265	188	114	< 0.01	0.07	< 0.1	0.26		
	03-Dec-01	Philip	1.19	1531	3/9	28.6	8.9	< 0.5	11	0.42	< 0.03	0.008	56.7	< 1	252	101	116	< 0.01	0.06	< 0.1	0.14		
	04-Jun-02	Philip	8.2 7.95	074	317	32.7 25.8	10	0.0	14	0.59	< 0.03	0.015	40.1 24.7	< 1	390	223	129	0.01	0.04	< 0.1	0.18		
	02-Jun-03	Philip	7.69	974 1538	270	25.8	9 7	< 0.3 0.7	14	0.77	0.03	< 0.009	24.7 21 Q	11	350	225	101	< 0.01	0.03	< 0.1	0.00		
	01-Dec-03	Philip	7.96	1407	309	22.0	69	0.8	5	0.42	< 0.03	0.001	38.6	- 1	278	179	107	0.03	0.00	- 01	0.07		
	09-Jun-04	Philip	7.54	1871	314	40.4	10.2	< 0.5	8	0.42	< 0.03	0.004	65.2		412	214	217	0.00	0.00	< 0.1	1.31	< 02	40
	30-Nov-04	Philip	7.76	791	290	20.5	6	< 0.5	13	0.5	< 0.03	0.004	23.4	< 1	90.3	53.1	85.9	< 0.01	0.02		0.05	< 0.2	10
	03-Aug-05	Maxx	7.86	1920	347	39	13	< 2	13	0.7	< 0.05	< 0.02	49	< 1	297	210	160	< 0.05	0.05	< 0.05	0.11		
	28-Nov-05	Maxx	8.19	1190	348	26		< 2	11	0.2	< 0.05	< 0.02	35	< 1	120	110	110	< 0.05	0.04	< 0.05	0.07		
	01-Jun-06	MAX	8	2060	342	35	11	< 2	8	0.5	< 0.05	0.08	44	< 1	340	250	140	< 0.02	0.05	< 0.05	0.09		
	04-Dec-06	MAX	8.1	1420	412	24	8.6	< 2	7	0.6	0.09	< 0.02	44	< 1	170	180	99	< 0.02	0.04	< 0.05	0.07		
	30-Mar-07	MAX	7.9	2440	356	31	9.2	8	12	0.8	0.11	< 0.02	54	< 1	460	280	120	< 0.02	0.03	< 0.05	< 0.005		
	14-Jun-07	MAX	8	1820	344	36	11	< 2	9	0.3	0.09	< 0.02	55	< 1	240	230	140	< 0.02	0.05	< 0.05	0.09		
	05-Dec-07	MAX	8.1	1450	282	29	11	< 2	17	0.4	< 0.05	< 0.02	44	< 1	240	130	120	< 0.02	0.04	< 0.1	0.07	< 0.01	8.3
	25-Jun-08	MAX	8.1	2480	308	47	14		15	0.6	0.13	< 0.02	63	< 1	420	280	190	< 0.02	0.05	< 0.1	0.12	< 0.1	76
	09-Dec-08	MAX	8	1840	309	33	12	< 2	11	0.4	0.12	0.05	51	< 1	280	190	130	< 0.02	0.03	< 0.1	0.09	0.01	33
	25-Jun-09	MAX	7.9	2030	320	30	11	< 2	6	0.3	< 0.05	< 0.02	46	< 1	370	280	120	< 0.02	0.05	< 0.1	0.08	< 0.01	23
	15-Dec-09	MAX	7.8	1380	307	30	11	< 2	< 4	0.6	0.19	0.03	45	< 1	170	130	120	< 0.02	0.04	< 0.1	0.07	< 0.01	22
	23-Jun-10	MAX	8	1300	302	22	8.1	< 2	< 4	0.5	< 0.05	< 0.02	36	< 1	190	140	90	< 0.02	0.04	< 0.1	0.06	< 0.01	12
	20-Dec-10	MAX	7.82	1080	283	22	8.3	< 2	6	0.3	< 0.05	< 0.02	33	< 1	130	94	96	< 0.02	0.03	< 0.1	0.06	< 0.01	11

					0-04				0		-5	P											
	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	11-Feb-97	WBL	7.7			26.2	12.6	< 0.34	24	< 0.07	< 0.01	< 0.011	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	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	35.2	< 0.72	66.4	33.7	95.1	0.03	0.04	< 0.03	0.11		
Outwash	01-Oct-97	WBL	7.57	902	251	33.2	10.2	1.44	< 7	0.1	< 0.01	< 0.011	35.7	< 0.72	54.3	28.7	110	0.04	0.06	< 0.03	0.08		25
	11-Dec-97	WBL	7.52	906	248	31.8	10.1	< 0.34	< 7	0.25	< 0.01	< 0.011	36.3	< 0.72	62.1	30	105	0.17	0.06	< 0.03	0.08		23
	31-Mar-98	WBL	7.55	1120	224	32.4	9.06	< 0.34			< 0.019		43	< 0.72	92.4	36.8	127	0.09	0.04	< 0.01	0.09		43
	24-Jun-98	WBL	7.77	1200	226	34.9	9.49	0.78			< 0.019		41.3	< 0.72	89.8	38.8	141	0.06	0.06	< 0.006	0.12		54
	02-Oct-98	CAN	7.4	1100	280	38	11	3	10	0.27	< 0.1	< 0.02	46	< 1	74	35	130	< 0.05	< 0.05		0.12		41
	03-Dec-98	CAN	7.5	1200	310	39	11	< 2	< 5	0.36	< 0.1	0.1	41	< 2	72	32	130	< 0.05	< 0.05		0.13		37
	29-Jun-99	Barr	8.15	1325	248	41	12	2.2	10	0.21	< 0.02	0.003	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	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	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	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	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	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	< 0.2	55
	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		
	03-Aug-05	Maxx	7.95	1800	325	51	19	< 2	22	1.5	0.12	< 0.02	86	< 1	190	140	180	< 0.05	0.09	0.07	0.23		
	28-Nov-05	Maxx	8.07	2140	378	52		< 2	10	1	< 0.05	< 0.02	112	< 1	258	180	200	< 0.05	0.09	< 0.05	0.27		
	01-Jun-06	MAX	8	1910	306	44	16	< 2	12	0.7	< 0.05	0.04	113	< 1	186	120	170	< 0.02	0.1	< 0.05	0.24		
	04-Dec-06	MAX	7.9	1610	315	40	17	< 2	7	0.7	0.09	< 0.02	83	1	150	100	170	< 0.02	0.09	< 0.05	0.22		
	30-Mar-07	MAX	8.1	1650	276	45	16	< 2	12	< 0.1	0.08	< 0.02	65	< 1	160	100	180	< 0.02	0.06	< 0.05	0.23		
	14-Jun-07	MAX	8	1370	278	39	15	< 2	8	0.1	0.09	< 0.02	70	< 1	140	110	140	< 0.02	0.06	< 0.05	0.18		1

Routine Groundwater Quality - General Analysis - Guelph WRIC & Waste Transfer Station

05-Dec-07 MAX

25-Jun-08 MAX

09-Dec-08 MAX

25-Jun-09 MAX

15-Dec-09 MAX

24-Jun-10 MAX

17-Dec-10 MAX

8

8.1

7.9

7.8

7.8

8

7.73

1310

1810

1470

1400

1130

1380

1030

289

284

289

318

298

331

278

36

37

35

33

28

36

29

15

14

14

11 < 2

12

12 < 2

11

2

2

2

<

<

< 2 20

9

8

4

5

4

12

<

0.5

0.6

0.6

0.6

0.4

0.5

0.06

0.06

< 0.05

< 0.05

< 0.05

< 0.05

0.3 < 0.05

< 0.02

< 0.02

< 0.02

< 0.02

< 0.02

< 0.02

0.03

57

83

58

56

40 <

51

41

< 1

1

< 1

< 1

< 1

< 1

<

100

240

170

190

120

180

84

72

150

110

130

89

100

73

150 < 0.02

< 0.02

< 0.02

< 0.02

< 0.02

< 0.02

< 0.02

140

130

120

100

130

110

0.05 < 0.1

0.05 < 0.1

0.05 < 0.1

< 0.1

< 0.1

< 0.1

< 0.1

0.07

0.06

0.04

0.04



0.2 < 0.2

< 0.1

0.02

< 0.01

< 0.01

< 0.01

< 0.01

0.21

0.19

0.17

0.15

0.19

0.17

44

54

41

21

15

21

23

ſ	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	11-Feb-97	WBL	7.78			39.9	2.08	< 0.34	28	0.21	< 0.01	0.034	73.5	< 0.72	33	19.3	94.9	0.05	0.05	< 0.03	0.02		
8.06	27-Mar-97	WBL	7.77	864	302	36.9	1.73	< 0.34	46	0.3	< 0.01	< 0.011	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	60.8	< 0.72	40.9	17.6	92	0.02	0.05	< 0.03	0.54		
Deurock	01-Oct-97	WBL	7.45	838	321	37.1	1.9	0.51	51	0.2	< 0.01	< 0.011	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	75.2	< 0.72	55.4	21	105	0.06	0.03	< 0.03	0.69		5.2
	31-Mar-98	WBL	7.41	997	288	33.4	2.05	1.72			< 0.019		65.6	< 0.72	102	32.9	116	0.01	0.02	< 0.01	0.54		3.9
	24-Jun-98	WBL	7.5	890	309	32.1	1.78	0.75			< 0.019		59.6	< 0.72	58.4	30.1	107	0.06	< 0.02	< 0.006	0.63		5.2
	02-Oct-98	CAN	7.4	890	320	38	2.2	< 2	< 5	0.3	< 0.1	< 0.02	73	< 1	57	31	110	< 0.05	< 0.05		0.84		4.8
	03-Dec-98	CAN	7.4	910	310	36	2.2	< 2	< 5	0.48	< 0.1	0.12	72	< 2	60	28	99	< 0.05	< 0.05		0.83		2.6
	29-Jun-99	Barr	8.23	976	282	40.1	3	1.7	12	0.19	< 0.02	0.003	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	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	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	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	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	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	< 0.2	3.9
	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		
	03-Aug-05	Maxx	8.15	888	298	36	2.5	< 2	22	1.2	< 0.05	< 0.02	47	< 1	98	71	92	< 0.05	0.02	0.07	0.7		
	28-Nov-05	Maxx	8.05	997	320	37		< 2	6	0.6	< 0.05	< 0.02	54	< 1	99	66	110	< 0.05	0.02	< 0.05	1		
	01-Jun-06	MAX	8.1	1040	314	32	2.3	< 2	11	0.5	< 0.05	< 0.02	50	< 1	129	67	87	< 0.02	0.01	< 0.05	0.94		
	04-Dec-06	MAX	8.1	976	327	35	2.8	< 2	< 4	0.4	< 0.05	< 0.02	50	< 1	99	62	99	< 0.02	0.01	< 0.05	1.1		
	30-Mar-07	MAX	8.2	1030	308	36	2.6	< 2	5	0.4	0.08	< 0.02	55	< 1	120	/1	100	< 0.02	0.02	< 0.05	1.1		
	14-Jun-07	MAX	8.1	1010	303	40	2.7	< 2	5	0.5	0.11	< 0.02	54	< 1	110	79	100	< 0.02	0.02	< 0.05	1.1		
	05-Dec-07	MAX	8	1130	306	37	2.8	< 2	12	0.2	< 0.05	< 0.02	62	< 1	150	68	110	< 0.02	0.01	< 0.1	1.2	< 0.01	1.9
	25-Jun-08	MAX	8.1	1050	291	37	2.8		15	0.5	0.12	< 0.02	52	< 1	130	81	100	< 0.02	< 0.01	< 0.1	1.2	< 0.01	1.2
	09-Dec-08	MAX	8	997	310	33	2.5	< 2	4	0.3	< 0.05	< 0.02	56	< 1	110	59	91	< 0.02	0.01	< 0.1	1.1	< 0.01	1
	25-Jun-09	MAX	7.8	943	298	32	2.3	< 2	4	0.3	< 0.05	< 0.02	54	< 1	97	61	90	< 0.02	0.01	< 0.1	1	< 0.01	1.1
	16-Dec-09	MAX	7.7	1010	312	35	2.5	< 2	8	0.3	< 0.05	0.02	46	< 1	110	62	97	< 0.02	0.02	< 0.1	1.1	< 0.01	1.1
	24-Jun-10	MAX	8	960	292	33	2.3	< 2	< 4	0.4	< 0.05	< 0.02	50	< 1	110	63	93	< 0.02	0.01	< 0.1	0.97	< 0.01	1.1
	22-Dec-10	MAX	7.73	953	304	35	2.6	< 2	< 4	0.3	< 0.05	< 0.02	43	< 1	95	64	97	< 0.02	0.01	< 0.1	1.1	< 0.01	0.8



Image mage mage <t< th=""><th>]</th><th>Date</th><th>Lab</th><th>pН</th><th>Cond-</th><th>Alk</th><th>Mg</th><th>К</th><th>BOD</th><th>COD</th><th>TKN NH3-</th><th>N Total-P</th><th>SO4</th><th>Phenol</th><th>Cl</th><th>Na</th><th>Ca</th><th>Fe</th><th>В</th><th>Р</th><th>Zn</th><th>NO2</th><th>NO3</th></t<>]	Date	Lab	pН	Cond-	Alk	Mg	К	BOD	COD	TKN NH3-	N Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
Minitor 11-6e or With 8.8 Vith 4.4 4.64 6.08 0.07 0.08 0.08 0.01 0.06 0.011 0.06 0.011 0.07 0.03 0.01 0.00 0.011 0.07 0.03 0.03 0.00 0.00					uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L mg/l	. mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
0-06 26/Mar/97 (WBL 0.0 1.52 0.36 0.37 0.37 0.01 23.4 0.01 23.7 0.38 7.1 0.03	Monitor	11-Feb-97	WBL	7.81			16.4	0.99	0.69	7	0.19 < 0.0	< 0.011	17.6	2.23	7.17	4.37	61.6	0.12	0.02	< 0.03	0.008		
Outwash 2.5.m 97 WBL 8.01 S.82 0.05 0.03 0.07 0.07 0.01 0.01 2.6.9 7.36 7.36 7.1 0.03 0.02 0.03 0.00 1 1.5 11.155e-97 WBL 7.85 4.84 1.71 2.18 0.67 <0.34 <0.07 <0.34 <0.07 <0.03 0.00 <0.01 8.01 8.22 7.10 0.03 0.02 0.05 <0.05 <0.05 <0.07 0.03 0.02 <0.01 2.01 0.01 2.2 7.7 0.22 0.01 <0.01 2.2 7.7 0.02 2.01 0.05 <0.05 <0.00 <0.01 4.00 <th>9-96</th> <th>26-Mar-97</th> <th>WBL</th> <th>8.04</th> <th>474</th> <th>186</th> <th>18.7</th> <th>0.86</th> <th>< 0.34</th> <th>14</th> <th>0.24 < 0.0</th> <th>< 0.011</th> <th>23.4</th> <th>< 0.72</th> <th>6.34</th> <th>7.96</th> <th>68.6</th> <th>0.07</th> <th>0.04</th> <th>< 0.03</th> <th>0.03</th> <th></th> <th></th>	9-96	26-Mar-97	WBL	8.04	474	186	18.7	0.86	< 0.34	14	0.24 < 0.0	< 0.011	23.4	< 0.72	6.34	7.96	68.6	0.07	0.04	< 0.03	0.03		
01-0c-sr9 Well 7.9 1.79 21.7 0.84 1.2 1.10 0.10 <	Outwash	25-Jun-97	WBL	8.01	582	205	20.7	0.95	< 0.34	< 7	< 0.07 < 0.0	< 0.011	26.7	< 0.72	6.93	7.38	71	0.03	0.03	< 0.03	0.02		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		01-Oct-97	WBL	7.92	490	179	21.7	0.84	1.2	13	0.1 < 0.0	< 0.011	22.4	< 0.72	9.82	1.68	74.5	0.03	0.02	0.03	0.008		11
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		11-Dec-97	WBL	7.85	488	171	21.8	0.67	< 0.34	< 7	0.22 < 0.0	< 0.011	20.4	< 0.72	13.6	1.48	70.3	0.03	< 0.02	0.04	0.005		8.7
24-Jun-98 WRL 7.79 536 193 21.6 0.78 1.38 ···· • 0.019 ···· 126 < 0.72 12.5 2.83 76.2 0.03 0.05 < 0.007 12 02-00-0ev9 CAN 7.6 590 220 24 < 1 < 2 < 5 0.04 <0.01 <0.02 2.85 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05		31-Mar-98	WBL	8.38	557	195	25.9	0.7	< 0.34		0.0	9	26.7	< 0.72	13.1	2.2	71.7	0.01	0.03	< 0.01	0.005		13
02-Oct-98 CAN 7.7 610 210 29 < 1 103-Dec-98 CAN 7.6 500 200 2 2 2 5 0.01 0.01 23 2 2 2 5 0.01 0.01 23 2 7 7 0.00 6 0.05 0.05 0.05 0.00 9 23 2 2 1 2 0.00 0.01 2 1 0.00 0.00 2 0.00 2 0.00 0.00 2 1 1 2 0.00 0.00 2 1 1 0.00 0.00 0.00 1 1 2 8 0 0.00 0.00 1 <th></th> <th>24-Jun-98</th> <th>WBL</th> <th>7.79</th> <th>536</th> <th>193</th> <th>21.6</th> <th>0.78</th> <th>1.38</th> <th></th> <th>< 0.0</th> <th>9</th> <th>26</th> <th>< 0.72</th> <th>12.5</th> <th>2.83</th> <th>76.2</th> <th>0.03</th> <th>0.05</th> <th>< 0.006</th> <th>0.007</th> <th></th> <th>12</th>		24-Jun-98	WBL	7.79	536	193	21.6	0.78	1.38		< 0.0	9	26	< 0.72	12.5	2.83	76.2	0.03	0.05	< 0.006	0.007		12
03-Dec-98 CAN 7.6 590 230 24 < 1 2.2 2.1 10 0.1 723 2.2 79 <0.05 <0.05 <0.05 0.01 91. 91. 09-Dec-99 Bar 7.65 649 251 20.2 < 1 <0.5 5 0.28 <0.00 12.2 < 1 31 14.6 93.2 0.01 0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.00 <0.01 <0.00 <0.01 <0.00 <0.01 <0.00 <0.01 <0.00 <0.01 <0.00 <0.01 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00 <0.00<		02-Oct-98	CAN	7.7	610	210	29	< 1	< 2	< 5	0.4 < 0.1	< 0.02	29	< 1	19	2	85	< 0.05	< 0.05		< 0.01		14
29.Jm-99 Barr 8.31 528 220 19.6 1 1.2 10 0.02 < 0.02 < 0.04 24.6		03-Dec-98	CAN	7.6	590	230	24	< 1	< 2	< 5	0.31 < 0.1	0.17	23	< 2	11	2.5	79	< 0.05	< 0.05		0.01		9.9
09-Dec-99 Bar 7.65 649 251 20.2 < 1 < 0.5 6 0.16 0.06 0.004 17 < 1 31 14.6 93.2 0.01 0.03 < 0.1 0.03 < 0.1 0.03 < 0.1 0.03 < 0.1 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.03 < 0.00 10.8 < 1 1.5 0.03 < 0.05 17.1 < 1 1.57 2.02 0.01 0.05 < 0.1 < 0.05 < 0.03 < 0.03 0.005 17.1 < 1 21.7 16.7 70.2 0.01 0.03 < 0.1 0.01 0.01 0.03 < 0.1 0.01 < 0.01 0.03 < 0.1 0.01 0.01 0.03 < 0.1 0.01 0.		29-Jun-99	Barr	8.31	528	220	19.6	1	1.2	10	0.21 < 0.0	0.004	24.6		23.3	8.2	79.7	< 0.01	0.01	< 0.1	< 0.005		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		09-Dec-99	Barr	7.65	649	251	20.2	< 1	< 0.5	6	0.16 0.0	0.004	17	< 1	31	14.6	93.2	0.01	0.03	< 0.1	0.02		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		21-Jun-00	Philip	7.71	414	234	14.7	0.8	< 0.5	5	0.28 < 0.0	3 < 0.002	12.2	< 1	12	8.9	77.4	< 0.03	0.01	< 0.05	< 0.005		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		07-Dec-00	Philip	7.91	408	249	15	0.3	1.1	5	0.13 0.0	< 0.002	13.7	< 1	13.5	8.7	69.3	< 0.03	0.06		0.17		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		27-Jun-01	Philip	7.9	570	248	18.3	< 1	1.7	< 5	0.14 < 0.0	0.004	25	< 1	20	14.2	86	< 0.01	0.06	< 0.1	0.21		
04-Jun-02 Philip 8.08 517 236 16.1 1 < 0.5 5 0.3 <0.03 0.005 17.1 < 1 21.7 16.7 79.2 0.01 0.05 <0.1 <0.05 0.01 0.05 <0.1 <0.05 <0.1 <0.05 <0.01 0.01 0.02 <0.01 0.03 <0.01 0.01 0.02 <0.01 0.03 <0.01 0.01 0.04 0.01 0.04 0.01 0.01 0.01 0.02 <0.01 0.04 0.01 0.01 0.04 0.01 0.04 0.01 0.04 0.01 0.04 0.01 0.04 0.01 0.04 0.01 0.05 <0.01 0.05 <0.02 1.8 0.00 1.8.7 29.2 87 <0.01 0.03 <0.05 <0.02 28.8 <1 39.7 18.4 89.5 <0.01 0.02 <0.05 0.03 0.03 27.8 <1 41.2 28.6 87.9 <0.01 0.02 <0.05 0.02 <0.02 2.04 <0.05 0.005		03-Dec-01	Philip	7.93	482	223	15.3	1.3	0.9	< 5	0.39 < 0.0	0.008	10.8	< 1	15.7	20.2	72	0.03	0.03	< 0.1	0.18		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		04-Jun-02	Philip	8.08	517	236	16.1	1	< 0.5	5	0.43 < 0.0	0.005	17.1	< 1	21.7	16.7	79.2	0.01	0.05	< 0.1	< 0.005		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		03-Dec-02	Philip	8.08	595	232	20.8	1	< 0.5	5	0.3 < 0.0	0.012	15.8	< 1	33.5	10.9	84.5	< 0.01	0.03	< 0.1	0.01		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		02-Jun-03	Philip	7.76	666	229	20.6	< 1	< 0.5	7	0.45 0.0	3 < 0.001	11	4	64.1	20.7	90.2	< 0.01	0.04		0.01		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		01-Dec-03	Philip	8.03	701	236	21.6	< 1	< 0.5	12	0.5 < 0.0	3 < 0.002	13.4	< 1	83.7	29.2	87	< 0.01	0.03	< 0.1	0.02		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		08-Jun-04	Philip	7.81	591	235	20.1	< 1	0.6	6	0.28 < 0.0	0.002	28.8	< 1	39.7	18.4	89.5	< 0.01	0.05		0.07	< 0.2	6.4
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		30-Nov-04	Philip	7.78	671	274	19.9	1	< 0.5	9	0.34 < 0.0	0.003	27.8	< 1	41.2	28.6	87.9	< 0.01	0.02	0.07	< 0.005		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		03-Aug-05	Maxx	8.08	584	259	22	1	< 2	13	0.8 < 0.0	5 < 0.02	24	< 1	9	11	87	< 0.05	0.03	0.07	< 0.005		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		28-Nov-05	Maxx	8.17	714	295	18		< 2	10	0.6 < 0.0	< 0.02	21	< 1	38	34	100	< 0.05	0.04	< 0.05	0.006		
04-Dec-06 MAX 8.1 686 291 22 1.2 < 2 < 4 0.3 0.07 < 0.02 20 < 1 34 27 86 < 0.02 0.04 < 0.05 0.005 0.005 0.007 < 0.02 20 < 1 34 27 86 < 0.02 0.04 < 0.05 < 0.005 0.005 0.007 < 0.02 20 < 1 34 27 86 < 0.02 0.04 < 0.05 < 0.005 < 0.005 0.005 < 0.007 < 0.02 20 < 0.02 0.04 < 0.05 < 0.005 < 0.005 < 0.007 < 0.02 20 < 0.01 < 0.005 < 0.007 < 0.02 22 <0.03 < 0.02 0.03 < 0.05 < 0.005 0.002 0.03 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 </th <th></th> <th>01-Jun-06</th> <th>N/A</th> <th></th> <th>60.6</th> <th>201</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>00</th> <th></th> <th>0.4</th> <th>07</th> <th>00</th> <th>0.00</th> <th>0.04</th> <th>0.05</th> <th>0.005</th> <th></th> <th></th>		01-Jun-06	N/A		60.6	201							00		0.4	07	00	0.00	0.04	0.05	0.005		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		04-Dec-06	MAX	8.1	686	291	22	1.2	< 2	< 4	0.3 0.0	< 0.02	20	< 1	34	21	00	< 0.02	0.04	< 0.05	0.005		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		30-Mar-07	MAX	8.2	691	296	22	1.1	< 2	< 4	0.4 0.0	< 0.02	27	< 1	23	10	400	< 0.02	0.04	< 0.05	< 0.005		
05-Dec-07 MAX 8.1 653 305 26 1 < 2 12 0.3 < 0.05 < 0.02 27 < 1 6 6.7 97 < 0.02 0.03 < 0.1 < 0.005 < 0.01 5.3 25-Jun-08 MAX 8.3 738 246 31 1.5 6 0.6 < 0.05 < 0.02 26 < 1 23 14 95 < 0.02 0.04 < 0.1 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01		14-Jun-07	MAX	8.1	/03	322	30	1.3	< 2	4	0.4 0.0	< 0.02	22	< 1	17	18	100	< 0.02	0.05	< 0.05	< 0.005	0.04	5.0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		05-Dec-07	MAX	8.1	000	305	20	1	< 2	12	0.3 < 0.0	< 0.02	21	< 1	22	0.7	97	< 0.02	0.03	< 0.1	< 0.005	< 0.01	5.3
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		25-Jun-08	MAX	8.3	738	240	31	1.5		0	0.6 < 0.0		20	< 1	20	0.7	90	< 0.02	0.04	< 0.1	0.01	< 0.01	0.0 5.6
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		09-Dec-08	MAX	8 7.0	700	217	30 20	1.1	< 2	0	0.5 < 0.0		21	< 1	10	9.7	93	< 0.02	0.03	< 0.1	0.006	< 0.01	5.0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		25-Juii-09	MAX	0	690	249	29	1.5	< 2	4	0.4 < 0.0		22	< 1	15	13	99 100	< 0.02	0.04	< 0.1	0.005	< 0.01	20
		24 Jun 10	N/A	0	071	540	54	1.2	` <i>∠</i>	0	0.5 < 0.0	, < 0.02	23		5	9.0	100	< 0.0Z	0.04	< 0.1	0.000	< 0.01	5.5
22 Dag 10/N/A		24-Jun-10 22 Dec 10	N/A																				

ſ	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
			1	uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	27-Jun-01	Philin	7 84	662	259	31.5	< 1	< 0.5	< 5	0.14	0.07	0.009	103	< 1	22	99	93.7	0.02	0.02	< 01	0.02	<u> </u>	-
10.00	03-Dec-01	Philip	8.01	666	267	30.7	< 1	0.8	< 5	0.19	0.04	0.01	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		
Dourook	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	< 0.2	< 0.2
	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		
	03-Aug-05	Maxx	8.18	599	240	31	1.2	< 2	< 4	0.3	< 0.05	< 0.02	67	< 1	20	10	86	< 0.05	0.01	< 0.05	< 0.005		
	28-Nov-05	Maxx	8.07	616	251	31	1.1	< 2	5	0.2	< 0.05	< 0.02	71	< 1	23	10	90	< 0.05	0.02	< 0.05	< 0.005		
	01-Jun-06	MAX	8.1 8.2	040 651	254	30 28	1.1	< 2	< 4	1	0.09	< 0.02	// 82	< 1	20	9.1	00	0.03	0.01	< 0.05	< 0.005		
	04-Dec-00 30-Mar-07	ΜΑΧ	8.2 8.2	648	237	28 27	1	< 2	- 4	0.5	0.11	< 0.02	02 75		17	0.0 7 7	03 79	0.02	0.01	< 0.05	< 0.005		
	14-Jun-07	MAX	8.1	656	249	29	1.1	< 2	5	0.5	0.12	< 0.02	81	< 1	21	8.9	84	0.02	0.01	< 0.05	< 0.005		
	05-Dec-07	MAX	8.2	652	239	28	1.1	< 2	11	0.2	0.07	< 0.02	81	< 1	21	8.8	86	< 0.02	< 0.01	< 0.1	< 0.005	< 0.01	< 0.1
	25-Jun-08	MAX	8.2	654	237	28	1.1		11	0.3	0.11	< 0.02	82	< 1	23	9.5	86	< 0.02	< 0.01	< 0.1	< 0.005	< 0.01	< 0.1
	09-Dec-08	MAX	8.1	679	238	29	1.1	< 2	< 4	0.2	0.07	< 0.02	91	< 1	27	11	85	0.03	0.02	< 0.1	< 0.005	< 0.01	< 0.1
	25-Jun-09	MAX	8	631	240	29	1.1	< 2	< 4	0.3	< 0.05	< 0.02	80	< 1	17	8.8	87	0.03	0.02	< 0.1	< 0.005	< 0.01	< 0.1
	16-Dec-09	MAX	8	685	239	32	1.2	< 2	< 4	0.2	0.06	0.02	84	< 1	28	14	94	0.04	0.02	< 0.1	< 0.005	< 0.01	< 0.1
	24-Jun-10	N/A																					
Ļ	22-Dec-10	N/A																					
Monitor	27-Jun-01	Philip	8.13	528	263	25.3	2	2.9	< 5	0.28	0.13	0.03	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	34.9	< 1	5.1	12	83.2	0.04	0.04	< 0.1	0.25	ļ	
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	. 01	< 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	(()	5.6	64.8 00.2	0.02	0.04	< 0.1	< 0.005		. 0.2
	30 Nov 04	Philip	7.06	478	250	24.2	1	< 0.5	10	0.20	0.1	0.003	33.4 20.4	< 1	6.7	5.4	60.3 66	0.05	0.03		0.19	< 0.2	< 0.2
	03-Aug-05	Maxx	8.13	474	241	25.8	19	< 0.5	8	0.55	0.15	< 0.007	20.4		5	5.5	62	0.07	0.02	0.08	< 0.005		
	28-Nov-05	Maxx	8.2	470	248	26	1.9	< 2	10	0.4	0.14	< 0.02	26	< 1	7	5.2	70	< 0.05	0.04	< 0.05	< 0.005		
	01-Jun-06	MAX	8.1	520	250	26	2	< 2	< 4	0.4	0.16	< 0.02	25	< 1	8	5.2	72	< 0.02	0.03	< 0.05	< 0.005		
	04-Dec-06	MAX	8.1	532	252	25	1.8	< 2	< 4	0.3	0.12	< 0.02	38	< 1	10	5.3	70	< 0.02	0.04	< 0.05	< 0.005		
	30-Mar-07	MAX	8.3	523	244	23	1.8	< 2	< 4	0.4	0.26	< 0.02	29	< 1	11	4.3	64	< 0.02	0.03	< 0.05	< 0.005		
	14-Jun-07	MAX	8.3	539	242	27	1.8	< 2	< 4	0.4	0.24	< 0.02	32	< 1	12	5.2	77	< 0.02	0.03	< 0.05	0.02		
	05-Dec-07	MAX	8.2	534	236	25	1.9	< 2	11	0.2	0.12	< 0.02	33	< 1	12	6	69	< 0.02	0.03	< 0.1	< 0.005	< 0.01	< 0.1
	25-Jun-08	MAX	8.2	534	231	27	2.3		16	0.6	0.21	< 0.02	30	< 1	15	6.5	73	< 0.02	0.03	< 0.1	< 0.005	< 0.01	< 0.1
	09-Dec-08	MAX	8.1	526	237	23	1.7	< 2	< 4	0.3	0.1	< 0.02	34	< 1	12	4.9	65	< 0.02	0.04	< 0.1	< 0.005	< 0.01	0.1
	25-Jun-09	MAX	8	559	232	27	1.8	< 2	11	0.2	< 0.05	< 0.02	44	< 1	16	5.2	74	< 0.02	0.04	< 0.1	< 0.005	< 0.01	0.1
	15-Dec-09	MAX	8	539	233	25	1.8	< 2	5	0.1	< 0.05	0.03	34	< 1	14	5.2	69	< 0.02	0.04	< 0.1	< 0.005	< 0.01	0.2
	28-Jun-10	MAX	8.1	546	225	25	1.8	< 2	5	0.2	< 0.05	0.03	39	< 1	18	4.8	69	< 0.02	0.04	< 0.1	< 0.005	< 0.01	0.1
	22-Dec-10	MAX	7.85	575	227	28	1.9	< 2	< 4	0.3	0.24	< 0.02	38	< 1	22	5.4	75	< 0.02	0.03	< 0.1	< 0.005	< 0.01	< 0.1



Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

ſ	Date	Lab	pН	Cond-	Alk	Mg	К	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	27-Jun-01	Philin	7 99	798	264	25.6	2	72	5	0.22	< 0.03	0.017	55	< 1	54	54 1	83.1	0.03	0.07	< 01	0.11		
11b 00	03-Dec-01	Philip	7.98	1081	266	28.4	2.2	1.4	6	0.22	< 0.03	0.023	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		
Outwash	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	< 0.2	4.7
	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		
	03-Aug-05	Maxx	8.04	919	235	21	1.6	< 2	8	0.8	< 0.05	< 0.02	37	< 1	139	88	84	< 0.05	1.2	< 0.05	0.03		
	28-Nov-05	Maxx	8.12	1210	235	21		< 2	< 4	0.7	< 0.05	< 0.02	37	< 1	192	150	91	< 0.05	0.6	< 0.05	0.02		
	01-Jun-06	MAX	8.1	961	268	18	1.4	< 2	8	0.6	< 0.05	0.05	40	< 1	129	120	69 50	< 0.02	0.8	< 0.05	0.02		
	04-Dec-06	MAX	8.2 8.2	899 780	279	14	1.2	< 2	< 4	0.5	< 0.05	< 0.02	48	< 1	92	110	53	< 0.02	1.9	< 0.05	0.01		
	14-Jun-07	ΜΔΧ	8.3 8.2	760	274	12	13	< 2	7	0.4	0.09	< 0.02	36		54	90	60	< 0.02	1.5	< 0.05	< 0.003		
	05-Dec-07	MAX	8.2	755	259	15	1.5	< 2	, 12	0.4	< 0.05	< 0.02 5.2	27		66	77	65	< 0.02	0.58	< 0.00	0.02	< 0.01	34
	25-Jun-08	MAX	8.2	1100	250	10	1.5	~ 2	6	0.5	0.08	< 0.02	25	< 1	180	110	81	< 0.02	0.39	< 0.1	0.01	< 0.01	5.5
	09-Dec-08	MAX	8.1	939	264	16	1.4	< 2	5	0.4	< 0.05	0.03	27	< 1	110	110	63	< 0.02	0.9	< 0.1	0.02	< 0.01	4.4
	25-Jun-09	MAX	8	1130	253	18	1.4	< 2	< 4	0.3	< 0.05	< 0.02	25	< 1	190	140	74	< 0.02	0.85	< 0.1	0.02	< 0.01	3.8
	15-Dec-09	MAX	8	890	250	17	1.5	< 2	< 4	0.2	< 0.05	0.03	19	< 1	110	89	71	< 0.02	0.44	< 0.1	0.02	< 0.01	3.5
	28-Jun-10	MAX	8	966	243	17	1.5	< 2	6	0.3	< 0.05	< 0.02	35	< 1	140	95	75	< 0.02	0.24	< 0.1	0.02	< 0.01	3.3
	17-Dec-10	MAX	7.96	966	255	18	1.5	< 2	< 4	0.2	< 0.05	< 0.02	38	< 1	130	110	75	< 0.02	0.57	< 0.1	0.02	< 0.01	3.3
Monitor	27-Jun-01	Philip	7.5	888	390	43.6	14	1.2	7	0.92	0.45	0.006	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	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	< 0.2	23
	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	0.00	1		
	05-Aug-05	Maxx	7.93	891 701	370	44	10	< 2	9	0.0	0.17	< 0.02	40	< 1	42	27	100	< 0.05	0.03	0.08	1.1		
	28-N0V-05	MAX	7.00 7.0	858	338	40 30	16	< 2	13	2.3	0.10	< 0.02	54 40	< 1	34	20	110	< 0.05	0.02	< 0.05	0.97		
	04-Dec-06	MAX	7.8	1020	423	41	22	< 2	8	1.2	0.24	< 0.02	40		41	34	110	< 0.02	0.02	< 0.05	1.1		
	30-Mar-07	MAX	8.1	938	376	33	22	< 2	5	1.2	0.50	< 0.02	40	< 1	35	26	110	< 0.02	0.02	< 0.05	1.2		
	14-Jun-07	MAX	8	947	353	37	17	< 2	8	3.5	0.24	< 0.02	45	< 1	40	29	100	< 0.02	0.02	< 0.05	1.1		
	05-Dec-07	MAX	8	796	343	34	11	< 2	12	0.4	0.1	0.03	39	< 1	34	17	94	< 0.02	0.03	< 0.1	0.92	< 0.01	1.4
	25-Jun-08	MAX	8	796	343	32	13		6	0.6	0.07	< 0.02	36	< 1	23	18	93	< 0.02	0.02	< 0.1	0.99	< 0.01	8.9
	09-Dec-08	MAX	7.9	816	343	30	12	< 2	9	0.5	0.06	< 0.02	40	< 1	27	18	96	< 0.02	0.03	< 0.1	0.92	0.02	5.9
	25-Jun-09	MAX	7.7	707	298	30	13	< 2	4	0.5	0.05	< 0.02	38	< 1	13	15	83	< 0.02	0.05	< 0.1	0.81	0.01	8
	16-Dec-09	MAX	7.6	742	312	37	10	< 2	10	0.3	< 0.05	< 0.02	39	< 1	31	13	93	< 0.02	0.02	< 0.1	0.81	0.03	1.4
	24-Jun-10	MAX	7.9	699	304	30	14	< 2	7	0.6	< 0.05	< 0.02	35	< 1	11	15	86	< 0.02	0.02	< 0.1	0.84	0.02	5.5
	20-Dec-10	MAX	7.75	658	304	32	8.7	< 2	7	0.4	< 0.05	< 0.02	34	< 1	9	6.5	87	< 0.02	0.02	< 0.1	0.77	0.02	1.7

Routine Groundwate	· Quality -	General Analysis - Guelph	WRIC & Waste Transfer Station
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	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	27-Jun-01	Philip	7.77	760	354	27.2	4	0.9	11	0.45	0.13	0.026	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	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		- 10								o / = /											
	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	< 0.2	0.2
	30-Nov-04	Philip	7.62	68/ 610	341	24.4	4	< 0.5	24	1.03	0.43	0.046	32.3	< 1	22.7	16.4 16	96.7	3.25	0.08	0 17	0.08		
	28-Nov-05	Maxx	7.93	647	345	21	4.2	< 2	14	2.4	0.35	< 0.02	20	- 1	14	10	100	21	0.09	< 0.05	0.03		
	01-Jun-06	MAX	81	584	292	19	2.5	< 2	8	1	0.35	0.02	20	< 1	10	12	72	17	0.07	0.05	0.02		
	04-Dec-06	MAX	7.9	648	328	22	3.2	< 2	5	0.8	0.43	< 0.02	26	< 1	10	14	92	0.78	0.00	< 0.05	0.21		
	30-Mar-07	MAX	8.1	526	257	15	2.2	< 2	8	0.7	0.39	< 0.02	18	< 1	8	10	76	1.1	0.04	< 0.05	0.22		
	14-Jun-07	MAX	8	685	337	22	3	< 2	16	0.6	0.44	< 0.02	30	< 1	11	13	93	4.5	0.05	< 0.05	0.22		
	05-Dec-07	MAX	7.9	657	305	22	2.8	< 2	11	0.3	< 0.05	0.02	27	< 1	7	8.4	95	< 0.02	0.04	< 0.1	0.58	< 0.01	4.5
	25-Jun-08	MAX	8.2	482	235	16	2.7		5	0.6	0.16	< 0.02	22	< 1	5	8.9	70	< 0.02	0.07	< 0.1	0.61	< 0.01	0.2
	09-Dec-08	MAX	7.9	707	356	25	4	< 2	9	0.5	< 0.05	< 0.02	27	< 1	6	13	100	< 0.02	0.06	< 0.1	0.74	< 0.01	1.4
	25-Jun-09	MAX	7.7	587	297	20	3	< 2	< 4	0.4	0.12	0.03	21	< 1	4	9.3	87	< 0.02	0.05	< 0.1	0.61	< 0.01	0.4
	16-Dec-09	MAX	7.5	764	383	31	4.7	< 2	5	0.5	< 0.05	< 0.02	25	< 1	4	9	120	< 0.02	0.04	< 0.1	0.65	< 0.01	3.6
	24-Jun-10	MAX	7.9	532	263	18	2.8	< 2	11	0.5	0.07	< 0.02	13	< 1	8	9.5	80	< 0.02	0.05	< 0.1	0.54	< 0.01	< 0.1
	17-Dec-10	MAX	7.68	712	353	30	3.9	< 2	9	0.4	< 0.05	< 0.02	20	< 1	1	1.1	100	< 0.02	0.06	< 0.1	0.47	< 0.01	2.1
<u>Monitor</u>	03-Dec-01	Philip	7.95	913	272	38.8	2.9	0.8	< 5	0.21	0.09	0.008	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 7 77	902	262	35.0 25.2	2	< 0.5	< 5	0.24	0.1	0.008	104	< 1	80.3 89.5	40.3	99.8 100	0.61	0.03	< 0.1	< 0.005		
	02-Juii-03	Philip	8.15	921 853	240	34.5	23	< 0.5	6	0.23	0.11	0.001	110	- 1	97.1	30	100	0.43	0.05	- 01	0.02		
	09-Jun-04	Philip	7.81	854	254	34.3	2.5	< 0.5	< 5	0.23	0.03	0.004	119	< 1	97.1	39.7	103	0.64	0.03	< 0.1	0.13	< 0.2	< 0.2
	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		
	03-Aug-05	Maxx	8.02	889	252	36	2.5	< 2	4	0.5	0.19	< 0.02	107	< 1	93	44	100	0.58	0.04	< 0.05	< 0.005		
	28-Nov-05	Maxx	8	884	263	37		< 2	< 4	0.2	0.12	< 0.02	101	< 1	87	44	110	0.59	0.04	< 0.05	< 0.005		
	01-Jun-06	MAX	8.1	929	266	33	2.2	< 2	5	0.5	0.17	< 0.02	106	< 1	111	40	94	0.43	0.05	< 0.05	< 0.005		
	04-Dec-06	MAX	8	967	268	35	2.5	< 2	< 4	0.3	0.18	< 0.02	111	< 1	100	43	100	0.5	0.04	< 0.05	< 0.005		
	30-Mar-07	MAX	8.1	958	260	32	2.4	< 2	5	0.3	0.21	< 0.02	103	< 1	94	39	90	0.5	0.04	< 0.05	< 0.005		
	14-Jun-07	MAX	8.2	967	258	34	2.5	< 2	4	0.4	0.21	< 0.02	110	< 1	97	44	100	0.43	0.04	< 0.05	< 0.005		
	05-Dec-07	MAX	8.1	939	251	34	2.4	< 2	8	0.2	0.17	< 0.02	103	< 1	97	42	98	0.42	0.04	< 0.1	< 0.005	< 0.01	< 0.1
	25-Jun-08	MAX	8.2	967	247	37	2.6	_	11	0.5	0.19	< 0.02	120	< 1	100	49	100	0.3	0.04	< 0.1	< 0.005	< 0.01	< 0.1
	09-Dec-08	MAX	8	965	251	34	2.5	< 2	< 4	0.3	0.14	< 0.02	124	< 1	95	45	97	0.32	0.04	< 0.1	< 0.005	< 0.01	< 0.1
	25-Jun-09	MAX	7.9 7.0	969	248	54 25	2.6	< 2	< 4	0.2	0.13	< 0.02	120	< 1	96	44	100	0.54	0.05	< 0.1	< 0.005	< 0.01	< 0.1
	28 Jun 10	MAX	7.0	955	248 244	33 32	2.7	< 2	/ 0	0.3	0.12	0.03	110	< 1	90	40 40	95	0.37	0.05	< 0.1	< 0.005	< 0.01	< 0.1
	20-Dec-10	MAX	7.76	953 952	244	32 34	2.5	< 2	6	0.4	0.13	< 0.02	100	< 1	92 95	43	100	0.4	0.05	< 0.1	< 0.005	< 0.01	< 0.1

ĺ	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L n	ng/L	mg/L	mg/L	mg/L
Monitor	03-Dec-01	Philip	7.93	655	296	29.7	2.2	1.4	< 5	0.23	< 0.03	0.223	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	> 80.0	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	/	0.48	< 0.03	0.004	44.8	< 1	16.7	5.7	105	0.05	0.02		0.25	< 0.2	4.6
	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	0.05	0.06		
	03-Aug-05	Maxx	7.98	800	345 506	38 45	2	< 2	19	1.1	< 0.05	< 0.02	25 17	< 1	55 11	12	110	0.15	0.01 <	0.05	0.06		
	01-Jun-06	ΜΔΧ	8.00	1090	403	43	17	< 2	12	0.5	< 0.05	< 0.02	21		132	30	140	< 0.03	0.00 <	0.05	0.09		
	04-Dec-06	MAX	79	1070	403	41	2	< 2	< 4	0.7	0.08	< 0.02	26	< 1	65	32	140	< 0.02	0.02 <	0.05	0.07		
	30-Mar-07	MAX	8.1	977	419	38	1.9	< 2	< 4	0.4	0.08	< 0.02	22	< 1	65	40	130	< 0.02	0.03 <	0.05	0.07		
	14-Jun-07	MAX	8.1	971	383	35	2	< 2	5	0.4	0.09	< 0.02	24	< 1	79	38	130	< 0.02	0.03 <	0.05	0.07		
	05-Dec-07	MAX	8	1260	363	36	2	< 2	14	0.2	< 0.05	< 0.02	49	< 1	160	88	120	< 0.02	0.02 <	0.1	0.07	< 0.01	3.3
	25-Jun-08	MAX	8.1	1340	309	45	2.4		4	0.5	< 0.05	< 0.02	29	< 1	200	49	160	< 0.02	0.02 <	0.1	0.09	< 0.01	6
	09-Dec-08	MAX	8	1180	348	28	2.5	< 2	< 4	0.3	< 0.05	< 0.02	35	< 1	160	83	120	< 0.02	0.03 <	0.1	0.07	< 0.01	2.6
	25-Jun-09	MAX	7.7	1190	355	31	2.2	< 2	< 4	0.3	< 0.05	< 0.02	24	< 1	160	78	130	< 0.02	0.03 <	0.1	0.09	0.02	4.1
	16-Dec-09	MAX	7.9	1030	338	29	2.4	< 2	9	0.5	0.29	0.03	28	< 1	120	73	110	2.5	0.03 <	0.1	0.02	< 0.01	2.7
	28-Jun-10	MAX	7.9	1050	402	30	2	< 2	7	0.3	< 0.05	0.02	28	< 1	83	50	130	< 0.02	0.03 <	0.1	0.1	0.02	2.4
	20-Dec-10	MAX	7.71	1120	357	31	2.2	< 2	< 4	0.2	< 0.05	< 0.02	36	< 1	130	59	140	< 0.02	0.03 <	0.1	0.09	< 0.01	2.1
Monitor	04-Dec-01	Philip	7.95	674	263	27.9	< 1	2	10	0.23	< 0.03	0.011	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 8.18	489	215	23.3	1	1.1	15	0.13	0.03	< 0.001	49.7 53.1	29	12	20 18.2	04.0 72.0	0.13	0.02	0.1	0.006		
	09-Jun-04	Philip	8.04	527	232	25.7	< 1	< 0.7	19	0.24	0.03	0.003	61.2	< 1	14.2	19.6	69.3	0.00	0.03 <	0.1	< 0.00	< 02	< 02
	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	< 0. <u>2</u>	< 0.2
	03-Aug-05	Maxx	8.22	533	234	26	1.1	< 2	15	1.1	< 0.05	< 0.02	51	< 1	11	19	67	< 0.05	0.03	0.07	< 0.005		
	28-Nov-05	Maxx	8.18	529	242	29		< 2	9	0.4	< 0.05	< 0.02	42	< 1	15	14	78	0.16	0.02 <	0.05	< 0.005		
	01-Jun-06	MAX	8.2	605	253	28	1.1	< 2	9	0.4	< 0.05	< 0.02	52	< 1	15	16	77	0.14	0.02 <	0.05	< 0.005		
	04-Dec-06	MAX	8.2	597	253	26	1	< 2	< 4	0.2	0.08	< 0.02	61	< 1	13	14	74	0.11	0.02 <	0.05	< 0.005		
	30-Mar-07	MAX	8.2	599	249	24	0.99	< 2	< 4	0.2	0.06	< 0.02	61	< 1	13	13	72	< 0.02	0.02 <	0.05	< 0.005		
	14-Jun-07	MAX	8.1	601	243	29	1.1	< 2	< 4	0.2	0.1	< 0.02	63	< 1	14	12	80	< 0.02	0.02 <	0.05	0.01		
	05-Dec-07	MAX	8.2	603	241	27	1.2	< 2	12	0.1	< 0.05	< 0.02	62	< 1	12	16	77	< 0.02	0.01 <	0.1	< 0.005	< 0.01	< 0.1
	25-Jun-08	MAX	8.2	590	236	29	1.1	0	7	0.3	< 0.05	< 0.02	58	< 1	15	11	80	< 0.02	< 0.01 <	0.1	< 0.005	< 0.01	< 0.1
	09-Dec-08	MAX	8	606	239	26	1.1	< 2	< 4	0.2	< 0.05	0.04	67	< 1	1/	14	/2	< 0.02	0.02 <	0.1	< 0.005	< 0.01	< 0.1
	25-Jun-09	MAX	8 7.0	635	237	29	1.2	< 2	< 4	0.2	< 0.05	< 0.02	64	< 1	21	10	00 70	0.06	0.02 <	0.1	< 0.005	< 0.01	< 0.1
	29_Jun_10	ΜΔΧ	7.9 8.1	599	242 231	29 26	0.98	~ 2	6	0.1	< 0.05	0.02	64		20 19	17	75	0.03	0.02 <	0.1		< 0.01	< 0.1
	20-Dec-10	MAX	7.92	672	252	20	1.2	< 2	< 4	0.2	< 0.05	< 0.02	65	< 1	23	19	77	< 0.02	0.02 <	0.1	< 0.005	< 0.01	< 0.1



Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

ſ	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
			1	uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	04-Dec-01	Philip	7.94	716	336	30.3	< 1	1.3	12	0.3	< 0.03	0.009	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	< 0.2	< 0.2
	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		
	03-Aug-05	Maxx	7.93	818	267	29	2.3	< 2	20	1.3	0.06	< 0.02	83	< 1	73	31	110	0.91	0.01	0.06	0.11		
	28-Nov-05	Maxx	8.09	1070	305	38		6	12	0.6	0.09	< 0.02	77	< 1	143	49	140	1.3	0.02	< 0.05	0.12		
	01-Jun-06	MAX	8	1100	361	36	2	< 2	11	0.5	0.06	0.03	59	< 1	129	60	120	0.29	0.02	< 0.05	0.26		
	04-Dec-06	MAX	8	1120	438	37	2	< 2	9	0.9	0.09	< 0.02	64	< 1	92	67	130	0.15	0.03	< 0.05	0.33		
	30-Mar-07	MAX	8.1	901	347	32	1.7	< 2	15	0.3	0.07	< 0.02	46	< 1	67	49	110	0.03	0.02	< 0.05	0.42		
	14-Jun-07	MAX	8.1 9.1	909	295	30 25	2	< 2	12	0.2	0.09	< 0.02	07	< 1	120	39	110	0.13	0.03	< 0.05	0.10	- 0.01	1.01
	25 Jun 08	MAX	0.1	1040	294	33 25	1.9	< 2	13	0.5	< 0.05	< 0.02	00	< 1	120	42	120	< 0.02	0.01	< 0.1	0.35	< 0.01	< 0.1
	23-Juii-08	MAX	0	1270	520 423	22	2.0	- 2	0	0.5	< 0.05	< 0.02	04 59	< 1	160	110	120	< 0.02	0.02	< 0.1	0.4	< 0.01	0.4
	25-Jun-09	ΜΔΧ	0 7.8	1670	423	33	2.2	~ 2	- 4	0.3	< 0.05	0.02	52		280	170	120	0.02	0.02	< 0.1	0.41	< 0.01	0.1
	15-Dec-09	MAX	7.7	1670	398	32	2.0	< 2	4	0.2	< 0.05	0.02	42		260	170	130	< 0.02	0.00	< 0.1	0.07	< 0.01	< 0.2
	29-Jun-10	MAX	8	1230	365	27	2.3	< 2	9	0.5	< 0.05	< 0.02	47	< 1	150	120	110	< 0.02	0.02	< 0.1	0.79	< 0.01	0.1
	20-Dec-10	MAX	7.76	1240	420	< 0.05	< 0.2	< 2	7	0.3	< 0.05	< 0.02	38	< 1	130	< 0.1	< 0.2	< 0.02	< 0.00	< 0.1	< 0.005	< 0.01	4
Monitor	04-Dec-01	Philip	7.95	754	259	35.1	< 1	0.6	< 5	0.16	< 0.03	0.006	92.4	< 1	48.3	7.7	104	0.27	< 0.01	< 0.1	< 0.005		
152.01	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		Í
Deurock	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	< 0.2	< 0.2
	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		
	03-Aug-05	Maxx	8.14	737	254	35	1.1	< 2	5	0.4	< 0.05	< 0.02	91	< 1	49	15	100	0.55	< 0.01	< 0.05	< 0.005		
	28-Nov-05	Maxx	8.22	736	262	37		< 2	6	0.4	< 0.05	< 0.02	88	< 1	47	16	110	0.58	< 0.01	< 0.05	< 0.005		
	01-Jun-06	MAX	8.1	790	268	33	1	< 2	10	0.4	< 0.05	< 0.02	74	1	59	15	92	0.46	0.01	< 0.05	< 0.005		
	04-Dec-06	MAX	8	811	271	35	1.1	< 2	< 4	0.3	0.18	< 0.02	79	< 1	55	17	100	0.55	0.01	< 0.05	< 0.005		
	30-Mar-07	MAX	8.1	808	263	29	1	< 2	< 4	0.3	0.1	< 0.02	92	< 1	54	15	88	0.56	0.01	< 0.05	< 0.005		
	14-Jun-07	MAX	8.1	799	258	36	1.3	< 2	< 4	0.4	0.11	< 0.02	95	< 1	51	18	110	0.4	0.01	< 0.05	< 0.005		
	05-Dec-07	MAX	8.2	799	255	35	1.2	< 2	13	0.2	0.09	< 0.02	100	< 1	51	19	110	0.47	0.01	< 0.1	< 0.005	< 0.01	< 0.1
	25-Jun-08	MAX	8.3	783	249	33	1.4		10	0.4	< 0.05	< 0.02	104	< 1	45	19	100	0.07	< 0.01	< 0.1	0.04	< 0.01	< 0.1
	09-Dec-08	MAX	8	786	252	32	1.2	< 2	< 4	0.3	0.07	< 0.02	116	< 1	42	19	96	0.45	0.01	< 0.1	< 0.005	< 0.01	< 0.1
	25-Jun-09	MAX	8	783	249	34	1.2	< 2	4	0.2	< 0.05	< 0.02	110	< 1	43	20	96	0.57	0.03	< 0.1	< 0.005	< 0.01	< 0.1
	16-Dec-09	MAX	8	802	251	32 24	1.2	2	< 4	0.2	< 0.05	< 0.02	110	< 1	48	19	100	0.62	0.02	< 0.1	< 0.005	< 0.01	< 0.1
	20-Jun-10 22-Dec-10	MAX	7.85	844	243 251	34	1.2	< 2	< 4	0.3	< 0.05	< 0.02	110	< 1	56	21	110	0.64	0.02	< 0.1	< 0.005	< 0.01	< 0.1


Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	04-Dec-01	Philip	8.16	646	252	27	< 1	4.4	13	0.27	< 0.03	0.014	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	< 0.2	4.1
	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	0.05	0.008		
	03-Aug-05	Maxx	8.06	068	535	30 53	0.98	< 2	18	1.4	< 0.05	< 0.02	16	< 1	10	4.6	120	0.1	< 0.01	< 0.05	0.03		
	01 Jun 06	MAX	8	853	462	33	0.97	< 2	11	0.8	< 0.05	< 0.02 0.02	20 15		30	10	120	< 0.03	0.04	< 0.05	0.03		
	04-Dec-06	ΜΔΧ	7.8	949	402	36	1.2	~ 2	7	0.7	< 0.05	0.02 - 0.02	24		4	16	120	0.02	0.05	< 0.05	0.03		
	30-Mar-07	MAX	8.1	955	484	38	0.92	< 2	< 4	0.4	0.09	< 0.02	28	< 1	13	9.2	150	< 0.02	0.03	< 0.05	0.008		
	14-Jun-07	MAX	8.1	996	478	38	1	< 2	7	0.3	0.1	< 0.02	25	< 1	35	8.7	160	< 0.02	0.02	< 0.05	0.04		
	05-Dec-07	MAX	8	1130	481	42	1.3	< 2	17	0.4	< 0.05	< 0.02	28	< 1	38	15	180	< 0.02	0.04	< 0.1	0.05	< 0.1	15
	25-Jun-08	MAX	8.1	1330	449	31	1.3		4	0.4	< 0.05	< 0.02	23	< 1	130	94	150	< 0.02	0.02	< 0.1	0.04	< 0.1	13
	09-Dec-08	MAX	8	1100	544	25	1.2	< 2	6	0.4	< 0.05	< 0.02	18	< 1	21	90	120	< 0.02	0.04	< 0.1	0.04	< 0.01	8.6
	25-Jun-09	MAX	7.7	1160	423	37	1.1	< 2	6	0.4	< 0.05	< 0.02	27	< 1	110	45	170	< 0.02	0.02	< 0.1	0.04	< 0.01	5.7
	16-Dec-09	MAX	7.8	1070	540	24	1.2	< 2	< 4	0.3	< 0.05	< 0.02	16	< 1	15	98	120	< 0.02	0.03	< 0.1	0.04	< 0.01	10
	25-Jun-10	MAX	7.8	1720	393	43	1.4	< 2	8	0.4	< 0.05	0.02	25	< 1	270	85	210	< 0.02	0.03	< 0.1	0.05	< 0.01	9.7
	17-Dec-10	MAX	7.6	1380	521	30	1.4	< 2	6	0.3	< 0.05	< 0.02	17	< 1	120	130	150	< 0.02	0.04	< 0.1	0.05	< 0.01	4.6
<u>Monitor</u>	26-Mar-08	MAX	8	691	251	29	3.6	< 2	4	0.4	0.16	< 0.02	70	< 1	36	42	76	< 0.02	0.04	< 0.1	0.05	0.02	< 0.1
16A-08	25-Jun-08	MAX	8.3	596	238	28	2.7		1	0.5	0.19	< 0.02	46	< 1	28	6.2	82	< 0.02	0.02	< 0.1	0.04	< 0.01	< 0.1
Bedrock	09-Dec-08	MAX	8.1	605	239	26	2	< 2	< 4	0.3	0.06	< 0.02	39	< 1	29	2.5	//	< 0.02	0.03	< 0.1	0.04	< 0.01	< 0.1
	23-Juli-09	ΜΑΧ	0 81	636	239	29	2	< 2	< 4 7	0.5	0.03	< 0.02	47		39	4	00 87	< 0.02	0.03	< 0.1	0.04	< 0.01	< 0.1
	28-Jun-10	MAX	7.9	634	240	29	1.8	< 2	4	0.2	< 0.07	0.03	53		31	2.1	83	< 0.02	0.03	< 0.1	0.04	< 0.01	< 0.1
	20-Dec-10	MAX	7.94	630	236	29	1.9	< 2	< 4	0.2	0.05	< 0.02	41	< 1	33	2.2	88	0.04	0.00	< 0.1	0.03	0.01	< 0.1
Monitor	26-Mar-08	MAX	8	1130	477	42	1.5	< 2	15	0.9	0.09	< 0.02	105	< 1	38	60	130	< 0.02	0.03	< 0.1	0.16	0.1	3.3
168.09	25-Jun-08	MAX	8.2	1170	318	43	2.4		14	0.3	< 0.05	< 0.02	68	< 1	160	42	130	< 0.02	< 0.01	< 0.1	1.1	< 0.01	< 0.1
Outwash	09-Dec-08	MAX	7.8	1290	597	51	2.1	< 2	17	0.8	< 0.05	< 0.02	50	< 1	53	39	170	< 0.02	0.03	< 0.1	0.72	< 0.01	2.9
Outwash	25-Jun-09	MAX	7.8	1640	382	46	3.1	< 2	9	0.4	< 0.05	< 0.02	58	< 1	260	150	150	< 0.02	0.02	< 0.1	1.8	< 0.01	< 0.1
	15-Dec-09	MAX	7.6	1350	555	48	2.1	< 2	19	0.5	< 0.05	0.03	48	< 1	96	71	160	0.03	0.03	< 0.1	1.1	< 0.01	< 0.1
	23-Jun-10	MAX	7.9	1470	373	41	2.8	< 2	9	0.4	< 0.05	0.02	79	< 1	210	120	130	< 0.02	0.02	< 0.1	1.3	< 0.01	< 0.1
	20-Dec-10	MAX	7.55	1240	586	49	1.6	< 2	22	0.8	< 0.05	< 0.02	49	< 1	39	46	170	< 0.02	0.03	< 0.1	0.75	0.03	1.8
Monitor	26-Mar-08	MAX	8.2	721	248	28	2.1	< 2	7	0.6	0.21	< 0.02	96	< 1	29	67	64	< 0.02	0.04	< 0.1	0.007	< 0.01	0.3
17A-08	25-Jun-08	MAX	8.3	643	233	30	2.2		< 4	0.5	0.29	< 0.02	63	< 1	36	16	80	0.05	0.02	< 0.1	< 0.005	< 0.01	< 0.1
Bedrock	09-Dec-08	MAX	8.1	609	237	26	1.4	< 2	< 4	0.4	0.1	< 0.02	51	< 1	27	15	69	0.02	0.03	< 0.1	< 0.005	< 0.01	< 0.1
	25-Jun-09	MAX	8	608	230	28	1.6	< 2	< 4	0.4	0.18	< 0.02	51	< 1	29	10	77	0.13	0.03	< 0.1	< 0.005	< 0.01	< 0.1
	16-Dec-09	MAX	0.1	615	232	29	1.6	< 2	4	0.2	0.08	< 0.02	48	< 1	30	11	79	0.1	0.03	< 0.1	< 0.005	< 0.01	0.2
	20-Dec-10	MAX	0.1 7.92	650	229	30 29	1.0 1.6	< 2	< 4 5	0.5	0.15	< 0.02	อษ 51	< 1	34 36	12 11	79 81	0.11	0.03	< 0.1	< 0.005	0.01	< 0.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station

	Date	Lab	pН	Cond-	Alk	Mg	К	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Monitor	26-Mar-08	MAX	8	2080	357	41	2.4	< 2	5	0.4	< 0.05	< 0.02	75	< 1	400	240	150	< 0.02	0.03	< 0.1	0.25	0.02	3.6
17B-08	25-Jun-08	MAX	8.3	2380	313	46	2.8		11	0.3	< 0.05	< 0.02	68	< 1	500	290	160	< 0.02	0.02	< 0.1	0.29	< 0.01	4.2
Outwash	09-Dec-08	MAX	8	1580	319	32	2.5	< 2	4	0.3	< 0.05	< 0.02	56	< 1	260	170	110	< 0.02	0.02	< 0.1	0.14	< 0.01	5.1
	25-Jun-09	MAX	7.8	2730	304	48	3.1	< 2	8	0.2	< 0.05	< 0.02	66	< 1	620	330	190	< 0.02	0.02	< 0.1	0.33	< 0.01	4.9
	16-Dec-09	MAX	7.7	1730	321	36	2.3	< 2	6	0.2	< 0.05	0.04	39	< 1	300	180	140	< 0.02	0.02	< 0.1	0.16	< 0.01	4.5
	23-Jun-10	MAX	8	1850	304	34 20	2.8	< 2	6	0.4	< 0.05	0.02	74 45	< 1	330	180	140	< 0.02	0.02	< 0.1	0.08	< 0.01	4
N	20-Dec-10	MAX	9.1	802	320	29	1.5	< 2	4	0.2	< 0.03	< 0.02	40	< 1	10	80	65	< 0.02	0.02	< 0.1	0.13	< 0.01	57
Monitor	20-1v1a1-08	ΜΑΧ	8.1 8.3	632	238	27	1.5	< 2	12	0.9	0.09	< 0.02	36		10	09 20	81	00 - 0.02	0.03	< 0.1	0.02	- 0.01	5.7 73
18A-08	09-Dec-08	MAX	8.1	613	243	20	11	e 2	< 4	0.5	0.16	< 0.02	35		16	61	76	< 0.02	< 0.01	< 0.1	0.20	< 0.01	67
Веагоск	25-Jun-09	MAX	7.9	605	242	29	1.2	< 2	< 4	0.2	< 0.05	< 0.02	34	< 1	16	5	85	< 0.02	0.01	< 0.1	0.32	< 0.01	6.9
	15-Dec-09	MAX	7.9	628	246	28	1.3	< 2	< 4	0.2	< 0.05	0.04	36	< 1	16	4.5	82	< 0.02	0.01	< 0.1	0.35	< 0.01	8
	30-Jun-10	MAX	8	625	241	29	1.2	< 2	18	0.3	< 0.05	0.03	38	< 1	18	4.6	82	< 0.02	0.01	< 0.1	0.33	0.02	6.5
	22-Dec-10	MAX	7.85	628	241	31	1.2	< 2	< 4	< 0.1	< 0.05	< 0.02	37	< 1	18	4.6	88	< 0.02	< 0.01	< 0.1	0.36	< 0.01	6.8
Monitor	26-Mar-08	MAX	8.2	1020	284	12	2.1	< 2	53	1	0.12	0.02	223	< 1	8	270	29	150	0.07	< 0.1	0.02	0.05	1.6
18B-08	25-Jun-08	INS																					
Outwash	09-Dec-08	INS																					
	25-Jun-09	INS																					
	15-Dec-09	INS																					
	30-Jun-10	INS										ł										4	
	22-Dec-10	INS	0.1	0.4.4	215	27	1.4		40	0.2	0.1	0.00	4.40	. 1	45	47	0.4	0.00	0.00	0.4	0.005	0.00	0.4
<u>Monitor</u>	26-Mar-08	MAX	8.1	844	245	37	1.4	< 2	13	0.3	0.1	0.03	143	< 1	45 50	47	94 100	0.02	0.03	< 0.1	< 0.005	0.02	< 0.1
19A-08	23-Juii-08	ΜΑΧ	0.2 8 1	041 811	240	37	1.5	- 2	- 4	0.5	0.05	< 0.02	129		46	19	96	0.04	0.02	< 0.1	< 0.005	< 0.01	< 0.1
Bedrock	25-Jun-09	MAX	7.9	768	236	35	1.2	< 2	2	0.2	< 0.05	< 0.02	140	< 1	27	12	100	0.17	0.02	< 0.1	< 0.005	< 0.01	< 0.1
	15-Dec-09	MAX	7.9	834	244	35	1.4	< 2	5	0.2	< 0.05	0.02	120	< 1	48	21	100	0.21	0.03	< 0.1	< 0.005	< 0.01	< 0.1
	30-Jun-10	MAX	7.8	788	234	33	1.2	< 2	6	0.2	< 0.05	0.03	130	< 1	37	16	100	0.2	0.02	< 0.1	< 0.005	< 0.01	< 0.1
	22-Dec-10	MAX	7.87	825	236	36	1.3	< 2	< 4	0.1	< 0.05	< 0.02	120	< 1	43	21	110	0.21	0.03	< 0.1	< 0.005	< 0.01	< 0.1
Monitor	26-Mar-08	MAX	8.1	1560	289	14	4.5	< 2	51	1.7	0.53	0.03	454	< 1	38	350	35	130	0.14	< 0.1	0.02	< 0.1	1
19B-08	25-Jun-08	MAX	8.3	2070	314	10	7.8		38	1.8	1	< 0.02	576	< 1	60	480	23	< 0.02	0.2	< 0.1	< 0.005	0.3	2.5
Outwash	09-Dec-08	MAX	8.2	2290	485	13	8.6	< 2	13	1.1	0.44	< 0.02	596	< 1	56	470	36	< 0.02	0.27	< 0.1	< 0.005	0.06	8.8
	25-Jun-09	MAX	8.2	2010	499	10	8.1	< 2	9	1.1	0.54	< 0.02	420	< 1	40	470	28	< 0.02	0.23	< 0.1	< 0.005	0.1	10
	15-Dec-09	INS																					
	30-Jun-10	INS																					
	22-Dec-10	INS	0.1	722	262	20	1.0		15	0.0	0.07	. 0.02	107	. 1	10	FC	70	50	0.02	. 01	0.01	0.1	2
<u>Monitor</u>	26-Mar-08	MAX	8.1 9.2	732	262	30	1.8	< 2	15	0.8	0.07	< 0.02	107	< 1	19	50	12	53	0.03	< 0.1	0.01	0.1	2
20A-08	23-Jui-08 09-Dec-08	MAX	8.5	633	242 251	20 26	1.2	< 2	4	0.4	< 0.05	< 0.02	55	< 1	17	4.9 9.2	84	< 0.02	0.07	< 0.1	0.03	0.07	2.5 4 1
Bedrock	25-Jun-09	MAX	7.9	602	242	28	1.1	< 2	< 4	0.3	< 0.05	< 0.02	49	< 1	16	5.9	83	< 0.02	0.02	< 0.1	0.09	0.09	2.4
	15-Dec-09	MAX	7.9	622	247	29	1.3	< 2	< 4	0.2	< 0.05	0.03	47	< 1	16	4.9	84	< 0.02	0.01	< 0.1	0.11	0.04	3.8
	29-Jun-10	MAX	8	794	236	27	1.2	< 2	10	0.4	< 0.05	< 0.02	130	< 1	37	5.3	80	0.19	< 0.01	< 0.1	0.1	< 0.01	< 0.1
	22-Dec-10	MAX	7.79	630	242	31	1.2	< 2	< 4	0.4	< 0.05	< 0.02	50	< 1	18	4.7	88	< 0.02	< 0.01	< 0.1	0.12	0.06	2.9



	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn	NO2	NO3
				uctivity	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L						
Monitor	26-Mar-08	MAX	8	572	244	30	1.2	< 2	10	0.5	< 0.05	< 0.02	52	< 1	11	3.5	82	73	< 0.01	< 0.1	0.09	< 0.01	1.2
20B-08	25-Jun-08	MAX	8.2	933	235	26	3.3		20	0.6	< 0.05	< 0.02	78	< 1	110	57	99	< 0.02	0.01	< 0.1	0.63	< 0.01	< 0.1
Outwash	09-Dec-08	MAX	8	694	266	25	1.3	< 2	7	0.3	< 0.05	< 0.02	73	< 1	25	16	84	< 0.02	0.02	< 0.1	0.16	< 0.01	< 0.1
	25-Jun-09	MAX	7.7	822	254	26	1.9	< 2	10	0.3	< 0.05	< 0.02	49	< 1	88	45	95	< 0.02	0.01	< 0.1	0.37	< 0.01	< 0.1
	15-Dec-09	MAX	7.9	628	271	27	1.5	< 2	< 4	0.2	< 0.05	< 0.02	56	< 1	8	9.6	85	< 0.02	0.01	< 0.1	0.18	< 0.01	< 0.1
	29-Jun-10	MAX	7.8	1080	256	29	1.9	< 2	14	0.4	< 0.05	0.02	44	< 1	170	58	110	< 0.02	0.01	< 0.1	0.64	< 0.01	< 0.1
	22-Dec-10	MAX	7.87	631	272	31	1.5	< 2	< 4	0.2	< 0.05	< 0.02	49	< 1	12	5.9	93	< 0.02	< 0.01	< 0.1	0.14	< 0.01	0.3
Monitor	25-Jun-08	MAX																					
21A-08	25-Jun-08	MAX																					
Bedrock	25-Jun-08	N/A																					
	25-Jun-08	N/A																					
	09-Dec-08	MAX	8.1	820	284	32	1.2	< 2	8	0.5	< 0.05	< 0.02	49	< 1	54	34	86	< 0.02	0.01	< 0.1	0.22	0.02	6.2
	25-Jun-09	MAX	7.8	583	261	26	0.89	< 2	6	0.3	< 0.05	< 0.02	30	< 1	5	13	78	< 0.02	0.02	< 0.1	0.26	< 0.01	4.8
	15-Dec-09	MAX	7.8	776	277	29	1.1	< 2	4	0.3	< 0.05	0.02	39	< 1	47	33	86	0.05	0.02	< 0.1	0.32	< 0.01	6.3
	25-Jun-10	MAX	8	589	262	25	0.87	< 2	4	0.4	< 0.05	< 0.02	26	< 1	8	13	75	< 0.02	0.01	< 0.1	0.29	< 0.01	4.3
	22-Dec-10	MAX	7.79	660	278	29	1.1	< 2	< 4	0.3	< 0.05	< 0.02	32	< 1	18	19	87	< 0.02	0.01	< 0.1	0.29	< 0.01	5.1

Routine Groundwater Quality - General Analysis -Guelph WRIC & Waste Transfer Station



Parameter	2a-91	2b-91	5-96	6a-96
Taraneter	29-Jun-10	29-Jun-10	24-Jun-10	23-Jun-10
MISA Group 16				
1.1.1.2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1 1 1-Trichloroethane:	< 01	< 01	< 01	< 01
1.1.2.2-Tetrachloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1.1.2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 02
1.1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1.1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1.2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1 2-Dibromoethane.*	< 0.2	< 0.2	< 0.2	< 02
1.2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1.2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1.3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1.4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
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
Chloroform:	< 0.1	< 0.1	< 0.1	0.2
Chloromethane:	< 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
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
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		
Vinvl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
			-	-
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

Donomotor	6b-96	7-96	8-96	11a-00
rarameter	23-Jun-10	24-Jun-10	24-Jun-10	28-Jun-10
MISA Group 16				
1 1 1 2-Tetrachloroethane:	< 01	< 01	< 01	< 01
1,1,1,2-Tetraemoroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2 Tetraenoroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1 1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.2
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1.2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane.*	< 0.2	< 0.2	< 0.2	< 0.2
1.2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1.2-Dichloropropage:	< 0.1	< 0.1	< 0.1	< 0.2
1.3-Dichloropenzene:	< 0.7	< 0.1	< 0.1	< 0.1
1.4 Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Romodichloromethane:	< 0.2	< 0.1	< 0.2	< 0.2
Bromoform:	< 0.7	< 0.1	< 0.1	< 0.1
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.0	< 0.0	< 0.0	< 0.5
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	0.1	< 0.1	< 0.1	< 0.1
Chloromathanai	0.2	۷ ۵.۱	۷.۱	< 0.1
Cio 1.2 Dishlaroothulanou	- 01	- 01	- 01	< 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
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
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
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MICA C 19				
Acrolain:	- 10	- 10	- 10	- 10
Acrolem:				
Acryionitrile:	< 5	< 5	< 5	< 5

Parameter	11b-00	12a-00	12b-00	13a-01		
Tarancui	28-Jun-10	24-Jun-10	24-Jun-10	28-Jun-10		
MISA Group 16						
1 1 1 2-Tetrachloroethane:	< 01	< 01	< 01	< 01		
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	< 0.2		
1 1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1		
1.2-Dichlorobenzene:	< 0.1	< 0.2	< 0.2	< 0.2		
1.2-Dibromoethane.*	< 0.2	< 0.2	< 0.2	< 0.2		
1.2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2		
1.2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.2		
1 3-Dichlorobenzene:	< 0.1	< 0.2	< 0.2	< 0.2		
1 4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2		
Bromodichloromethane:	1 4	< 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:	< 01	< 01	< 01	< 01		
Chloroform:	37	< 0.1	< 0.1	< 0.1		
Chloromethane:	< 0.5	v 0.1	v 0.1	< 0.5		
Cis-1 2-Dichloroethylene	< 0.0	< 01	< 01	< 0.0		
Cis-1 3-Dichloropropylene:	< 0.1	< 0.2	< 0.2	< 0.2		
Dibromochloromethane:	0.4	< 0.2	< 0.2	< 0.2		
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5		
Tetrachloroethylene:	< 0.0	< 0.0	< 0.0	< 0.0		
trans_1 2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1		
Trans-1,2-Dichloropropylene:	< 0.1	< 0.1	< 0.1	< 0.1		
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1		
Trichlorofluoromethane:	< 0.1	< 0.1	< 0.1	< 0.1		
Vinyl chloride:	< 0.2	< 02	r 02	< 0.2		
v myr emoriae.	< 0.2	< 0.2	< 0.2	< 0.2		
MISA Group 17						
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1		
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1		
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2		
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2		
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1		
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1		
MISA Crown 19						
Acrolein:	<u>ج</u> 10	< 10	<u>ج</u> 10	ج 10		
Acrylonitrile:	< 5	< 5	< 5	< 5		
reryionune.	Ϋ́ Υ			, ,		

Parameter	13b-01	14a-01	14b-01	15a-01		
Tarancui	28-Jun-10	29-Jun-10	29-Jun-10	28-Jun-10		
MISA Group 16						
1.1.1.2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1		
1 1 1-Trichloroethane:	< 01	< 0.1	< 01	< 01		
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	< 01	< 0.1		
1 1-Dichloroethylene:	< 0.1	< 0.1	< 01	< 01		
1.2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2		
1 2-Dibromoethane.*	< 0.2	< 0.2	< 0.2	< 0.2		
1.2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2		
1.2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1		
1 3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2		
1 4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2		
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:	< 01	< 01	< 01	< 01		
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1		
Chloroform:	< 0.1	< 0.1	< 01	< 01		
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		
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5		
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1		
trans-1 2-Dichloroethylene:	< 0.1	< 0.1	< 01	< 01		
Trans-1 3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2		
Trichloroethylene:	< 0.1	< 0.1	< 01	< 0.1		
Trichlorofluoromethane:	< 0.1	< 0.1	< 0.2	< 0.2		
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2		
v myr emoride.	· 0.2	· 0.2	· · · · · ·	- 0. <u>-</u>		
MISA Group 17						
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1		
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1		
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2		
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2		
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1		
m-Xylene and p-Xylene:	< 0.1	< 0.1	0.1	< 0.1		
MISA Chaum 10						
Acrolain:	~ 10	~ 10	- 10	r 10		
Acrylonitrile:	< 5	< 5	< 5	2 5		
reryionune.		[×] ^v		, ,		

Paramatar	15b-01	16A-08	16B-08	17A-08	
1 al allicici	25-Jun-10	28-Jun-10	23-Jun-10	23-Jun-10	
MISA Group 16					
1 1 1 2-Tetrachloroethane:	< 01	< 01	< 01	< 01	
1,1,1,2-Tetraemoroethane:	< 0.1	< 0.1	< 0.1	< 0.1	
1,1,2,2-Tetrachloroethane	< 0.1	< 0.1	< 0.1	< 0.1	
1,1,2,2 Tetraenoroethane:	< 0.2	< 0.2	< 0.2	< 0.2	
1 1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.2	
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1	
1.2-Dichlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1	
1,2-Dibromoethane.*	< 0.2	< 0.2	< 0.2	< 0.2	
1,2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2	
1,2-Dichloropropage:	< 0.2	< 0.2	< 0.2	< 0.2	
1,2-Dichlorohonzano:	< 0.2	< 0.1	< 0.2	< 0.1	
1,3-Dichlorohonzono:	< 0.2	< 0.2	< 0.2	< 0.2	
1,4-Dichloromethane:	< 0.2	< 0.2	< 0.2	< 0.2	
Dromoformu	< 0.1	< 0.1	< 0.1	< 0.1	
Diomoiorin:	< 0.2	< 0.2	< 0.2	< 0.2	
Bromometnane:	< 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	
Chloroform:	< 0.1	< 0.1	< 0.1	< 0.1	
Chloromethane:		< 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	
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5	
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1	
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			
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2	
MISA Group 17					
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1	
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2	
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2	
o-Xvlene:	< 0.1	< 0.1	< 0.1	< 0.1	
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1	
-, p 12,10101					
MISA Group 18					
Acrolein:	< 10	< 10	< 10	< 10	
Acrylonitrile:	< 5	< 5	< 5	< 5	

Parameter	17B-08	18A-08	19A-08	20A-08		
Tarancui	23-Jun-10	30-Jun-10	30-Jun-10	29-Jun-10		
MISA Group 16						
1.1.1.2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1		
1 1 1-Trichloroethane:	< 01	< 01	< 01	< 01		
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:	< 0.1	< 0.1	< 0.1	< 0.1		
1.2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2		
1.2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2		
1,2-Dichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2		
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1		
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2		
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2		
Bromodichloromethane:	2.9	< 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		
Chloroform:	7	< 0.1	< 0.1	< 0.1		
Chloromethane:		< 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:	1.1	< 0.2	< 0.2	< 0.2		
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5		
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1		
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		
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2		
MISA Group 17						
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1		
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1		
Styrene:	< 0.2	< 0.2	< 0.2	< 0.2		
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2		
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1		
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	0.2		
MISA Group 18	10	40	10	10		
Acrolem:	< 10	< 10	< 10	< 10		
Acryionitrile:	< 5	< 5	< 5	< 5		

Doromotor	20B-08	21A-08				
rarameter	29-Jun-10	25-Jun-10				
MISA Group 16						
1,1,1,2-Tetrachloroethane:	< 0.1	< 0.1				
1,1,1-Trichloroethane:	< 0.1	< 0.1				
1,1,2,2-Tetrachloroethane:	< 0.2	< 0.2				
1,1,2-Trichloroethane:	< 0.2	< 0.2				
1,1-Dichloroethane:	< 0.1	< 0.1				
1,1-Dichloroethylene:	< 0.1	< 0.1				
1,2-Dichlorobenzene:	< 0.2	< 0.2				
1,2-Dibromoethane:*	< 0.2	< 0.2				
1,2-Dichloroethane:	< 0.2	< 0.2				
1,2-Dichloropropane:	< 0.1	< 0.1				
1,3-Dichlorobenzene:	< 0.2	< 0.2				
1,4-Dichlorobenzene:	< 0.2	< 0.2				
Bromodichloromethane:	< 0.1	< 0.1				
Bromoform:	< 0.2	< 0.2				
Bromomethane:	< 0.5	< 0.5				
Carbon Tetrachloride:	< 0.1	< 0.1				
Chlorobenzene:	< 0.1	< 0.1				
Chloroform:	< 0.1	< 0.1				
Chloromethane:	< 0.5					
Cis-1.2-Dichloroethylene:	< 0.1	< 0.1				
Cis-1.3-Dichloropropylene:	< 0.2	< 0.2				
Dibromochloromethane:	< 0.2	< 0.2				
Methylene Chloride:	< 0.5	< 0.5				
Tetrachloroethylene:	< 0.1	< 0.1				
trans-1.2-Dichloroethylene:	< 0.1	< 0.1				
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2				
Trichloroethylene:	< 0.1	< 0.1				
Trichlorofluoromethane:	< 0.2					
Vinvl chloride:	< 0.2	< 0.2				
MISA Group 17						
Benzene:	< 0.1	< 0.1				
Ethylbenzene:	< 0.1	< 0.1				
Styrene:	< 0.2	< 0.2				
Toluene:	< 0.2	< 0.2				
o-Xylene:	< 0.1	< 0.1				
m-Xylene and p-Xylene:	< 0.1	< 0.1				
MISA Group 18						
Acrolein:	< 10	< 10				
Acrylonitrile:	< 5	< 5				
i i i ji i i i i i i i i i i i i i i i						

Parameter	2a-91	2b-91	5-96	6a-96
i arameter	29-Jun-10	29-Jun-10	24-Jun-10	23-Jun-10
MISA Group 19				
Accompthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenanhthene	< 1	< 1	< 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
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1		
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeho(1,2,5-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
1-Methylnanhthalene	~ 02		- 02	- 02
2-Methylnaphthalene	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Pervlene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate:	< 2	< 2	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ether:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,0-Dillitrotoluelle:	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine	0.0	< 0.5	0.0	< 0.5
/Diphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
·····				
MISA Group 20				
2.3.4.5-Tetrachlorophenol	< 04	< 0.4	< 04	< 04
2,3,4,5 Tetrachlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-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-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,0-Dinitro-o-Cresol:				
2-Chloro 2 methylateret	< 0.3	< 0.3	< 0.3	< 0.3
4-Cilloro-5-methylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
o-Cresol	~ 05	~ 05	< 05	< 05
m- n-Cresol	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5



Latanation 23-Jun-10 23-Jun-20 23-Jun-20 23-Jun-20 23-Jun-20 23-Jun-20 Arcorption: - 0.2 - 0.2 - 0.2 - 0.2 Scheadurghton: - 0.2 - 0.2 - 0.2 - 0.2 Banacia-Junacian: - 0.2 - 0.2 - 0.2 - 0.2 Banacia-Junacian: - 0.2 - 0.2 - 0.2 - 0.2 Banacia-Junacian: - 0.2 - 0.2	Parameter	6b-96	7-96	8-96	11a-00
MixA Crown 19 $0.00000000000000000000000000000000000$	1 al alliciti	23-Jun-10	24-Jun-10	24-Jun-10	28-Jun-10
Link Automuto De SNitoaccanguthos: 0.2 <	MICA Carrow 10	20 0 0 1 10		2100010	20 0 0 10
Acamphabane: 0.2	MISA Group 19				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
Arabaphysne	5-Nitroacenaphthene:	. 0.2	. 0.2	- 02	< 1
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Benzo(a)Fyrene.	< 0.2	< 0.2	< 0.2	< 0.2
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Benzo(g h i)pervlepe:	< 0.2	< 0.2	< 0.2	< 0.2
	Benzo(k)Eluoronthono:	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c } & c & 0 & c & 0.5 & c & 0.5 & c & 0.5 \\ c & c & 1 & c & 1 & c & 1 \\ c & c & 1 & c & 1 & c & 1 \\ c & c & 0 & c & 0.5 & c & 0.5 & c & 0.5 \\ c & 0 & c & 0.5 & c & 0.5 & c & 0.5 \\ c & 0 & c & 0.2 & c & 0.2 & c & 0.2 \\ c & 0 & 2 & c & 0.2 & c & 0.2 & c & 0.2 \\ c & 0 & 0 & 0 & 0 & 0 & 0 & c \\ c & 0 & 0 & 0 & 0 & 0 & 0 & c & 0.5 \\ c & 0 & 0 & 0 & 0 & 0 & 0 & c \\ c & 0 & 0 & 0 & 0 & 0 & 0 & c & 0.5 \\ c & 0 & 0 & 0 & 0 & 0 & 0 & c & 0.5 \\ c & 0 & 0 & 0 & 0 & 0 & 0 & 0 & c \\ c & 0 & 0 & 0 & 0 & 0 & 0 & 0 & c & 0.5 \\ c & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & c & 0.5 \\ c & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 &$	Binbenyl:	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Camphene:	< 0.5	< 0.5	< 0.5	< 0.5
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1-Chloronanhthalene:	< 1	e 1	< 1	
$\begin{array}{c c} Chrysmer: \\ Chrysmer: \\ c 0.2 \\ c 0.2$	2-Chloronaphthalene:		< 05		< 05
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Chrysene:			< 0.3	< 0.3
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Dibenzo(a h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Eluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Indepo(1.2.3 cd)Pyrepe	< 0.2	< 0.2	< 0.2	< 0.2
	Indole.	< ∪.∠	► 0.2	< 0.2	~ 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1-Methylnanhthalene	- 02	- 02	- 02	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2-Methylnaphthalene	< 0.2	~ 0.2	~ 0.2	~ 0.2
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2-Wethymaphinalene.	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Porvione:	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Per ylene.	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Purene:	< 0.2	< 0.2	< 0.2	< 0.2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	beilzyi Butyi Philialate:	< 0.5	< 0.5	< 0.5	< 0.5
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Dis(2-ethylnexyl)Philialate:	< 2	< 2	< 2	< 2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Di-N-butyiPhthalate:	< 2	< 2	< 2	< 2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	4 Promonhonyl phonyl Ethom	< 0.8	< 0.8	< 0.8	< 0.8
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	4-Bromophenyi phenyi Ether	< 0.5	< 0.5	< 0.5	< 0.5
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	4-Chiorophenyi Phenyi Ether:	< 0.5	< 0.5	< 0.5	< 0.5
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	bis(2-chlorostbrd))Ether:	< 0.5	< 0.5	< 0.5	< 0.5
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Dis(2-Chiofoethyf)Ether:	< 0.3	< 0.3	< 0.3	< 0.5
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2 4 Dipitrotoluono:	< 0.5	< 0.5	< 0.5	< 0.5
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	bis(2 chloroethovy)Methane:	< 0.5	< 0.5	< 0.5	< 0.5
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Nitrosodinhonylamina	< 0.5	< 0.0	< 0.5	2 0.5
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	/Diphenylamine:	< 1	< 1	< 1	< 1
MISA Group 20 2,3,4,5-Tetrachlorophenol: <	N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 202,3,4,5-Tetrachlorophenol: $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.42,3,4,6-Tetrachlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,3,5-Trichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4,5-Trichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4,5-Trichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4,6-Trichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4,6-Trichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4,6-Trichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4-Dinitrophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4-Dinitrophenol: $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.32,6-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,6-Dichlorophenol: $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.32,6-Dichlorophenol: $<$ 0.3 $<$ 0.3 $<$ 0.5 $<$ 0.52,6-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,6-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,6-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,6-	it ittiosodi it propytalilie.	× 0.0	v 0.0	v 0.0	. 0.0
District $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 $<$ 0.4 0.4 0.4 0.4 0.4 0.4	MISA Croup 20				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2 2 4 5 Totmachlangel	- 04	- 04	- 04	- 04
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2,3,4,5-Tetrachiorophenoi:	< 0.4	< 0.4	< 0.4	< 0.4
2,3,5-1 retrachorophenol:<	2,3,4,6-Tetrachiorophenoi:	< 0.5	< 0.5	< 0.5	< 0.5
2.3,5-Trichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4,5-Trichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4,6-Trichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4-Dinitrophenol: $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.32,6-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,4-Dichlorophenol: $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.32,6-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.52,6-Dichlorophenol: $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 <td>2,3,5,6-Tetrachiorophenol:</td> <td>< 0.5</td> <td>< 0.5</td> <td>< 0.5</td> <td>< 0.5</td>	2,3,5,6-Tetrachiorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-1richlorophenol: $<$ 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: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 2,4-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 2,4-Dichlorophenol: $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 2,6-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 2,4-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 2,4-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 2,4-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 2,Chlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 2,Chlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 4,-Chloro-3-methylphenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $0,-Cresol:<0.5<0.5<0.5<0.5<0.5Pentol:<0$	2,3,4-Theniorophenoi:	< 0.5	< 0.5	< 0.5	< 0.5
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2,3,5-1 richlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,0-1rtentorophenol:<0.5<0.5<0.5 $2,4-Dinitrophenol:<$	2,4,5-Trichlanghangh	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dimulophenol: $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 $<$ 2 2 $<$ 2 2 $<$ 2 2 $<$ 2 2 $<$ 2 2 2 $<$ 2 <th< td=""><td>2,4,0-Theniorophenol:</td><td>< 0.5</td><td>< 0.5</td><td>< 0.5</td><td>< 0.5</td></th<>	2,4,0-Theniorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Difficulty phenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 2,4-Dichlorophenol: $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 2,6-Dichlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 4,6-Dinitro-o-Cresol: $<$ $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 2-Chlorophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 2-Chloro-3-methylphenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 4-Nitrophenol: $<$ 1 $<$ 1 $<$ 1 $<$ 1 $o-Cresol:<0.5<0.5<0.5<0.5n-p-Cresol:<0.5<0.5<0.5<0.5Pentachlorophenol:<1<1<1<1Phenol:<0.5<0.5<0.5<0.5$	2,4-Dimurophenoi:	< 2	< 2	< 2	< 2
2,4-Dichlorophenol: $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 $<$ 0.3 2,6-Dichlorophenol:<	2,4-Dimethylphenol:	< 0.3	< 0.5	< 0.3	< 0.3
2,0-Dichilorophenol: 0.3 0.3 0.3 0.3 4,6-Dinitro-o-Cresol: 0.3 0.3 0.3 0.3 2-Chlorophenol: 0.5 0.5 0.5 0.5 4-Chloro-3-methylphenol: 0.5 0.5 0.5 0.5 4-Nitrophenol: 1 1 1 1 o-Cresol: 0.5 0.5 0.5 0.5 entachlorophenol: 0.5 0.5 0.5 0.5 Pentachlorophenol: 1 1 1 1 Phenol: 0.5 0.5 0.5 0.5 Phenol: 0.5 0.5 0.5 0.5	2,4-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,0-Dillito-o-Cresol:< 0.3 < 0.3 < 0.3 < 0.3 2-Chlorophenol:< 0.5 < 0.5 < 0.5 < 0.5 4-Nitrophenol:< 1	2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2-chilophenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.54-Chloro-3-methylphenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.54-Nitrophenol: $<$ 1 $<$ 1 $<$ 1 $<$ 1o-Cresol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5m.p-Cresol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5Pentachlorophenol: $<$ 1 $<$ 1 $<$ 1 $<$ 1Phenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5Phenol: $<$ 0.5 $<$ 0.5 $<$ 0.5 $<$ 0.5	2 Chlorophenol	< 02	< 02	< 02	< 0.2
4-Nitrophenol: <	4 Chloro 3 mothylmhanal	< 0.3	< 0.3	< 0.3	< 0.3
A-relation 1 1 1 1 o-Cresol: <	4 Nitrophonol:	< 0.0	< 0.0	< 0.0	< U.D
m-,p-Cresol: < 0.5	recol:	- 05			
Inspectation C 0.5 C 0.5 C 0.5 C 0.5 Pentachlorophenol: < 1	m n Cresol	- 05	- 0.5	- 05	- 05
Phenol: < 0.5 < 0.5 < 0.5 < 0.5	ni-,p-Clesol: Bontochlorophonoli	< 0.5 - 1	× 0.5	- 1	< 0.5
	Phenol:	- 05		- 05	
	1 110101.	< 0.0	¢ 0.0	< 0.5	< U.D



Parameter	11b-00	12a-00	12b-00	13a-01
1 al allicici	28-Jun-10	24-Jun-10	24-Jun-10	28-Jun-10
MICA Chaum 10	20 0 0 1 10	2.000 10	21000110	20 0 0 10
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	. 0.2		< 1
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
Belizo(a)Fyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g h i)pervlene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Eluoranthana:	< 0.2	< 0.2	< 0.2	< 0.2
Binhenvl:	< 0.2	< 0.2	< 0.2	< 0.2
Camphene:	< 0.5	< 0.5	< 0.5	< 0.5
1-Chloronanbthalene:	< 1	< 1	< 1	
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	< 0.2	< 0.2	< 0.2	< 0.0
Dibenzo(a h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
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	0.2	0.2	< 1
1-Methylnaphthalene	< 0.2	< 0.2	< 0.2	< 02
2-Methylnaphthalene	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Pervlene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate	< 0.5	< 0.5	< 0.2	< 0.2
bis(2-ethylbexyl)Phthalate	< 2	< 2	< 2	< 0.0 < 2
Di-N-butylPhthalate	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromonhenyl phenyl Ether	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Ether	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2.4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine	- 1	- 1	- 1	- 1
/Diphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol:	< 0.4	< 0.4	< 0.4	< 0.4
2.3.4.6-Tetrachlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2.3.5.6-Tetrachlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-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-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:				
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1	< 1	< 1	< 1
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5



Parameter	13b-01	14a-01	14b-01	15a-01
	28-Jun-10	29-Jun-10	29-Jun-10	28-Jun-10
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
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)Fluorantnene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Eluorenthano:	< 0.2	< 0.2	< 0.2	< 0.2
Binhenvl	< 0.5	< 0.5	< 0.2	< 0.2
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
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
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene: Popzul Putul Phthelato:	< 0.2	< 0.2	< 0.2	< 0.2
bis(2-ethylbeyyl)Phthalate	< 0.5	< 0.5	< 0.5 50	< 0.5
Di-N-butylPhthalate		< 2	5 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ether:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine (Dinhonylamino)	< 1	< 1	< 1	< 1
N Nites et al. N. and and and and	. 05	. 05	. 05	. 05
IN-INITrosodi-IN-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2.3.4.5-Tetrachlorophenol	< 0.4	< 04	< 04	< 04
2.3.4.6-Tetrachlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-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-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,0-Dinitro-0-Cresol:	. 02	~ ^ >	~ 0.2	~ 0.2
2-Chloro-3 methylphonol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Mitrophenol	- 1	- 1	- 1	- 1
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5
1	1		1	1



Parameter	15b-01	16A-08	16B-08	17A-08
	25-Jun-10	28-Jun-10	23-Jun-10	23-Jun-10
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:		< 1		
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
Bipnenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Campnene:	- 1		- 1	- 1
2-Chloronaphthalene:	< 05	< 05	< 05	
Chrysene.	< 0.2	< 0.2	< 0.2	< 0.0
Dibenzo(a h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
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-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate:	< 2	< 2	< 2	< 2
Di-N-butyiPhthalate:	< 2	< 2	< 2	< 2
4 Promophonyl phonyl Ethor	< 0.8	< 0.8	< 0.8	< 0.8
4-Diomophenyl Phenyl Ether:	< 0.5	< 0.5	< 0.5	< 0.5
his(2-chloroisopronyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine	< 1	< 1	< 1	< 1
/Diphenylamine:				
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol:	< 0.4	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachiorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-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-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:				
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1	< 1	< 1	< 1
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Phenol:				~ 05
1 10101.	× 0.5	< 0.5	× 0.5	< 0.0



Parameter	17B-08	18A-08	19A-08	20A-08
	23-Jun-10	30-Jun-10	30-Jun-10	29-Jun-10
MISA Group 19				
Acenaphthene:	< 0.2	< 02	< 02	< 02
5-Nitroacenaphthene:	< 0.2	< 1	< 1	< 1
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
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:		< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indele:	< 0.2	< 0.2	< 0.2	< 0.2
1-Methylnaphthalene:	< 02			
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate:	< 2	6	< 2	3
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ether:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
2 4 Dipitrotoluono:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5	< 0.5	< 0.5	< 0.5
Nitrosodiphenylamine				
/Diphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol:	< 0.4	< 0.4	< 0.4	< 0.4
2,3,4,6-Tetrachlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5,6-Tetrachlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-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-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorophenol:	< 03	< 03	< 03	< 03
4-Chloro-3-methylphenol	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1	< 1	< 1	< 1
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5
				1



Parameter	20B-08	21A-08
MICA Crown 10	29-Jun-10	25-Jun-10
MISA Group 19	. 00	. 0.0
Acenaphthene: 5-Nitroacenaphthene:	< 0.2 < 1	< 0.2
Acenaphthylene:	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2
Bipnenyi:	< 0.5	< 0.5
1-Chloronanhthalene	< 1	e 1
2-Chloronaphthalene:	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2
Indole:	< 1	
1-Methylnaphthalene:	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2
Pervlene:	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate:	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8
4-Bromophenyl phenyl Ether:	< 0.3	< 0.3
4-Chlorophenyl Phenyl Ether:	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether: bis(2 Chloroethyl)Ether:	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5	< 0.5
Nitrosodiphenylamine	< 1	< 1
/Diphenylamine:		
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5
MISA Croup 20		
2 3 4 5-Tetrachlorophenol:	< 0.4	< 0.4
2,3,4,5-Tetrachlorophenol:	< 0.4	< 0.4
2,3,5,6-Tetrachlorophenol:	< 0.5	< 0.5
2,3,4-Trichlorophenol:	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5
2-Chlorophenol:	< 03	< 0.3
4-Chloro-3-methylphenol:	< 0.5	< 0.5
4-Nitrophenol:	< 1	< 1
o-Cresol:	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1
Phenol:	< 0.5	< 0.5

(4a Rpt Organics - ATG MISA Group 19-20 / WRIC-Transfer / 60191193 / Mar-11)










































Appendix C

Surface Water Chemistry – Routine and Organics

Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L						
		6.5 -									0.03			1.0				0.30	0.20		0.02
SW 1		8.5																			
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						I	
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						I	
16-Oct-96	ENT						< 10		2	0.13	0.01	1		< 1						I	
20-Nov-96	ENT						< 10		3	0.08	0.15	7		15						I	
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						I	
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						I	
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																			I	
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																			I	
31-Aug-98	Dry																			I	
30-Sep-98	Dry																			I	
31-Oct-98	Dry																			I	
30-N0V-98	Dry																			I	
31 Jap 00	Froze																			I	
28-Feb-99	Froze																			I	
23-100-99	Barr	8.01	1624	142	7 49	13	67	68	3.6	0.37	0.27	21	33	- 2	441	298	52.7	0.5	0.05	04	0.03
30-Apr-99	Dry	0.01	1024	142	7.47	15	0.7	00	5.0	0.57	0.27	21	00			200	52.1	0.0	0.00	0.4	0.00
31-May-99	Dry																			I	
29-Jun-99	Barr	7 91	307	77	2.9	9	64	51	1.72	0.84	0.057	12	15		41.9	34.3	20.6	0.12		04	0.02
31-Jul-99	Drv		507		2.0	_	0.1	0.	1.72	0.01	0.001					0.10	2010	0112			0.02
31-Aug-99	Drv																			I	
30-Sep-99	Dry																			I	
31-Oct-99	Dry																			I	
30-Nov-99	Dry																			I	
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																			l	
28-Feb-00	Froze																			ĺ	
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	l	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



Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SW 1		6.5 - 8 5									0.03			1.0				0.30	0.20		0.02
20 Jul 0	0 Deres	0.5																			
29-Aug-0	0 Dry																				
28-Sep-0	0 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-0	0 Dry																				
28-Nov-0	0 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-0	0 Froze																				
31-Jan-0	1 Froze																				
28-Feb-0	1 Froze																				
31-Mar-0	1 Froze		5 45	1.5.5	6.10			05	2.1.6	0.15	0.40				4.40	100		0.00			0.00
24-Apr-0	I Philip	7.9	222	175	6.13	11	2.2	65 77	3.16	0.17	0.12	6	9.8	2	140	122	34.4	0.83	0.02	0.4	0.02
28-May-0	1 Pminp	1.29	333	119	3.93	9	0.3	11	2.4	0.11	0.200	10	13.2	< 1	39.4	40	49.4	0.58	0.03	0.4	0.05
25-Jul-0	1 Philip	73	322	105	4 82	15	8.1	143	53	03	0 765	21	21 7	e 1	30.3	29.7	56.9	0.96	0.06	1	0 10
31-Aug-0	1 Drv	1.5	522	105	1.02	15	0.1	110	5.5	0.5	0.700	21	2		00.0	20.1	00.0	0.00	0.00		0.10
27-Sep-0	1 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-0	1 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-0	1 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-0	1 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	2 Froze																				
28-Feb-02	2 Froze																				
29-Mar-02	2 Froze																				
29-Apr-0	2 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	2 Dry		220		2.16		5.0	75	2.10	0.14	0.400	40	5.0			00.4	40.4	0.07	0.00		
05-Jun-0	2 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
30 Aug 0	2 Dry																				
27-Sep-0	2 Dry																				
31-Oct-0	2 Dry																				
29-Nov-0	2 Dry																				
20-Dec-02	2 Dry																				
31-Jan-0	3 Froze																				
28-Feb-0	3 Froze																				
29-Mar-0.	3 Froze																				
30-Apr-0	3 Dry																				
31-May-0.	3 Dry																				
05-Jun-0	3 Philip	6.99	240	68	2.89	4	6.1	51	6	0.16	0.934	118	6.1	< 1	26.1						
31-Jul-0	3 N/A																				
30-Aug-0.	3 N/A																				
27-Sep-0.	3 Dry																				
29-Nov 0	3 Dry																				
01-Dec-0	3 Philip	7 21	256	52	3 16	4	42	24	0.63	< 0.03	0 146	12	6	< 1	49 7	28.9	18.8	0.54	< 0.01	0.3	0.07
31-Jan-0	6 Drv	,.21	250	52	5.10	-	7.4	4 7	0.05	\$ 0.05	0.140	12	Ŭ		10.1	20.0	10.0	5.04		0.0	0.07
28-Feb-0	6 Dry																				
09-Mar-0	6 MAX	7.5	245	25	2.2	2	4	22	1.3	0.29	0.17	24	5	2	53	37	8.9	1.8	< 0.02	0.2	0.09
ľ	•	-	•		•		-	•	•	•	•		•	•	•	•		•			



Date	Lab	pН	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-Apr-06 16-May-06 30-Jun-06 31-Jul-06 31-Aug-06 13-Sep-06 31-Oct-06	Dry MAX Dry Dry Dry N/A Dry	7.6	346	126	4.8	7.6	3	43	1.6	0.16	0.21	3	4	< 1	36	43	31	0.43	0.02		0.02
30-Nov-06 31-Dec-06 31-Jan-07 28-Feb-07 14-Mar-07 29-Mar-07 30-Apr-07 31-May-07 30-Jun-07	Dry Dry Snow MAX MAX Dry Dry Dry	7.3 7.8	238 686	22 101	2.4 6.7	5.3 4.4	3 3	25 31	1.3 1.5	0.53 0.08	0.26 0.19	4 10	7 13	< 1	49 140	33 120	8.7 34	0.16 0.93	< 0.01 0.02		0.02 0.04
31-Jul-07 31-Aug-07 28-Sep-07 31-Oct-07 21-Nov-07 31-Dec-07 08 Jap 08	Dry Dry Dry MAX Snow	7.9	239	69	4.4	8	3	33	1.3	0.09	0.41	8	10	< 1	24	24	15	0.56	0.01		0.04
28-Feb-08 31-Mar-08	Snow Snow	0.2	2260	225	20	0.5	2	22	0.0	0.06	0.22	3	20	< 1	520	350	100	0.2	0.02		0.09
31-May-08 31-May-08 24-Jun-08 24-Jul-08 11-Aug-08 28-Sep-08 31-Oct-08 30-Nov-08 31-Dec-08	Dry MAX MAX MAX Dry Dry Dry Snow	7.6 7.6 7.3	121 98 157	39 47 61	2.3 2.1 2.2	2.6 2.6 2.2	553	33 22 19	2.5 0.6 0.8	0.9 < 0.05 0.15	0.28 0.19 0.19	24 5 4	4 < 1 2	< 1 < 1 < 1	9 3 10	11 2.7 11	11 14 16	0.2 0.99 0.2 0.2	0.01 0.01 0.02		0.03 0.02 0.02
30-Jan-09 12-Feb-09 11-Mar-09 28-Apr-09 27-May-09 30-Jun-09 31-Jul-09 31-Aug-09 30-Sep-09 30-Oct-09 30-Nov-09	MAX MAX MAX MAX Dry Dry Dry Dry Dry Dry Dry	7.3 6.4 7 7.4	374 253 374 472	36 47 80 88	1.7 1.7 2.7 4	2.4 2.6 2.2 7.6	< 2 3 < 2 7	14 19 33 67	0.6 0.7 0.1 3.1	< 0.05 < 0.05 < 0.05 0.63	0.19 0.13 0.11 1.3	7 < 10 10 9	7 9 6 20	< 1 < 1 < 1	85 43 58 74	60 36 50 80	12 12 23 22	0.5 0.3 0.4 0.3	< 0.01 < 0.01 0.02 0.03		0.04 0.03 0.04 0.03



Date	Lab	pН	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-Dec-09 29-Jan-10 26-Feb-10 18-Mar-10 30-Apr-10 31-May-10 30-Jun-10 30-Jun-10 31-Aug-10 30-Sep-10	 Dry Snow Snow MAX Dry 	7.7	268	91	4	3.2	3	23	0.8	< 0.05	0.13	2	5	< 1	27	21	28	< 0.1	< 0.01		0.02
29-Oct-10 02-Dec-10 31-Dec-10) Dry) MAX) Dry	7.68	187	82	3.9	2.4	< 2	31	0.9	< 0.05	0.29	49	2	1	7	7	23	0.2	< 0.01		0.03



Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L						
		6.5 -									0.03			1.0				0.30	0.20		0.02
SW 2		8.5																			
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 -Guelph WRIC & Waste Transfer Station



Date	Lab	pН	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
		6.5 -		6		6	0	0	0	0	0.03		6	1.0	6		0	0.30	0.20	0	0.02
SW 2		8.5																			
29-Mar-02 30-Apr-02	Dry Standi																				
31-May-02	Drv																				
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	Proze																				
31-May-03	Dry																				
05-Jun-03	Dry																				
31-Jul-03	N/A																				
30-Aug-03	N/A																				
27-Sep-03	Dry		Ì					Ì	Ì					Ì			Ì				
31-Oct-03	Dry																				
29-Nov-03	Dry																				
20-Dec-03	Dry																				
31-Jan-06	Dry																				
28-Feb-06	Dry																				
09-Mar-06	MAX	7.5	278	29	2.1	1	8	42	1.1	0.23	0.19	38	6	< 1	60	40	9.7	1.6	< 0.02	0.2	0.08
30-Apr-06	Dry		115		1.0				0.5	0.00	0.00					10	40		0.04		0.00
16-May-06	MAX	7.4	117	45	1.8	1.4	< 2	44	0.6	0.09	0.08	4	2	< 1	9	12	12	0.4	< 0.01		0.02
30-Jun-00	Dry																				
31-Jui-00	Dry																				
13-Sep-06	N/A																				
31-Oct-06	Drv																				
30-Nov-06	Dry																				
31-Dec-06	Dry																				
31-Jan-07	Snow																				
28-Feb-07	Snow																				
14-Mar-07	Snow																				
29-Mar-07	MAX	8	2320	348	49	8.7	< 2	18	0.9	0.06	0.034	9	44	< 1	500	420	170	0.27	0.04		0.02
30-Apr-07	Dry																				
31-May-07	Dry																				
30-Jun-07	Dry																				
31-Jul-07	Dry																				
51-Aug-07	Dry																				
28-Sep-07	Dry	77	125	112	5.2	5 1	5	70	2.0	0.81	0.20	11	22	1	20	45	12	0.85	0.04		0.04
02-001-07	MAA	1.1	423	115	5.2	5.1	5	10	2.9	0.81	0.29	11	23	1	29	40	43	0.05	0.04	I	0.04



Date	Lab	pН	Cond-	Alk	Mg	К	BOD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L						
SW 2		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
21-Nov-07	MAX	8	199	74	3.3	1.5	3	24	1.7	0.15	0.16	20	9	< 1	10	9.1	24	0.99	< 0.01		0.06
31-Dec-07	Snow																				
08-Jan-08	MAX	7	115	27	1.6	1.5	4	16	1.3	0.06	0.23	11	3	< 1	15	13	9.2	0.68	< 0.01		0.02
28-Feb-08	Snow																				
19-Mar-08	MAX	8.1	2170	300	23	6.1	< 2	38	1.1	0.06	0.16	15	24	< 1	490	290	99	< 0.1	0.02		0.03
10-Apr-08	MAX	8.2	2340	233	21	9.2	< 2	19	0.8	< 0.05	0.12	5	33	< 1	520	350	110	0.2	0.02		0.04
22-May-08	MAX	8	2270	387	32	8.5	(30	1.5	< 0.05	0.12	8	21	< 1	480	320	120	0.3	0.02		0.03
24-Jun-08	MAX	7.5	148	38	1.6	4.8	/	33	1.7	0.34	0.3	13	3	2	20	12	9	0.55	< 0.01		0.03
24-Jul-08	MAX	7.6	1/0	50	3.1	3	3	20	0.8	< 0.05	0.15	4	< 1	< 1	21	21	17	0.3	0.01		0.02
17 Sop 08	MAX	7.4 o	1270	264	2.9	2.5	- 2	13	1	0.58	0.11	4	2	< 1	20	19	75	0.3	0.01		0.01
17-Sep-08	Dry	0	1270	204	17	0.5	< 2	14	0.7	< 0.05	0.00	2	23	< 1	220	100	75	0.2	0.05		0.02
31-Oct-08	Dry																				
26-Nov-08	MAX	8	631	155	10	5.6	3	22	0.9	0.06	0 11	47	13	< 1	95	91	50	0.7	0.01		0.04
31-Dec-08	Drv	Ŭ	001	100	10	510	Ű		0.7	0.00	0					0.		0.1	0.01		0.01
30-Jan-09	Snow																				
12-Feb-09	MAX	7.4	647	63	4.3	2.3	< 2	22	0.7	0.15	0.17	21	10	< 1	150	100	21	1.1	< 0.01		0.06
11-Mar-09	MAX	7.1	1680	259	16	5.6	< 2	17	0.3	< 0.05	0.086	< 10	23	< 1	350	230	77	< 0.1	0.02		0.04
28-Apr-09	MAX	7.3	1350	211	19	6.8	8	54	1.9	<	0.22	76	16	<	270	220	66	1	0.03		0.06
27-May-09	MAX	7.9	2130	347	33	10	2	40	1.5	0.06	0.22	9	17	< 1	430	330	100	1	0.04		0.02
17-Jun-09	Dry																				
17-Jun-09	Dry												<	<							
17-Jun-09	MAX	7.7	1990	371	33	12	19	280	14	0.17	2.1	410			390	290	110	9.5	0.05		0.17
17-Jun-09	MAX	7.7	1990	371	33	12	19	280	14	0.17	2.1	410	<	<	390	290	110	9.5	0.05		0.17
31-Jul-09	Dry																				
31-Aug-09	Dry																				
30-Sep-09	Dry																				
30-Oct-09	Dry																				
30-Nov-09	Dry																				
30-Dec-09	Dry																				
29-Jail-10 26 Eab 10	Show																				
20-100-10 18 Mar 10	MAY	70	2020	248	36	10	з	28	1	- 0.05	0.05	5	31	- 1	770	300	170	- 01	0.01		0.02
07-Apr-10	MAX	7.8	2850	240	35	14	12	93	64	2.2	0.00	43	19	< 1	710	430	150	1.5	0.02		0.02
30-Apr-10	Dry	7.0	2000	205	55	1.	.2	00	0.1	2.2	0.0	10	10		110	100	100	1.0	0.02		0.07
31-May-10	N/A																				
31-May-10	Drv																				
31-May-10	N/A																				
31-May-10	Dry																				
22-Jun-10	N/A																				
22-Jun-10	Dry																				
22-Jun-10	N/A																				
22-Jun-10	Dry																				
30-Jul-10	Dry																				
31-Aug-10	Dry	l																			



Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L						
SW 2		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
30-Sep-10) MAX	7.2	207	63	3.4	9.4	4	48	1.4	0.09	0.54	17	1	< 1	22	16	16	0.3	0.02		0.02
29-Oct-10) Dry																				
02-Dec-10	MAX	7.93	326	107	5.1	5.2	< 2	25	0.8	< 0.05	0.11	13	6	2	32	31	26	0.6	< 0.01		0.03
31-Dec-10	Dry																				

Routine Surface Water Quality - General Analysis -Guelph WRIC & Waste Transfer Station



Date	Lab	pН	Cond-	Alk	Mg	K	В	OD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	m	ıg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	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
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
09-Jun-04	N/A					<									<							
09-Jun-04	N/A																					
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
03-Aug-05	N/A																					
28-Nov-05	Maxx	8.18	620	231	24		<	2	< 4	0.4	0.1	< 0.02		18	< 1	51	26	84	< 0.05	0.02	< 0.05	0.08
01-Jun-06	N/A																					
04-Dec-06 20 Mar 07	MAX	02	621	242	24	1.2		2	4	0.6	0.11	. 0.02		1.4	. 1	44	24	00	- 0.02	0.02	< 0.0F	0.1
14 Jun 07	MAX	0.5 9.2	502	242	24	1.5	<	2	4	0.0	0.11	< 0.02		14	< 1	44 25	24 19	02 76	< 0.02	0.02	< 0.05	0.1
14-Juli-07	MAX	8.5 8.2	558	243	24	1.5	-	2	10	0.9	0.13	< 0.02		16		27	10	70	< 0.02	0.01	< 0.05	0.17
05-Dec-07	MAX	8.2	650	233	27	1.5	2	2	6	0.0	0.15	< 0.02		26		51	22	96	0.02	0.02	< 0.00	0.00
02-May-08	MAX	8.3	610	213	19	1.1	<	2	< 4	0.6	0.05	0.02		17	< 1	51	30	68	< 0.02	< 0.01	< 0.1	0.07
25-Jun-08	MAX	8.1	593	217	20	1.3			11	0.7	0.12	< 0.02		15	< 1	45	26		< 0.02	< 0.01	< 0.1	0.05
11-Sep-08	MAX	8.2	574	228	20	1.4	<	2	11	0.6	< 0.05	< 0.02		16	< 1		21	75	< 0.02	0.01	< 0.1	0.07
09-Dec-08	MAX	8	787	262	20	1.6	<	2	< 4	0.3	< 0.05	< 0.02		19	< 1	80	47	80	< 0.02	0.02	< 0.1	0.13
01-May-09	MAX	7.8	582	231	21	1.3	<	2	< 4	0.5	< 0.05	< 0.02		13	< 1	44	22	75	< 0.02	0.01	< 0.1	0.07
25-Jun-09	MAX	8.1	557	228	21	1.4	<	2	< 4	0.5	< 0.05	< 0.02		12	< 1	31	18	73	< 0.02	0.02	< 0.1	0.06
31-Aug-09	MAX	7.8	1420	334	20	1.7	<	2	140	1.5	0.13	0.12		110	< 1	190	120	160	1	0.19	0.11	0.01
15-Dec-09	MAX	7.8	451	169	20	1.2	<	2	9	0.4	0.06	0.02		11	< 1	26	13	70	< 0.02	0.01	< 0.1	0.15
24-Jun-10	MAX	8	618	235	21	1.3	<	2	< 4	0.6	0.07	0.02		15	1	40	24	73	< 0.06	0.01	< 0.1	0.05
17-Dec-10	MAX	7.98	725	266	24	1.5	<	2	8	0.3	< 0.05	< 0.02		16	< 1	54	28	88	< 0.02	0.02	< 0.1	0.1

Routine Surface Water Quality - General Analysis -Guelph WRIC & Waste Transfer Station



Date	Lab	pН	Cond-	Alk	Mg	K ma/I	BOD	COD	TKN ma/I	NH3-N	Total-P	TSS mg/I	SO4	Phenol	Cl	Na ma/I	Ca	Fe	B ma/I	P ma/I	Zn mg/I
			uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/∟	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ilig/L
P2SW2		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
31-Jan-08	Snow	_																			
28-Feb-08	Snow																				
31-Mar-08	Dry																				
10-Apr-08	MAX	8.2	3850	330	36	10	< 2	27	0.6	< 0.05	0.013	1	38	< 1	950	610	160	0.2	0.03		0.04
31-May-08	Dry																				
30-Jun-08	Dry																				
31-Jul-08	Dry																				
31-Aug-08	Dry																				
28-Sep-08	Dry																				
31-Oct-08	Dry																				
30-Nov-08	Dry																				
31-Dec-08	Snow																				
30-Jan-09	Snow																				
27-Feb-09	Snow																				
31-Mar-09	Dry												_								
28-Apr-09	MAX	6.7	120	31	1.3	0.3	<	12	0.8	0.2	0.1	20	7	3	14	13	11	0.6	<		0.07
27-May-09	Dry			10																	
17-Jun-09	MAX	6.4	154	43	4.4	0.9	6	55	2.1	0.17	<	63	4	1	23	20	19	1.6	<		0.13
31-Jul-09	Dry																				
31-Aug-09	Dry																				
30-Sep-09	Dry																				
30-Oct-09	Dry																				
30-Nov-09	Dry	74	2480	4.4	10	1.5	14	02	2	0.28	0.41	170	7	2	690	460	44	6	- 0.01		0.26
20 Jap 10	Spow	/.4	2400	44	10	1.5	14	93	2	0.28	0.41	170	1	2	000	400	41	0	< 0.01		0.30
29-Jail-10 26 Feb 10	Snow																				
20-100-10 31-Mar-10	Dry																				
30-Apr-10	Dry																				
31-May-10	Dry																				
30-Jun-10	Drv																				
30-Jul-10	Drv																				
31-Aug-10	Drv																				
30-Sep-10	Drv																				
29-Oct-10	Drv																				
30-Nov-10	Dry																				
31-Dec-10	Dry																				



Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 -									0.03			1.0				0.30	0.20		0.02
TP1		8.5																			
31-Jan-06	Drv																				
28-Feb-06	Dry																			l I	
09-Mar-06	MAX	7.4	1440	49	2.7	6	17	61	2.7	0.72	0.32	40	44	3	359	240	40	1.2	< 0.02	0.3	0.12
30-Apr-06	Dry																			1	
16-May-06	MAX	7.9	200	83	2	0.75	< 2	24	0.8	< 0.05	0.15	4	6	< 1	9	18	27	0.06	0.02	1	0.15
30-Jun-06	Dry																			l I	
31-Jul-06	Dry																			l I	
31-Aug-06	Dry																			l I	
13-Sep-06	MAX	7.7	159	58	2.6	3	3	21	0.9	0.08	0.26	1	9	< 1	6	5.7	20	0.07	0.03	l I	0.06
31-Oct-06	Dry																			l I	
30-Nov-06	Dry																			1	
31-Dec-06	Dry																			l I	
31-Jan-07	Snow																			l I	
28-Feb-07	Snow																			l I	
14-Mar-07	MAX	7.9	2000	96	3.6	2.1	4	33	1.8	0.32	0.22	2	17	< 1	520	410	36	0.2	0.03	l I	0.09
29-Mar-07	Dry																			1	
30-Apr-07	Dry																			l I	
31-May-07	Dry																			l I	
30-Jun-07	Dry																			l I	
31-Jul-07	Dry																			l I	
31-Aug-07	Dry																			l I	
28-Sep-07	Dry																			1	
02-Oct-07	Dry																			l I	
21-Nov-07	MAX	7.6	181	56	2.8	3.5	7	38	1	0.08	0.26	20	10	< 1	14	16	20	0.82	0.02	l I	0.06
31-Dec-07	Snow																			1	
08-Jan-08	MAX	7.9	1080	130	2.2	3.1	4	26	1.8	< 0.05	0.17	5	28	< 1	220	220	29	0.34	0.04	l I	0.19
28-Feb-08	Snow																			1	
19-Mar-08	MAX	7.9	2150	83	1.9	2.6	3	32	0.9	0.27	0.14	4	24	< 1	580	420	20	0.2	0.02	l I	0.07
10-Apr-08	MAX	8.2	542	117	5.3	1.9	6	30	0.9	< 0.05	0.07	2	8	< 1	90	70	35	0.4	0.02	1	0.007
22-May-08	MAX	8.3	612	140	7.3	3.9	3	50	1.5	< 0.05	0.035	2	18	< 1	98	88	34	0.1	0.04	l I	0.007
24-Jun-08	MAX	8	272	87	3.8	1.8	6	39	1.5	0.12	0.11	10	5	1	26	25	25	0.44	0.02	1	0.02
24-Jul-08	MAX	8.2	633	193	10	9	5	74	2	0.25	0.12	6	1	< 1	82	53	58	1	0.03	l I	< 0.005
11-Aug-08	MAX	7.5	403	147	7.1	3.4	4	30	1.3	0.21	0.059	4	4	< 1	38	34	40	0.7	0.02	1	< 0.005
17-Sep-08	MAX	7.8	506	195	8.9	4.4	3	43	1.4	< 0.05	0.073	6	12	< 1	38	40	64	0.9	0.04	l I	0.01
16-Oct-08	MAX	/./	346	117	3.9	3.1	4	20	0.9	< 0.05	0.11	10	31	< 1	19	22	44	0.5	0.05	l I	0.02
20-Nov-08	MAA	8.1	2710	259	17	5.4	< 2	47	2.3	0.1	0.25	91	31	< 1	640	360	90	2	0.02	1	0.08
31-Dec-08	Snow																			l I	
12 Eab 00	MAY	7.6	2270	05	2.0	25	- 2	24	1.2	0.14	0.29	40	21	- 1	640	450	22	20	- 0.01	I	0.26
12-Feb-09	MAY	7.0 6.9	1200	0J 115	2.0	2.5	~ 2	24	1.5	0.14	0.20	40	15		210	240	21	2.9	0.01	I	0.20
28-Apr 00	MAY	67	277	115	5 77	5 13	S R	20	21	0.07	0.20	< 10 50	10	2	12	240	17	2.2	0.01	I	0.10
20-Apt-09	MAY	7 1	253	40 5/	2.7	1.5	10	50	2.1	0.23	0.41	20	25		40 27	26	10	2.5	0.01	I	0.13
17_Iun_00	MAX	6.6	445	54 70	6.5	5.7	48	230	2.5	1	0.00	20 79	2.5	18	21	32	51	23	0.00	I	0.07
23. Jul 00	MAY	7.2	151	54	1.0	2.1	-+0 -2	36	2	< 0.05	0.3	12	12	۲0 د 1	5	83	18	0.3	0.1	I	0.13
23-Jui-09	Dry	1.2	151	54	1.9	2.1	0	00	2	- 0.05	0.10	14	12		Ŭ	0.0	10	0.0	0.04	I	0.00
20-Aug-09	Diy	•	1		I.	1		I	1	1	I.		I.	1	I	I	I.	1	1		1



Date	Lab	pН	Cond-	Alk	Mg	К	BOD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L						
TP1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
29-Sep-09	MAX	7.6	299	74	4.1	5.4	5	43	1.5	0.1	0.27	7	33	< 1	27	23	36	0.9	0.02		0.04
29-Oct-09	MAX	7.4	692	186	9.8	5.8	5	71	2.1	0.08	0.3	36	46	< 1	77	55	77	2.5	0.04		0.1
19-Nov-09	MAX	7.1	413	72	7.6	7.3	32	160	7	0.41	0.87	110	100	4	21	22	56	2	0.06		0.22
09-Dec-09	MAX	7.5	2730	53	8.8	4.3	3	27	1	0.2	0.21	12	10	< 1	760	430	77	0.3	< 0.01		0.28
29-Jan-10	Snow																				
26-Feb-10	Snow																				
31-Mar-10	Dry																				
07-Apr-10	MAX	7.7	541	72	3.4	2.9	< 2	53	1.6	< 0.05	0.24	10	52	2	87	69	42	0.6	0.04		0.25
31-May-10	Dry																				
22-Jun-10	N/A												ļ								
30-Jul-10	Dry																				
31-Aug-10	Dry																				
30-Sep-10	MAX	7.8	512	175	9.5	7.9	4	69	2	0.11	0.25	< 10	10	< 1	43	43	62	1.4	0.02		0.006
05-Nov-10	MAX	8.14	570	187	7.9	5.7	< 2	41	1.7	0.43	0.15	9	15	< 1	50	51	61	0.7	0.02		0.03
02-Dec-10	MAX	7.84	626	219	27	4.7	31	39	1.2	< 0.05	0.13	130	17	1	56	65	92	19	0.02		0.83
31-Dec-10	Snow																				

Routine Surface Water Quality - General Analysis -Guelph WRIC & Waste Transfer Station



Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 -									0.03			1.0				0.30	0.20		0.02
TP1-Out		8.5																			
31-Jan-00	6 Dry																				
28-Feb-00	6 Dry																				
09-Mar-06	6 MAX	7.6	1390	69	3.9	6	10	52	2.4	0.66	0.29	25	27	1	332	220	37	0.92	< 0.02	0.4	0.07
30-Apr-06	6 Dry														_						
16-May-00	6 MAX	7.8	222	85	3.4	2.7	< 2	31	1.2	0.07	0.13	3	6	< 1	15	23	23	0.47	0.02		0.02
30-Jun-00	6 Dry																				
31-Jul-00	6 Dry																				
12 Sop 00	6 Dry	76	125	50	2.2	2.9	4	17	0.0	0.06	0.28	1	0	- 1	Б	5.4	16	< 0.05	0.03		0.02
31 Oct 0	6 Dry	7.0	155	50	2.2	5.0	4	17	0.9	0.00	0.20	1	0	< 1	5	5.4	10	< 0.05	0.03		0.02
30-Nov-0	6 Dry																				
31-Dec-00	6 Dry																				
31-Jan-0	7 Snow																				
28-Feb-0	7 Snow																				
14-Mar-0	7 MAX	7.6	972	70	4	5.7	4	28	1.7	0.66	0.3	3	11	< 1	220	180	26	0.2	0.02		0.03
29-Mar-07	7 MAX	8.2	951	170	9.8	5.8	4	38	2.1	< 0.05	0.12	4	23	2	180	170	61	0.48	0.05		0.02
30-Apr-07	7 Dry																				
31-May-07	7 Dry																				
30-Jun-0'	7 Dry																				
31-Jul-07	7 Dry																				
31-Aug-0'	7 Dry																				
12-Sep-07	7 MAX	7.7	659	107	0.8	45	14	140	3	0.13	0.75	15	48	4	100	53	48	7.2	0.1		0.02
02-Oct-0	7 MAX	7.9	695	229	9.6	24	7	120	4	0.19	0.26	10	24	2	73	47	72	0.96	0.08		0.02
21-Nov-0	MAX	7.8	191	55	3.1	4.1	5	5	1	0.1	0.22	19	15	< 1	14	15	22	0.77	0.02		0.05
31-Dec-0	/ Snow	77	967	107	4	2.0	2	22	15	- 0.05	0.12	0	24	. 1	100	150	22	0.42	0.01		0.04
28 Feb 09	8 Spow	1.1	807	107	4	2.9	2	22	1.5	< 0.03	0.12	9	24	< 1	190	150	32	0.43	0.01		0.04
20-1 C0-00	8 Snow																				
10-Apr-08	8 MAX	82	535	126	43	2.3	< 2	36	1.1	< 0.05	0 14	3	6	1	84	76	32	07	0.02		0.01
22-May-08	8 MAX	8.1	584	155	5.9	2.5	3	41	1.5	< 0.05	0.12	17	14	< 1	80	80	41	0.7	0.04		0.008
24-Jun-08	8 MAX	7.8	245	87	2.9	1.7	4	37	1.5	0.24	0.23	6	4	1	19	20	22	0.69	0.03		0.02
24-Jul-08	8 MAX	8	333	128	4.8	5.8	4	43	1.3	0.11	0.15	5	< 1	< 1	27	24	35	1.2	0.03		0.006
11-Aug-08	8 MAX	7.5	323	118	4.7	2.1	2	24	0.6	0.4	0.059	3	2	< 1	24	24	32	0.5	0.02		0.007
17-Sep-08	8 MAX	7.9	427	165	7.1	5.2	< 2	26	1.2	< 0.05	0.091	4	8	< 1	33	40	54	0.5	0.03		0.01
16-Oct-08	8 MAX	7.9	389	130	3.9	4.7	< 2	63	1.1	0.28	0.11	< 1	34	2	23	23	52	< 0.1	0.04		0.007
26-Nov-08	8 MAX	8.1	4740	243	16	4.2	< 2	36	0.8	0.06	0.056	2	34	< 1	1300	820	160	0.2	0.03		0.06
31-Dec-08	8 Snow																				
30-Jan-09	9 Snow	_					_						_								
12-Feb-09	9 MAX	7.6	772	86	5.2	2.2	< 2	21	0.7	< 0.05	0.11	11	9	< 1	180	110	33		< 0.01		0.05
11-Mar-09	9 MAX	6.7	526	95	4.5	2.9	3	27	1	< 0.05	0.13	10	13	< 1	99	78	29		0.01		0.05
28-Apr-09	MAX	6.7 7	404	64 52	3	1.8	8 12	53	1.6	0.24	0.25	32	21	2	12	5/	22	1.5	0.02		0.06
27-may-09	9 MAX	7	282	52 122	2.9	4.0	13	53	2.0 1.6	0.35	0.5	40 1	33	4	32 27	34	21 17	1.0	0.06		0.08
23 Jul 0		7 1	402	133	4.2	0.2	6	89	1.0	0.25	0.13	4	42		37 11	42	47 24	1.0	0.11		0.01
23-Jui-09		/.1	∠14	02	3.3	3.4	0	00	2.1	~ 0.05	0.5	52	13			10	24	1.2	0.00		0.00
20-Aug-0	DIY		1		I.	1 1		1	I	1	I		I	1	I	I	1	1	1		1



Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	TSS	SO4	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
			uctivity	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L						
		6.5 -									0.03			1.0				0.30	0.20		0.02
TP1-Out		8.5																			
29-Sep-09	MAX	7.3	228	78	2.7	3.2	3	28	1	0.05	0.19	6	20	< 1	14	15	26	0.1	0.02		0.02
29-Oct-09	MAX	7.8	586	161	6.7	7.7	< 2	35	1.1	0.08	0.14	8	28	< 1	65	48	59	0.3	0.03		0.03
19-Nov-09	MAX	8	627	190	7.7	7.4	< 2	27	1	0.14	0.11	1	18	< 1	70	55	69	0.2	0.03		0.01
09-Dec-09	MAX	7.9	531	167	6.9	4	< 2	21	0.8	0.11	0.06	2	14	< 1	55	48	53	0.2	0.01		0.009
29-Jan-10	Snow																				
26-Feb-10	Snow																				
18-Mar-10	MAX	7.9	723	224	12	6.4	4	34	1.8	0.15	0.16	7	5	< 1	92	73	64	0.8	0.01		0.02
07-Apr-10	MAX	7.7	599	140	6.5	5.1	6	58	1.8	< 0.05	0.29	9	32	< 1	88	72	53	1.4	0.03		0.02
31-May-10	Dry																				
22-Jun-10	N/A																				
30-Jul-10	MAX	7.8	365	135	4.6	3.1	3	42	1.5	0.57	0.17	9	20	< 1	20	19	48	0.7	0.04		0.007
31-Aug-10	MAX	8.2	379	140	4.1	4.5	3	25	1	0.08	0.13	< 1	20	< 1	21	23	52	< 0.1	0.04		< 0.005
30-Sep-10	MAX	7.9	443	146	6.4	6.8	< 2	45	1.4	0.19	0.18	< 10	14	< 1	38	32	47	0.5	0.02		0.008
05-Nov-10	MAX	8.17	569	188	8.1	5.9	< 2	41	1.6	0.43	0.15	7	15	< 1	51	51	63	0.7	0.02		0.03
02-Dec-10	MAX	8	544	177	7.9	3	< 2	22	0.6	< 0.05	0.05	3	16	< 1	49	57	50	0.4	0.01		0.02
31-Dec-10	Froze																				

Routine Surface Water Quality - General Analysis -Guelph WRIC & Waste Transfer Station



	Date	Lab	pН	Cond- uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N	Total-P	TSS mg/L	S04 mg/L	Phenol	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
CW 2	21 Jan 02	Derr		uctivity	ing/E	ing/12	ing/L	mg/L	ing/L	8	ing/12	ing/E	8	ing/E	ug/ E	ing/ E	ing/E	mg/L	ing/L	ing/ E	ing/E	
SW 3	28 Eab 02	Dry																				
	20-Feb-02	Dry																				
	29-Iviai-02	Dry																				
	21 May 02	Dry																				
	28 Jun 02	Dry																				
	20-Juii-02	Dry	ł		1	1				1		1									l	
	20 Aug 02	Dry																				
	27 Son 02	Dry																				
	21-Sep-02	Diy																				
	20 New 02	Dry	ł		1	1				1		1									l	
	29-INOV-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		1100	104	10.0	102	470	400			10		70		4.40						
	05-Jun-03	Philip	6.75	1129	184	10.8	102	172	102	31	5.65	4.3	84	12	6	140					ļ	
	31-Jul-03	Dry																				
	30-Aug-03	Dry																				
	27-Sep-03	Dry																				
	31-Oct-03	Dry																			ļ	
	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
	31-Jan-06	Dry																				
	28-Feb-06	Dry																				
	09-Mar-06	MAX	7.6	2620	248	21	150	130	1200	120	23.1	12	230	< 50	51	628	390	87	11	0.09	10	0.67
	30-Apr-06	Dry																				
	16-May-06	MAX	7.8	3960	322	35	390	20	1000	53	3.3	2.5	60	61	6	862	550	110	3.2	0.13		0.21
	30-Jun-06	Dry																				
	31-Jul-06	Dry																				
	31-Aug-06	Dry																				
	13-Sep-06	N/A																				
	31-Oct-06	Dry																				
	30-Nov-06	Dry																				
	31-Dec-06	Dry																				
	31-Jan-07	Snow																				
	28-Feb-07	Snow																				
	14-Mar-07	MAX	7.5	441	33	1.9	3.3	5	33	1.5	0.57	0.31	21	6	6	100	75	10	0.68	0.01		0.03
	29-Mar-07	Dry																				
	30-Apr-07	Dry																				
	31-May-07	Dry																				
	30-Jun-07	Dry																				
	31-Jul-07	Dry																				
	31-Aug-07	Dry																				
	28-Sep-07	Dry																				
	02-Oct-07	MAX	7.9	565	211	9.6	31	5	130	5	0.22	1.2	18	40	3	30	28	64	0.9	0.06		0.04



Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	TSS	S04	Phenol	C1	Na	Ca	Fe	В	Р	Zn
1		۱ ۱	uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21-Nov-07	MAX	6.6	504	116	19	52	180	770	13	1.76	5.2	130	< 20	300	50	13	67	5.7	0.05		0.22
31-Dec-07	Snow	١		I	I I		۱ ا	I I	l I	l i	I	1	1	.		l .	I .				
08-Jan-08	MAX	7.3	525	75	4.3	16	11	98	2	0.12	0.64	13	13	2	94	74	23	0.59	0.02		0.04
28-Feb-08	Snow	1		1 1	I I		۱ ۱	I	l i	l i		1	I	,		l _ 1	Ι ι				
19-Mar-08	MAX	7.3	869	39	2.1	6.7	23	110	1.1	0.28	0.64	9	11	14	220	160	12	0.3	< 0.01		0.03
10-Apr-08	MAX	7.7	648	126	7.7	36	150	490	4.1	0.3	2	13	15	18	100	71	34	0.9	0.04		0.04
31-May-08	Dry	١		1 1	l I	I I	۱ ۱	I I	I 1	l I	1	I	I	,	,	I	Ι,				
30-Jun-08	Dry Dry	١		1 1	I 1		۱ ا	I 1	l i	l i		I	I	.	,	I ,	Ι ι				
31-Jul-08	Dry	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
28-Sep-08	Drv	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
31-Oct-08	Dry	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
30-Nov-08	Snow	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
31-Dec-08	Snow	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
30-Jan-09	Snow	١		1 1	I 1		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
12-Feb-09	MAX	7.1	1270	38	7.5	2.2	< 2	120	2.5	0.12	0.42	140	11	1	320	240	28	3.7	< 0.01		0.14
11-Mar-09	MAX	6.6	319	53	2.1	5.7	16	76	1.6	0.14	0.55	10	13	3	53	41	17	0.4	0.01		0.02
28-Apr-09	MAX	6.7	240	59	7	10	28	240	8	0.63	2.1	75	< 5	17	32	21	24	6.8	0.02		0.17
27-May-09	MAX	6.5	310	92	8.1	34	83	380	13	2.4	3.1	130	< 2	13	< 2	14	31	7.4	0.05		0.22
17-Jun-09	MAX	6.5	261	60	7.2	18	59	380	9	1.3	1.4	140	14	14	20	12	32	4	0.04		0.17
23-Jul-09	MAX	6.9	162	58	4.5	22	30	160	4.7	0.81	1.6	79	< 1	7	< 1	2.9	16	1.7	0.02		0.07
28-Aug-09	Dry		000		۱ ۱		.	 	۱ <u> </u>			4.0	۱						0.0-		o
29-Sep-09	MAX	7.1	235	89		29 25	71 74	390		0.63	3.3	13	< 1	21	< 1	4.3	33	4.9	0.02		0.27
29-Oct-09	MAX	6.8 7 1	331	109	13	35	/1 61	520		0.37	4.4	360	< 1	27	ا در ا در	6.8 9 E	44	1.2	0.05		0.34
19-1NOV-09	MAX	7.1 7.2	3000	109	52 6.6	25	5	520 100	2	0.97	0.C	110	20 Q	10	23	0.0 550	28 28	20	0.05		1.1 0.12
29_Iap 10	Spow	1.2	5000	44	0.0	5.9		100	3	0.42	0.09	110	Э	0	040	550	20	2.9	\$ 0.01		0.13
26-Feb-10	Snow	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
18-Mar-10	MAX	7.6	2000	213	 77	48	18	200	12	0.52	3.3	41	210	4	190	170	110	2.3	0.09		0.22
07-Apr-10	MAX	7.6	305	63	18	9.7	7	200	6	0.61	1.9	250	37	2	25	20	57	7	0.03		0.44
31-May-10	Dry	1		I - I	l i	1 I I	۱ ۱	I I	I i	l I	1	I	I	,	,	I	Ι,				
22-Jun-10	N/A	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
30-Jul-10	MAX	7.8	945	213	15	4	6	140	2.8	0.08	0.48	120	4	< 1	170	110	75	4.1	0.03		0.11
31-Aug-10	Dry	١		l l	I 1		۱ ا	I I	l i	l i	I	1	I		,	I ,	l ,				
30-Sep-10	MAX	7.9	399	155	7.4	7.1	3	42	1.5	0.3	0.41	10	16	1	23	28	48	0.4	0.04		0.02
29-Oct-10	Dry	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
29-Oct-10	MAX	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
29-Oct-10	Dry	ų		l l	l I		۱ ۱	I		I 1	I I		l	} .	,	,	,	ļ		ļ	
29-Oct-10	MAX	١		1 1	I I		۱ ا	I I	l i	l i	1	1	I	,	,	I	Ι ι				
02-Dec-10	Dry MAY	7.00	CAC.	100	1.2		\leq		Ι.,Ι	0.12	0.00	26	24	2	₇₀		74		0.00		0.05
02-Dec-10	IVIAX Dev	7.98	040	182	13	4./	∠	33	1	0.13	0.29	20 	31	2	12	38	/4	0.9	0.02		0.05
02-Dec-10 02-Dec-10	MAX	7 98	646	182	13	47	< 2	33	1 1	0.13	0.20	26	31	2	72	38	74	00	0.02	ł	0.05
31-Dec-10	MAX	1.70	0-10	102	13	· · · /		55	'	0.15	5.23	20	51		'2	30	'*	0.9	0.02		0.00
31-Dec-10	Snow	١		I	l I		۱ ا	I I	l i	l i	I	1	I	,		I	I ,				
31-Dec-10	MAX	١		1 1	I I		۱ ۱	I I	l i	l i	1	1	I	,	,	I	Ι ι				
31-Dec-10	Snow	<u> </u>		İ	I I	L 1	<u>ا</u> ا	I I	I I	l I			I	Ì.	1	1	l .			Ì	



	Date	Lab	pН	Cond-	Alk	Mg	K	BOD	COD	TKN	NH3-N	Total-P	TSS	S04	Phenol	Cl	Na	Ca	Fe	В	Р	Zn
				uctivity	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L						
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

Routine Surface Water Quality - General Analysis -Guelph WRIC & Waste Transfer Station





Appendix D

Certificate of Approval – WRIC and Transfer Station

FILE NO. 14.240.007-	
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RECEIVED



JUN 2 5 2010

Ministry of the Environment Ministère de l'Environnement

Community Design & Development Service ENDED CERTIFICATE OF APPROVAL MUNICIPAL AND PRIVATE SEWAGE WORKS NUMBER 5015-856HHF

Issue Date: June 16, 2010

The Corporation of the City of Guelph 1 Carden Street Guelph, Ontario, N1H 3A1

Site Location: 110 Dunlop Drive Division 'C', RP 61R-5574 Lot 4 and 5, Concession 1 Guelph City, County of Wellington N1H 6N1

JUN 2 5 2010 Environmental Services

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

The establishment and subsequent alteration of sewage Works for the conveyance of sanitary sewage from the waste management site to the existing municipal sanitary sewer system and for the treatment and disposal of stormwater runoff from a total drainage area of 10.9 hectares to provide enhanced water quality protection (equivalent to Level 1) and to attenuate post-development peak flows to below pre-development levels for the 5-year and 100-year return storms, discharging to a roadside ditch that ultimately drains to the Eramosa River via an unnamed tributary, consisting of the following:

PROPOSED WORKS

re-direct the existing overflow outlet of the Household Hazardous Waste (HHW) Depot underground spill . tank to the lined portion of the Compost Pad Storage Pond (CPSP); to convey overflow through a new buried pipe, approximately 35 m of 150 mm PVC, which will discharge into the lined CPSP. The outlet of the pipe will be equipped with a flat gate and riprap over a length of approximately 3 m.

including all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the following submitted supporting documents:

1. Application for Approval of Municipal and Private Sewage Works from The Corporation of the City of Guelph, dated April 13, 2010 and received on April 14, 2010; with cover letter submitted by Joseph Puopolo, P.Eng., dated April 13, 2010; along with supporting information; and

9	storm sewers with diameters of 300 millimetres, 600 millimetres, and 900 millimetres and]]
G	associated appurtenances;]]
Sar	litary Sewage Pumping Station	
0	one (1) 1.2 metre diameter factory built sewage pumping station (SPS), located in the northeast)]
	rated at 7.6 litres per second at a Total Dynamic Head (TDH) of 16 metres, and one (1) 100 millimetre diameter forcemain from the SPS to sanitary sewer Manhole (MH) No. I on Dunlop Drive connected to the municipal sanitary sewer system;	<u>][</u>
]]
Sto	rmwater Management Facility	
A s	tormwater management facility servicing the Waste Resource Innovation Centre, designed as a stormwater]]
det out	ention pond (SDP) system with a total mactive storage volume of 705 cubic metres for quality control and let control devices for quantity control, comprising:]]
9	perimeter drainage swale around the site;)J.
9	subsurface infiltration trenches to accommodate roof-top runoff;	
9	grass-lined drainage ditches;	11
9	two (2) new double-inlet catch basins located within the grassed ditch to capture and direct surface stormwater runoff from around the perimeter of the Outdoor Compost Curing Pad (OCCP) to a 300]]
	millimetre diameter storm sewer leading to Stormwater Detention Pond No. 1 (SDP1);	11
0	one (1) lined Compost Pad Storage Pond (CPSP) with a temporary storage capacity of 100 cubic	11.
	metres for runoff from the 1.56 ha OCCP and having a total capacity of 540 cubic metres, including:	JI.
	- one (1) 600 millimetre diameter inlet storm sewer connected between the CPSP and MH 5 at the OCCP;]]
]]

2. E-mail dated May 14, 2010, along with supporting information, from Glenn Farmer of AECOM to Youssouf Kalogo, P.Eng., of the Ontario Ministry of the Environment.

sanitary sewers and sewer connections with diameters of 100 millimetres, 150 millimetres, and 200

EXISTING WORKS

0

Sanitary and Storm Sewers

millimetres and associated appurtenances;

JI

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- outlet from CPSP to the sanitary sewer system via one (1) 200 millimetre diameter pipe leading to MH A2, with one (1) 50 millimetre diameter orifice plate at pipe inlet, for conveyance of the OCCP runoff to the SPS at a maximum controlled rate of 7 litres per second for the 100-year storm event;
- a separation berm between the CPSP and SDP1, including a ditch inlet catch basin (DICB) with invert at 0.45 metre above the CPSP bottom, to convey excess flow to SDP1 during the 2-year return storm event or greater with corresponding CPSP volumes of greater than 100 cubic metres via one (1) 900 millimetre diameter CSP from the DICB and over the separation berm;
- impermeable liner along the base and slopes of the CPSP;
- one (1) stormwater detention pond (SDP1) with an inactive storage depth of 0.6 metres and corresponding volume of approximately 630 cubic metres and having a total storage volume of 2,090 cubic metres, including:
 - seven (7) stormwater inlet locations around the pond perimeter for direct conveyance of runoff from a total drainage area of up to 5.71 ha into the pond in addition to the 900 millimetre diameter overflow line from the CPSP ditch inlet catch basin to a rip rap protected area;
 - a small, impermeable berm constructed around the pond outlet structure to ensure the minimum required inactive storage volume for quality control;
 - one (1) outlet structure for discharge of effluent to Stormwater Detention Pond No. 2 (SDP2) via a 900 millimetre diameter corrugated steel pipe (CSP) equipped at the inlet with a headwall and an adjustable steel gate with a 200 millimetre diameter orifice for quantity control;
- one (1) stormwater detention pond (SDP2) with an inactive storage volume of approximately 75 cubic metres and having a total storage volume of 1,870 cubic metres, and designed for controlled outflow rates of 0.12 cubic metres per second for the 5-year return storm and 0.18 cubic metres per second for the 100-year return storm, including:
 - four (4) stormwater inlet locations around the pond perimeter for direct conveyance of runoff from a total drainage area of 2.87 ha into the pond in addition to the 900 millimetre diameter inlet sewer from SDP1;
 - a small, impermeable berm constructed around the pond outlet structure to ensure the minimum required inactive storage volume for quality control;

- one (1) outlet structure for discharge of effluent to a roadside ditch via a 900 millimetre diameter CSP equipped at the inlet with a headwall and an adjustable steel gate with a 400 millimetre diameter orifice for quantity control;

including all other controls and appurtenances essential for the proper operation of the aforementioned Works ;

all in accordance with the following submitted supporting documents:

- 1. <u>Application for Approval of Municipal and Private Sewage Works</u> from The Corporation of the City of Guelph, dated August 16, 2007 and received on August 20, 2007;
- 2. Document entitled "Storm & Sanitary Drainage Assessment Report for the City of Guelph Waste Resource Innovation Centre", prepared by Gartner Lee Limited, dated August, 2007;
- 3. Letters with attachments dated October 5, 2007 and November 26, 2007 from Glenn Farmer of Gartner Lee Limited (GLL) to Andre Schnell of the Ontario Ministry of the Environment (MOE);
- 4. E-mail with attachments dated April 1, 2008 from Glenn Farmer of GLL to Andre Schnell of the MOE;
- 5. E-mail dated April 21, 2008 from Andre Schnell of the MOE to Glenn Farmer of GLL; and
- 6. Stormwater Management Report and final plans and specifications prepared by R. Cave and Associates Engineering Ltd., Consulting Engineers, dated 1992.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"*Certificate* " means this entire certificate of approval document, issued in accordance with Section 53 of the <u>Ontario Water Resources Act</u>, and includes any schedules;

"*Director* " means any *Ministry* employee appointed by the Minister pursuant to section 5 of the Ontario Water Resources Act;

"District Manager " means the District Manager of the Guelph District Office of the Ministry ;

"*Existing Works* " means of the sewage works previously constructed and approved under a certificate of approval;

"Ministry " means the Ontario Ministry of the Environment;

"*Owner* " means The Corporation of the City of Guelph and includes its successors and assignees;

"*Proposed Works* " means the sewage works described in the *Owner* 's application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate* ; and

"*Works*" means the sewage works described in the *Owner*'s application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate* and includes both *Proposed Works* and *Existing Works*.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. <u>GENERAL PROVISIONS</u>

(1) Except as otherwise provided by these Conditions, the *Owner* shall design, build, install, operate and maintain the *Works* in accordance with the description given in this *Certificate*, the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this *Certificate*.

(2) Where there is a conflict between a provision of any submitted document referred to in this *Certificate* and the Conditions of this *Certificate*, the Conditions in this *Certificate* shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(3) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

2. <u>COMPOSTING AND CURING OPERATIONS</u>

Outdoor composting and curing operations (including pads) are prohibited.

3. CHANGE OF OWNER

The *Owner* shall notify the *District Manager* and the *Director*, in writing, of any of the following changes within thirty (30) days of the change occurring:

- (a) change of Owner;
- (b) change of address of the *Owner*;

(c) change of partners where the *Owner* is or at any time becomes a partnership, and a copy of

the most recent declaration filed under the <u>Business Names Act</u>, R.S.O. 1990, c.B17 shall be included in the notification to the *District Manager*; and

(d) change of name of the corporation where the *Owner* is or at any time becomes a corporation, and a copy of the most current information filed under the <u>Corporations Information Act</u>, R.S.O. 1990, c. C39 shall be included in the notification to the *District Manager*.

4. <u>"AS-BUILT" DRAWINGS</u>

The *Owner* shall ensure that a set of as-built drawings showing the *Works* "as constructed" shall be prepared, and these drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be retained at the *Works* for the operational life of the *Works*.

5. <u>OPERATION AND MAINTENANCE</u>.

(1) The *Owner* shall ensure that the design minimum inactive storage volumes in SDP1 and SDP2 be available at all times for quality control.

(2) The *Owner* shall inspect the *Works* at least once a year and, if necessary, clean and maintain the *Works* to prevent the excessive buildup of sediments, debris, and/or vegetation, maintain the inlet and outlet structures, and address any signs of slope erosion.

(3) The *Owner* shall inspect the *Works* immediately following any serious oil or gasoline spill, and on a daily basis until the source of the spill is eliminated, and shall remove any captured oil, grease, and/or gasoline from the pond(s) and from the outlet control structure(s).

(4) The *Owner* shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations and remedial measures undertaken, and shall keep the logbook available for inspection by the *Ministry*. The logbook shall include the following:

(a) the name of the *Works* ; and

(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

6. MONITORING AND REPORTING

The Owner shall, upon the issuance of this Certificate, carry out the following monitoring program:

(1) All samples and measurements taken for the purposes of this *Certificate* are to be taken at a time and in a location characteristic of the quality and quantity of the effluent streams over the time period being monitored.

(2) Requirements for surface water monitoring shall be carried out as per the condition contained in the current Certificate of Approval for the site (Waste Disposal).

(3) The methods and protocols for sampling, analysis, and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the *Ministry* 's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (August 1994), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and

(b) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.

(4) The *Owner* shall prepare and submit a performance report to the *District Manager* on an annual basis within **ninety (90) days** following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the *Works* and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but not be limited to, the following information:

(a) a summary and interpretation of all monitoring data collected in accordance with Condition 6; and

(b) an overview of the performance, success and adequacy of the Works .

(5) In addition to the obligations under Part X of the <u>Environmental Protection Act</u>, the *Owner* shall, within **ten (10) working days** of the occurrence of any reportable spill as defined on Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the *District Manager* describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

7. <u>RECORD KEEPING</u>

The *Owner* shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the monitoring, operation and maintenance activities required by this *Certificate*.

8. <u>REVOCATION OF EXISTING APPROVALS</u>

(1) The descriptions of the approved *Works* and conditions of approval in this *Certificate* apply in place of all existing descriptions and conditions in the Certificates of Approval under the <u>Ontario Water</u> <u>Resources Act</u> for sewage works which are part of the *Works* approved by this *Certificate*.

(2) Notwithstanding subsection (1) above, the original applications for approval, including design calculations, engineering drawings and reports prepared in support of the existing Certificate(s) of Approval whose descriptions of the approved *Works* and conditions are now replaced pursuant to

subsection (1) above, shall form part of this Certificate .

(3) Where an existing Certificate of Approval referred to in subsection (1) above applies to *Works* in addition to the *Works* approved by this *Certificate*, it shall continue to apply to those additional *Works*.

The reasons for the imposition of these terms and conditions are as follows:

- 1. Condition 1 is imposed to ensure that the *Works* are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the *Certificate* and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.
- 2. Condition 2 is included to ensure that outdoor composting and curing operations remain permanently shut down such that there is no opportunity for contact of stormwater with waste material and the subsequent discharge of this runoff to the receiving environment.
- 3. Condition 3 is included to ensure that the *Ministry* records are kept accurate and current with respect to approved works and to ensure that subsequent owners of the works are made aware of the *Certificate* and continue to operate the works in compliance with it.
- 4. Condition 4 is included to ensure that the *Works* are constructed in accordance with the approval and that record drawings of the *Works* "as constructed" are maintained for future references.
- 5. Condition 5 is included to require that the *Works* be properly operated and maintained such that the environment is protected.
- 6. Condition 6 is included to ensure that relevant effluent parameters are monitored to allow for an evaluation of the effluent quality from the *Works*, to provide an overview of the treatment performance and adequacy of the *Works*, and to ensure that the *Ministry* is made aware of problems as they arise so that the *Ministry* can work with the *Owner* in resolving the problems in a timely manner. Furthermore, surface water monitoring will ensure early detection of contaminants in the event that such contaminants escape the site and to provide an indication of any potential environmental impairment due to the site operations and/or discharges from the *Works*.
- 7. Condition 7 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term monitoring, operation and maintenance of the *Works*.
- 8. Condition 8 is included to stipulate that this *Certificate* replaces all previous approvals for the *Works* being the subject of this *Certificate*, and that the existing approvals remain in force for the purpose of any *Works* which are not subject to this *Certificate*.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 9970-7EVLBH issued on June 6, 2008

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as

amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
 The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

- 3. The name of the appellant;
- 4. The address of the appellant;
- 5. The Certificate of Approval number;
- 6. The date of the Certificate of Approval;
- 7. The name of the Director;
- 8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, 15th Floor Toronto, Ontario <u>AND</u> M5G 1E5 The Director Section 53, *Ontario Water Resources Act* Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the

Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 16th day of June, 2010

Jennifer Barolet, P.Eng. Director Section 53, *Ontario Water Resources Act*

YK/

c: District Manager, MOE Guelph Glenn Farmer, AECOM
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Ministry of the Environment

RECENTED

de l'Environnement

The Corporation of the City of Guelph 59 Carden Street Guelph, Ontario NIH 3A1

Site Location: Guelph Solid Waste Transfer Station 80 Dunlop Drive being Part of Lot 5, Concession 1, Div. C Guelph City, County of Wellington

You have applied in accordance with Section 27 of the Environmental Protection Act for approval of:

the use and operation of a Waste Disposal Site (Transfer) with a total Site area of 3.16 hectares all in accordance with the plans and specifications detailed in the City of Guelph. Solid Waste Transfer Station, Design and Operations Report as prepared by Gartner Lee Limited, January 2002 submitted in support of an Application for Provisional Certificate of Approval for a Waste Disposal Site dated January 30, 2002 and signed by Cathy Smith, City of Guelph.

to be used for the transfer of the following types of waste:

Non-hazardous Solid Industrial Waste from industrial, commercial and institutional sources, Commercial Waste and Domestic Waste.

Note: Use of the site for any other type of waste is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

For the purpose of this Provisional Certificate of Approval and the terms and conditions specified below, the following definitions apply:

DEFINITIONS:

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"Act" means the Environmental Protection Act. R.S.O. 1990, C. E-19 amended; (a)

- "Certificate" means Provisional Certificate of Approval No. 8058-56XPT5; **(b)**
- "Municipality" means The Corporation of the City of Guelph, and includes its officers, (c) employees, agents and contractors;

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- (d) "Director" means a Director, Environmental Assessment and Approvals Branch, Ontario Ministry of the Environment;
- (e) "District Manager" means the District Manager, Guelph District Office, West Central Region, Ontario Ministry of the Environment;
- (f) "Incident" means an abnormal event which causes a spill, emission, emergency situation or other occurrence which may affect the environment, cause a nuisance or health effect;
- (g) "Ministry" means Ontario Ministry of the Environment;
- (h) "Reg 347" means <u>Ontario Regulation 347</u> R.S.O. 1990, General-Waste Management, as amended;
- (i) "Site" and "Facility" both mean 80 Dunlop Drive, being Part of Lot 5, Concession 1, Div. C., Guelph City, County of Wellington;

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

B. GENERAL:

- 2. Except as otherwise provided by these Terms and Conditions, this Site shall be designed, developed, used, maintained and operated in accordance with the Application for Provisional Certificate of Approval for a Waste Disposal Site dated January 30, 2002 and signed by Cathy Smith, City of Guelph and subsequent plans and specifications listed in Schedule "A" of this Certificate.
- 3. Where there is a conflict between a provision of any document referred to in Condition 2 and the Conditions of this Certificate, the Conditions of this Certificate shall take precedence.
- 4. Requirements specified in this Certificate are the requirements under the Act. Issuance of this Certificate in no way abrogates the Municipality's legal obligations to take all reasonable steps to avoid violating other applicable provisions of the Act and other Statutes and Regulations and to obtain other approvals required by legislation.
- 5. Requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstances is held invalid, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.
- 6. The Municipality must ensure compliance with all Terms and Conditions of this Certificate. Any

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- 7. The Municipality shall ensure that all communications and correspondence made pursuant to this Certificate include reference to the Site number. Or $frc \rightarrow frc \phi$
- 8. The Municipality shall notify the Director in writing of any of the following changes within thirty (30) days of the change occurring:
 - (a) (i) change of Owner or operator of the Site or both;
 - (ii) change of address or address of the new Owner;
 - (iii) change of partners when the Owner or operator is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, 1991 shall be included in the notification to the Director;

(iv) any change of name of the corporation where the Owner or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" (form 1 or 2 of <u>Ontario Regulation 182</u> Chapter C-39, R.R.O. 1990 as amended from time to time), filed under the Corporations Information Act shall be included in the notification to the Director; and

- (v) change in the directors or officers of the corporation where the Owner or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" as referred to in 8(a)(iv), supra;
- (b) In the event of any change in ownership of the Site, the Owner shall notify in writing the succeeding owner of the existence of this Certificate, and a copy of such notice shall be forwarded to the Director.
- 9. The Municipality shall allow Ministry personnel, or a Ministry authorized representative(s), upon presentation of credentials, to:
 - (a) carry out any and all inspections authorized by Section 156, 157 or 158 of the Act, Section 15, 16, 17 of the <u>Ontario Water Resources Act</u>, R.S.O. 1990, or Section 19, 20 of the <u>Pesticides Act</u>, R.S.O. 1990, as amended from time to time, of any place to which this Certificate relates; and, without restricting the generality of the foregoing to:
 - (b) (i) enter upon any premises where the records required by the Conditions of this Certificate are kept;
 - (ii) have access to and copy, at any reasonable time, any records required by the Conditions of this Certificate;
 - (iii) inspect at reasonable times any facilities. equipment (including monitoring and

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control equipment), practices, or operations required by the Conditions of this Certificate; and

(iv) sample and monitor at reasonable times for the purposes of assuring compliance with the Conditions of this Certificate.

The Municipality shall, forthwith upon request of the Director, District Manager, or Provincial Officer (as defined in the Act), furnish any information requested by such persons with respect to compliance with this Certificate, including but not limited to, any records required to be kept under this Certificate; and

(b) In the event the Municipality provides the Ministry with information, records, documentation or notification in accordance with this Certificate (for the purposes of this Condition referred to as "Information"),

(i) the receipt of Information by the Ministry;

- (ii) the acceptance by the Ministry of the Information completeness or accuracy; or
- (iii) the failure of the Ministry to prosecute the Municipality, or require the Municipality to take any action under this Certificate or any statute or regulation in relation to the Information,

shall not be construed as an approval, excuse or justification by the Ministry of any act or omission of the Municipality relating to the Information, amounting to non-compliance with this Certificate or any statute or regulation.

- 11. Any information relating to this Certificate and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Privacy Protection Act, R.S.O. 1990, C.F-31.
- 12. All records and monitoring data required by the Conditions of this Certificate must be kept on the Site for a minimum period of at least two (2) years.

C. SITE OPERATIONS:

- 13. The Site has a service area within the Province of Ontario and may accept waste during the following time frames:
 - (a) Monday to Friday, 7:00 a.m to 6:00 p.m.; and
 - (b) Saturday 8:00 a.m. to 4:00 p.m.
- 14. Notwithstanding the hours of operation for waste receipt referenced in Condition 13, the Site's

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activities and movement of waste within the Site, including outgoing shipments, may occur during the hours of Monday 12:00 a.m. to Saturday 11:59 p.m.

- 15. The Site must be maintained in a secure manner, such that unauthorized persons cannot enter the Site.
- 16. The Municipality shall only receive and transport non-hazardous solid industrial waste from industrial, commercial and institutional sources, commercial waste and domestic waste limited to the following:
 - (a) 299 tonnes per day for incoming wastes;
 - (b) 299 tonnes per day for out-going wastes
- 17. The total maximum amount of waste, as defined in Condition 16, that may be stored at the Site shall not exceed 598 tonnes. Permanent or temporary outdoor storage of waste is not permitted at the Site with the exception of the following:
 - (a) A maximum of two loaded transfer trailers awaiting shipment may be stored outside the transfer building. The length of time that a loaded trailer may be stored outside shall not exceed twelve (12) hours. All loaded transfer trailers shall be covered at all times while stored outdoors; and
 - (b) A maximum of four (4) thirty (30) cubic metre bins of recyclable materials awaiting shipment or processing may be stored outside the transfer building. The length of time that the loaded bins may be stored outside shall not exceed forty-eight (48) hours. All bins containing recyclable materials shall be covered at all times while stored outdoors.
- 18. No storage or transfer areas, other than those approved under this Certificate shall be used for waste storage or transferring. Proposed Leaf and Yard Waste, Wood and Concrete Waste and Public Waste Drop off Areas are not permitted at this time unless an application to amend this Certificate is made to the Director.
- 19. The Municipality shall ensure that trained personnel as per Condition 21 are available at all times during the hours of operation of this Site. No loading, unloading, or sorting of recyclables or any waste material shall occur unless trained personnel supervises the loading, unloading, or sorting operation.
- 20. All in-coming and outgoing wastes shall be screened and inspected by trained personnel as detailed in your supporting documentation listed in Sections 5 and 6 of Item 2 of Schedule "A" of this Certificate, prior to being received, transferred and shipped to ensure wastes are being managed and disposed of in accordance with the Act and O. Reg. 347.
- 21. The Municipality shall ensure through proper written records that all personnel directly involved with activities relating to the Site have been trained with respect to:

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- (a) the Terms, Conditions and operating requirements of this Certificate;
- (b) the operation and management of all transfer, process, storage and contingency measures equipment and procedures;

(c) any environmental and occupational health and safety concerns pertaining to the Sitc and wastes to be transferred; and

- (d) relevant waste management legislation and Regulations under the Act and Ontario Water Resources Act.
- 22. The Municipality must conduct regular daily and weekly inspections of the equipment and facilities as outlined in Section 7, Table 4 of Item 2 of Schedule "A" of this Certificate to ensure that all equipment and facilities at the Site are maintained in good working order at all times. Any deficiencies detected during these regular inspections must be promptly corrected. A written record must be maintained at the Site, which includes the following:
 - (a) name and signature of trained personnel conducting the inspection;
 - (b) date and time of the inspection;
 - (c) list of equipment inspected and all deficiencies observed;
 - (d) a detailed description of the maintenance activity;
 - (e) date and time of maintenance activity; and
 - (f) recommendations for remedial action and actions undertaken.

23. The Municipality, in addition to inspections and documentation requirements carried out in Condition 22, must conduct on each operating day, a visual inspection of the following areas to ensure the Site is secure and that no off-site impacts such as vermin, vectors, odour, noise, dust, litter, or other possible contaminants resulting from the operation of the Facility:

- (a) Oil/water separator;
- (b) holding tanks and associated containment areas
- (c) drainage swales, culverts and catch basins and stormwater management pond; and
- (d) security fence, barriers and property line.

24. The Municipality shall take immediate measures to clean-up all spills, related discharges and process upsets of wastes which result from the operation of the Site. All spills and upsets shall

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be immediately reported to the Ministry's Spills Action Centre at (416) 325-3000 or 1-800-268-6060 and shall be recorded in a written log or an electronic file format, referred to in Condition 29 of this Certificate, as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences.

25. The Municipality shall ensure that the Contingency Plan and the Emergency Response Plan as detailed in Section 10 of Item 2 in Schedule "A" of this Certificate is reviewed annually and revised accordingly to ensure that it both current and reflects the intended actions of the Municipality. If implementation of the Contingency Plan is necessary, it shall be effected through written concurrence from the Director.

D. STORMWATER AND WASTEWATER MANAGEMENT:

26. The Municipality shall manage all discharges from this Site including stormwater nun-off, including the stormwater collected and contained in the Stormwater Collection Pond, in accordance with appropriate Municipal, Provincial and or Federal Legislation, Regulations and By-laws.

E. COMPLAINTS PROCEDURE:

27. If at any time, the Municipality receives complaints regarding the operation of the Site, the Municipality shall respond to these complaints according to the following procedure:

(a) The Municipality shall record each complaint on a formal complaint form entered in a sequentially numbered log book. The information recorded shall include the nature of the complaint, the name, address and the telephone number of the complainant and the time and date of the complaint;

(b) The Municipality, upon notification of the complaint shall initiate appropriate steps to determine all possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and

- (c) The Municipality will immediately orally notify the Ministry, followed with the submission of a written report within one (1) week, of the complaint detailing what actions were taken to identify and remediate the cause of the complaint and what actions will be implemented to prevent or reasonably avoid a reoccurrence.
- 28. The Municipality shall submit, in writing, within sixty (60) days from the date of the issuance of this Certificate, that the groundwater monitoring program as referenced in Section 8 of Item 2 in Schedule "A" will be put into effect. Commencing March 31, 2004 and every year thereafter, the Municipality shall include the results from the approved program covering the previous calendar year, with the interpretation of the monitoring results prepared by a qualified 30 hydrogeologist, engineer or scientist in the Annual Report referenced in Condition 37. Following a review of the analytical results or, of any of the reports required by this Condition, the District

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Manager or, the Director may alter the frequencies and locations of sampling and parameters for analysis required by this Condition if he/she considers it necessary for proper assessment of the quality of the groundwater or, if he/she is requested to do so by the Municipality and considers it acceptable by the evidence of information in support of the request.

F. RECORD KEEPING:

29. The Municipality shall maintain, at the Site for a minimum of two years, a log book or electronic file format which records daily the following information:

- (a) date of record;
- (b) types, quantities and source of waste received at the Site;
- (c) quantity and type of waste stored on the Site;
- (d) quantity, type (including residual waste from transferring and wastewater discharged to sanitary sewer) and destination of waste shipped from the Site;
- (c) analytical results, when required of all in-coming and outgoing wastes and materials; and
- (f) results of inspections and reports required under Conditions 22, 23 and 24, including the name and signature of the person conducting the inspection and completing the report.

G. ANNUAL REPORT:

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30. By March 31, 2004, and on an annual basis thereafter, the Municipality shall prepare and retain on-site an Annual Report covering the previous calendar year. Each report shall include, as a minimum, the following information:

a detailed monthly summary of the type, quantity and origin of all wastes received and transferred from the Site, including the destination, type and quantity of waste destined for final disposal and also including any reconciliations on mass balance made;

any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the Site and during the facility inspections and any mitigative actions taken;

a statement as to compliance with all Terms and Conditions of this Certificate and with the inspection and reporting requirements of the Conditions herein;

any recommendations to minimize environmental impacts from the operation of the Site and to improve Site operations and monitoring programs in this regard; and

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(e) a detailed section showing the results, interpretation of the results, timetable for implementing recommendations from the approved groundwater monitoring program referred to in Condition 28.

H. CLOSURE PLAN:

31. (a) The Municipality shall submit, for approval by the Director, a written Closure Plan for the Site four (4) months prior to the closure of the Site. This plan must include as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work; and

(b) Within ten (10) days after closure of the Site, the Municipality must notify the Director in writing that the Site has been closed in accordance with the approved Closure Plan.

SCHEDULE "A"

This Schedule "A" forms part of this Provisional Certificate of Approval No.8058-56XPT5.

- (1) Application for Provisional Certificate of Approval for a Waste Disposal Site dated January 30, 2002 and signed by Cathy Smith, City of Guelph.
- (2) Document titled, <u>City of Guelph. Solid Waste Transfer Station. Design and Operations Report</u> prepared by Gartner Lee Limited, January 2002 submitted to the Ministry of the Environment on behalf of the City of Guelph in support of the Application for Provisional Certificate of Approval (Waste Disposal Site).

The reasons for the imposition of these terms and conditions are as follows:

- (1) The reason for Condition 1 is to simplify the wording of the subsequent Conditions and define the specific meaning of Terms as used in this Provisional Certificate of Approval.
- (2) The reason for Conditions 2, 18, 26, 29 and 30 is to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Municipality, and not in a manner which the Director has not been asked to consider.
- (3) The reason for Conditions 3, 4, 5, 6, 7, 8, 11, and 12 is to clarify the legal rights and responsibilities of the Municipality.
- (4) The reason for Conditions 9 and 10 is to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site and Facility. Condition 9 is supplementary to the powers of entry afforded a Provincial Officer pursuant to the <u>Environmental Protection</u> <u>Act</u>, the <u>Ontario Water Resources Act</u>, and the <u>Pesticides Act</u>, as amended.

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(5) The reason for Conditions 13, 14, 16, 17, 19, and 20 is to ensure that the hours of operation, types, amounts and volumes of waste at the Site are managed in accordance with that approved under this Provisional Certificate of Approval.

(6) The reason for Conditions 15, 22, 23, 25, 27 and 28 is to ensure that the Site is operated in a manner which does not result in a muisance or a hazard to the health and safety of the environment or people.

(7) The reason for Conditions 21, and 24 is to ensure that staff are properly trained in the operation of the equipment used at the Site and emergency response procedures in order to minimize the impacts of spills and process upsets occurring and will enable staff to deal promptly and effectively.

(8) The reason for Condition 31 is to ensure that the Site is closed in accordance with Ministry standards and to protect the health and safety of the public and the environment.

In accordance with Section 139 of the <u>Environmental Protection Act</u>, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the <u>Environmental Protection Act</u>, provides that the Notice requiring the hearing shall state:

The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
 The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;

4. The address of the appellant;

5. The Certificate of Approval number;

The date of the Certificate of Approval;

7. The name of the Director;

8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

AND

This Notice must be served upon:

The Secretary*	
Environmental Review Tribunal	
2300 Yonge St., 12th Floor	
P.O. Box 2382	
Toronto, Ontario	
M4P 1E4	

The Director Section 39, Environmental Protection Act Ministry of Environment and Energy 2 St. Chir Avenue West, Floor 12A Toronto, Ontario M4V 1L5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

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The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of April, 2003

THIS CERTIFICATE WAS MAILED pril 29,2003 ON_ KI. 9 (Signed)

Ian Parrott, P.Eng. Director Section 39, Environmental Protection Act

DL/ c:

District Manager, MOE Guelph Mark Sungaila, Gartner Lee Limited - 🗸

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8. Environmental Monitoring

Currently the City undertakes a routine program of groundwater and surface water monitoring at the WDC, and these results are submitted to the MOE annually as part of the City's annual report for that facility. A similar monitoring program (frequency and analyses) will be undertaken at the Transfer Station site as described herein.

8.1 Groundwater Monitoring Program

Groundwater monitor locations are shown on the site plan in Figure 8 and in Figure B-1 in Appendix B.

Groundwater levels will be measured at all monitoring locations on a quarterly basis (typically) in March, June, September and December) each year. Groundwater sampling will be conducted twice per year in June (dry period) and in December (wet period). Each sampling event will include analyses for leachate indicator parameters and general chemistry. Organics analyses will be conducted once per year, during the June (dry) event. Tables 5 and 6 below summarize the groundwater monitoring program and analytical parameters, respectively.

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Groundwater	Monitoring]	Program
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Location	March	June	September	December
13a-01	•	S + Organics	•	S
13b-01	•	S + Organics	•	S
14a-01	•	S + Organics	•	S
14b-01	•	S + Organics	•	S
15a-01	•	S + Organics	•	Ś
15-b-01	•	S + Organics	•	S
Staff Gauge ²	•	S + Organics	•	S

Note: 2. Pond located in eastern portion of property.

• Water Levels Only.

S Sampling and water levels.

	· · · · · · · · · · · · · · · · · · ·
Leachate Indicator	Biological Oxygen Demand (BOD)
Parameters	Chemical Oxygen Demand (COD)
	Total Kjeldahl Nitrogen (TKN)
	• Ammonia as Nitrogen (NH ₃ -N)
	Total Phosphorus (Total P)
	Total Suspended Solids (TSS)
	Total Sulphate (SO ₄)
,	Phenols

Table 6.Analytical Parameter List

Gartner Lee

Chloride (Cl) Sodium (Na)

City of Guelph, Solid Waste Transfer Station Design and Operations Report

	Analytical rarameter List
	Calcium (Ca)
1	• Boron (B)
	Total Iron (Fe)
	Phosphorus (P)
	• Zinc (Zn)
General Parameters	• PH
т. 	Conductivity
	Alkalinity
	Magnesium (Mg)
	• Potassium (K)
Organics	• EPA 624,625 (ATG 16+17+18 & ATG 19+20)

Table 6 alution Domana star I

8.2 Surface Water Monitoring Program

Surface water sampling will be taken on a monthly basis in the stormwater management pond for the parameters shown in Table 6. During each month, sampling will be undertaken when surface water runoff conditions occur (weather permitted). If no surface water events occur, sampling will be undertaken at the end of the month regardless. Measurements of discharge, surface water runoff events and overall conditions of the detention ponds (e.g., dry, or stagnant water) will be documented on a weekly basis throughout each month.

The existing off-site surface water pond (described in Section 2.7 and shown in Figure 8) will be sampled on a quarterly basis, together with the groundwater monitoring.

Record Keeping and Reporting 9.

9.1 **On-Site Records**

The following records will be maintained in written format:

- up-to-date site plans for all major facility elements including the building, road a) network, sewer and drainage systems;
- **b**) up-to-date emergency response plan;
- c) a daily record of waste received including quantity and source, and quantity and destination of material transferred off-site;
- d) a daily record of any waste loads rejected;

Gartner



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	APPROXIMATE PROPERTY BOUNDARY						
NN			CATCH BAS	SIN			
			STORM SEW	ER			
	-	1.00%	DITCH WITH	FLOW	DIRECTION		
	E	318.67	FINISHED G	RADE E	LEVATION (mASL)		
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	-		EXISTING GI AND ELEVA	ROUND TION(r	SURFACE CONTOU mASL)	R	-
			ASPHALT -	SURF	ACED ROADWAY		
	<u>No</u>	otes for S	iite Plan				
	de 2	See Occo scription	of site featur	res and	l operations. phic survey plan pl	rovided	
	by 16 by	Lonsdale , 2001. Van Har	Consulting E Property bou ten Surveying	Inginee Indary Inc., (from legal survey plan p from legal survey p dated July 16, 200	mber prepared 1.	
	3. The site plan may be affected by site features which will be identified at the time of final design including sanitary sewers and other buried utilities. The size and general location of areas reserved for the potential Public Waste Drop Off Area, the Leaf and Yard Waste Area, and the Wood and Concrete Waste Area are approximate and have been provided by the City of Gueiph. Size and location to be confirmed at the time of design/approval of these areas.						
	 4. Stormwater management pond shall be located generally as shown with a storage volume of 2,200 m3 and with a high water level of 316.00 mASL. Pond grading shall be set such that the pond drains to the existing 1500 mm dia. CSP culvert beneth Watson Service Road. The upstream invert of the culvert is 314.74 m. 5. Surface water ditches, culverts, and catch basins shall be provided in general locations shown, and shall be designed to convey the 100 year return period event to the stormwater management pond without overtopping. Allowance shall be made for freeboard above the 100 year flow level in the ditches. 6. Sanitary sewer service shall be provided to washroom focility in scalehouse and to floor drain system in Transfer Building Tipping Floor (via oil/water separator and holding tanks). 7. Sanitary sewage/leachate flows to be conveyed to pumping station via gravity sewers. Flows to discharge to existing City of Guelph Sanitary sewer system and pumping station to be designed at the time of final design. 8. New site entrance/exit shall be provided from Watson Service Road to accommodate 145 m long left turn lane for new entrance/exit, if required. 						
	2	ISSUED	FOR DESIGN	AND OF	ERATIONS REPORT	12/20/01	MAS
	No.	D D	Des	scription	JENI REVIEW	12/6/01 Date	By
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	Solid Waste Transfer Station - Design and Approvals City of Guelph						
				SITE	PLAN		
	Desi	gned By:	M.A.S./D	.G.J.	Drawn By:	J.M.C.	
	Chec	ked By:	M.A.S		Approved By:	R.W.L.	
	Site	Name:	GUELF	2002 'H	File Name:	21-141 2114111.D	WG
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WET/DRY CENTRE

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Ministry

of the

Ontario

Ministère de Environment l'Environnement

AMENDED PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE NUMBER A170128 Issue Date: September 29, 2006

The Corporation of the City of Guelph City Hall, 59 Carden Street Guelph, Ontario NIH 3A1

Site Location:

City of Guelph Recycling Centre 110 Dunlop Drive City of Guelph, County of Wellington

You have applied in accordance with Section 27 of the Environmental Protection Act for approval of:

for the use and operation of, a 10.852 hectare Waste Disposal Site (Processing) and Transfer Station for the purposes of composting, and multi-material recovery, to serve the municipalities and businesses of the Province of Ontario and Household Hazardous Waste Transfer Station, serving the County of Wellington and City of Guelph,

which includes the use of the Site only for:

- composting of the following categories of waste (Note: Use of the site for additional (a) categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) organic non-hazardous waste from residential, industrial, commercial and institutional sources as collected by means of the source separated wet waste collection system limited to a maximum Site storage capacity of 5950 tonnes:
- processing, transfer and temporary storage of the following categories of waste (Note: Use (b) of the Site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval); municipal waste including food and beverage cans, cardboard, glass, newspaper, plastic and other such materials as would be collected by means of the source separated dry waste collection system limited to a maximum Site storage capacity of 3850 tonnes;
- transfer and temporary storage of the following categories of waste (Note: Use of the Site (c) for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) Household Hazardous Waste limited to the following waste classes; 145H, 148A, 212L, 213I, 221I, 242A, 242B, 252T, 263A, 269A, 312P and 3311, as outlined in the New Ontario Waste Classes January 1986 limited to a maximum Site storage capacity of 15 tonnes; and

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2002

temporary storage and transfer of the following categories of waste (Note: Use of the Site (d) for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) leaf and yard waste, brush, wood waste and waste wood, the amount of which is to be counted towards the maximum site storage capacity of 5950 tonnes for organic non-hazardous waste.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following

- (a) "Act" means the Environmental Protection Act, R.S.O. 1990, C.E-19, as amended;
- (b) "birds" means pigeons, gulls, terns, crows, hawks, ducks, geese or any other birds that
- "brush" means tree limbs, natural Christmas trees or other woody materials; (c)
- "Certificate" means this entire provisional Certificate of Approval document, issued in (đ) accordance with section 39 of the Act, and includes any schedules to it, the application and the supporting documentation listed in schedule "A;
- "City" means the Corporation of the City of Guelph; (e)
- "competent" means knowledgeable and able to carry out any necessary duties, in the (f) following through instruction and practice;
 - (i)
 - relevant waste management legislation, regulations and guidelines; (ii) major environmental, health and safety concerns pertaining to the waste to be
 - (iii) occupational health and safety concerns pertaining to the waste to be handled;
 - (iv) emergency management procedures for the waste to be handled;
 - (v) use and operation of any equipment to be used;

 - (vi) emergency response procedures and alerting procedures;
 - (vii) Site specific operations and/or procedures; and
 - (viii) the requirements of this Certificate.
- "Director" means any Ministry employee appointed in writing by the Minister pursuant to (g) section 5 of the Act as a Director for the purposes of Part V of the Act;
- "District Manager" means the District Manager of the local district office of the Ministry (h)in which the Site is geographically located;
- "District Office" means the local office of the Ministry in which the Site is geographically (i)
- "dry waste" means those waste materials not identified in the wet and household hazardous (i)

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- 004
- (k) "household hazardous waste" and "HHW" means those waste materials which by reason of their type and/or quantity may require more than the usual care in handling and disposal;
- (1) "incident" means an abnormal event which causes a spill, emission, emergency situation or other occurrences which may have an adverse effect on the environment, cause a nuisance or endanger public health and safety;
- (m) "leachate" means liquid generated inside the composter and from the compost curing pad, including run-off;
- (n) "leaf and yard waste" means waste consisting of leaves, grass clippings and other plant materials but not tree limbs or other woody materials:
- (o) "Material Recovery Facility" means the facility where *dry waste* is received, processed and stored, and includes the material recovery building and an outside storage area;
- (p) "Ministry" and "MOE" means the Ontario Ministry of the Environment;
- (q) "Ontario Regulation 347" means Ontario Regulation 347, R.R.O. 1990, General Waste Management, made under the Act, as amended from time to time;
- (r) "Ontario Regulation 362" means Ontario Regulation 362 R.R.O. 1990, Waste Management - PCBs, or as amended, made under the Act;
- (s) "Ontario Regulation 903" means Ontario Regulation 903 R.R.O. 1990, Wells, amended to Ontario Regulation 128/03, made under the OWRA;
- (t) "organic waste" means source separated solid waste consisting of food scraps, wet packaging, yard waste, wood, disposable diapers, sanitary products, pet litter, vacuum cleaner catchings and any other non-hazardous waste with similar characteristics;
- (u) "Organic Waste Processing Facility" means the facility where wet waste is received, processed and stored, and includes organic waste receiving and processing building, the composter, biological filter and an outside storage area, where compost will finish curing and bulking agents will be stored;
- (v) "Public Liaison Committee" means the committee which may exist to monitor the construction and operation of the facility;
- (w) "putrescible waste" means solid waste that contains organic matter capable of being decomposed by microorganisms;
- (x) "residual waste" means waste resulting from the operations at the Site and directed for disposal;

2005

- (y) "Site" means Part of Lot 4, Concession 1, Division C, Guelph, Ontario;
- (z) "Household Hazardous Waste Transfer Station" and "HHW Transfer Station" means the location where the *household hazardous waste* is received, bulked, packed, stored and transferred to recyclers and/or to final disposal;
- (aa) "waste wood" means waste that is a wood or a wood product that has been treated with adhesives or preservatives or painted and includes manufactured wood such as medium density fibreboard; and
- (bb) "wood waste" means waste that is wood or a wood product that is not contaminated with chromated copper arsenate, ammoniacal copper arsenic pentachlorophenol, creosote or other wood preservative, is not part of an upholstered article, does not have an affixed or adhered rigid surface and from which hardware or fittings have been removed.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

3.

4.

- 1. This Provisional Certificate of Approval supersedes and replaces all previously issued Provisional Certificate of Approvals issued for this Site under Part V of the *Act* including Provisional Certificate Number A170128 issued July 4, 1997 and Notices of amendments issued December 17, 1997, May 21, 1998, October 21, 1998, April 27, 1999, September 29, 1999, September 26, 2000, January 30, 2001, March 13, 2001, April 9, 2003 and May 13, 2005.
- 2. The requirements of this Certificate are minimum requirements only and do not relieve you from;
 - (a) complying with any other applicable approval, statue or regulation; or
 - (b) obtaining any approvals or consents not specified in this Certificate.
 - (a) The requirements of this Certificate are severable. If any requirement of this Certificate, or application of any requirement of this Certificate, to any circumstances is held invalid, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.
 - (b) In all matters requiring the interpretation and implementation of this *Certificate*, the conditions of this *Certificate* shall take precedence, followed in descending order by the *City*'s application and the documentation, referred to in this *Certificate*, which is submitted in support of this application.
 - (a) The City shall notify the Director, in writing, of any of the following changes within, thirty (30) days of the change occurring;
 - (i) change of owner/operator of the Site or both;

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5.

6.

- (ii) change of address of the City's office or address of the new owner; and
- (iii) any changes in the legal name of the *Certificate* holder, or any change of business name or style where applicable.
- (b) Notification shall include a copy of the most current "Initial Notice" or "Notice of Change" filed under the <u>Corporations Information Act</u>, R.S.O. 1990, as amended from time to time, or if that act is not applicable, a copy of the most recent registration under the <u>Business Names Act</u>, R.S.O. 1990, as amended from time to time.
- (a) The City shall retain all records, diagrams and reports required by this Certificate for a minimum of five (5) years from the date of generation unless otherwise noted. The City shall make all records, diagrams and reports, available upon request for inspection by a Provincial Officer.
- (b) The City shall maintain, at all times, up-to-date Site plans, plant drawings, operation plans, contingency plans, emergency measures and any other similar type information at the facility for as long as the facility is operational and shall retain this information for five (5) years following closure of the facility.

General Site Operations

- (a) (i) The Site shall be operated and maintained in an environmentally safe manner which ensures the health and safety of all persons and minimizes visual impacts, surface water ponding, *leachate* breakouts, dust, odours, vectors, litter, vibration, noise and hazard to aircraft;
 - (ii) If at any time problems such as dust, odours, vectors, litter, vibration, noise, hazard to aircraft or other nuisances are generated at the Site, resulting in complaints received by this Ministry and validated by a Provincial Officer, then the City shall upon request of the Ministry, take appropriate remedial action immediately. Appropriate measures may include temporary stoppage of all operations until the problem has been rectified and measures have been undertaken to prevent future occurrence;
 - (b) Residual waste, transported for disposal, shall not exceed two hundred (200) tonnes per day. If the residual waste approaches two hundred (200) tonnes per day, the City shall take measures immediately to reduce the receipt of the waste that causes the residual waste to approach two hundred (200) tonnes per day. Residual waste shall be disposed of at a waste disposal site approved by the Ministry to accept such waste;
 - (c) All outside storage containers or bins containing waste, including the public drop off bins, shall be closed or covered when not in use.

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Dirt, Dust and Airborne Emissions

- (a) The City shall ensure that dust and/or other material that may become a contaminant, generated by activities on the Site, is minimized in a manner that ensures there are no off-Site impacts of such emissions. The City shall implement control measures as outlined in the approved Operation and Management Plan to comply with this condition.
 - (b) The City shall ensure that vehicles entering the Site do not drag into the Site, dirt and/or other material that may become a contaminant or a nuisance. The City shall ensure that vehicles leaving the Site do not drag out of the buildings or off the Site waste, dirt and/or other material that may become a contaminant or a nuisance.
 - (c) All parking areas, on-Site roads that are used for transportation of wastes, recyclable material and/or processed material including compost, and storage areas shall be paved and shall be cleaned as necessary to prevent dust and litter from blowing off the Site.

Litter

7.

- 8. (a) Litter shall be picked up daily from the Site and from roads and ditches within one (1) kilometer of the Site;
 - (b) All collected and stored litter shall be in closed or covered containers;
 - (c) Litter collected through the litter control program shall be transferred off-Site or processed within four (4) days of collection;
 - (d) The City shall undertake all reasonable measures at the Site to ensure that there is no unauthorized dumping of waste on the Site.

Rodents and Vermin

- 9. (a) The City shall implement the approved litter control to minimize and control the occurrence of vectors, rodents and vermin;
 - (b) If necessary, the City shall retain the services of a pest management company to monitor and controls vectors, rodents and vermin.

Odour

 (a) The City shall implement an odour monitoring program designed to detect and identify any odours originating from the Site which would trigger implementation of contingency measures;

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- (b) The City shall ensure that the Organic Waste Processing Facility and composter are maintained in a negative pressure at all times unless an emergency occurs;
- (c) In the event of biological filter failure and/or any other process upset or malfunction resulting in an odour *incident*, the *City* shall implement additional odour control measures as identified in the contingency plan;
- (d) Organic waste received at the public drop-off bins shall remain covered at all times other than loading and shall be emptied indoors daily;
- (e) If *putrescible waste* is received at the *Material Recovery Facility*, it shall remain covered at all times other than during loading and unloading.

Noise

- (a) All off-road equipment used at the Site shall be operated in such a manner that sound levels from such equipment do not exceed 85 decibels at 15 metres measurement distance;
 - (b) All off-road equipment shall be operated and maintained in accordance with the procedures specified in Publication NPC-115 of the *Ministry*'s Model Municipal Noise Control By-law;
 - (c) All stationary equipment shall be operated and maintained in accordance with the procedures specified in Publication NPC-105 of the *Ministry*'s Model Municipal Noise Control By-law;
 - (d) Notwithstanding Conditions 11 (a), (b) and (c), if at any time noise and vibration nuisances are generated at the Site, resulting in complaints received by this Ministry and validated by a Provincial Officer, the City shall take remedial action immediately.

Hazard to Aircraft

- 12. (a) The City shall ensure that the activities related to the operation of the Site do not create a hazard to aircraft;
 - (b) Prior to operation of the facility, the City shall retain a consultant, acceptable to the Director, who shall undertake a baseline study for a minimum period of one (1) year, of bird populations in and around the area of the proposed facility;
 - (c) The City shall ensure that there is no net increase in bird populations at the Site above the baseline levels established by the baseline study conducted as a requirement of Condition 12(a);

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- (d) If the population of *birds* in the vicinity of the facility increases above the baseline levels, the *City* shall immediately undertake additional bird deterrent measures, to bring the bird population in accordance with baseline levels;
- (e) The City shall ensure that the number of thermals created by the Site is kept to the minimum and that the number of birds soaring in these thermals shall not exceed ten (10) at any given time;
- (f) The City shall ensure that the amount of dust, steam, smoke or other airborne vapour discharged from the facility is kept to the minimum and shall not restrict visibility on or near the Guelph Air Park;
- (g) The City shall continue to implement a bird control management plan, as required, to ensure the Site is not an attraction to birds. The bird control management plan shall include but not be limited to additional bird deterrent measures in addition to the measure outlined in Item 3 of Schedule "A";
- (h) Upon receipt of a written notification that Transport Canada or such other governmental agency of equivalent jurisdiction over airport operations has served notice or a similar written warning to shut down or curtail airport operations at the Guelph Air Park due to hazard to aircraft as a result of *birds* in the vicinity of the airport, which may or may not be a direct result of the *Site* operations, the *City* shall undertake the following measures immediately:
 - (i) cease acceptance of all waste at the Site, except HHW, unless in the opinion of the District Manager, the reason for the hazard to aircraft as a result of birds is known, and is not a direct or indirect result of Site operations;
 - (ii) if the reason for the hazard to aircraft as a result of *Sile* operations; or indirect result of *Sile* operations, take all reasonable measures to investigate the problem, institute remedial/mitigative measures immediately, devise a long-term action plan to avoid any such future occurrences at the airport and submit a comprehensive report of such plans to the *Director*, and the appropriate
 - agency that has served the notification to shutdown or curtail airport operations; (iii) if the reason for the hazard to aircraft as a result of *birds* is not known, the *City* shall undertake a comprehensive study, acceptable to the *Director* and the agency that served notification to shutdown or curtail operations to determine if such hazard to aircraft was a direct or indirect result of the *Site* operations and to propose measures to prevent any similar or related occurrences that may create a hazard to aircraft;
 - (iv) the City shall submit the reports required by Condition 12 (h) (ii) and (iii) to the Director for approval and to the agency that served notification to shutdown or curtail airport operations. Upon the Director's approval, the City shall implement remedial/mitigative/contingency measures, as required;

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- (v) The City shall not accept any waste at the Site unless a qualified professional consultant has submitted a report stating that the hazard to aircraft as a result of birds has been resolved, or is not the direct or indirect result of Site operations, and the Director has authorized that the Site can again begin to accept waste;
- (vi) notwithstanding Condition 12 (h) (ii), (iii), (iv) and (v), the City may continue to process any waste materials inside the Organic Waste Processing Facility and the Material Recovery Facility that were present at the Site prior to the City shall continue to ensure that all Site activities do not create a hazard to aircraft
- (vii) During the period of shutdown the *City* shall implement its contingency plan for disposal of waste at approved alternative location(s);
- (viii) Condition 12 (h) (i) to (vii) does not relieve the City from implementing all necessary contingency/mitigative measures to ensure that Site activities do not create a hazard to aircraft.

Traffic

13. The City shall make adjustments to traffic flow patterns, including but not limited to the use of traffic lights as required, to minimize any adverse traffic impacts resulting from the facility traffic patterns.

Operating Hours

- 14. (a) Waste, and/or recyclable material shall be received at the *Site* only during the following hours:
 - (i) Monday to Friday: 7:00 a.m. to 11:00 p.m.; and
 - (ii) Saturday 8:00 a.m. to 4:00 p.m.
 - (b) Indoor processing, excluding the composter, may take place during regular operating hours of Monday 12:00 a.m. to Saturday 11:59 p.m. In extraordinary circumstances, indoor processing may take place beyond these hours to eliminate any backlog of material requiring processing.
 - (c) Outdoor processing and/or transfer onto or off *Site* shall take place only during the following hours:
 - (i) Monday to Friday 7:00 a.m. to 11:00 p.m.; and
 - (ii) Saturday 8:00 a.m. to 4:00 p.m.
 - (d) Waste, compost and/or recyclable material shall be transferred from the *Site* only during the following hours:
 - (i) Monday to Friday 7:00 a.m. to 6:00 p.m.; and
 - (ii) Saturday 8:00 a.m. to 4:00 p.m.

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(e) All control measures, including but not limited to, dust, odours, vectors, litter, noise and hazard to aircraft shall take place 24 hours a day, seven (7) days a week.

Site Security

- 15. (a) The City shall ensure that a competent attendant is available at all times during the hours of operation at this Site. No loading or unloading of waste, compost and/or recyclable material, including the public drop-off bins, shall occur unless a competent Site attendant supervises the loading or unloading operation. No public drop-off shall be allowed beyond the normal operating hours of the facility. No processing shall occur unless a competent Site attendant supervises the processing;
 - (b) Not less than once each calendar year, the City shall ensure that a fire inspection is carried out to determine if adequate fire prevention and protection measures are in place for the facility;
 - (c) The City shall ensure that the Site is adequately lit at all times;
 - (d) The City shall ensure that the existing signs posted on the Site, which identify the name of the facility and an emergency and/or *incident* reporting telephone number, continue to be adequately maintained;
 - (e) The City shall ensure that the existing 1.6 metre high fence with lockable gates is adequately maintained in order to continue to preserve the security of the Site; and
 - (f) The City shall ensure that the Site is secured beyond the normal operating hours of the facility to prevent unauthorized entry.

Organic Waste Processing Facility

- 16. (a) The City shall ensure that only municipal waste, generated within the Province of Ontario is received at the Site.
 - (b) All materials to be processed at the Organic Waste Processing Facility shall be unloaded and processed indoors;
 - (c) To prevent dilution of contaminated compost feed material, the *City* shall not direct to composting, any individual waste source, additive, bulking agent or inoculant that exceeds the concentrations set out in Schedule "B" of this *Certificate*;
 - (d) The City shall dispose of any waste unacceptable for compost feed material at a waste disposal site approved by the Ministry to accept such material;
 - (e) The City shall not blend material that fails to meet the criteria set out in Schedule "B" with other compost material to meet the criteria;

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- (f) The Organic Waste Processing Facility doors for vehicular traffic shall normally be kept closed and shall only be opened for entry or departure of vehicles;
- (g) The City shall not store waste material at the Organic Waste Processing Facility in enclosed containers (e.g. plastic garbage bags) for longer than four (4) days after the initial receipt at the Site and shall promptly empty any enclosed containers in which anaerobic conditions develop;
- (h) The temperature, as measured at any point one (1) metre inside the composting mass, shall be 55 °C or higher for at least three (3) 24 hour periods to inactivate pathogens and these periods are not required to be consecutive. The temperature must be monitored daily and at points sufficient to provide a temperature profile of the composting material. If temperature monitoring shows that the above has not been achieved, the material from the composting process must be disposed off-Site at a licensed facility or re-processed;
- (i) Compost undergoing curing shall be turned at least once per month or as frequently as necessary to maintain aerobic conditions in the curing compost, unless the City demonstrates that the compost has been cured;
- (j) The compost must be cured for a minimum six (6) month period if no other specific determination of stability acceptable to the *District Office* is made. With a specific determination of stability for specific market applications, the *City* may cure compost for less than six (6) months in accordance with procedures submitted to and accepted by the *Ministry*;
- (k) Finished compost shall not leave the Site nor be used until it has been sampled and analyzed. The final compost product, in the form it leaves the Site, shall not exceed the concentrations set out in Schedule "B" of this Certificate;
- (1) The amount of cured ("stable") compost stored on Site shall not exceed 8000 tonnes. Cured compost shall not be stored on Site for a period of greater than six (6) months. The City shall ensure that off-spec compost, which does not meet the oriteria in Schedule B is used only at sites approved by the Ministry;
- (m) The City shall annually review and update the established monitoring plan of the Organic Waste Processing Facility, to ensure the production of a high quality compost which is consistent with the requirements of the "Interim Guideline for the Production and use of Aerobic Compost in Ontario", November 1991 or its latest amendment;
- (n) As a minimum, the City shall include a determination of the metal content, organic chemical, non-biodegradable particulate matter and stability if compost has not been cured for a minimum of six (6) months;

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- Ø013_, <u>*</u>___
- (o) The City shall provide the results of this sampling and analysis program to the users of the compost, upon request.
- 17. (a) The City shall cease all composting activity at this Site as of September 1, 2006. Composting activities can only be resumed with the Director's approval; and
 - (b) Upon removal of all compost from the Organic Waste Processing Facility, the City shall power wash or otherwise clean the building to remove all residue; and
 - (c) The ventilation systems shall remain in operation until such time as all compost has been removed from the Organic Waste Processing Facility and the building has been cleaned.
- 18.
- (a) Notwithstanding Condition 16(b), *leaf and yard waste*, brush, wood waste and waste wood may be unloaded outdoors on the compost curing pad.
- (b) Leaf and yard waste shall be shipped on the day received where possible. At no time shall leaf or yard waste be stored for greater than six (6) days from the date of receipt prior to being shipped.
- (c) Brush, wood waste and waste wood may undergo size reduction by shredding, grinding and/or chipping using Ministry approved equipment, prior to shipment off-site. Size reduction shall occur on the compost curing pad. The City shall take precautions to ensure that size reduction activities do not cause a nuisance or impact including limiting the hours of operation and/or refraining from carrying out size reduction during days with unfavourable meteorological conditions.

Material Recovery Facility

- 19. (a) The City shall ensure that only municipal waste recyclable material, generated within the Province of Ontario is received at this Site.
 - (b) All materials to be processed at the Material Recovery Facility shall be unloaded and processed indoors except commingled recyclables which may also, as required, be unloaded into the outdoor storage bunker assigned to this material, or in the Organic Waste Processing Facility when not in use for composting;
 - (c) The City shall ensure all storage containers are maintained in good condition;
 - (d) The City shall limit any outside storage to processed or source-separated dry materials, dropped off by either commercial or residential vehicles, including but not limited to tires, white goods, construction and demolition wastes, commingled recyclables, wood wastes, waste wood, glass, scrap metal, tires, drywall and rubble;

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- (e) Outside storage shall be on an asphalt pad, or equivalent impermeable surface, within designated concrete bunkers, in a manner and in amounts which does not create a nuisance or hazard;
- (f) The City shall implement litter controls including, but not limited to, covering waste with netting and limiting the receipt or movement of materials on windy days. Litter pick-up shall occur daily and after the movement of waste either into the Materials Recovery Facility for processing or after loading vehicles for off-Site transfer at a minimum;
- (g) Prior to the storage of new materials outside, the City shall submit a revised list to the District Manager for concurrence;
- (h) The outdoor storage of any wastes that may attract *birds*, vectors, rodents and/or vermin is prohibited;
- (i) The City shall ensure that the addition, removal and processing of all wastes and/or recyclable material occurs only in the presence of competent personnel;
- (j) The Material Recovery Facility doors for vehicular traffic shall normally be kept closed and shall only be opened for entry or departure of vehicles if there is an attraction to *birds*;
- (k) All dry material shall be processed and shipped off-Site within 120 days of receipt;
- (1) Residual waste not suitable for further processing at the Site shall be moved off-Site within five (5) days of generation.

Household Hazardous Waste Transfer Station

22.

- 20. In this section, "processed waste" means wastes that have been bulked together in a common container or packaged for disposal.
- 21. The operation of this *HHW Transfer Station* is limited to the collection and transfer of waste classes 145H, 148A, 212L, 213I, 221I, 242A, 242B, 252T, 263A, 269A, 312P and 331I, as outlined in the New Ontario Waste Classes, January 1996.
 - (a) The City shall update and maintain details of the HHW Transfer Station, including but not limited to:
 - (i) a current Site plan (to include as a minimum the location of the wastes and processed wastes);
 - (ii) operation and management procedure;

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(l)

- _____0 0 1 5; __
- (b) The City shall ensure that only HHW generated by residents living within the City of Guelph and the County of Wellington is received. No industrial, commercial and/or institutional hazardous waste shall be received at this facility;
- (c) The City shall ensure that competent personnel are on duty at all times during the operation of the HHW Transfer Station to provide proper supervision of activities;
- (d) The City shall ensure that adequate fire fighting equipment is available at the HHW Transfer Station location at all times and that on-Site staff are trained in the use of such equipment;
- (e) The City shall ensure that the local police and fire departments are informed of the operation at the *HHW Transfer Station* at all times and are kept up-to-date on the types and quantities of waste that the facility handles;
- (f) Not less than once per calendar year, the City shall ensure that a fire inspection is carried out, to determine if adequate fire prevention and protection measures are in place for the facility;
- (g) The City shall ensure that waste which by reason of their type and/or quantity are to be bulked and shipped off-Site shall be transported, processed or disposed of at facilities which are licensed for such transport, processing or disposal by the Ministry;
- (b) The HHW Transfer Station shall be inspected on a daily basis to ensure that the integrity of waste containers is maintained. A daily record shall be maintained which describes any spill, how the waste was re-contained or otherwise dealt with and recommendations for preventing a recurrence of a similar *incident*;
- (i) No waste shall be stored on-Site longer than three (3) months from the date it was received;
- (j) All storage of waste shall be in accordance with the *Ministry*'s "Guidelines for Environmental Protection Measures at Chemical Storage Facilities", October 1978, and its amendments;
- (k) The City shall annually review and update the existing waste screening measures for all incoming waste, to ensure only waste approved by this Certificate are received at this facility;
 - The updated report on the waste screening measures shall be submitted to the *District* Manager on an annual basis;

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- (m) The City shall ensure that no PCB wastes are accepted at the Site. Oil and oil-based paints which have been manufactured prior to 1972, paints and thinners having an oily appearance, rubber based paints (concrete paints/stains), adhesives, urethane elastomers manufactured prior to 1977, pesticides manufactured prior to 1977, any of these materials whose manufacturing date cannot be determined and any container having contained these materials may contain PCBs. The City shall undertake a waste screening procedure for PCBs that includes, but is not limited to the following:
 - (i) The City shall ensure that an approved PCB storage site is available to take and store any confirmed PCB waste that is inadvertently received at the Site;
 - (ii) The City shall ensure a waste tracking system is established to property identify the source of any confirmed PCB waste:
 - (iii) Any PCB suspect material shall be segregated and shall not be mixed or bulked. All PCB suspect material shall be sampled and analyzed for PCB content. Each individual suspect container or a representative proportional composite of not more than ten (10) individual suspect container of a representative proportional composite of not
 - more than ten (10) individual suspect containers shall be sampled and analyzed;
 (iv) Any material that may be mixed or bulked shall be sampled and analyzed for PCB content. Each individual bulk container or drum shall be sampled and analyzed;
 - (v) Any material that has measure levels greater than fifty (50) parts per million is considered to be PCB waste as defined in Ontario Regulation 362. PCB waste shall be removed from the Site to an approved PCB storage site in accordance with written instructions from a Director as defined in Ontario Regulation 362, or a Waste Management System Certificate of Approval which specifies the manner in which PCB waste may be stored, handled, collected, transported or disposed of.

Leachate Monitoring

- 23. (a) 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;
 - (b) 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.

Groundwater Monitoring

24. Groundwater shall be sampled on a semi-annual basis (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 leachate monitoring information become available.

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All monitoring wells which form part of any monitoring program shall be protected from 25. damage. Any groundwater monitoring wells that are damaged shall be repaired or replaced forthwith or properly abandoned in accordance with Ontario Regulation 903.

Surface Water Monitoring

- 26. The City shall annually review and update the existing surface water sampling (a) program, designed to detect and quantify any impacts originating from the Site;
 - A surface water sampling program shall be implemented to ensure early detection of (b) contaminants in the event that such contaminants escape the Site. Surface water shall be sampled monthly for the following conventional parameters: biochemical oxygen demand (BODs), suspended solids (SS), ammonia, nitrogen, Total Kjeldahl Nitrogen (TKN), total phosphours and phenolics. For all other parameters, surface water shall be sampled on a semi-annual basis (spring and fall). 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 parameter for analysis may be adjusted upon the approval of the Director, as surface water and leachate monitoring information become available. Surface water shall be sampled at the discharge location of the final surface water detention pond;
 - The City shall ensure that all stormwater which comes in contact with waste material (c) is treated or discharged into the sanitary sewer;
 - The City shall annually review and update the detailed maintenance schedules for the (d) infiltration trenches and stormwater detention ponds.

Contingency Plans

- The City shall annually review and update the existing contingency plan for the Site, 27. (a) which includes as a minimum, the following: . 2 c (i)
 - measures to be undertaken in the event of a spill;
 - fire protection systems, control and safety devices; (ii)
 - (iii) an emergency plan outlining the action to be undertaken in the event of a fire or other such emergency;
 - (iv) measures to be undertaken in the event of a composter process upset and/or failure;
 - measures to be undertaken in the event of a power and/or equipment failure; (v)
 - (vi) measures to be undertaken in the event of a biological filter upset or failure;
 - (vii) measures to be undertaken in the event odour problems develop at the Site;
 - (viii) measures to be undertaken in the event fog problems develop from the composter or the processed compost piles (curing piles);
 - (ix) measure to be undertaken in the event hazard to aircraft problems develop or there is a net increase in birds at the Site;

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- measures to be undertaken in the event any unauthorized non-hazardous or (X) hazardous waste or unidentifiable waste appears at the Site;
- (xi) measures to be undertaken in the event of groundwater and/or surface water contamination; and
- (xii) measures to be undertaken in the event of quality/fungal contamination.
- The update report on the contingency plan shall be submitted to the District Manager (b)

Site Inspection

The City shall ensure, through daily inspection by competent personnel, that the Site is 28. being operated in accordance with this Certificate. The City shall remedy any malfunction and/or deficiency which these inspections reveal.

Record Keeping

- The City shall maintain a written record of daily Site inspections at the Site. This 29. (a)record shall be in the form of a Site Inspection daily log(s) and shall include as a
 - (i) date and time of inspection; (ii)
 - name, title and signature of competent personnel supervising the inspection; (iii)
 - a listing of all equipment, fencing, gates etc inspected and any deficiencies observed; (iv)
 - any maintenance conducted as a result of these inspections; (v)
 - recommendations for remedial action and date remedial action, if necessary, was completed:
 - indication whether odours are detectable; (vi)
 - indication of any litter collected; (vii)
 - indication of any incidents; and (viii)
 - indication of birds. (ix)
 - The City shall maintain a daily written record of the waste and/or recyclable material (b) received and processed at the Material Recovery Facility, and the waste and/or recyclable material transferred from the Material Recovery Facility. This record shall be in the form of a Material Recovery Facility daily log(s) and shall include as a minimum:
 - date, quantity and source of waste and/or recyclable material received; (i) (ii) –
 - date and quantity of waste and/or recyclable material processed;
 - (iii) date, quantity and the destination of material transferred off-Site; and
 - (iv) date, quantity and destination of any residual waste.

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- (c) The City shall maintain a written record of the waste and/or compost feedstock received and processed at the Organic Waste Processing Facility, and the waste and/or compost transferred from the Organic Waste Processing Facility. This record shall be in the form of an Organic Waste Processing Facility daily log(s) and shall include as a minimum:
 - (i) date, quantity, quality and source of waste and/or compost feedstock received;
 - (ii) temperature of the interior of the composting material;
 - (iii) frequency for turning compost and compost curing piles;
 - (iv) date, quantity and destination of the compost transferred off-Site; and
 - (v) date, quantity and destination of any residual waste.

(d) The City shall maintain a written record of the HHW received at the HHW Transfer Station and/or transferred from the HHW Transfer Station. This record shall be in the form of a HHW Transfer Station daily log(s) and shall include as a minimum:

- (i) date, quantity, type and source of HHW received;
- (ii) date, quantity, type and destination of HHW waste transferred off-Site.
- (e) The City shall maintain a written summary record of all residual waste shipped off-Site for disposal which shall include as a minimum:
 - (i) daily total quantity and type of residual waste transferred off-Site; and
 - (ii) destination of residual waste transferred off-Site.

Annual Report

- 30. The City shall submit an annual report on the operation of the Site for the previous calendar year to the District Manager by March 31st of each year. This report will include (all numbers reported in consistent metric units):
 - (a) a monthly summary of the waste and/or recyclable materials received at the Site, including quantity, source and Ontario Regulation 347 waste classes;
 - (b) a monthly summary of the wastes and/or recyclable materials processed at the Site including quantity and Ontario Regulation 347 waste classes;

(c) a monthly summary of the waste and/or recyclable materials transferred off-Site including quantity, destination and *Ontario Regulation 347* waste classes;

- (d) a monthly summary description of the composting facility operations including:
 - a colloquial description of the temperature of the compost material (daily readings) and the curing piles (weekly readings). Temperature graphs are not to be included in the report, but are to be kept on file and provided to the *Ministry* upon request;
 - (ii) the quantity, by weight and volume of compost and residues produced and the quantity of compost and residues removed from the facility; and

(iii) a description of the compost distribution/markets.

(e) an annual summary of the analytical results for the groundwater, surface water and leachate monitoring program including an interpretation of the results and any remedial/mitigative action undertaken; and

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an annual summary of any deficiencies, items of non-compliance or process (f) aberrations that occurred and remedial/mitigative action taken to correct them.

Communication Plan

- 31. (a) The City shall maintain and advertise a phone number for receiving complaints;
 - The City shall maintain a written record of any written or verbal complaint received (b) concerning the operation of the Site. This record shall be in the form of an occurrence report and shall include as a minimum. (i)
 - date and time of the complaint and the name of the complainant, if available;
 - (ii) nature and circumstances of the complaint; and
 - (iii) recommendations for remedial action and date remedial action taken.
 - Wherever possible and warranted, the City shall provide follow up to the complainant (c) on all actions taken to address the complaint.
 - The City shall continue to allow reasonable access to the Site for any member of the (đ) Public Liaison Committee which may exist during the operation of the facility.
 - The City shall make available to a Public Lictison Committee which may exist, all (e) records and reports required by this Certificate for the purposes of monitoring the ongoing operations of the Site.

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Schedule "A"

This Schedule "A" forms part of Certificate of Approval No. A170128.

- 1. Application for a Certificate of Approval for a Waste Disposal Site (Processing) dated August 27, 1991 and supporting documentation submitted therewith.
- Plume Visibility Study, Wet/Dry Processing Facility, Guelph, Ontario dated November 20, 1991.
- Evaluation of Potential Birds Hazards to Aircraft Safety Associated with the City of Guelph's Proposed Wet/Dry Recycling Facility Adjacent to the Guelph Air Park, dated March 5, 1992.
- 4. Letter to E. Gill, Ministry of Environment from K.J. Bull, City of Guelph, dated December 18, 1992 and additional information submitted therewith including the document "City of Guelph Hazardous Waste Facility Operation Manual" dated December 1992.
- 5. Application for a Provisional Certificate of Approval for a Waste Disposal Site (Processing) dated September 10, 1993.
- Letter and supporting documentation dated April 4, 1994, to Mr. H. M. Wong, Ontario Ministry of Environment and Energy from Mr. Richard Cave, R. Cave and Associates Ltd.
- 7. Letter date March 31, 1995 to the Ministry of Environment and Energy, Cambridge District Office from R.D. Funnell, P.Eng., City Engineer, re: Wet-Dry Recycling Centre - Annual Report.
- Letter dated May 16, 1995 to Dave Ross, Ministry of Environment and Energy, from R.D. Funnell, P.Eng., City Engineer, RE: City of Guelph's Application to Amend Provisional Certificate of Approval No. A170128 for Waste Disposal Site (Processing) with the attached Application for an Approval of Waste Disposal Site dated May 17, 1995.
- 9. Letter dated December 30, 1996, to Mr. H. Wong, Ministry of Environment and Energy, West Central Region from R.D. Funnell, P.Eng., Director of Works, RE: Amendments to Certificate of Approval (Waste Disposal) No. A170128 for the City of Guelph's Wet-Dry Recycling Centre, including application dated December 31, 1996 and supporting documentation.
- Letter dated July 14, 1997 to Mr. Hardy Wong, Director, West Central Region from Jutta Siebel, Wet-Dry Residential Coordinator, RE: City of Guelph's Wet-Dry Recycling Centre Certificate of Approval No. A170128.

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- 11. Letter and application from Janet Laird, Manager of Solid Waste Services, City of Guelph to G. Carpentier, MOE dated April 3, 1998 re: Amendment to Certificate of Approval A170128.
- 12. Letter from Jutta Siebel, Wet-Dry Residential Coordinator, City of Guelph to G. Carpentier, dated May 4, 1998 re: Public Consultation and Analytical Data.
- 13. The covering letter from Ms. J. Laird, Manager of Solid Waste Services, City of Guelph to Mr. G. Carpentier, MOE, dated May 27, 1998 with attachments:
 - (a) Application for approval of a waste disposal site.
 - (b) Public consultation process for amendments to Certificate of Approval No. A170128.
- 14. The covering letter from Ms. J. Laird, to Mr. G. Carpentier, dated June 19, 1998 with attachments:
 - (a) Waste acceptance policy at the wet-dry recycling centre;
 - (b) Section 2.9 "Penalties for Improper Disposal" from the "A Guide for Solid Waste Disposal at Eastview Sanitary Landfill Site and the Wet-Dry Recycling Centre";
 - (c) Contingency plan for "odourous" wet/organic waste received at the wet-dry recycling centre.
- 15. Letter and application from Janet Laird, Manager of Solid Waste Services, City of Guelph, to G. Carpentier, MOE, dated October 26, 1998, re: Amendment to Provisional Certificate of Approval A170128.
- 16. Facsimile from Jutta Siebel, Wet-Dry Residential Coordinator, City of Guelph, to Stephen Rouleau, MOE, dated January 13, 1999, re: Copper and Mercury Levels in Compost:
- Facsimile from Jutta Siebel, Wet-Dry Residential Coordinator, City of Guelph, to Stephen Rouleau, MOE, dated January 15, 1999 re: Copper and Mercury Levels in Leaf and Yard Waste.
- Letter and application from Janet Laird, Manager of Solid Waste Services, City of Guelph, to Adam Ciulini, MOE, dated February 12, 1999, re: Rationale for Amendment.
- Memorandum from Adam Ciulini, MOE, to A. Dominski, MOE, dated April 12, 1999, re: Waste Management Policy Branch's Support of the Amendment.
- 20. Letter and application from Janet Laird, Manager of Solid Waste Services, City of Guelph to G. Carpentier, MOE, dated August 19, 1999, re: Amendment to Certificate of Approval No. A170128.
- 21. Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Cathy Smith, Manager, Solid Waste Resources Division, Corporation of the City of Guelph, including the attached cover letter dated February 1, 2005.

- <u>[</u>] 023
- Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Janet Laird, Director of Environmental Services, City of Guelph, dated February 17, 2006.
- 23. Document entitled City of Guelph Request for Amendments to Provisional Certificate of Approval No. A170128, prepared for City of Guelph, prepared by Gartner Lee Limited, dated February 2006 except for Section 2.4, 2.6, 3.4 and 3.5 which are not approved by the Director.
- 24. Letter from Dean Wyman, Manager, Solid Waste Resources Division, City of Guelph, to EAAB, dated June 12, 2006 re: changes to and clarification of document submitted in support of the application for amendments.
- 25. Email from Dean Wyman, Manager, Solid Waste Resources Division, City of Guelph, to Veronica Pochmursky, EAAB, sent September 6, 2006, re: City of Guelph's procedures for clean wood and contaminated wood and final destination of contaminated or combined wood.

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SCHEDULE "B"

This Schedule "B" forms part of Certificate of Approval No. A170128.

PARAMETER

CONCENTRATION (mg/kg dry weight)

METALS

Arsenic	10
Cadmium	13
Chromium	E
Cabalt	210
Cobait	34
Copper	100
Lead	150
Mercury	0.8
Molybdenum	5
Nickel	5
Selenium	62
Zina	2
	500

ORGANIC CHEMICALS

PCB

0.5

NON-BIODEGRADABLE PARTICULATE MATTER

CONCENTRATION

(% dry weight)

Plastic		1.0	
Other (total)	 	2.0	

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SCHEDULE "C"

This Schedule "C" forms part of Certificate of Approval No. A170128.

Submittals required by GUELPH WET/DRY RECYCLING FACILITY CofA # A170128

<u>dated 1 October 1993</u> 25 amended 5 February 1996 for Waste Disposal Site (Processing) and Transfer Station

Task / Condition	Date required	
requirement	Date reduited	Status
Site Visual Screening Plan		· · · · · · · · · · · · · · · · · · ·
FOR APPROVAL	60 dates h. C	
Construction schedule B	ou days before construction	Submitted 26 January 1994
startun date		
Air and water any	60 days before construction	Done
And water approvais		
Opporting R 3 (1	Before construction	Done
Operating & Maintenance		
Titter Class I D	60 days before construction	Submitted 26 January 1994
EOD ADDROUM		
FOR APPROVAL	60 days before startup	21 September 1995
Start a Background Odour		Results submitted 10 April
Study	60 days before construction	1994
Bio-Filter monitoring		21 September 1005 manual
program <u>FOR APPROVAL</u>	60 days before startup	to Air CofA
Conduct 1-year bird study	Before startup	Study complete
Bird control plan &		Dorres and for NOT
monitoring program FOR	60 days before startum	22 Imme 100C
APPROVAL		22 January 1996
conduct traffic study	60 days after startum	Starley 1 - Starley
	oo mys mus startup	Study complete 21 May
Site security program		1996
	60 days hafara starting	Submitted as part of
	to days beidle startup	Contingency Programs 21
Post signs	hofein ataut	September 1995
Erect 1.8 m fence	belore startup	Done
Monitoring Plan for Oreani	before startup	Done
Waste Processing Failly		
FOR A POPOVAT	60 days before startup	21 September 1995
List of motorial to 1		
Dust of material to be stored		
ourside to DM	90 days before startup	21 September 1995
· · · · · · · · · · · · · · · · · · ·		-

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Details of Household Hazardous Waste Transfer Station <u>FOR APPROVAL</u>	Before construction of HHW facility	21 September 1995 – amended to take 212 and 312 16 May 1997
Written authorization from Fire Department	Before startup	Fire inspection to be carried out within sixty (60) days of issuing new CofA
Screening procedure for Household Hazardous Waste to DM	60 days before startup	21 September 1995
Leachate monitoring program FOR APPROVAL	60 days before startup	21 September 1995
Groundwater monitoring program FOR APPROVAL	60 days before startup	Submitted 21 September 1995
Establish background g/w constituent levels	Before startup	11 April 1996
Well inventory (field verified)	60 days before startup	23 June 1996 – no site-specific one submitted Further evaluation required
Surface water monitoring program FOR APPROVAL	60 days before startup	21 September 1995
Stormwater management plan	60 days before construction	Submitted 26 January 1994
Contingency plan (spills & fire) <u>FOR APPROVAL</u>		
Contingency plan (operations) <u>FOR</u> <u>APPROVAL</u>	60 days before startup	21 September 1995
Annual report	31 March 1996 etc	26 March 1997
Community information	Before startup	Samples submitted

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The reasons for the imposition of these terms and conditions are as follows:

The reason for Condition 1 is to clarify that the previously issued Certificate of Approval No. A170128 issued on July 4, 1997 and Notices of amendments issued December 17, 1997, May 21, 1998, October 21, 1998, April 27, 1999, September 29, 1999, September 26, 2000, January 30, 2001, March 13, 2001, April 9, 2003 and May 13, 2005 are no longer in effect and has been replaced and superseded by the Terms and Conditions stated in this Certificate.

The reason for Conditions 2 and 3 is to clarify the legal rights and obligations of this Certificate.

The reason for Condition 4 is to ensure that the Site is operated under the corporate, limited or applicant's own name which appears on the application and supporting information submitted with the application and not under any name which the Director has not been asked to consider.

The reason for Condition 5 is to ensure that Ministry personnel, when acting in the course of their duties, will be given unobstructed access to the information and records related to the Site which are required by this Certificate, and to enable the Ministry to be assured of the City's compliance with the terms and conditions stated in this Certificate.

The reason for Conditions 6(a), 6(b), 7, 8, 9, 10, 11 and 13 is to minimize and/or prevent nuisance or adverse environmental affects from occurring. The use and operation of the Site without these conditions may create a nuisance or result in a hazard to the health and safety of any person or the environment.

The reason for Conditions 6(c), 16, 19, 21 and 22 is to ensure that the Site is operated in accordance with the application and supporting documentation for this Certificate and not in any manner which the Director has not been asked to consider. The operation of the Site without these conditions would not be in the public interest and may result in unacceptable environmental impacts. The imposition and compliance with these conditions will further ensure that the facility is operated and monitored in accordance with established procedures and practices for this type of facility.

The reason for Condition 12 is to ensure that there is no adverse impact on aircraft safety in the area and no net increase in the bird population in the area, as a result of the use and operation of this Site.

The reason for Condition 14 is to ensure that the Site will not be operated at hours during which such operation could cause material discomfort to any person.

The reason for Condition 15 is to minimize the risk of vandalism and to ensure that the Site is only operated in the presence of competent personnel to ensure the waste is properly managed.

The reason for Condition 17 is to ensure the orderly shut down of the composting facility until such time as the facility is rehabilitated and can operate without creating negative impacts on area residents.

The reason for Condition 18 is to ensure that there is sufficient space to accommodate leaf and yard waste, brush and wood waste and that these wastes are handled in a manner which will not negatively impact on area residents.

The reason for Condition 20 is to clarify what is meant by processed waste in reference to the FIHW Transfer Station.

The reason for Conditions 23, 24 and 26 is to minimize the risk of environmentally unacceptable discharges of a contaminant into the environment. Compliance with the monitoring programs outlined in these conditions will enable the City to allow for an early detection system for any unacceptable discharges of contaminants and allow for the implementation of a contingency plan.

The reason for Condition 27 is to ensure the City has an up-to-date contingency plan for the prompt control, abatement, mitigation and clean-up of emergency incidents, accidental discharge of contaminants, potential environmental or nuisance related impacts.

The reason for Condition 28 is to ensure that the facility is operated and maintained appropriately. Operation of the facility without this condition could lead to the deterioration of the facility, could result in an unacceptable environmental impact and could result in a danger to the health and safety of any person.

The reason for Conditions 29 and 30 is to allow the Ministry to review and assess the operations and to ensure the Site is operated in accordance with the application and this Certificate and not in any manner which the Director has not been asked to consider. Operation of the Site without these conditions would not be in the public interest.

The reason for Condition 31 is to ensure a communication plan is established to allow public consultation and input. The use and operation of the Site without this condition would not be in the public interest.

This Provisional Certificate of Approval revokes and replaces Certificate(s) of Approval No. A170128 issued on July 4, 1997 and Notices of amendments issued December 17, 1997, May 21, 1998, October 21, 1998, April 27, 1999, September 29, 1999, September 26, 2000, January 30, 2001, March 13, 2001, April 9, 2003 and May 13, 2005.

In accordance with Section 139 of the <u>Environmental Protection Act</u>, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after recelpt of this Notice, require a hearing by the Tribunal. Section 142 of the <u>Environmental Protection Act</u>, provides that the Notice requiring the hearing shall state:

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WET/DRY CENTRE

, A029 20020

The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
The grounds on which you intend to rely at the hearing in relation to<u>each</u> portion appealed.

The Notice should also include;

- 3. The name of the appellant;
- The address of the appellant;
- 5. The Certificate of Approval number;
- 6. The date of the Certificate of Approval;
- The name of the Director;
- The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

AND

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 2300 Yonge SL, Suite 1700 P.O. Box 2382 Toronto, Ontario M4P 1E4

The Director Section 39, Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 11.5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 29th day of September, 2006

Tesfaye Gebrezghi, P.Eng. Director Section 39, Environmental Protection Act

VP/

c: District Manager, MOE Guelph

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Appendix E

City of Guelph Compliance Statement

WRIC

<u>The 2010 annual summary of any deficiencies, items of non-compliance or process</u> <u>aberrations, that occurred and remedial/mitigative action taken to correct them.</u> <u>As per condition 30(f) of C. of A. # A170128 – Annual reporting requirement</u>

The WRIC Facility continues to strive to comply with its Certificate of Approval and to seek opportunities for continuous improvement. Detailed monthly summaries of the types, quantities, origins, processing and destinations of wastes and recyclable materials are provided in Section 3 of this report. Section 5 discusses the results of the annual groundwater, surface water and leachate monitoring program. Section 8 provides a review and summary of the current Contingency Plans for the site.

The City is not aware of any adverse environmental impacts from the operation of the Wet-Dry Facility in 2010 and that there were no odour complaints received about the facility. Two regular odour patrols a day have confirmed that there were no noticeable odours emanating from this facility in 2010.

The Director of Environmental Services and the Manager of Solid Waste Resources continue to put a very high priority on compliance with applicable laws. Staff training continues to be provided both in-house and by external providers, and included inspections, reporting, due diligence, environmental regulations, competent person, contingency plans, emergency procedures, certificate of approval conditions, spills, TDGA, lab packing and other relevant topics.

Transfer Station

<u>The 2010 annual summary to compliance with all terms and conditions of the</u> <u>Transfer Station C of A. and with the inspection and reporting requirements of the</u> <u>conditions</u> <u>As per condition 30© – Annual reporting requirement</u>

The City is not aware of any adverse environmental impacts from the operation of the Transfer Station in 2010 and that there were no odour complaints received about the facility. Two regular odour patrols a day have confirmed that there were no noticeable odours emanating from this facility in 2010.

The Transfer Station continues to comply with its Certificate of Approval, including its inspection and reporting requirements, and to seek opportunities for continuous improvement. Detailed monthly summaries of the types, quantities, origins and destinations of wastes and recyclable materials are provided in Section 4 of this report.

The Director of Environmental Services and the Manager of Solid Waste Resources continue to put a very high priority on compliance with applicable laws. Staff training continues to be provided both in-house and by external providers, and included inspections, reporting, due diligence, environmental regulations, competent person, contingency plans, emergency procedures, certificate of approval conditions, spills, TDGA, lab packing and other relevant topics.