

RICHMOND SANITARY LANDFILL SITE

MONITORING REPORT NO. 29

PART OF LOTS 1, 2 AND 3, CONCESSION IV
TOWN OF GREATER NAPANEE
COUNTY OF LENNOX AND ADDINGTON

Waste Management of Canada Corporation

Project No: 081-12459-01 (8570)
Date: March 2016

—
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081-12459-01 (8570)

March 30, 2016

Mr. Timothy Haaf, Construction/Maintenance Manager
Waste Management – Closed Sites Midwest
851 Robison Rd East
Erie, PA 16509

Re: Waste Management of Canada Corporation - Richmond Landfill Site
Annual Monitoring Report #29

Dear Tim:

We are pleased to provide Monitoring Report #29 in accordance with the conditions of Environmental Compliance Approval No. A371203, and Environmental Compliance Approval No. 1688-8HZNJG.

Two (2) hard copies of this report have been provided to the District Manager and Senior Environmental Officer for the Ministry of the Environment and Climate Change – Kingston District Office. Additional hard copies and electronic copies have been provided to the stakeholders as described in Condition 14.2 of ECA No. A371203. We have provided an electronic copy of this document to you and to Jim Forney. If you require additional copies, please let us know.

Please note that the Ministry of Environment and Climate Change's Monitoring and Screening Checklist form has been included in reports submitted by BluMetric Environmental Inc. (formerly Water and Earth Science Associates (WESA)), under separate cover.

We trust the enclosed is satisfactory. However, if you have any additional questions, please do not hesitate to contact the writer.

Yours truly,

WSP Canada Inc.

A handwritten signature in black ink that reads "P. Brodzikowski".

Peter S. Brodzikowski, P.Eng.
Designated Consulting Engineer
Senior Engineer, Solid Waste Management
PSB/bdl
Encl.

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Appendix A	Environmental Compliance Approvals and Certificates of Approval
A.1	Environmental Compliance Approval (Waste Disposal Site) No. A371203, dated January 9, 2012
A.1.1	Amendment to Environmental Compliance Approval No. A371203, dated January 9, 2012, Imposing Conditions 5.12 through 5.24 (Waste and Recycling Drop-Off Facility), and Adding Items 52 through 55
A.1.2	Amendment to Environmental Compliance Approval No. A371203 dated May 3, 2013, Amending Conditions 8.2, 8.5.1 (a), 9.5 (a) and (b), 14.1 (a) through (e), 14.2, 14.3 i through xxiii; Imposing Conditions 14.4 (a) and (b), and Adding Items 56 through 58
A.1.3	Amendment to Environmental Compliance Approval No. A371203, dated October 4, 2013, Amending Conditions 2.5 and 2.6 i through iii
A.1.4	Amendment to Environmental Compliance Approval No. A371203, dated August 14, 2015, Adding a Definition, Revoking Condition 8.5, Imposing Conditions 8.5 (a) i, ii, and iii, (b), and (c) i, ii, iii, and iv, 8.7 and 8.8, and Adding Items 59 and 60
A.1.5	Amendment to Environmental Compliance Approval No. A371203, dated November 5, 2015, Amending Condition 8.5 (c) iii, and adding Item 61
A.2.	Environmental Compliance Approval (Sewage Works) No. 1688-8HZNJG, dated January 10, 2012
A.3	Certificate of Approval (Industrial Sewage) No. 4-0129-64-956 (Oil/Sediment Interceptor), dated January 24, 1995
A.4	Certificate of Approval No. A710003 (Soil Recycling), dated December 20, 1993
A.4.1	Amendment to Certificate of Approval No. A710003 dated August 25, 1999, Regarding Notification of Change of Name

- A.4.2 Amendment to Certificate of Approval No. A710003 dated March 26, 2004, Regarding Notification of Change of Name
- A.5 Environmental Compliance Approval (Air) No. 5970-9HKP3V (Landfill Gas Collection and Flaring System, including Candlestick Flare) dated April 29, 2014
- Appendix B Landfill Gas Collection System As Built Drawing to December 2015
- Appendix C Memorandum: 2015 Stormwater Management Ponds and Leachate Monitoring Results, prepared by BluMetric Environmental Inc. (formerly Water and Earth Science Associates (WESA))
- Appendix D Detailed Chronology of Significant Landfill Design and Operation, and Land Use Changes, and Potential Volatile Organic Compound sources at the Site
- Appendix E Statement of Compliance - 2015 Environmental Monitoring and Reporting, prepared by BluMetric Environmental Inc. (formerly Water and Earth Science Associates (WESA))
- Appendix F 2015 Phytoremediation System Monitoring Results, provided by BluMetric Environmental Inc. (formerly Water and Earth Science Associates (WESA))
- Appendix G Site Location Plan – Phytoremediation System
- Appendix H Letters of Approval for Alternate Leachate Treatment Sites

1 INTRODUCTION

Waste Management of Canada Corporation's (WM) Richmond Landfill site is located within Part of Lots 1, 2, and 3, Concession IV, Former Township of Richmond, now the Town of Greater Napanee. The landfill site consists of a 16.2 hectare waste disposal landfill site within a total site area of 138 hectares, and operates under Environmental Compliance Approval (ECA) (formerly Certificate of Approval) No. A371203, including amendments. The Richmond Landfill ceased to accept waste for final disposal on June 30, 2011, as per Condition 4.4 of the ECA.

This monitoring report for the Richmond Landfill site was prepared following site inspections and discussions with WM staff, and complies with conditions listed in ECA No. A371203, issued January 9, 2012 and amended May 3, 2013, August 14, 2015, and November 5, 2015, and ECA (Sewage Works) No. 1688-8HZNJG, issued January 10, 2012, as follows:

- Condition 14.2 and 14.3 (i through xxiii) of ECA No. A371203; and
- Conditions 10(4) (a) (b), (c), (d), (e), (f), (g), and (h) of ECA No. 1688-8HZNJG

The May 2013 ECA amendment was issued to reflect the interim order issued by the Environmental Review Tribunal (ERT) regarding the following Conditions:

- (i) Condition 8.2, 8.5 1(a) and (b) (Assessment of Groundwater Wells, and Odour Monitoring Plan);
- (ii) Condition 9.5 (Public Notification Plan);
- (iii) Condition 14.1 (Semi-Annual Monitoring/Reporting);
- (iv) Conditions 14.2 and 14.3 (Annual Reporting); and
- (v) Conditions 14.4 (a) and (b) (Site Compliance Information and Annual Reporting Information).

The August 2015 ECA amendment was issued to reflect the interim order issued by the ERT regarding the following Conditions:

- (i) Condition 8.5 (a) i, ii, iii, (b) and (c) i, ii, iii, and iv (Environmental Monitoring Plan, Replacement/Installation/Testing of Monitoring Wells
- (ii) Addition of Condition 8.7 (Reporting Exceedances to District Manager); and
- (iii) Addition of Condition 8.8 (1,4-dioxane Reporting);

The November 2015 ECA amendment was issued to reflect the interim order issued by the ERT regarding the following Conditions:

- (i) Condition 8.5 (c) iii (Complete Testing of Monitoring Wells M187 to M191 by December 1, 2015).

It is noted that certain Conditions of ECA No. A371203 remain under appeal to the ERT, as follows:

- (i) Condition 8.5 (Environmental Monitoring Plan);
- (ii) Condition 9.1 (Groundwater and Surface Water Impact Contingency Plan); and
- (iii) Condition 9.2 (Leachate Collection System Contingency Plan);

On December 24, 2015, the ERT issued an order which listed further amendments to the Environmental Monitoring Plan and to the contingency plans, and that additional investigations are required to further understand the hydrogeology of the site and the extent of the leachate contamination. No amendment to the ECA was issued prior to the end of the 2015 calendar year, therefore, this annual report is based upon the currently approved Conditions. Any changes to the aforementioned Conditions as a result of the ECA appeal will be reflected in the 2016 annual report.

This report was prepared following a site inspection performed by WSP Canada Inc. (WSP) on October 30, 2015, discussions with management, and covers activities and monitoring for the 2015 calendar year.

A copy of ECA No. A371203 is included in **Appendix A.1** of this report, with amendments provided in **Appendix A.1.1 through A.1.5**. The amendments issued since the issuance of the ECA are listed below, and contain the following updates:

January 9, 2012 Amendment (Appendix A.1.1)

Imposed Conditions 5.12 through 5.24 inclusive and Items 52 through 55. This amendment approved the operation of the waste and recyclable drop off facility, subject to conditions regarding waste types, waste quantities, service area, and removal frequency.

May 3, 2013 Amendment (Appendix A.1.2)

Amended Conditions 8.2, 8.5.1 (a) and (b), 9.5 (a) and (b), 14.1 through 14.3, and Imposed Conditions 14.4 (a) and (b), and Items 56 through 58. This amendment was issued to reflect the interim order issued by the ERT, as discussed on page 1 of this report.

October 4, 2013 Amendment (Appendix A.1.3)

Amended Conditions 2.5 and 2.6. This amendment approved the updated financial assurance reported submitted to the Ministry of Environment and Climate Change (MOECC) in March 2013, and updated the financial assurance amounts to be provided in 2014, 2015, and 2016.

August 4, 2015 Amendment (Appendix A.1.4)

Added "Parties" (Concerned Citizens Committee of Tyendinaga and Environs; Director, MOECC, WM, Mohawks of the Bay of Quinte, and Tom Touzel on behalf of Napanee Green Lights) to the Definitions of the ECA. Revoked Condition 8.5 and Imposed Condition 8.5 (a) i, ii, iii, (b), and (c) i, ii, iii, and iv. This amendment was issued to reflect the interim order issued by the ERT, as discussed on page 2 of this report.

November 5, 2015 Amendment (Appendix A.1.5)

Amended Condition 8.5 (c) iii to extend the date for completing all work associated with testing required for monitoring wells M187 to M191 to December 1, 2015. This amendment was issued to reflect the interim order issued by the ERT, as discussed on page 1 of this report.

The following other Certificates of Approval (C of As) and ECAs concerning the site are included in **Appendix A:**

ECA No. 1688-8HZNJG dated January 10, 2012, can be found in **Appendix A.2**. This document outlines the new requirements for the operation, maintenance, monitoring, and reporting of the leachate and stormwater management systems.

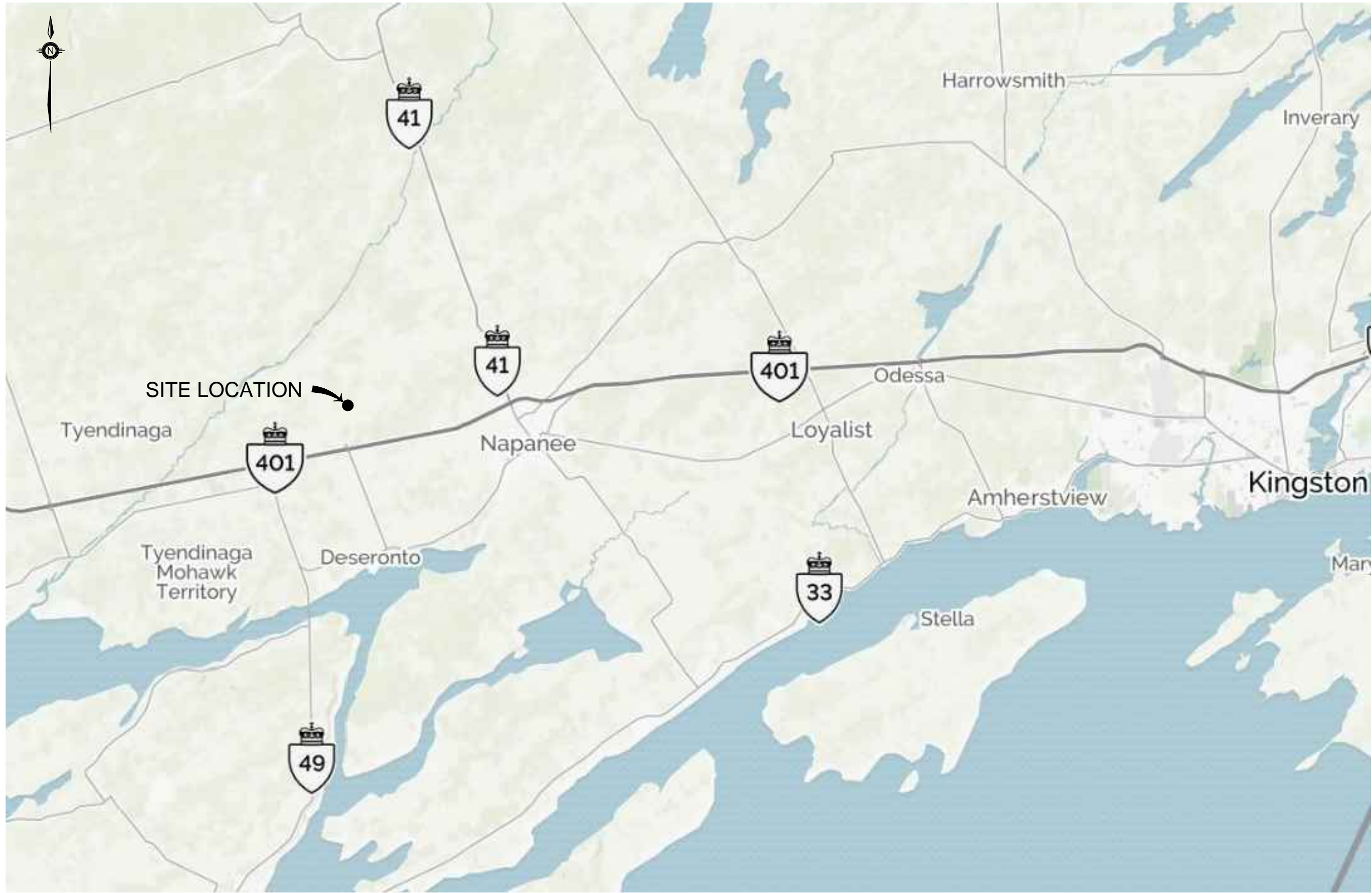
C of A (Industrial Sewage Works) No. 4-0129-64-956 dated January 24, 1995 is located in **Appendix A.3**. This approval governs the operation of the oil/sediment interceptor at the former contaminated soil pad.

C of A for a Waste Disposal Site No. A710003 (Soil Recycling) dated December 20, 1993 (**Appendix A.4**), with amendments, and

Environmental Compliance Approval No. 5970-9HKP3V (Landfill Gas Collection and Flaring System), dated April 29, 2014 (**Appendix A.5**). The approval permits the operation of a candlestick flare as a contingency measure in the event the enclosed flare is shut down for repair or

maintenance. This approval revoked and replaced C of A (Air) No. 1355-5LRN9N (Landfill Gas Collection and Flaring System) dated May 8, 2003.

The site location can be seen in the following **Figure 1**.



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 OWEN SOUND (ONTARIO) CANADA N4K 6W2
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W.M.
WASTE MANAGEMENT

SITE LOCATION PLAN
 RICHMOND LANDFILL

DWN BY: T C G DATE: MARCH 2016
 CHK BY: P S B SCALE: N T S
WASTE MANAGEMENT OF CANADA CORP.
 DRAWING NO. 0857013 - FIGURE 1

FIGURE
1

2 PREVIOUSLY SUBMITTED REPORTS

Several reports have been completed and filed with the MOECC in compliance with requirements of the conditions of the previous Provisional C of A and current ECAs. Those prepared by WSP (formerly GENIVAR Inc. and Henderson Paddon & Associates Limited.) are as follows:

Monitoring Report No. 1, March 1988

1987 Annual Monitoring - Complying with Conditions 10(b), 10(c), and 10(e) of the C of A dated August 11, 1987.

Final Design Report, September 1988

Complying with Conditions 2(a) and 11(a) of the C of A dated August 11, 1987, (Condition 2(a) and 10(a) of the C of A dated March 30, 1988).

Application for the Approval of Sewage Works for the Leachate Collection and Treatment Facilities, October 1988

Monitoring Report No. 2 to 23

1988 to 2009 Annual Monitoring Reports - Complying with Conditions 9(b), 9(c), 9(e), and 9(f) of C of A No. A371203 dated March 30, 1988, Condition 12 (3) of C of A No. 3-0975-90-916 dated October 21, 1991 (Monitoring Reports No. 5 through 22), and Conditions 10 (4) (a), (b), (c), (d), (e), (f), (g), and (h) of C of A No. 5268-7E8LJW, dated August 19, 2008 (Monitoring Reports 22 and 23).

Clay Liner – Design Construction and Testing, October 1989

Complying with Condition 2(b) of the C of A dated March 30, 1988.

Condition No. 7 Report, December 1991

This report was prepared and filed on December 31, 1991 by Laidlaw in connection with requirements of Certificate of Approval (Sewage) No. 31720-90-916.

Condition No. 29 Report, December 1991

This report was prepared and filed on December 31, 1991 by Laidlaw in connection with requirements of Certificate of Approval No. 19-371203 dated September 4, 1991.

Development & Operations Report

Report dated March 1996, to comply with Condition 2(a) of the C of A and as requested in the Amendment to the C of A on August 1, 1995.

Final Closure Plan

Final Closure Plan dated June 2007, was submitted to satisfy Condition 34 of the C of A that required a detailed closure plan pertaining to the termination of the landfill site, post closure inspection, maintenance and monitoring, and end use.

Construction Quality Assurance/Construction Quality Control (CQA/CQC) Plan for the Final Cover System

CQA/CQC Plan dated June 25, 2010, to comply with Condition 6(b) of the amended C of A issued March 31, 2010.

Odour Monitoring Plan

Submitted June 25, 2010 as part of the Environmental Monitoring Plan (EMP) prepared by Water and Earth Science Associates (WESA), to satisfy Condition 8(d) of the amended C of A issued March 31, 2010.

Financial Assurance Update

Revised Financial Assurance Plan dated June 25, 2010, to satisfy Condition 19 of the amended C of A issued March 31, 2010.

Operations and Procedures Manual

Updated Operations and Procedures Manual, dated June 25, 2010, to satisfy Condition 66 of the amended C of A issued March 31, 2010.

Leachate Collection System Contingency Plan

Dated June 25, 2010, to satisfy Condition 84 of the amended C of A issued March 31, 2010.

Landfill Gas Collection System Contingency Plan

Dated June 25, 2010, to satisfy Condition 88 of the amended C of A issued March 31, 2010.

Design of Low Permeability Surface and Low Permeability Liner for Compost Pad and Pond

Dated June 25, 2010, to satisfy Conditions 138 and 139 of the amended C of A issued March 31, 2010.

Monitoring Report No. 24

2010 Annual Monitoring Report - Complying with Conditions 9(b), 9(c), 9(e), and 9(f) of C of A No. A371203 dated March 30, 1988 (as amended), Conditions 9a and 9b (i through xxv) of Notice 5 to amend C of A No. A371203 dated March 31, 2010, and Conditions 10(4) (a through h) of C of A No. 5268-7E8LJW dated August 19, 2008.

Monitoring Report No. 25

2011 Annual Monitoring Report – Complying with Conditions 14.2 and 14.3 (i through xxiii) of ECA No. A371203 dated January 9, 2012 (as amended), and Conditions 10(4) (a through h) of ECA No. 1688-8HZNJG.

Operations and Maintenance Manual Revision No. 1 – Stormwater/Leachate Management Systems

Dated March 22, 2012, to satisfy Condition 7 (3) of ECA No. 1688-8HZNJG. This report was updated to reflect changes in site operations. This report was not required to be submitted to MOECC, but is retained at the site as part of the operating records.

Operations and Procedures Manual Revision No. 1

Dated March 22, 2012, to satisfy Condition 4.3 (c) of ECA No. A371203. This report was updated to reflect changes in site operations. This report was not required to be submitted to MOECC, but is retained at the site as part of the operating records.

Odour Monitoring Plan Revision No. 1

Dated March 22, 2012, to satisfy Condition 8.5 d of ECA No. A371203. This report was updated to reflect changes in site operations and to address comments from the public and MOECC on the initial submission.

Stormwater Contingency and Remedial Action Plan

Dated March 22, 2012 to satisfy Condition 9 (1) of ECA No. 1688-8HZNJG. This condition required the submission of a contingency and remedial action plan pertaining to the stormwater systems within six (6) months of the date of ECA issuance. The report was required to be submitted only to the MOECC District Manager for approval. Report is awaiting review.

Public Notification Plan

Dated September 19, 2012 to satisfy Condition 9.5 of ECA No. A371203. This condition required the submission of a public notification plan to notify parties that contingency plans were implemented at the site, within 12 months of the date of issuance of the ECA.

Odour Survey Protocol

Dated February 2013. This report was submitted to address comments from the ERT hearing.

Public Notification Plan

Dated February 2013. This report was submitted to address comments from the ERT hearing.

Financial Assurance Update

Revised Financial Assurance Plan dated March 25, 2013, to satisfy Condition 2.7 of the ECA issued January 9, 2012.

Monitoring Report No. 26

2012 Annual Monitoring Report – Complying with Conditions 14.2 and 14.3 (i through xxiii) of ECA No. A371203 dated January 9, 2012 (as amended), and Conditions 10(4) (a through h) of ECA No. 1688-8HZNJG.

Monitoring Report No. 27

2013 Annual Monitoring Report – Complying with Conditions 14.2 and 14.3 (i through xxiii) of ECA No. A371203 dated January 9, 2012 (as amended), and Conditions 10(4) (a through h) of ECA No. 1688-8HZNJG.

Maintenance Schedule – Ditches, Culverts, and Leachate Collection System

Dated June 12, 2014 to satisfy Conditions 13.9 and 13.10 of ECA No. A371203. This schedule was submitted as part of an MOECC application, regarding maintenance on the aforementioned landfill infrastructures for the duration of the landfill's contaminating lifespan. Schedule is awaiting review/comments from MOECC.

Addendum to Monitoring Reports No. 26 and 27

Dated September 15, 2014, to satisfy Condition 5.11 (i through iv), which was excluded from the annual monitoring reports. This letter report was submitted to MOECC and various stakeholders as identified under Condition 14.2 of Notice 1 to amend ECA No. A371203.

Operations and Procedures Manual Revision No. 2

Dated October 28, 2014, to satisfy Condition 4.3 (b) of ECA No. A371203. This report was updated to reflect changes in site operations. This report was not required to be submitted to MOECC, but is retained at the site as part of the operating records.

Odour Monitoring Plan Revision No. 2

Dated November 24, 2014. This report was submitted as part of a MOECC application to request consolidation of the Odour Monitoring Plan Revision No. 1, and the Odour Survey Protocol documents identified under Condition 8.5 (d) of ECA No. A371203, and was updated to reflect changes in site operations. In early 2016, WM and the MOECC have corresponded regarding this application. Additional details will be provided in the 2016 annual report.

Monitoring Report No. 28

2014 Annual Monitoring Report – Complying with Conditions 14.2 and 14.3 (i through xxiii) of ECA No. A371203 dated January 9, 2012 (as amended), and Conditions 10(4) (a through h) of ECA No. 1688-8HZNJG.

3 REPORTING REQUIREMENTS – ENVIRONMENTAL COMPLIANCE APPROVAL NO. A371203

3.1 ASSESSMENT OF ENGINEERED FACILITIES, DESIGN AND OPERATIONS OF THE SITE, AND ADEQUACY OF, AND NEED TO, IMPLEMENT CONTINGENCY PLANS

Condition 14.3 i of the ECA requires an assessment of the operation and performance of all engineered facilities. The following describes the facilities reviewed and the assessment completed.

3.1.1 LANDFILL MASS

The existing landfill mass was reviewed for slope stability, areas of settlement, integrity of the final cover, vegetation, leachate and gas seeps, and areas requiring remediation. The landfill slopes are regularly reviewed by WM, and were inspected in the past year by WSP. No areas were discovered with slope instability, and settlement is still occurring mainly in the higher elevations of the landfill. The landfill final cover was inspected, and leachate seeps were repaired as found, and surface emission surveys were used to locate weak areas on the final cap. Vegetation of the final cap was reviewed and is establishing well. We conclude no remedial work is required on the landfill mass.

3.1.2 LEACHATE COLLECTION SYSTEM

The existing leachate collection system and pump stations were reviewed to determine if they are operating as designed, and if any remedial work is required. WM staff regularly reviews the operation of the leachate system, and completes repairs as required. It is understood that leachate is being collected from the system, and that no blockages are present. High-level alarms were installed in the north chamber, and replaced in the south pump station, in 2010. No remedial work is currently required.

3.1.3 GAS COLLECTION SYSTEM

The existing gas collection system is regularly monitored by WM, to ensure that landfill gas is being collected and destroyed in the flare system. No new gas extraction wells were installed in 2015. The gas system was operating as required in 2015, and no additional remedial work is recommended at this time.

3.1.4 STORMWATER MANAGEMENT SYSTEM

Three (3) stormwater sedimentation ponds collect stormwater runoff from the landfill site, and remove sediment prior to discharge. Ponds are regularly inspected by WM staff. The ponds in the northwest and northeast corners of the site had no issues in 2015, and require no remedial work. The south pond was reconstructed in 2008-2009, had no issues in 2015, and currently requires no remedial work.

3.1.5 LEACHATE HOLDING LAGOON

The leachate holding lagoon was inspected, and was found to be in acceptable condition. The lagoon was decommissioned by WM in 2010, and will remain dry. The lagoon remains in place as a contingency for leachate storage.

3.1.6 CONCLUSIONS

After a review of the engineered facilities at the site, it was concluded that there is currently no need to amend the design, or adjust the operation of the Richmond Landfill site.

Since all engineering works are performing as designed, and monitoring indicates that no contingency plans should be implemented, it is our conclusion that at this time, there is no need to implement any contingency plans.

3.2 LEACHATE COLLECTION SYSTEM EFFICIENCY

Condition 14.3 ii of the ECA requires an assessment of the efficiency of the leachate collection system.

A review of the leachate volume removed from the landfill site was determined to be of a reasonable volume to conclude that the leachate collection system is continuing to operate effectively, and is further discussed in **Section 3.11**. WM regularly inspects the infrastructure, and has determined that there are no blockages in the system.

3.3 EXISTING SITE CONDITIONS

Condition 14.3 iii of the ECA requires WM to provide plans showing the existing contours of the site.

WSP completed a GPS survey on November 16, 2011 for as constructed purposes upon completion of final capping conditions. No significant change has occurred in the site topography other than settlement since that survey. This information, along with an updated landfill gas collection system plan, has been combined into a single drawing, which is contained in **Appendix B** of this report.

3.4 2015 LANDFILL OPERATIONS AREA

Condition 14.3 iv of the ECA requires information regarding the areas of landfilling operations during the reporting period.

No landfilling operations took place during the reporting period. On June 30, 2011, the Richmond Landfill ceased to accept waste in accordance with Condition 4.4 of the ECA.

3.4.1 EQUIPMENT

Upon completion of landfilling activities, several pieces of equipment were removed from the site however some equipment remains onsite to assist in performing regular maintenance activities, as follows:

- a Case International farm tractor with a rotary mower; and
- a 1989 Pelican sweeper.

If additional equipment was required, they were obtained from local contractors.

3.5 2016 LANDFILL OPERATIONS AREA

Condition 14.3 v of the ECA requires information regarding the intended area of landfilling operations during the next reporting period.

Per Condition 4.4 of the ECA, no further landfilling operations will occur at the site.

3.6 2015 EXCAVATION AREAS

Condition 14.3 vi of the ECA requires information regarding areas of excavation during the reporting period.

No excavation was completed at the site in 2015.

3.7 FINAL AND VEGETATIVE COVER INSPECTIONS

Condition 14.3 vii of the ECA requires a summary of the inspection of the final cover and vegetative cover, including identification of any seepages and remedial actions taken.

The placement of the final cover system was completed on the Richmond Landfill on September 23, 2011. Inspections took place in 2015 to ensure vegetative cover has been well established. No seeps were detected during inspections.

3.8 PREVIOUSLY EXISTING SITE FACILITIES

Condition 14.3 viii of the ECA requires information regarding previously existing site facilities.

3.8.1 BUILDINGS AND SIGNAGE

The landfill site office is located to the south of the landfill site on the main access road. The building houses management staff, secretarial and record services, communications equipment, weigh scale recording devices and operating staff facilities.

Landfill equipment is serviced in the existing maintenance building. Fuel storage is located in this area and a staff room for the landfill equipment operators is attached.

Signs are erected along the access road near Beechwood Road identify the landfill site. The main sign supplies the following information:



Signs are also present on the main gates for the following:

- Notification that the public drop off area for local residents was closed February 28, 2014, and remains closed; and
- Gates are to be closed after 5 p.m.

Signage indicating types of waste accepted at the site have been removed.

3.8.2 STAFF

WM staff manages and operates the site. Mr. Ross Wallace acted as the Landfill Manager throughout 2015. The site was managed by the Eastern Canada Market Area office with Mr. Reid Cleland being the Director of Disposal Operations - Ontario.

Other landfill staff presently consists of the following:

- One (1) full time operator who is responsible for site maintenance, gas field monitoring/repairs; and
- One (1) full time public relations and office person.

Other equipment operators are brought on the site for contract work as required for ongoing maintenance activities.

3.8.3 TONNAGE CONTROL

A truck weigh scale records net tonnages received at the site on a day-by-day basis.

In 1998, an 80' Active Mod-U-Dec pitless truck scale with a Toledo digital weight display and printer was connected to a computer for data management. Truck traffic is controlled from the office by traffic light signals and by an air phone intercom system as trucks approach the scale.

In 2004, electrical work was completed to allow the scale facility to be run by a generator in the event of power failure to the site. Standby power can be easily connected to the scale house facility to operate the necessities for the acceptance of waste vehicles.

Three (3) separate calibration procedures were performed on the scale in 2012, and two (2) separate calibration procedures were performed on the scale in 2013, to ensure that weights are recorded correctly. Load cells have also been repaired as required.

One (1) calibration procedure were performed on the scale in June 2014 to ensure that weights are recorded correctly. No other issues with the scales were reported.

In 2015, the scale was used periodically to weigh loads of leachate removed by Sutcliffe Sanitation. No calibration of the scale was performed in 2015.

3.8.4 SOIL RECYCLING PAD

A soil recycling pad is located to the east of the existing maintenance building and was used in the past for temporary storage of hydrocarbon-impacted soil. Upon site closure on June 30, 2011, the Richmond Landfill ceased to accept waste, including contaminated soil, for final disposal. The pad was flushed and cleaned after soil receipt ended. Surface runoff from this pad flows directly to the stormwater ponds. The oil/sediment separator is monitored for sediment buildup and cleaned as required. No buildup of sediment was noted within this structure in 2015.

3.8.5 SMALL VEHICLE TRANSFER AREA

The public drop off area was approved for operation by the MOECC on January 9, 2012, subject to the conditions listed in ECA No. A371203, and reopened to the public on February 1, 2012. This area was used for small vehicles offloading waste, recyclables and compostable materials. This practice facilitated the transfer of material from the smaller vehicles into the roll-off bins. A reuse centre where residents could donate and exchange reusable goods was also constructed within the public drop off area. WM also participated in the Ontario Electronic Stewardship (OES) program and Ontario Tire Stewardship (OTS) programs for electronics and tire recycling, and was also a member of Stewardship Ontario's Municipal Hazardous or Special Waste (MHSW) program, and collected paint and single use batteries for disposal offsite. White goods, including those which were tagged "freon removed", and scrap metal, were separated from the waste stream and temporarily stored on the site. WM removed these materials regularly for recycling.

On February 28, 2014, WM ceased operation of the public drop off area, reuse centre, OTS, OES and white goods areas. All approvals pertaining to the operation of the facility remain in place, and WM may elect to re-open the facility at a future date.

3.8.6 LANDFILL GAS COLLECTION AND FLARING SYSTEM

The landfill gas collection and flaring system (LFGCS) was implemented for odour control at the Richmond Landfill in 2000. The construction of Phase I of the system was carried out in the years 2000/2001 with the installation of a 2.1 metre diameter x 12.2 metre high enclosed flaring system, according to Certificate of Approval (C of A) (Air) No. 8-4076-99-006, issued by the MOECC on December 21, 1999. In 2003, C of A (Air) No. 1355-6LRN9N was issued by the MOECC, which revoked and replaced the previous C of A. On April 29, 2014, the MOECC issued ECA No. 5970-9HKP3V, which revoked and replaced the previous C of A. This approval permits the operation of a candlestick flare only when the enclosed flare is shut down for maintenance and repair.

Subsequent expansions and upgrades to the LFGCS have been made since the installation of the initial system in order to burn the landfill gas produced by the decomposing waste. WM reports that the present system collects gas from five (5) leachate clean-outs, four (4) leachate collection manholes and 42 vertical gas wells, of the 62 wells installed. 20 decommissioned wells are also present. Please refer to the drawing in **Appendix B** for the gas collection system as built drawing.

Regular operation and maintenance of the landfill gas collection and flare system was carried out in 2015. The landfill gas flare has been effective at reducing odour around the landfill site. In the rare occurrence of flare shutdown, operators, who are automatically notified by a paging system, attend the site to restart the flare or correct any alarm situations. The flare has operated successfully to date.

3.8.7 SEDIMENTATION PONDS

The three sedimentation ponds were operational in 2015. Pond discharge was previously controlled and not permitted without prior testing and approval from MOECC District staff. On January 10, 2012, the MOECC issued ECA No. 1688-8HZNJG, which revoked and replaced the previous C of A for sewage works. The ECA allows WM to operate the discharge outlet valves on the sedimentation ponds in the open position, thereby permitting the ponds to operate as designed in a free flowing state. Revised maintenance, monitoring, and reporting programs are also listed in the ECA.

3.8.8 SITE ACCESS AND ROADS

The site entrance and roads were inspected by WSP during the annual site inspection, and no problems were identified.

3.9 FACILITIES INSTALLED IN 2015

Condition 14.3 ix of the ECA requires information about the installation of any facilities at the site during the reporting period.

In 2015, additional field work was completed regarding the Contaminant Attenuation Zone (CAZ). Information regarding this work can be found under **Section 3.21** of this report.

3.10 SITE PREPARATIONS AND FACILITIES PLANNED FOR 2016

Condition 14.3 x of the ECA requires information regarding any site preparation or installation of facilities planned for the next reporting period.

In early 2015, WM submitted an application to the MOECC to request approval for a leachate storage tank at the site to improve the efficiency of the leachate collection and removal system. Should approval be granted, WM will consider installing the tank in 2016.

Additional work may be performed in 2016 to further delineate the Contaminant Attenuation Zone. Refer to **Section 3.21** for further information regarding the need for this work.

No other site preparations or facilities are planned to be installed in 2016.

3.11 LEACHATE QUANTITIES

Condition 14.3 xi of the ECA requires a summary of the quantity of any leachate or pre-treated leachate removed from the north and south pumping stations at the site during each operating week.

In 2015, leachate continued to be hauled to Napanee for treatment. Loads are collected from the site, manifested, and then discharged at the septage receiving facility located at Enviro Park Lane and West Street in the Town of Greater Napanee. In the event Napanee is unable to receive leachate, WM has approval for disposal at the septage receiving facility in Cobourg, ON. Leachate continues to be extracted at the lowest portions on Phases 2 and 4 and hauled as required for treatment off-site. Additional details are provided in **Section 4.1**.

In the event that leachate cannot be hauled from the site due to conditions at the Napanee or Cobourg plants, leachate or leachate-impacted water will be temporarily stored in the leachate-holding lagoon located to the north of the site. Once leachate treatment resumes at the receiving plant, this liquid would then be hauled to the plant for treatment and disposal. Storage of leachate in the holding lagoon is a temporary, last resort measure, and is outlined in the leachate management plan submitted to the MOECC. In 2010, this pond was dewatered, and allowed to drain freely in future rainfall events. However, in the event that the pond is required for temporary storage of leachate, the pond remains capable of being used for this contingency.

WM inspects the site each day for leachate seeps and problem areas in the final cap. If leachate seeps are encountered, they are promptly repaired to avoid any surface water contamination. Generally, leachate seeps are excavated and granular material and dry clay are replaced and packed. When cracks develop in other areas of the final cap and the potential for gas migration is present, the final cap is scarified or re-compacted and additional clay may be placed in the area to prevent gas migration. Through the continuous removal of leachate to the leachate treatment facilities and the extraction of landfill gas through the landfill gas collection and disposal system, the potential for leachate seeps and gas outbreaks are minimized and the potential for any off-site impact is reduced. No seeps were detected on the landfill mound in 2015.

Table 3.1, located on the following page, details the weekly quantity of leachate removed from the Richmond Landfill. The volumes presented in the table were converted from the tonnage determined in the tanker truck at the site scale, and converted using 1 tonne = 1 m³.

TABLE 3.1
2015 Weekly Leachate Quantities

WEEK ENDING	TOTAL LEACHATE REMOVED (m ³)	WEEK ENDING	TOTAL LEACHATE REMOVED (m ³)
1/3/2015	57.98	7/11/2015	302.14
1/10/2015	222.68	7/18/2015	179.25
1/17/2015	268.95	7/25/2015	175.46
1/24/2015	346.22	8/1/2015	175.34
1/31/2015	251.74	8/8/2015	174.35
2/7/2015	163.39	8/15/2015	160.96
2/14/2015	75.03	8/22/2015	158.57
2/21/2015	140.23	8/29/2015	162.39
2/28/2015	123.68	9/5/2015	118.16
3/7/2015	124.61	9/12/2015	171.06
3/14/2015	158.24	9/19/2015	172.19
3/21/2015	212.17	9/26/2015	1,020.89
3/28/2015	247.26	10/3/2015	170.84
4/4/2015	226.10	10/10/2015	252.01
4/11/2015	418.47	10/17/2015	110.94
4/18/2015	525.11	10/24/2015	112.54
4/25/2015	469.87	10/31/2015	161.32
5/2/2015	620.93	11/7/2015	430.55
5/9/2015	425.88	11/14/2015	407.16
5/16/2015	235.86	11/21/2015	350.12
5/23/2015	189.98	11/28/2015	173.73
5/30/2015	174.28	12/5/2015	246.56
6/6/2015	157.78	12/12/2015	225.33
6/13/2015	175.47	12/19/2015	206.82
6/20/2015	386.84	12/26/2015	408.91
6/27/2015	366.53	12/31/2015	423.19
7/4/2015	355.48	TOTAL	13,771.54

3.12 TOXICITY TESTING – STORMWATER MANAGEMENT PONDS

Condition 14.3 xii of the ECA requires a discussion of the results of the toxicity testing of the landfill stormwater management ponds which includes potential impacts to the groundwater by the ponds.

BluMetric Environmental Inc., formerly Water and Earth Science Associates (WESA), has provided a memorandum regarding the results of toxicity testing of the stormwater ponds, and potential impacts to the groundwater by the ponds. This memorandum can be found in **Appendix C** of this report.

3.13 WASTE TONNAGE SUMMARIES

Condition 14.3 xiii of the ECA requires the weekly, maximum daily, and total annual quantity (tonnes) of waste received at the site.

No waste was received at the site in 2015.

The public drop off area is also permitted on 25 occasions per year to have a “Large Waste Day” and receive up to 100 tonnes per day. In 2015, no Large Waste Days were utilized.

3.14 SUMMARY OF COMPLAINTS

Condition 14.3 xiv of the ECA requires a summary of any complaints received and the responses made.

Over the years, a few immediate neighbours have occasionally contacted WM regarding odours from the landfill site. The normal decomposition of waste generates odours and is contained in landfill gas. WM implemented the operation of a landfill gas recovery system in 2001 to control the escape of landfill gas. Gas wells were drilled in the waste mound, and collection piping withdraws landfill gas from the wells and all leachate manholes to reduce the odour emitted from the landfill site. Landfill gas is flared off via an enclosed flare to the south of the landfill footprint. The landfill flare was commissioned in April 2001 and successfully reduces landfill gas odours.

The weather station is located north of the office area. The station monitors wind speed, wind direction, temperature, rainfall, solar radiation and relative humidity. Recorded local weather patterns help in addressing odour complaints.

In June and July 2009, the consulting group RWDI, accompanied by a representative from the MOECC, conducted a three week long odour survey, and found no negative impacts on the local air quality. In addition, the MOECC used their TAGA (Trace Atmospheric Gas Analyzer) unit to evaluate the local air quality, and concluded that the air quality was similar to any rural air quality in Ontario.

WM also continued with the surface emission survey study in 2015, where a consultant measured surface emissions to identify areas of weak cap. This year, surface emission events were conducted in May, July, and October. No areas were identified above 500 parts per million by volume (ppmv).

WM staff also tour the surrounding area and concession roads regularly to monitor for odour, litter and illegally dumped waste. Observations are recorded and corrective measures taken as required. In addition, when odour complaints are received at the landfill site, WM staff is dispatched to investigate the source of the odour and record the conditions that may have influenced the odour. WM is able to complete this response plan if complaints are received directly by WM. If complaints are delayed or not directed towards WM, the potential odour source cannot be investigated nor can corrective action be taken if the odour was potentially landfill related. A sign is posted near the front entrance, directing residents with questions, concerns and complaints to contact the Landfill Manager or WM Help Line. Phone numbers for both contacts are provided on the sign.

In May 2013, as part of the ERT settlement conditions, a revised Odour Monitoring Plan and Odour Survey Protocol were included as Schedule A items, and incorporated into Notice 1 to amend ECA No. A371203. These documents describe the procedures in place for odour surveys and documenting and following up on odour complaints. In November 2014, WM submitted an application to the MOECC to combine the two aforementioned documents into one plan, and to update the plan to reflect changes in site conditions. In early 2016, WM and the MOECC have corresponded regarding this application. Additional details will be provided in the 2016 annual report.

In 2015, there were no complaints received by WM regarding odours.

3.15 SUMMARY OF SEEPS/UPSET CONDITIONS/EMERGENCY SITUATIONS, AND REMEDIAL ACTIONS

Condition 14.3 xv of the ECA requires a discussion of any seeps, upset conditions or emergency situations and/or corrective/remedial actions taken.

No seeps, upset conditions or emergency situations occurred at the site in 2015.

3.16 OPERATIONAL PROBLEMS

Condition 14.3 xvi of the ECA requires a discussion of any operational problems encountered at the site, and corrective action taken.

No operational problems occurred at the site in 2015.

3.17 REFUSAL OF WASTE

Condition 14.3 xvii of the ECA requires a summary of any waste that was refused for disposal at the site, the reasons for refusal, and the carrier who brought the waste to the site.

In 2015, there were no incidents where waste was brought to the site and refused.

3.18 LEACHATE COLLECTION SYSTEM CLEANING AND INSPECTION

Condition 14.3 xviii of the ECA requires a summary of the leachate collection system cleaning and inspection activities.

In 2015, WM regularly inspected the leachate pumps and system each day that hauling of leachate occurred. On November 20, 2015, the leachate collection system was flushed and camera inspected by Benko Sewer Service of London, ON, in accordance with Condition 13.10 of ECA No. A371203. No issues were noted during this activity.

3.19 FINANCIAL ASSURANCE SUMMARY

Condition 14.3 xix of the ECA requires an update summary of the amount of financial assurance which has been provided to the Director.

In 2015, an amount of \$11,549,022 was provided to the Director as per Condition 2.6 (i) of Notice 2 to amend ECA No. A371203.

3.20 CHRONOLOGY OF SIGNIFICANT LANDFILL DESIGN, OPERATIONAL AND LAND USE CHANGES

Condition 14.3 xx of the ECA requires a table detailing the chronology of significant landfill design, operational, and land use changes for the landfill, and any other information with respect to the site which the District Manager or Regional Director may require from time to time.

Please refer to **Appendix D** for a table which lists the aforementioned information. The table also lists the potential sources of Volatile Organic Compounds at the site.

3.21 STATEMENT OF COMPLIANCE

Condition 14.3 xxi of the ECA requires a statement of compliance with all conditions of the ECA and other relevant Ministry groundwater and surface water requirements.

As a result of the inspections completed in 2015, to the best of our knowledge, WSP certifies that WM has complied with the conditions outlined in the various Environmental Compliance Approvals and Certificates of Approval for the site, with respect to site operations. BluMetric Environmental Inc. has provided a memorandum regarding compliance with the environmental monitoring and reporting requirements of the ECA, which can be found in **Appendix E**.

Monitoring programs have identified elevated levels of some monitoring parameters at locations to the south of the landfill. Detailed explanation of sample results, and work completed prior to 2015, can be found in the spring and fall 2012 semi-annual monitoring reports prepared by BluMetric Environmental Inc., and in previous annual reports completed by WSP.

In the spring of 2015, the ERT held a hearing on the appeal filed in 2012 by the Concerned Citizens' Committee of Tyendinaga and Environs. The decision, with an accompanying order, was issued on December 24, 2015. The ERT has ordered that additional field work be completed and a report prepared that is to be provided to all parties to the hearing. The report is to be completed by April 15, 2016. After the report is reviewed, the parties will meet to discuss the contents. After reviewing input from all parties, the MOECC will determine if the Contaminant Attenuation Zone (CAZ) has been adequately defined. If the MOECC agrees the CAZ has been adequately defined, WM will submit the CAZ application. If the MOECC does not agree the CAZ has been adequately defined, more field work will be ordered.

3.22 CONFIRMATION OF SITE INSPECTION PROGRAM

Condition 14.3 xxii of the ECA requires confirmation that the site inspection program as required by this ECA has been complied with by the Owner.

WM has confirmed to WSP that the site inspection program that is required by the Environmental Compliance Approvals, the Certificates of Approval, and by the various reports that address the site operations and monitoring, have been complied with.

3.23 OPERATIONS, EQUIPMENT, PROCEDURES CHANGES, AND RECOMMENDATIONS

Condition 14.3 xxiii of the ECA requires documentation of any changes in operations, equipment, or procedures employed at the site, and recommendations regarding any proposed changes in operations of the site.

As part of ECA No. 1688-8HZNJG, issued January 10, 2012, WM was required to submit a Stormwater Contingency and Remedial Action Plan to the MOECC District Manager within six (6) months of the date of issuance for the ECA. On March 22, 2012, WM submitted this plan. To date, WM has not received any comments from the MOECC regarding this plan.

On September 14, 2012, WM submitted an application to amend ECA No. A371203, regarding the operation of the public drop off area. WM requested an amendment to Condition 5.18 (1), to reduce the

frequency of waste removal from the public drop off area from twice per week, to once every two weeks. To date, WM has not received any comments from MOECC regarding the status of this application.

On February 28, 2014, WM ceased operations of the public drop off facility. All approvals remain in place for the operation of this area, and WM may elect to re-open the facility at a future date.

In June 2014, WM submitted an application to the MOECC regarding a proposed maintenance schedule for the ditches, culverts, and leachate collection system for the duration of the contaminating lifespan of the site, in accordance with Condition 13.9 and 13.10 of ECA No. A371203. To date, WM has not received any comments from the MOECC regarding this application.

In November 2014, WM submitted an application to the MOECC to consolidate the “Odour Monitoring Plan – Revision No. 1” and “Odour Survey Protocol”, as approved under Notice 1 to amend ECA No. A371203, issued May 3, 2013, into one document, which was then updated to reflect site conditions. In early 2016, WM and the MOECC have corresponded regarding this application. Additional details will be provided in the 2016 annual report.

In January 2015, WM submitted an application to the MOECC for approval of a leachate storage system. The system would allow for optimization of leachate loading and hauling. To date, WM has not received any comments from the MOECC regarding this application.

3.24 PHYTOREMEDIATION SYSTEM

Condition 5.11 of the ECA lists the reporting requirements for the phytoremediation system at the Richmond Landfill, which includes the following:

- i. Results and an analysis of the results of the monitoring programs for the phytoremediation system;
- ii. Assessment of the results of the phytoremediation system as related to the stated objectives for the existing and proposed phytoremediation system;
- iii. Assessment of the need to change the monitoring program for the phytoremediation system and a recommendation of the required changes;
- iv. A report on operational problems identified during the operation of the phytoremediation system and a discussion of each problem and what was done to rectify each problem;

- v. Assessment of the need for operational changes for the phytoremediation system and a recommendation of the required changes; and
- vi. A Site plan which shows the location of the phytoremediation system and any changes made to the phytoremediation system.

The approval for the phytoremediation system was initially issued by the MOECC on May 2, 2011 through Notice 8 to amend C of A No. A371203. As noted in previous annual monitoring reports, the system was installed in late May 2011 in the northwest corner of the landfill property. No monitoring results or assessment of the system's operation were available for 2011 as the trees required time to establish in their environment. In late September 2012, the entire plantation was plowed under due to poor growth and wet site conditions.

In April 2013, the ground within the entire phytoremediation area was disked, and low areas were drained to remove standing water. All planting areas were frost seeded with white clover and barley at this time. In May 2013, under the direction of Mr. Steve Shaw from Landscape Rehab Tree and Turf, approximately 6,700 dogwoods and willows were planted, and the area was sprayed with the chemical "Round Up" to retard weed growth. WM monitored the growth of the plantation throughout late spring, and by July 2013 reported a tree growth rate of 100 millimetres to 200 millimetres. Grass was mowed between the rows to promote continued growth. In October 2013, "Round Up" was again sprayed for weed control in the planted areas, and grass was mowed between tree rows. WM reported a live tree plantation of approximately 60%, with an average tree height between 250 millimetres to 350 millimetres.

In June 2014, under the direction of Mr. Steve Shaw of Landscape Rehab Tree and Turf, the herbicide Simazine was applied at a rate of seven (7) kilograms per hectare. A post emergent herbicide was also applied to areas where vegetation was already starting to re-establish. Gromoxone was used to burn down re-established grass and weeds and was applied at a rate of two (2) litres per hectare. A tree height of 50 centimetres to 100 centimetres was also reported.

To address Condition 5.11 for 2015, the following is noted:

- For Condition 5.11 (i, ii, and iii), please refer to **Appendix F** for the results of the 2015 monitoring program for the phytoremediation area, as provided by BluMetric Environmental Inc..
- In regards to Conditions 5.11 (iv and v) inclusive, no operational issues were noted by WM. WM reports the plantation experienced good growth in 2015. The willows are approximately 1.5 metres to 2.4 metres in height, and the dogwoods are approximately 0.9 metres to 1.2 metres in height.

Approximately five (5) to 10 percent more shrubs that were not able to be seen previously in the weeds have shown signs of growth. All plant life will continue to be monitored for any signs of impairment. No operational recommendations are presented at this time.

- Please refer to the site plan located in **Appendix G** of this report, which shows the location of the phytoremediation system area as required by Condition 5.11 (vi).

4 REPORTING REQUIREMENTS – ENVIRONMENTAL COMPLIANCE OF APPROVAL NO. 1688-8HZNJG

On January 10, 2012, the MOECC issued Environmental Compliance Approval No. 1688-8HZNJG, which revoked and replaced the previous Certificate of Approval. The ECA removed the requirement to operate the ponds in a closed manner, thereby allowing the ponds to operate as designed, subject to quarterly toxicity testing to confirm no adverse effects to species listed in the ECA.

Since the ECA is the most recent version of the approval regarding the operation and management of the stormwater and leachate management systems at the Richmond Landfill, this section of the annual monitoring report is submitted in accordance with Conditions 10 (4) (a) (b), (c), (d), (e), (f), (g), and (h) of this document. An overview of the leachate management system present at the Richmond Landfill is provided below.

4.1 LEACHATE MANAGEMENT

Leachate haulage from the site to the Napanee (now part of the Town of Greater Napanee) sewage system began in 1996. Leachate is regularly hauled from the landfill by Sutcliffe Sanitation Services Ltd. and discharged directly to the sewage system. Close communication between the Town, WM and Sutcliffe Sanitation is maintained to determine if leachate may be accepted for treatment. Sutcliffe Sanitation is the common hauler of sludge from the sewage treatment plant and leachate from the landfill site. Before picking up a load of leachate, WM confirms with the Town that leachate can be hauled on that particular day. In the event that the Town is operating on high flows, the Town will notify WM that no leachate can be accepted until levels are reduced. WM will in turn notify Sutcliffe Sanitation.

During the winter of 2003/2004, WM constructed a leachate/septage dumping facility within the Town of Napanee. The dumping facility is located at Enviro Park Lane and West Street within the Town of Napanee on municipally owned property. The dumping facility was commissioned in April 2004, after which time all leachate was deposited at the dumping station. Station users are recorded by PIN numbers that uniquely identify each station user and log the quantity of material discharged to the dumping facility. Users are then billed on a user pay basis by the Napanee Utilities. Ownership, operation and maintenance of the facility are the responsibility of the Greater Napanee Utilities. WM has a usage contract, which allows WM to use

the facility for a specified period of time as long as Napanee Utilities does not have a restriction on dumping due to treatment conditions at the sewage treatment plant. The dumping facility contains dumped loads and slowly discharges wastewater into the Napanee sewage system. Napanee Utilities has a C of A for this site.

It is a requirement of the landfill site's ECA that alternative leachate treatment options are available should Napanee be unable to treat leachate. Approval has been given to discharge leachate at Cobourg, however, this facility was not used by WM in 2015. Letters of approval for alternate leachate treatment sites can be found in **Appendix H** of this report.

4.1.1 LEACHATE QUANTITIES

Condition 10(4) (b) of the ECA requires a summary of the monthly quantity of leachate disposed offsite and corresponding leachate average quality.

Table 4.1 indicates the leachate quantities trucked from the site to the Napanee sewage treatment plant in 2015. The average rate of removal for treatment was 37.73 m³/day. It is recommended that leachate removal continue.

TABLE 4.1
2015 Monthly Leachate Quantities

Month	Napanee (m ³)
January	1,147.57
February	502.33
March	866.96
April	2,030.52
May	1,131.28
June	1,251.23
July	1,023.06
August	717.09
September	1,536.04
October	693.09
November	1,422.46
December	1,449.91
Total	13,771.54

Please refer to **Appendix C** for information regarding monthly average leachate quality data, provided by BluMetric Environmental Inc.

4.1.2 OPERATIONAL PROBLEMS AND CORRECTIVE ACTIONS

Condition 10(4) (c) of the ECA requires a description of any operating problems encountered and corrective actions taken.

No operating problems were encountered or corrective actions taken for the leachate management system in 2015. No issues from the treatment of the leachate at the sewage treatment plant have arisen, to our knowledge.

4.1.3 MAINTENANCE PERFORMED ON STRUCTURES

Condition 10(4) (d) of the ECA requires a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism, or thing forming part of the Works.

In 2015, regular inspection of the leachate pumps and system took place each day that leachate was hauled from the site. On November 20, 2015, in accordance with Condition 13.10 of ECA No. A371203, the leachate collection system was cleaned and camera inspected. No buildup of debris was encountered during flushing activities, and no other problems were recorded.

4.1.4 CALIBRATION AND MAINTENANCE OF LEACHATE MONITORING EQUIPMENT

Condition 10(4) (e) of the ECA requires a summary of the calibration and maintenance carried out on all leachate monitoring equipment.

In 2015, regular maintenance on leachate monitoring equipment was performed. Also, the leachate pumps in the south chamber were removed, inspected, cleaned and re-installed.

4.1.5 SUMMARY OF COMPLAINTS RECEIVED

Condition 10(4) (f) of the ECA requires a summary of any complaints received during the reporting period, and any steps taken to address the complaints.

In 2015, no odour complaints were received.

4.1.6 SUMMARY OF BY-PASS, SPILL OR ABNORMAL DISCHARGE EVENTS

Condition 10(4) (g) of the ECA requires a summary of all By-pass, spill, or abnormal discharge events.

In 2015, there were no leachate events that were a by-pass, spill, or abnormal discharge event.

4.2 SURFACE WATER MANAGEMENT

Surface water quality management is also operated under ECA No. 1688-8HZNJG, which revoked and replaced the previous C of A on January 10, 2012. The new approval permits the ponds to be free flowing, subject to toxicity testing to verify no adverse effects are caused to species listed in the ECA. This section is intended to satisfy the requirements outlined in Condition 10(4) (a), (c), (d), (f) and (g) of the ECA.

4.2.1 SUMMARY OF STORMWATER MONITORING DATA

Condition 10(4) (a) of the ECA requires a summary and interpretation of all stormwater monitoring data and a comparison to the Provincial Water Quality Objectives (PWQO), including an overview of the success and adequacy of the Works.

BluMetric Environmental Inc. has prepared a memorandum to satisfy this section of the ECA. The reader is directed to **Appendix C** of this report for further information.

4.2.2 OPERATING PROBLEMS AND CORRECTIVE ACTIONS

Condition 10(4) (c) of the ECA requires a description of any operating problems encountered and corrective actions taken.

In 2015, there were no operating problems encountered or corrective actions taken for the stormwater management system.

4.2.3 SUMMARY OF MAINTENANCE ACTIVITIES

Condition 10 (4) (d) of the ECA requires a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism, or thing forming part of the Works.

The two (2) northerly sedimentation ponds and the south sedimentation pond operated in 2015 without any maintenance required on the ponds. The ponds are regularly inspected to ensure their operation meets the ECA, and no remedial work was required in 2015.

4.2.4 SUMMARY OF COMPLAINTS RECEIVED

Condition 10(4) (f) of the ECA requires a summary of any complaints received during the reporting period, and any steps taken to address the complaints.

In 2015, there were no complaints received regarding the ponds.

4.2.5 SUMMARY OF BY-PASS, SPILL OR ABNORMAL DISCHARGE EVENTS

Condition 10(4) (g) of the ECA requires a summary of all By-pass, spill, or abnormal discharge events.

In 2015, there were no stormwater events that were a by-pass, spill, or abnormal discharge event.

5 GENERAL

In 2015, WM completed ongoing maintenance and operation of the landfill site. Active litter control, gas management, leachate treatment and active monitoring of the landfill site resulted in no operational impacts on the surrounding area. The continued use of the landfill gas collection and flaring system, and system maintenance and upgrades, has reduced any potential landfill gas odours. WM has been very active in monitoring all aspects of the site, both on and off site, ensuring that no impacts were caused on the surrounding areas. The entire landfill mound has had final cover in place since September 2011, and is regularly inspected.

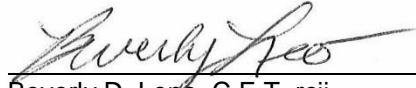
Leachate extraction and treatment continues at the landfill site, and 13,771.54 m³ of leachate has been removed during the past year, or approximately 37.73 m³/day. It is recommended that leachate removal for treatment off site continue. In January 2015, WM submitted an application for approval to construct a leachate holding tank at the site, which is currently under review by the MOECC.

The landfill gas extraction and flaring system successfully collected and flared the landfill gas generated from the site. Continued operation and expansion of this system will be completed in the coming years to ensure that odours are minimized around the landfill site. Additional wells may be installed to replace non-functioning wells. In 2014, WM received approval for the installation of a backup flare, which would operate in the event the enclosed flare is down for maintenance or repairs.

Neighbours with concerns are always invited to visit the landfill with their concerns, which are addressed by the site manager.

We conclude the landfill is managed and operated in an environmentally sound and orderly manner in the post-closure period.

PREPARED BY



Beverly D. Leno, C.E.T. rcji
Environmental Technologist
BDL/PSB/bdl

REVIEWED BY



Peter S. Brodzikowski, P. Eng.
Designated Consulting Engineer
Senior Engineer, Solid Waste Management

Appendix A

**ENVIRONMENTAL COMPLIANCE APPROVALS AND CERTIFICATES
OF APPROVAL**

APPENDIX A-1

**ENVIRONMENTAL COMPLIANCE APPROVAL
(WASTE DISPOSAL SITE) NO. A371203, DATED
JANUARY 9, 2012**

RECEIVED
Jan 17 12 20



Ministry of the Environment
Ministère de l'Environnement

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER A371203

Issue Date: January 9, 2012

Waste Management of Canada Corporation
2301 Carp Rd
Ottawa, Ontario
K0A 1L0

Site Location: Richmond Landfill Site
Lot Pt 1, 2, 3, Concession 4
Greater Napanee Town, County of Lennox and Addington
K7R 3L1

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

the use, operation, and closure of a 16.2 hectare waste disposal landfill site including a landfill gas collection system and landfill gas flare within a total site area of 138 hectares , as follows:

For the purpose of this environmental compliance approval, the following definitions apply:

"Contaminating Lifespan" or "CLS" refers to the period of time, after closure until the *Site* finally produces contaminants at concentrations below levels which have unacceptable health or environmental effects;

"Director " means any *Ministry* employee appointed in writing by the Minister pursuant to section 5 of the *EPA* as a *Director* for the purposes of Part V of the *EPA*;

"District Manager " refers to the *District Manager* in the Ministry of the Environment's Kingston District Office;

"District Office " refers to the Ministry of the Environment Kingston *District Office* ;

"EAB" refers to the Environmental Approvals Branch of the Ministry of the Environment;

"EMP " refers to the Environmental Monitoring Plan;

"Environmental Compliance Approval" or "ECA" means this entire provisional Environmental

Compliance Approval document, issued in accordance with Section 20.2 of the *EPA* , and includes any schedules to it, the application and the supporting documentation listed in Schedule "A";

"*EPA* " means *Environmental Protection Act* , R.S.O. 1990, c. E. 19, as amended from time to time;

"*Major Works* " are those works that have an engineering component.

"*MOE* " or "*Ministry* " refers to the Ontario Ministry of the Environment;

"*Operator* " has the same meaning as "Operator" as defined in s.25 of the *EPA* ;

"*Owner* " means Waste Management of Canada Corporation and its successors and assigns;

"*O. Reg. 101/94*" means Ontario Regulation 101/94 as amended from time to time;

"*PA* " means the *Pesticides Act* , R.S.O. 1990, c. P-11, as amended from time to time;

"*Provincial Officer* " means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA* or Section 5 of the *EPA* or Section 17 of *PA*;

"*Regional Director*" refers to the Director of the Ministry of the Environment's Eastern Regional Office;

"*Regulation 232* " or "*Reg. 232*" or "*O. Reg. 232/98*" means Ontario Regulation 232/98 (New Landfill Standards) made under the *EPA* , as amended from time to time;

"*Regulation 347* " or "*Reg. 347* " or "*O. Reg. 347*" means Regulation 347, R.R.O. 1990, made under the *EPA* , as amended from time to time; and

"*Site* " means the Richmond Landfill Site.

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

TERMS AND CONDITIONS

1.0 GENERAL

Compliance

1.1 The *Owner* shall ensure that any person authorized to carry out work on or operate any aspect of the *Site* is notified of the *ECA* and the conditions herein and shall take all reasonable measures to ensure the person complies with the same.

1.2 Any person authorized to carry out work on or operate any aspect of the *Site* shall comply with

the conditions of this *ECA* .

In Accordance

- 1.3 Except as otherwise provided for in this *ECA* , the *Site* shall be designed, developed, constructed, operated and maintained in accordance with the supporting documentation listed in Schedule "A".

Other Legal Obligations

- 1.4 The issuance of, and compliance with, this *ECA* does not:
- a. relieve any person of any obligation to comply with any provision of the *EPA* or any other applicable statute, regulation or other legal requirement; or
 - b. limit in any way the authority of the *Ministry* to require certain steps be taken or to request that any further information related to compliance with this *ECA* be provided to the *Ministry* .

unless a provision of this *ECA* specifically refers to the other requirement or authority and clearly states that the other requirement or authority is to be replaced or limited by this *ECA* .

Adverse Effect

- 1.5 The *Owner* or *Operator* remain responsible for any contravention of any other condition of this *ECA* or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the adverse effect or impairment of air and/or water quality.

Furnish Information

- 1.6 Any information requested by the *Director* or a *Provincial Officer* concerning the *Site* and its operation under this *ECA* , including but not limited to any records required to be kept by this *ECA* shall be provided in a timely manner.
- 1.7 The receipt of any information by the *Ministry* or the failure of the *Ministry* to prosecute any person or to require any person to take any action, under this *ECA* or under any statute, regulation or subordinate legal instrument, in relation to the information, shall not be construed as:
- i. an approval, waiver, or justification by the *Ministry* of any act or omission of any person that contravenes any condition of this *ECA* or any statute, regulation or other subordinate legal requirement; or
 - ii. acceptance by the *Ministry* of the information's completeness or accuracy.
- 1.8 Any information related to this *ECA* and contained in *Ministry* files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy

Interpretation

- 1.9 This *ECA* revokes and replaces the previous *ECA* and all subsequent amendments.
- 1.10 Where there is a conflict between a provision of any document, including the application, referred to in this *ECA* , and the conditions of this *ECA*, the conditions in this *ECA* shall take precedence.
- 1.11 Where there is a conflict between the application and a provision in any documents listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the *Ministry* approved the amendment in writing .
- 1.12 Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.
- 1.13 The conditions of this *ECA* are severable. If any condition of this *ECA* , or the application of any condition of this *ECA* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *ECA* shall not be affected thereby.

Certificate of Requirement

- 1.14 Pursuant to Section 197 of the *EPA* , no person having an interest in the *Site* shall deal with the *Site* in any way without first giving a copy of this *Certificate* to each person acquiring an interest in the *Site* as a result of the dealing.
- 1.15 The Certificate of Requirement shall be registered in the appropriate land registry office on title to the *Site* and a duplicate registered copy shall be submitted to the *Director* within ten (10) calendar days of receiving the Certificate of Requirement signed by the *Director* .

No Transfer or Encumbrance

- 1.16 No portion of this *Site* shall be transferred or encumbered prior to or after closing of the *Site* unless the *Director* is notified in advance and is satisfied with the arrangements made to ensure that all conditions of this *ECA* will be carried out and that sufficient financial assurance is deposited with the *Ministry* to ensure that these conditions will be carried out.

Change of Owner

- 1.17 The *Owner* shall notify the *Director* , in writing, and forward a copy of the notification to the *District Manager* , within 30 days of the occurrence of any changes in the following information:

- i. the ownership of the *Site* ;
- ii. the *Operator* of the *Site* ;
- iii. the address of the *Owner* or *Operator* ;
- iv. the partners, where 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* , R. S. O. 1990, c. B.17, shall be included in the notification;
- v. the name of the corporation where the *Owner* or *Operator* is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act* , R. S. O. 1990, c. C.39, shall be included in the notification.

1.18 In the event of any change in the ownership of the *Site* , other than a change to a successor municipality, the *Owner* shall notify in writing the succeeding owner of the existence of this *ECA* , and a copy of such notice shall be forward to the *Director* and *District Manager* .

Inspections

1.19 No person shall hinder or obstruct a *Provincial Officer* from carrying out any and all inspections authorized by the *EPA* , or the *PA* , of any place to which this *ECA* relates, and without limiting the foregoing:

- i. to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this *ECA* are kept;
- ii. to have access to, inspect, and copy any records required to be kept by the conditions of this *ECA* ;
- iii. to inspect the *Site*, related equipment and appurtenances;
- iv. to inspect the practices, procedures, or operations required by the conditions of this *ECA* ; and
- v. to sample and monitor for the purposes of assessing compliance with the terms and conditions of this *ECA* or the *EPA* , or the *PA* .

2.0 FINANCIAL ASSURANCE

Overview

- 2.1 Financial assurance shall be provided as required by the *Director* , in an amount that is sufficient to pay for compliance with and performance of any action specified in this *ECA* , including closure, monitoring and maintenance of the *Site* ; maintenance of all required contaminant control systems including leachate management systems, contaminant monitoring for the contaminating lifespan of the *Site* and contingency plans for the *Site* in accordance with this *ECA*.
- 2.2 Financial assurance may be provided in one or more of the following forms: cash, irrevocable letter of credit, surety bond, or some other form, all satisfactory to the *Director* .

Inflation Rate

- 2.3 The *Owner* shall ensure the methodology used to determine the inflation rate for the financial assurance re-evaluation calculation is the current approach deemed acceptable by the *Ministry* .

Interest (Discount) Rate

- 2.4 The *Owner* shall ensure the methodology used to determine the interest rate for the financial assurance re-evaluation calculation is the current approach deemed acceptable by the *Ministry* .

Proposed Payment Schedule

- 2.5. The *Owner* shall ensure that financial assurance in a form acceptable to the *Director* in the amount of **\$13,236,992.00** has been provided to the *Director* . If these amount has not been provided, the *Owner* shall within thirty (30) days of issuance of this *ECA* , provide to the *Director* the financial assurance as required by this condition in a form that is in a form acceptable to the *Director* .
- 2.6. The *Owner* shall provide the *Ministry* financial assurance (total amount, not additional amount) in a form acceptable to the *Director* as follows for the following years:
- i. March 31, 2012 - **\$12,192,739.00**
 - ii. March 31, 2013 - **\$ 11,755,105.00**

Updated Review Report

- 2.7 A revised or new financial assurance program shall be submitted to the *Director* by no later than **March 31, 2013** and then at an interval no greater than a period of every three (3) years thereafter. The report shall include:
- a. updates of the discount, interest and inflation rates associated with the requirements for financial assurance in this *ECA* including justifications and sources of the proposed rates; and
 - b. a report prepared by a qualified Professional Engineer which updates the cost estimates on which the amounts associated with the requirements for financial assurance in this *ECA* are based.
- 2.8 No waste shall be received, accepted, disposed or transferred at the *Site* unless appropriate financial assurance is received.
- 2.9 If any financial assurance is scheduled to expire or notice is received, indicating financial assurance will not be renewed, and satisfactory methods have not been made to replace the financial assurance at least sixty (60) days before the financial assurance terminates, the financial

assurance shall forthwith be replaced by cash.

3.0 CONSTRUCTION, INSTALLATION and PLANNING

Major Works

- 3.1 (1) The final detailed design of *Major Works* shall include the following:
- a. design drawings and specifications;
 - b. a detailed quality assurance / quality control (QA/QC) program for construction of the major work, including necessary precautions to avoid disturbance to the underlying soils; and
 - c. details on the monitoring, maintenance, repair and replacement of the engineered components of the major work, if any.
- (2) Maintenance or replacing components (i.e. piping for the gas collection system) related to existing *Major Works* are not considered *Major Works* under Section 3.0 of the *ECA*
- 3.2 Any design optimization or modification that is inconsistent with the conceptual design shall be clearly identified, along with an explanation of the reasons for the change.
- 3.3 Each major work shall be constructed in accordance with the approved final detailed design and the QA/QC procedures shall be implemented as proposed by the *Owner* . Any significant variances from the conceptual design for the *Site* shall be subject to approval by the *Director* .
- 3.4 As-built drawings for all *Major Works* shall be retained on site and made available to *Ministry* staff for inspection.

4.0 GENERAL OPERATIONS

Proper Operation

- 4.1 The *Site* shall be properly operated and maintained at all times. All waste shall be managed and disposed of in accordance with the *EPA* and *Regulation 347* and the requirements of this *ECA*. At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.

Operations Manual

- 4.2 The *Owner* shall ensure the operations and procedures manual for the *Site* includes discussions on the following items.:
- a. Health and safety;
 - b. Operation and maintenance of the *Site* ;

- c. Waste disposal area and development;
- d. Nuisance management;
- e. Leachate management;
- f. Landfill gas management;
- g. Surface water/Stormwater management;
- h. Inspections and monitoring;
- i. Contingency plans and emergency procedures;
- j. Complaints; and,
- k. Reporting and record keeping.

4.3 The operations and procedures manual shall be:

- a. retained at the *Site* ;
- b. reviewed on an annual basis and updated by the *Owner* as required; and
- c. be available for inspection by *Ministry* staff.

Site Closure

4.4 The *Owner* shall ensure that no waste is received for disposal at the *Site* after **June 30, 2011** and the site is capped with final cover material by **September 30, 2011**.

Capacity

4.5 The *ECA* permits disposal of waste at the *Site* to fill an air space of **2,842,700 cubic metres** (including waste, daily and interim cover material).

Yearly Waste Limit

4.6 No more than 125,000 tonnes of waste per year may be accepted at the *Site* .

Service Area

4.7 Only waste that is generated in the Province of Ontario shall be accepted at the *Site* .

Hours of Operation

4.8 Waste shall only be accepted at the *Site* during the following time periods:

- i. 8 am to 5 PM - Monday to Friday (except statutory holidays)
- ii. 8 am to 1 PM - Saturday

4.9 With the prior written approval of the *District Manager* , the time periods may be extended to accommodate seasonal or unusual quantities of waste.

4.10 The *Owner* may provide limited hours of operation provided that the hours are posted at the

landfill gate and that suitable notice is provided to the public of any change in operating hours.

- 4.11 Upon reasonable notice to the *Director*, contingency actions may take place outside normal hours of operation. Emergency response may occur at any time as required.

Site Security

- 4.12 During non-operating hours, the *Site* entrance and exit gates shall be locked and the *Site* shall be secured against access by unauthorized persons.

On-Site Roads

- 4.13 *Site* roads shall be maintained in a manner approved by Item 19 of Schedule "A".

Waste Inspection Procedures

- 4.14 The *Operator* shall develop and implement a program to inspect waste to ensure that the waste is of a type approved for acceptance under this *ECA* .

Waste Inspection and Deposition

- 4.15 All loads of waste must be properly inspected by trained *Site* personnel prior to acceptance at the *Site* and waste vehicles must be diverted to appropriate areas for waste disposal.
- 4.16 The *Owner* shall deposit waste in a manner that minimizes exposure area at the landfill working face and all waste shall be compacted before cover is applied.

Litter Control:

- 4.17 All loose, windblown litter shall be collected and disposed of at an approved disposal facility.

Vermin, Scavenging, Dust, Litter, Odour, Noise, etc.

- 4.18 The *Site* shall be operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

- 4.19 No scavenging is to occur at the *Site* .

Dust

- 4.20 The *Owner* shall control fugitive dust emissions from *Site* sources including but not limited to *Site* roads, stockpiled cover material and closed landfill area prior to seeding especially during times of dry weather conditions. If necessary, major sources of dust shall be treated with water and/or dust suppression materials to minimize the overall dust emissions from the *Site* .

Noise

- 4.21 The *Owner* shall comply with noise criteria in *MOE* Guideline entitled "Noise Guidelines for Landfill Sites."

5.0 SITE OPERATIONS

Cover Material

- 5.1
- i. Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 mm of soil cover or an approved thickness of alternative cover material shall be placed.
 - ii. Final Cover - Final cover placed after the effective date of this *ECA* must meet the following specifications. In areas where landfilling has been completed to final contours, a minimum 900 mm thick layer of native silty clay till soil shall be placed having a hydraulic conductivity of 1×10^{-8} m/s or less followed by 150 mm of topsoil. The *Owner* shall construct the final cover system for the *Site* in accordance with Items 33 to 36 of Schedule "A" and this *ECA*.
 - iii. The *Owner* shall ensure that no contaminated soils are used in the final cover.

Cleaning Leachate Collection System

- 5.2 The leachate collection system piping for each stage of the landfill shall be cleaned on an annual basis, or more frequently as circumstances require, in order that the leachate collection system operates properly. Visual inspections of the leachate collection system shall be conducted on a quarterly basis to determine the need for more frequent cleaning.

Leachate Sump Pits

- 5.3 A leachate maintenance level of no greater than 0.66 metres shall be maintained in the north pumping chamber and documented each working day.
- 5.4 Appropriate alarms shall be installed to warn *Site* personnel of rising leachate levels within the sump pits so that the *Owner* can take appropriate action to prevent an overflow.

Surface Water

- 5.5 The *Owner* shall take all appropriate measures to minimize surface water from coming in contact with waste. Temporary berms and ditches shall be constructed around active waste disposal areas to prevent extraneous surface water from coming in contact with the active working face.
- 5.6 The *Owner* shall not discharge surface water to receiving water bodies without an approval under

Section 53 of the *OWRA* .

Compost Pad Area and Compost Pond

- 5.7 The *Owner* shall stop operation of the compost pad by no later than **September 30, 2011**.
- 5.8 The *Owner* shall removed all compost material (finished, curing compost, bulking material) from the *Site* by no later than **September 30, 2011**.

Construction and Operation of Phytoremediation System

- 5.9. (1) The phytoremediation system located in the northwest corner of *Site* shall be constructed and operated in accordance with Item 38 in Schedule A.
- (2) The extent of the phytoremediation system shall not extent beyond the limits as shown in Item 38 in Schedule A.
- (3) The phytoremediation system located in the northwest corner of the *Site* shall not be irrigated with any leachate.
- (4) The *Owner* shall ensure that the vegetation does not exceed a height of 12 feet.
- (5) Where vegetation reaches or exceeds a height of 12 feet, the *Owner* shall prune the vegetation forthwith.
- (6) Within seven (7) days of completion of planting of the phytoremediation system as identified in Item 38 of Schedule "A", the *Owner* shall notify the *District Manager* in writing that the planting has been completed.

Monitoring of Phytoremediation System

- 5.10 (1) The following monitor wells will be used to monitor groundwater levels around the phytoremediation system in the northwest corner of the *Site* :
- a. Shallow Zone - M27, M29, M30, M31, M38, M66-2, M67-2, M100, M101, M102 and M103
 - b. Intermediate Bedrock Zone - M3A-3, M5-3, M6-3, M74 and M75
- (2) The following monitors will be used to monitor groundwater quality around the phytoremediation system in the northwest corner of the *Site* :
- a. Shallow Zone - M29, M66-2, M67-2, M101, M102 and M103
 - b. Intermediate Bedrock Zone - M5-3, M6-3, M74 and M75
- (3) For the monitoring wells identified in Condition 5.10 (2), the *Owner* shall analyze groundwater

for determining the quality of groundwater around the phytoremediation system in the northwest corner of the *Site* based on the *EMP* approved prior to this notice and any future approved changes identified in future amendments.

Reporting

- 5.11 Reporting on the phytoremediation system shall be part of the annual monitoring report for the *Site* and shall include but not be limited to the following:
- i. results and an analysis of the results of the monitoring programs for the phytoremediation system;
 - ii. assessment of the results of the phytoremediation system as related to the stated objectives for the existing and proposed phytoremediation system;
 - iii. assessment of the need to change the monitoring program for the phytoremediation system and a recommendation of the required changes;
 - iv. a report on operational problems identified during the operation of the phytoremediation system and a discussion of each problem and details of what was done to rectify each problem;
 - v. assessment of the need for operational changes for the phytoremediation system and a recommendation of the required changes;
 - vi. a *Site* plan which shows the location of the phytoremediation system and any changes made to the phytoremediation system;

6.0 TRAINING

Employees and Training

- 6.1 A training plan for all employees that operate any aspect of the *Site* shall be developed and implemented by the *Operator*. Only trained employees shall operate any aspect of the *Site* or carry out any activity required under this *ECA*. For the purpose of this *ECA* "trained" means knowledgeable either through instruction or practice in:
- i. the relevant waste management legislation including *EPA, O. Reg. 347*, regulations and guidelines;
 - ii. major environmental and occupational health and safety concerns pertaining to the waste to be handled;
 - iii. the proper handling of wastes;
 - iv. the management procedures including the use and operation of equipment for the processes and wastes to be handled;
 - v. the emergency response procedures;
 - vi. the specific written procedures for the control of nuisance conditions;
 - vii. the terms, conditions and operating requirements of this *ECA* and,
 - viii. proper inspection, receiving and recording procedures and the activities to be undertaken during and after a load rejection.

7.0 INSPECTIONS AND RECORD KEEPING

Daily Inspections and Log Book

- 7.1 An inspection of the entire *Site* and all equipment on the *Site* shall be conducted each day the *Site* is in operation to ensure that the *Site* is being operated in compliance with this *ECA* . Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the *Site* if needed.
- 7.2 A record of the inspections shall be kept in a daily log book or a dedicated electronic file that includes:
- i. the name and signature of person that conducted the inspection;
 - ii. the date and time of the inspection;
 - iii. the list of any deficiencies discovered;
 - iv. the recommendations for remedial action; and
 - v. the date, time and description of actions taken.
- 7.3 A record shall be kept in the daily log book of all the following:
- i. the type, date and time of arrival, hauler, and quantity (tonnes) of all waste received at the *Site* ; and,
 - ii. a list of the refusal of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

Monthly Records

- 7.4 Monthly *Site* inspection records in the form of a written log or a dedicated electronic file shall include the following:
- i. a summary of wastes received and refused for disposal at the *Site* ;
 - ii. the area of the *Site* in which waste disposal operations are taking place;
 - iii. a calculation of the total quantity (tonnes) of waste received at the *Site* during each operating day and each operating week;
 - iv. the amount of any leachate removed, or treated and discharged from the *Site* ;
 - v. a record of litter collection activities and the application of any dust suppressants;
 - vi. a record of the daily inspections;
 - vii. a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service;
 - viii. type and amount of daily, intermediate and final cover used;
 - ix. maintenance and repairs performed on equipment employed at the *Site* ;
 - x. complaints received and actions taken to resolve them;
 - xi. emergency situations and actions taken to resolve them; and

- xii. any other information required by the *District Manager* .

Site Inspections

7.5 During *Site* operations, the *Owner* shall inspect the site monthly for the following items but not limited to these items:

- i. General settlement areas or depressions on the waste mound;
- ii. Shear and tension cracks on the waste mound;
- iii. Condition of surface water drainage works;
- iv. Erosion and sedimentation in surface water drainage system;
- v. Presence of any ponded water on the waste mound;
- vi. Adequacy of cover material;
- vii. Evidence of vegetative stress, distressed poplars or side slope plantings on or adjacent to the waste mound;
- viii. Condition of groundwater monitoring wells and gas wells;
- ix. Presence of insects, vermin, rodents and scavenging animals on or adjacent to the waste mound;
- x. Condition of fence surrounding the *Site* ; and,
- xi. General *Site* appearance.

7.6 The *Owner* shall inspect the waste mound and surrounding areas for the presence of leachate seeps as required by Condition No. 13.5.

Record Retention

- 7.7 Except as authorized in writing by the *Director* , all records required by this *ECA* shall be retained at the *Site* for a minimum of two (2) years from their date of creation.
- 7.8 The *Owner* shall retain all documentation listed in Schedule "A" for as long as this *ECA* is valid.
- 7.9 All monthly summary reports are to be kept at the *Site* until they are included in the Annual Report.
- 7.10 The *Owner* shall retain employee training records as long as the employee is working at the *Site* .
- 7.11 The *Owner* shall make all of the above documents available for inspection upon request of *Ministry* staff.

8.0 MONITORING

Groundwater Monitors

8.1 The *Owner* shall ensure all groundwater monitoring wells are properly capped, locked and

protected from damage.

- 8.2 All groundwater monitoring wells whether included in the monitoring program or not shall be assessed, repaired, replaced or decommissioned as required. Any well being decommissioned shall be decommissioned in accordance with good standard practice that will prevent contamination through the abandoned well and in accordance with Ontario Regulation 903.
- 8.3 The *Owner* shall repair or replace any monitoring well included in the monitoring program which is destroyed or in any way made inoperable for sampling such that no more than one sampling event is missed.
- 8.4 Any monitoring well included in the monitoring program that is no longer required as part of the groundwater monitoring program may be decommissioned provided its removal from the monitoring program has been approved by the *Director* . A report on the decommissioning shall be provided in the annual monitoring report for the period during which the well was decommissioned.

Monitoring Programs

- 8.5.
 - a. Monitoring programs shall be carried out for groundwater, surface water and landfill gas on an interim basis in accordance with Item 45 in Schedule "A" until the report required by Condition 8.5 (b) has been approved by the *Director* .
 - b. The *Owner* of the *Site* must provide an addendum report to the report entitled "*Environmental Monitoring Plan - WM Richmond Landfill Site* " prepared by WESA Inc dated June 29, 2010 to the *Director* for approval, with copies to the *District Manager*, that addresses additional information required as indicated in Item 48 in Schedule "A". The report shall be submitted within sixty (60) days upon the Ministry's Eastern Region Technical Support Section acceptance of the findings of a technical report to be prepared by the *Owner* that details the findings of the groundwater investigation. Pending final approval of the *EMP* and the addendum by the *Director* , the *Owner* shall implement the amended *EMP* upon approval by the *Director* .
 - c. The addendum report for the *EMP* must include adequate detail on groundwater and surface water monitoring locations, monitoring frequencies, parameters etc.
 - d. The addendum report for the *EMP* shall also include a monitoring program to identify odour issues along with appropriate odour abatement activities and a communication plan for the public.
 - e. Any off site exceedances of parameters for groundwater, surface water, or odour shall be reported to the *District Manager* within 48 hours of determination of the exceedance. In addition, a statement detailing which results are out of compliance with the *Ministry's* guidelines and objectives shall be provided at the same time as the results.

Compliance Criteria

- 8.6 The *Site* shall be operated in such a way to ensure compliance with the *MOE* 's Guideline B-7 Reasonable Use Concept at monitoring points along the property line that have the potential to be impacted by leachate from the *Site* .

9.0 CONTINGENCY PLANS

Groundwater and Surface Water Impact Contingency Plan

- 9.1 In conjunction with the report required by Condition No 8.5 (b), the *Owner* shall submit for approval to the *Director* an addendum report that provides an update to the memorandum entitled "*Groundwater and Surface Water Impact Contingency Plan* " prepared by WESA Inc. dated June 29, 2010 that incorporates the additional information collected from the groundwater investigations to be conducted as detailed in Items 47 and 50 of Schedule "A". The addendum report for the Groundwater and Surface Water Impact Contingency Plan will include but not be limited to the following:

- i. Trigger mechanisms associated with the groundwater and surface water monitoring programs. These mechanisms, based on water quality monitoring data, will identify when additional measures are required to be implemented in order to ensure on-going compliance with water quality criteria;
- ii. Quantifiable timelines for each step of the impact contingency plans; and
- iii. A plan to deal with any off site groundwater and surface impacts that can be attributed to landfill operations over the long term including during landfill operation and during post-closure.

Leachate Collection System Contingency Plan

- 9.2
- i. The *Owner* shall initiate the Leachate Collection System Contingency Plan at a minimum when the trigger mechanisms identified in Items 41, 47 and 48 of Schedule "A" have been identified as occurring.
 - ii. The conceptual Leachate Collection System Contingency Plans as identified in Item Nos 41, 47 and 48 in Schedule "A" are considered acceptable. In the event the *Owner* needs to implement the Contingency Plan, the *Owner* shall submit to the *Director* for approval prior to implementation, with copies to the *District Manager* , detailed design drawings for works or any remedial system required for the contingency plan.

Leachate Contingency Plan

- 9.3 The *Owner* shall on a biannual basis confirm that there is a suitable location available for disposal of leachate and what that location is. Confirmation shall be provided to the *District Manager* upon receipt. If a location for disposal of leachate is not available, the *Owner* shall provide an action plan for approval to the *District Manager* .

Landfill Gas Contingency Plan

- 9.4 i. The *Owner* shall initiate the Landfill Gas System Contingency Plan at a minimum when the trigger mechanisms identified in Item Nos. 42, 47 and 48 in Schedule "A" have been identified as occurring.
- ii. The conceptual Landfill Gas System Contingency Plans as identified in Item Nos. 42 and 48 in Schedule "A" are considered acceptable. In the event the *Owner* needs to implement the Contingency Plan, the *Owner* shall submit to the *Director* for approval prior to implementation, with copies to the *District Manager* , detailed design drawings for works or any remedial system required for the contingency plan.

Public Notification Plan for Contingency Plans

- 9.5 Within 12 months of issuance of this notice, the *Owner* shall submit to the *Director* for approval, with copies to the *District Manager* , a public notification plan that shall address the steps to be taken to notify the adjacent property owners, the *PLC* , the Town of Greater Napanee, Township of Deseronto, Tyendinaga Township and the Mohawks of the Bay of Quinte that the *Owner* will be initiating contingency plans as approved by this *ECA* .

10.0 PUBLIC LIAISON COMMITTEE

- 10.1 The *Owner* shall use its best efforts to establish and maintain a Public Liaison Committee (PLC) for the *Site* . The PLC shall serve as a focal point for dissemination, review and exchange of information and monitoring results relevant to the operation of the undertaking. In addition, the purpose of the PLC will be to provide community review of the development, operation (current and proposed) and ongoing monitoring, closure and post-closure care related to the *Site* . The PLC will also be provided the opportunity to review and comment on any subsequent applications for approval under the *EPA* .
- 10.2 The *Owner* shall invite representatives from the Town of Greater Napanee, the *Ministry* , the Township of Tyendinaga, the Quinte Conservation Authority and the Mohawks of the Bay of Quinte to sit on the committee.
- 10.3 The *Owner* shall, in consultation with the PLC, develop a terms of reference for the PLC that will describe how the PLC shall carry out business, and the terms of reference shall include a dispute resolution strategy to resolve issues and disagreements between the PLC and the *Owner* . The *Owner* shall provide the terms of reference to the *Director* and the *Regional Director* for placement on the public record.

- 10.4 The general mandate of the PLC shall include:
- a. Review operations and provide regular input to the *Owner* with respect to all matters pertaining to landfill site operation, including issues pertaining to ongoing operations, monitoring, the need for contingency plans or remedial measures, response to community complaints, the need for changes to the *ECA* , post-closure monitoring and maintenance, and development of the proposed end use for the *Site* ;
 - b. Review operational and monitoring reports;
 - c. Consider and make recommendations to the *Owner* regarding outside consulting advice in respect of the *Site* ;
 - d. Facilitate ongoing dialogue between the *Owner* , and the community, including residents and businesses in the immediate vicinity of the *Site* ;
 - e. Provide reports regularly to the community on the activities of the PLC, the landfill operations and landfill related issues and seek public input on these activities and issues;
 - f. Monitor the *Owner* 's complaint response program and make recommendations to the *Owner* with respect to this program; and
 - g. Provide recommendations to the *Owner* with respect to unresolved complaints.
- 10.5 The PLC shall not exercise any supervisory, regulatory, approval, legal or other decision making role with respect to the operations at the *Site* .
- 10.6 The *Owner* shall provide for the administrative costs of operating the PLC, including the cost of meeting places and clerical services.
- 10.7 The PLC shall operate under a Terms of Reference of the committee. Any changes to the Terms of Reference for the PLC shall be made by the PLC. Any changes to the Terms of Reference for the PLC shall be provided to the *Ministry* for information purposes.
- 10.8 Community members shall be appointed by the PLC. The community member positions are intended to be available to individuals that are not members of groups already represented on the PLC and have an interest in the operation of the *Site* . The PLC shall encourage individuals who reside in close proximity to the *Site* to participate. A community member is defined as a taxpayer and/or resident of the Town of Greater Napanee and/or The Township of Tyendinaga.
- 10.9 The function of the *Ministry* member will be to provide advice, information and input to other members as required.
- 10.10 The PLC shall determine the appropriate meeting frequency and review it on an annual basis.
- 10.11 Minutes and agendas of meetings shall be printed and distributed on a timely basis.
- 10.12 The PLC shall have reasonable access to the *Site* and its landfill related facilities for the purpose of carrying out its objective and mandate and the *Owner* 's consultants' reports relating to *Site* operations shall be provided to the PLC.

- 10.13 The *Owner* shall provide the PLC with access to the *Owner* 's consultants as required and consultants reports in accordance with protocols agreed to between the *Owner* and the PLC.
- 10.14 Unless disclosure would be contrary to the Freedom of Information and Protection of Privacy Act ,the PLC, the Town of Greater Napanee, the Township of Tyendinaga, and the Mohawks of the Bay of Quinte are to be provided all formal submissions and correspondence related to the *Site* operations by the *Owner* at the same time as these items are submitted to the *Ministry* .
- 10.15 The *Owner* shall allow access to the *Site* during normal operating hours, to enable any individual member of the PLC and member of the public recommended by local representatives on the PLC, to observe operations. An individual member of the PLC must contact the *Operator* to arrange for a *Site* pass, be accompanied by an *Operators* representative at all times and follow all safety procedures.
- 10.16 All recommendations made to the *Owner* with respect to ongoing *Site* operations, monitoring and the implementation of contingency measures shall be discussed at joint meetings between representatives of the *Owner* and the PLC. The purpose of these meetings will be to arrive at an agreement between the *Owner* and PLC with respect to implementation of the recommendations.
- 10.17 The *Owner* will provide and deliver to the PLC, the Town of Greater Napanee, the Township of Tyendinaga and the Mohawks of the Bay of Quinte all monitoring results, reports and any other information required to be collected and/or submitted to the *MOE* by a Condition of this *ECA* .
- 10.18 The *Owner* with approval from the *Director* and the *District Manager*, may dispense with the PLC if, after a period of time and after giving sufficient notice, there is no interest from the public in continuing with it. The need for a PLC shall be reviewed by the *Owner* on a yearly basis.

11.0 COMPLAINTS PROCEDURE

- 11.1 If at any time, the *Owner* receives complaints regarding the operation of the *Site* , the *Owner* shall respond to these complaints according to the following procedure:
- a. The *Owner* shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;
 - b. The *Owner* , 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 *Owner* shall complete a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the

recurrence of similar incidents. A copy of the report shall be retained at the *Site* .

11.2 The *Owner* shall post *Site* complaints procedure at *Site* entrance along with the name and phone number of a suitable, local contact to receive complaints or questions related to the *Site* . All complaints and the *Owner* 's actions taken to remedy the complaints must be summarized in the Annual Report.

12.0 EMERGENCY SITUATIONS

12.1 In the event of a fire or discharge of a contaminant to the environment, *Site* staff shall contact the *MOE* Spills Action Centre (1-800-268-6060) and the *District Office* of the *MOE* .

12.2 The *Owner* shall submit to the *District Manager* a written report within three (3) days of the spill or incident, outlining the nature of the incident, remedial measures taken and measures taken to prevent future occurrences at the *Site* .

12.3 The Emergency Response Manual shall be updated on a regular basis and be provided to the *District Manager* within one month of the revision date.

12.4 The *Owner* shall ensure that adequate fire fighting and contingency spill clean up equipment is available and that emergency response personnel are familiar with its use and location.

13.0 SITE CLOSURE

13.1 i. The *Owner* shall construct the final cover system for the *Site* in accordance with Items 33 to 36 inclusive of Schedule "A" and this *ECA* .

ii. Prior to subgrade preparation, the *Owner* shall inspect for any evidence of leachate springs or seeps and immediately remedy any seeps or springs prior to placement of the final cover and topsoil.

13.2 If final contours are reached in any part of the *Site* then that part of the *Site* shall be closed in accordance with the closure plan, Items 19 to 30 on Schedule "A" and this amendment to the *ECA* as approved by the *Director*.

13.3 Within sixty (60) days prior to *Site* closure, the *Owner* shall notify the public via an advertisement in all local newspapers. In addition, notice shall be given to the *District Office* , the Town of Greater Napanee, the Mohawks of the Bay of Quinte and all residents and businesses within a 1,000 metre radius of the *Site* .

13.4 The *Owner* shall update the sign at the front gate of the *Site* to indicate the following:

- a. the name of the *Site* and *Owner* ;
- b. the *ECA* number;

- c. the name of the *Operator* ;
 - d. a warning against unauthorized access;
 - e. the telephone number to which complaints or questions may be directed;
 - f. a twenty-four (24) hour emergency telephone number;
 - g. the *Site* is closed;
 - h. dumping outside of the gate is illegal; and
 - i. alternative locations for waste disposal.
- 13.5 After *Site* closure, on a weekly basis, the *Owner* shall inspect the *Site* for leachate seeps and for signs of illegal dumping of waste. Illegal waste shall be removed and disposed of within 48 hours of detection. Leachate seeps shall be repaired within 48 hours of detection.. Upon approval from the *Director* , the frequency for inspecting for leachate seeps may be reduced to quarterly.
- 13.6 Upon closure of the *Site* , the following features will be inspected, recorded and maintained on a quarterly (every three (3) months) basis:
- a. evidence of settlement;
 - b. landfill gas collection system, landfill gas flare and related equipment;
 - c. cover soil integrity;
 - d. vegetative cover;
 - e. gates and fencing around the *Site* ;
 - f. surface water drainage works; and
 - g. erosion and sediment in surface water drainage system.
- 13.7 Any deficiencies noted in the above items shall be repaired within one month time of notice.
- 13.8 Upon *Site* closure, grass on the berms and the top of the landfill shall be cut a minimum of two (2) times per year.
- 13.9 Upon closure of the *Site* , the ditches and culverts surrounding the *Site* shall be cleaned on an annual basis for the first five (5) years after *Site* closure. Prior to five years after *Site* closure, the *Owner* shall submit to the *Director* for approval a proposed maintenance schedule for the ditches and culverts for the period covering 5 years after *Site* closure until the end of the contaminating lifespan.
- 13.10 Upon closure of the *Site* , the leachate collection system shall be cleaned and camera inspected on an annual basis for the first three (3) years after *Site* closure. Prior to three (3) years after *Site* closure, the *Owner* shall submit to the *Director* for approval a proposed maintenance schedule for the leachate collection system or the period covering 3 years after *Site* closure until the end of the *contaminating lifespan* .
- 13.11 If weather conditions do not allow timely placement of final and vegetative cover, silt curtains shall be employed to minimize silt loadings to surface water bodies.

13.12 The following shall remain in place and be operational at the *Site* until the end of the contaminating lifespan:

- a. Leachate extraction equipment;
- b. Landfill gas extraction equipment; and
- c. Sedimentation ponds.

14.0 SEMI ANNUAL AND ANNUAL REPORTING

Semi Annual Monitoring Reporting

14.1 By **January 15** and **July 15** of each year, the *Owner* shall submit semi-annual monitoring reports to the *District Office* and post the reports on a publicly accessible website. These semi annual reports shall include:

- i. The results and an interpretive analysis of the results from the leachate, groundwater, surface water, and landfill gas monitoring programs approved by this *ECA*, including an assessment of the need to amend the monitoring programs;
- ii. An assessment with regards to the compliance of the groundwater quality at the property boundary and compliance points with regards to Guideline B-7 Reasonable Use Concept;
- iii. A report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903; and
- iv. The second semi-annual report will include an Annual Summary section which describes the results from the current calendar year and any data quality changes identified from previous years, or through the current year.

Annual Reporting

14.2 A written report on the development, operation, and closure of the *Site* shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the *Regional Director*, the *District Manager*, the *PLC*, the Town of Greater Napanee, the Township of Tyendinaga and the Mohawks of the Bay of Quinte, by **March 31st** of each year and shall cover the year ending the preceding December 31st.

14.3 The Annual Report shall include the following:

- i. an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the *Site*, and the adequacy of and need to implement the contingency plans;
- ii. an assessment of the efficiency of the leachate collection system;
- iii. *Site* plans showing the existing contours of the *Site*;
- iv. areas of landfilling operation during the reporting period;
- v. areas of intended operation during the next reporting period;

- vi. areas of excavation during the reporting period;
- vii. the progress of final cover, vegetative cover, and any intermediate cover application;
- viii. previously existing *Site* facilities;
- ix. facilities installed during the reporting period;
- x. *Site* preparations and facilities planned for installation during the next reporting period;
- xi. calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the *Site* during the reporting period and a calculation of the total volume of *Site* capacity used during the reporting period;
- xii. a summary of the quantity of any leachate or pre-treated leachate removed from the *Site* during each operating week;
- xiii. a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the *Site* .
- xiv. a summary of any complaints received and the responses made;
- xv. a discussion of any operational problems encountered at the *Site* and corrective action taken;
- xvi. a summary of the amount of wastes refused for disposal at the *Site* , the reasons for refusal and the carrier who brought the waste to the *Site* ;
- xvii. a summary of the leachate collection system cleaning and inspection activities;
- xviii. an update summary of the amount of financial assurance which has been provided to the *Director*;
- xix. any other information with respect to the site which the *District Manager or Regional Director* may require from time to time;
- xx. a statement of compliance with all conditions of this *ECA* and other relevant *Ministry* groundwater and surface water requirements;
- xxi. a confirmation that the *Site* inspection program as required by this *ECA* has been complied with by the *Owner* ;
- xxii. Any changes in operations, equipment or procedures employed at the *Site* ; and
- xxiii. Recommendations regarding any proposed changes in operations of the *Site* .

Schedule "A"

1. Application for a Certificate of Approval for a Waste Disposal Site (Landfill), dated January 11, 1988.
2. Report entitled "Sutcliffe Sanitation Services Ltd., Landfill Site Expansion Development and Operations Report", prepared by Henderson Paddon and Associates Limited, dated September 1985.
3. Report entitled "Addendum No. 1 Sutcliffe Sanitation Services Limited Landfill Site Expansion Development and Operations Report" prepared by Henderson Paddon and Associates Limited dated December 1986.
4. Report entitled "Hydrogeologic Study Proposed Landfill Expansion, Township of Richmond" prepared by Morrison Beatty Limited and dated September 30, 1985.
5. Report entitled "Proposed Groundwater and Surface Water Monitoring Program, Sutcliffe Sanitation Services Limited Landfill, Township of Richmond" prepared by Morrison Beatty Limited and dated August 1987.
6. Letter dated September 12, 1990 from Mr. J.R. Bray, P.Eng. to Tricil Limited (c/o Laidlaw Waste Systems Ltd.).
7. Application for Approval of a Waste Disposal Site, dated May 24, 1995 and signed by Michael Pullen, Director, Environmental Management, Laidlaw Waste Systems (Richmond) Ltd.
8. Letter from Jeff Armstrong, Henderson, Paddon & Associates Limited to I. Parrott, MOEE dated May 30, 1995 re: Development of Landfill Base of Phases IV and V (including attached drawings 8570D-400 to 406, inclusive and 8570D-94-Site).
9. Letter from Jeff Armstrong, Henderson Paddon and Associates Limited to i. Parrott, MOEE dated June 23, 1995 re: Additional information to Support Applciation for Provisional Certificate of Approval for a Waste Disposal Site A371203.
10. Letter from Jeff Armstrong, Henderson Paddon and Associates Limited to I. Parrott, MOEE dated July 21, 1995 re: Public Consultation on the Re-Design of the Landfill Base for Phase IV and V.
11. Application for Approval for a Waste Disposal Site dated July 25, 1996 signed by Mr. Michael Pullen, Director, Environmental Management.
12. Report entitled "Undertaking to Establish an Organic Composting Facility at the Laidlaw Waste Systems (Richmond) Ltd. Landfill Site" dated July 1996, prepared by Laidlaw Waste Systems (Richmond) Ltd.

13. Plan entitled "Richmond Township Landfill Proposed Compost Pad Expansion", revised April 12, 1996, prepared by Henderson Paddon and Associates Ltd.
14. The June 9, 1999, report entitled "Conceptual Design for a Landfill Gas Collection and Flaring System Richmond Landfill Site Napanee, Ontario" which was prepared by Comcor Environmental Limited.
15. Drawing 8570G-L1 dated May 2000- Phase I Proposed Leachate Collector, Napanee Landfill, Napanee, Ontario
16. A letter dated July 31, 2000, regarding concerns raised during review of application, to Tes Gebrezghi, MOE, from Jeff Armstrong, Henderson Paddon & Associates Limited
17. A report titled "Assessment of Napanee Water Pollution Control Plant To Treat Leachate from the Laidlaw Landfill, Richmond, Ontario, dated May 1996 and prepared by Henderson, Paddon & Associates Limited
18. A report titled "CWS Response to the Town of Greater Napanee Audit of the Richmond Landfill Operation, dated May 12, 2000, and prepared by Canadian Waste Services Inc.
19. Report entitled "Richmond Sanitary Landfill Site Final Closure Plan" and appendices dated June 2007 prepared by Henderson, Paddon and Associates Limited.
20. Memorandum dated November 30, 2007 from K. Stephenson, Hydrogeologist, Eastern Region, MOE to C. Dobiech, Kingston District, MOE.
21. Memorandum dated December 5, 2007 from Victor Castro, Surface Water Scientist, Eastern Region, MOE to Craig Dobiech, Kingston District, MOE.
22. Letter dated July 11, 2008 from Greg Washuta, Senior Waste Engineer, EAAB, MOE to Mike Walters, WMCC.
23. Letter, attachments, and Appendix B dated September 26, 2008 from Randy Harris, Site Manager, WMCC to Greg Washuta, Senior Waste Engineer, EAAB, MOE.
24. Letter dated February 23, 2009 from Greg Washuta, Senior Waste Engineer, EAAB, MOE to Randy Harris, Site Manager, WMCC.
25. Drawing number 8570-2006 entitled "June 2006 Existing Conditions Richmond Landfill Napanee, Ontario" dated March 19, 2007 prepared by Henderson Paddon and Associates Limited.
26. Drawing number 8570F-104 entitled "Richmond Landfill Site Proposed Final Contours Landfill and Borrow Areas" dated March 1995 prepared by Henderson Paddon and Associates Limited.

27. Letter dated March 2009 from Randy Harris, Site Manager, Waste Management of Canada Corporation to Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE.
28. Drawing number 8570F-114 entitled "Richmond Township Landfill Sections 'A-A' and 'B-B'" created by Henderson Paddon and Associates Limited, dated March 1996.
29. Drawing number 8570F-115 entitled "Richmond Township Landfill Sections 'C-C', 'D-D', and 'E-E'" created by Henderson Paddon and Associates Limited, dated March 1996.
30. Memorandum dated February 25, 2009 from K. Stephenson, Hydrogeologist, Eastern Region, MOE to C. Dobiech, Kingston District, MOE.
31. Letter dated June 1, 2009 from Mr. Randy Harris, Site Manager, Waste Management of Canada Corporation to Application Processor, Client Services Section, Environmental Assessment and Approvals Branch, Ministry of the Environment.
32. Report entitled "Site Conceptual Model Report, WM Richmond Landfill" and attached appendices A to H inclusive by Dr. B.H. Kueper and WESA Inc., dated October 2009.
33. Report entitled "Richmond Sanitary Landfill Site OS-08-570-13-OS Construction Quality Assurance/Construction Quality Control Plan for the Final Cover System", dated June 2010, prepared by GENIVAR Consultants LP.
34. E-mail dated August 20, 2010 from Greg Washuta, Senior Waste Engineer, Waste Unit, Environmental Assessment and Approvals Branch, Ministry of the Environment to Dave White and Randy Harris, Waste Management of Canada Corporation.
35. Letter dated August 24, 2010 from Jeff E. Armstrong, Senior Environmental Engineer, GENIVAR Consultants LP to Greg Washuta, Senior Waste Engineer, Waste Unit, Environmental Assessment and Approvals Branch, Ministry of the Environment.
36. Document entitled "Richmond Sanitary Landfill Site Construction Quality Assurance/Construction Quality Control Plan for the Final Cover System ERRATA" prepared by Jeff E. Armstrong, Senior Environmental Engineer, GENIVAR Consultants LP, dated August 24, 2010.
37. Application for a Provisional Certificate of Approval for a Waste Disposal Site for Waste Management of Canada Corporation's Richmond Landfill Site, signed by Randy Harris, Site Manager on September 30, 2010.
38. Report entitled "Phytoremediation Plan - WM Richmond Landfill Town of Greater Napanee, Ontario" dated December 2010 and prepared by WESA Inc.
39. Report entitled "Richmond Sanitary Landfill Site - Operations and Procedures Manual June 25, 2010" prepared by GENIVAR Consultants LP Inc dated June 25, 2010.

40. Report entitled "Landfill Gas Collection and Flaring System Design Report - Richmond Landfill" prepared by GENIVAR Consultants LP dated June 29, 2009.
41. Report entitled "Richmond Sanitary Landfill Site - Leachate Collection System Contingency Plan" prepared by GENIVAR Consultants LP dated June 25, 2010.
42. Report entitled "Richmond Sanitary Landfill Site - Landfill Gas Collection System Contingency Plan" prepared by GENIVAR Consultants LP dated June 25, 2010.
43. Report entitled "Financial Assurance Plan" completed by GENIVAR Consultants LP and dated June 25, 2010;
44. Report entitled "Contaminating Lifespan" (Appendix D of Financial Assurance Plan) completed by GENIVAR Consultants LP and dated June 16, 2010.
45. Report entitled "Final Report - Environmental Monitoring Plan - WM Richmond Landfill" prepared for Waste Management of Canada Corporation by WESA Inc. and dated June 29, 2010.
46. Appendix "A" (Report Entitled "Odour Monitoring Plan" prepared for Waste Management of Canada Corporation by GENIVAR Consultants LP dated June 25, 2010) of the report entitled "Environmental Monitoring Plan - WM Richmond Landfill" prepared for Waste Management of Canada Corporation by WESA Inc. and dated June 29, 2010.
47. Letter dated January 14, 2011 addressed to Mr. Randy Harris, Waste Management of Canada Corporation from Mr. Greg Washuta, Ministry of the Environment providing comments on Items 39 through 46 in Schedule "A".
48. Letter dated February 28, 2011 addressed to Mr. Greg Washuta, Ministry of the Environment from Mr. Randy Harris, Waste Management of Canada Corporation providing additional information regarding financial assurance, the status of the environmental monitoring plan and various contingency plans.
49. Letter dated April 5, 2011 addressed to Mr. Randy Harris, Waste Management of Canada Corporation from Mr. Dale Gable, Ministry of the Environment requesting additional information on financial assurance, the status of the environmental monitoring plan and various contingency plans.
50. Letter dated April 20, 2011 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Jeff Armstrong, GENIVAR Inc. providing additional information on the environmental monitoring plan, financial assurance and the contaminating lifespan of the Site.
51. Letter dated August 12, 2011 and supporting documentation addressed to Mr. Tesfaye Gebrezghi, Ministry of the Environment from Mr. Reid Cleland, Waste Management of Canada Corporation requesting amendment to Condition No. 35. The supporting documentation included the following:

- i. Application for a Certificate of Approval for a Waste Disposal Site signed by Mr. Reid Cleland, Waste Management of Canada Corporation and dated August 15, 2011.

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

- 1. The reason for Conditions 1.1 and 1.2 is to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.*
- 2. The reason for Conditions 1.3, 1.4, 1.5, 1.9, 1.10, 1.11, 1.12, 1.13, 3.1, 3.2, 3.3 and 8.6 is to clarify the legal rights and responsibilities of the Owner under this ECA.*
- 3. Conditions 1.6, 1.7 and 1.8 are included to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site, which are approved under this Certificate.*
- 4. Conditions 1.14 and 1.15 are included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.*
- 5. The reasons for Condition 1.16 are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this ECA.*
- 6. The reasons for Conditions 1.17 and 1.18 are to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.*
- 7. The reason for Condition 1.19 is to ensure that appropriate Ministry staff have ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this ECA. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.*
- 8. The reasons for Conditions 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, and 2.9 are to ensure that sufficient funds are available to the Ministry to close the landfill, and to carry out all expected post-closure care activities and any contingencies. Failure to include requirements for financial assurance would not be in the public interest and may result in a hazard or nuisance to the natural environment or any person.*
- 9. The reason for Condition 3.4 is to ensure the availability of as-built drawings for inspection and information purposes.*
- 10. The reasons for Conditions 4.1, 4.2 and 4.3 are to ensure the Owner operates the Site in an environmentally safe manner. This is to ensure the environment and public health are*

protected.

11. *The reason for Condition 4.4 is to establish a closure date for the Site.*
12. *The reasons for Conditions 4.5, 4.6 and 4.7 is to specify the approved areas from which waste may be accepted at the Site and the types and amounts of waste that may be accepted for disposal at the Site, based on the Owner's application and supporting documentation.*
13. *The reasons for Conditions 4.8, 4.9, 4.10 and 4.11 are to specify the normal hours of operation for the landfill Site and a mechanism for amendment of the hours of operation.*
14. *The reasons for Condition 4.12 are to specify Site access to/from the Site and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no Site attendant is on duty.*
15. *The reasons for Condition 4.18 are the protection of public health and safety and minimization of the potential for damage to environmental control, monitoring and other works at the landfill Site. Scavenging is the uncontrolled removal of material from waste at a landfill Site.*
16. *The reason for Condition 4.21 is to ensure that noise from or related to the operation of the landfill is kept to within Ministry limits and does not result in a hazard or nuisance to any person.*
17. *The reason for Condition 5.1 is to ensure that landfilling operations are conducted in an environmentally acceptable manner. Daily and intermediate cover is used to control potential nuisance effects, to facilitate vehicle access on the Site, and to ensure an acceptable Site appearance is maintained. The proper closure of a landfill Site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the Site.*
18. *The reasons for Conditions 5.2, 5.3 and 5.4 are to ensure proper operation of the leachate collection system. This is to ensure the protection of the environment and public health.*
19. *The reason for Conditions 5.5 and 5.6 are to ensure surface water at the site is not impacted by landfill operations. This is to ensure the environment and public health are protected.*
20. *The reasons for Condition 5.7 and 5.8 is to ensure the Owner is aware that the composting operation will cease by the given date.*
21. *The reason for Condition 5.9 is to approve the proposed phytoremediation system as*

applied and established operations conditions for the phytoremediation system.

22. *The reason for Conditions 5.10 and 5.11 is to clarify the responsibilities of the Owner, the requirements of the Ministry, the authority of the Ministry and protects the natural environment and human health.*
23. *The reason for Condition 5.12 is to approve the continued operation of the Waste and Recycling Drop-Off Facility as per the submitted information.*
24. *The reason for Conditions 5.13, 5.14, 5.15 and 5.18 is to ensure the type of waste, the quantity of waste service and removal frequency are clearly identified.*
25. *The reasons for Condition 5.16 and 5.17 is to specify the normal hours of operation for the landfill Site and a mechanism for amendment of the hours of operation and ensure trained staff are present to accept waste.*
26. *The reasons for Conditions 5.19 through 5.24 is to ensure the operation is done in a manner that will not cause a nuisance or an adverse effect. This is to ensure the long-term protection of the environment and human health.*
27. *The reason for Condition 6.1 is to ensure that the Site is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.*
28. *The reasons for Conditions 7.1, 7.2 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11 and 14.1 are to provide for the proper assessment of effectiveness and efficiency of Site design and operation, their effect or relationship to any nuisance or environmental impacts, and the occurrence of any public complaints or concerns. Record keeping is necessary to determine compliance with this ECA, the EPA and its regulations*
29. *The reasons for Conditions 8.1, 8.2, 8.3, and 8.4 are to ensure protection of the natural environment and the integrity of the groundwater monitoring network.*
30. *The reason for Condition 8.5 is to demonstrate that the landfill Site is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.*
31. *The reason for Condition 9.1 is to ensure the Owner submits a contingency plan for the Site based on the current soil and groundwater investigation. This is to ensure the environment and public are protected.*
32. *The reason for Conditions 9.2, 9.3, 9.4, 11.1 and 11.2 is to ensure that the Owner follows a plan with an organized set of procedures for identifying and responding to*



Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in

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, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Environmental Commissioner
1075 Bay Street, Suite 605
Toronto, Ontario
M5S 2B1

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection 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) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

This instrument is subject to Section 38 of the Environmental Bill of Rights, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at www.ebr.gov.on.ca, you can determine when the leave to appeal period ends.

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 9th day of January, 2012



Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

DG/

c: District Manager, MOE Kingston - District
Randy Harris, Waste Management of Canada Corporation

A.1.1

**AMENDMENT TO ENVIRONMENTAL COMPLIANCE
APPROVAL NO. A371203, DATED JANUARY 9, 2012,
IMPOSING CONDITIONS 5.12 THROUGH 5.24 (WASTE
AND RECYCLING DROP-OFF FACILITY), AND ADDING
ITEMS 52 THROUGH 55**


AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER A371203

Notice No. 10

Issue Date: January 9, 2012

Waste Management Canada Corporation
 1271 Beechwood Rd
 Rural Route, No. 6
 Napanee, Ontario
 K7R 3L1

Site Location: 1271 Beechwood Road
 1271 Beechwood
 Greater Napanee Town, County of Lennox and Addington
 K7R 3L1

You are hereby notified that I have amended Approval No. A371203 issued on December 29, 2011 for the use, operation, and closure of a 16.2 hectare waste disposal landfill site including a landfill gas collection system and landfill gas flare within a total site area of 138 hectares , as follows:

Waste and Recyclable Drop-Off Facility
Compliance

5.12 Except as otherwise provided by these conditions, the Waste and Recyclable Drop-Off Facility shall be designed, developed, maintained and operated in accordance with the Applications for a Provisional Certificate of Approval for a Waste Disposal Site dated May 25, 2011, and the supporting documentation, plans and specifications listed in Schedule "A".

Waste Types

5.13 (1) The Waste and Recycling Drop-Off Facility shall accept the following types of waste:

- i. Solid Non Hazardous Waste - Domestic Waste, Construction and Demolition Waste;
- ii. Blue Box Materials;
- iii. Tires; and
- iv. White Goods and Metal;

(2) Contaminated soil shall not be accepted at the Waste and Recycling Drop Off Facility.

(3) If the *Owner* participates in Stewardship Ontario, Ontario Tire Stewardship, or any other recycling program developed by the Province of Ontario, then the waste that has been approved for collection under the aforementioned programs will also be accepted at the public drop off area.

Waste Quantity

5.14 (1) The total amount of waste and recyclable material, which may be received at the Waste and Recyclable Drop off Facility shall not exceed **50 tonnes** per day.

(2) On twenty-five occasions throughout a single calendar year the *Owner* is permitted to have a "Large Waste Day" where the *Owner* is permitted to accept up to **100 tonnes** per day. The *Owner* shall notify the *District Manager* in writing within 48 hours after the *Owner* has used one of the "Large Waste Days".

(3) The maximum amount of waste that may be stored at the Waste and Recycling Drop-Off Facility shall not exceed **50 tonnes**.

(4) The maximum number of waste storage containers that may be stored/utilized at the Waste and Recyclable Drop-Off Facility at any one time shall be as follows:

- i. nine (9) - 40 yard bins for metals, tires and solid non hazardous waste consisting of domestic, construction and demolition waste;
- ii. two (2) - 8 yard bins for blue box materials;
- iii. three (3) - five (5) gallon pails for single use batteries.

Service Area

5.15 Only waste that is generated within the boundaries of the **Town of Greater Napanee, Town of Deseronto and Tyendinaga Township** which includes the **Mohawks of the Bay of Quinte** shall be accepted at the *Site*. No waste shall be received for disposal at this *Site* from outside the approved service area.

Hours of Operation

5.16. The operating hours of the Waste and Recycling Drop-Off Facility shall be as follows:

- i. 8 a.m. to 5 p.m. - Monday to Friday, except for statutory holidays; and
- ii. 8 a.m. to 1 p.m. - Saturday

5.17 No waste shall be received at the Waste and Recycling Drop-Off Facility except during operating hours when the *Site* is under the supervision of trained personnel.

Removal Frequency

5.18 (1) Waste materials shall be removed from the Waste and Recycling Drop-Off Facility on a minimal frequency of twice per week with the exception of white goods and blue box materials.

(2) White goods and blue box materials shall be removed at a frequency no less than once every six months.

(3) Wastes which have been approved for collection under Stewardship Ontario, Ontario Tire Stewardship, or any other recycling programs developed by the Province of Ontario, shall be removed from the *Site* at the frequency as detailed in the requirements for the aforementioned programs.

Operations

5.19 Recycling activities shall be completed as per *Ontario Regulation 101/94*.

5.20 Recyclable materials shall be properly separated and each area properly identified. The areas shall be kept in a neat and tidy manner.

5.21 All storage containers/bins used to store waste and/or recyclable materials shall be maintained in good condition to prevent leakage. The *Owner* shall immediately remove from service any leaking container. Containers/bins used to store clean scrap metal may be equipped with drainage holes to permit the drainage of rainwater.

5.22 With the exception of white goods, waste may only be stored within the waste storage bins in accordance with Items 52, 53, 54 and 55 in Schedule "A".

5.23 All waste types shall be segregated either into bins, or in designated areas defined by barriers. All bins and designated waste storage areas shall be clearly labelled.

5.24 The *Owner* shall ensure that all white goods received at the Waste and Recyclable Drop-off Facility have been drained of any refrigerants, and have the appropriate paperwork (current ODP card) demonstrating that the refrigerants have been removed.

The following Items are hereby added to Schedule "A":

52. Letter report dated May 25, 2011 addressed to Mr. Tesfaye Gebrezghi, Ministry of the Environment from Mr. Jeff Armstrong, GENIVAR Inc. requesting an amendment to permit the approval of continued recyclables disposal at the Richmond Landfill Site. The supporting documentation included the following:

- i. Application for a Certificate of Approval for a Waste Disposal Site signed by Mr. Reid Cleland, Waste Management of Canada Corporation and dated May 25, 2011;
- ii. Drawing No 8570713-MT1 entitled "Site Location Map" prepared by GENIVAR INC. and dated May 17, 2011; and
- iii. Drawing No. 8670713-MT2 entitled "Site Plan Mini-transfer Station" prepared by GENIVAR Inc. and dated May 17, 2011.

53. Letter report dated May 25, 2011 addressed to Mr. Tesfaye Gebrezghi, Ministry of the Environment from Mr. Jeff Armstrong, GENIVAR Inc. requesting an amendment to Condition No. 35 which would allow the continue use of the mini-transfer station at the Richmond Landfill Site. The supporting documentation included the following:

- i. Application for a Certificate of Approval for a Waste Disposal Site signed by Mr. Reid Cleland, Waste Management of Canada Corporation and dated May 25, 2011;
- ii. Development and Operations Report for a Waste Transfer Station prepared by GENIVAR Inc. (Project No. 081-12493-00) and dated May 2011
- iii. Drawing No 8570713-MT1 entitled "Site Location Map" prepared by GENIVAR INC. and dated May 17, 2011; and
- iv. Drawing No. 8670713-MT2 entitled "Site Plan Mini-transfer Station" prepared by GENIVAR Inc. and dated May 17, 2011.

54. Letter dated June 20, 2011 addressed to Mr. Reid Cleland, Waste Management of Canada Corporation from Mr. Dale Gable, Ministry of the Environment requesting additional information on the continued operation of the Waste and Recycling Drop-Off Facility.

55. Letter dated June 30, 2011 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Jeff Armstrong, GENIVAR Inc. providing additional information on the operations of the Waste and Recycling Drop-Off Facility. The information included the following:

- i. Development and Operations Report for a Waste Transfer Station prepared by GENIVAR Inc. (Project No. 081-12493-00) and dated June 2011.

The reasons for this amendment to the Certificate of Approval are as follows:

1. The reason for Condition 5.12 is to approve the continued operation of the Waste and Recycling Drop-Off Facility as per the submitted information.

2. The reason for Conditions 5.13, 5.14, 5.15 and 5.18 is to ensure the type of waste, the quantity of waste service and removal frequency are clearly identified.

3. The reasons for Condition 5.16 and 5.17 is to specify the normal hours of operation for the landfill Site and a mechanism for amendment of the hours of operation and ensure trained staff are present to accept waste.

4. The reasons for Conditions 5.19 through 5.24 is to ensure the operation is done in a manner that will not cause a nuisance or an adverse effect. This is to ensure the long-term protection of the environment and human health.

This Notice shall constitute part of the approval issued under Approval No. A371203 dated

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, 1993, S.O. 1993, c. 28 (Environmental Bill of Rights), the Environmental Commissioner, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

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, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Environmental Commissioner
1075 Bay Street, Suite 605
Toronto, Ontario
M5S 2B1

AND

The Director appointed for the purposes of Part II.1 of
the Environmental Protection 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) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

This instrument is subject to Section 38 of the Environmental Bill of Rights, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at www.ebr.gov.on.ca, you can determine when the leave to appeal period ends.

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 9th day of January, 2012

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

DG/
c: District Manager, MOE Kingston - District
Jeff Armstrong, GENIVAR Inc.

A.1.2

**AMENDMENT TO ENVIRONMENTAL COMPLIANCE
APPROVAL NO. A371203 DATED MAY 3, 2013,
AMENDING CONDITIONS 8.2, 8.5.1 (A), 9.5 (A) AND (B),
14.1 (A) THROUGH (E), 14.2, 14.3 I THROUGH XXIII;
IMPOSING CONDITIONS 14.4 (A) AND (B), AND ADDING
ITEMS 56 THROUGH 58**


AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER A371203

Notice No. 1

Issue Date: May 3, 2013

Waste Management of Canada Corporation
 Rural Route, No. 6
 Napanee, Ontario
 K7R 3L1

Site Location: 1271 Beechwood Road
 1271 Beechwood Rd Lots 1, 3, 4, 5, 6 Concession 4, Geo. Twp. of Richmond
 Greater Napanee Town, County of Lennox and Addington
 K7R 3L1

You are hereby notified that I have amended Approval No. A371203 issued on January 9, 2012 and amended on January 9, 2012 for the use, operation, and closure of a 16.2 hectare waste disposal landfill site including a landfill gas collection system and landfill gas flare within a total site area of 138 hectares, as follows:

The following Conditions are hereby amended as follows:

8.2 All groundwater monitoring wells whether included in the monitoring program or not shall be assessed at least every five years, and repaired, replaced or decommissioned as required in accordance with good standard practice to prevent groundwater contamination and in compliance with the requirements of Ontario Regulation 903.

8.5.1 (a) The *Owner* shall conduct odour monitoring and undertake odour abatement activities as described in the Odour Monitoring Plan dated February 2013, set out as Item 56 and 57 in Schedule "A".

(b) The *Owner* may apply to the *Director* for an amendment to this ECA to amend the Odour Monitoring Plan after completing grid surface emissions surveys, one each in the second, third and fourth quarters of each of 2013 and 2014, and where the results from the grid surface emissions surveys demonstrate that total hydrocarbon vapours, expressed as methane, do not substantially exceed 500 parts per million per each grid dimension.

Public Notification Plan

9.5 (a) The *Owner* shall provide notice to interested persons and follow the procedures set out in the Public Notification Plan dated February 2013 set out as Item 58 in Schedule "A" upon the occurrence of any event that triggers notice to be given as set out in the Plan.

(b) Should the *Owner* wish to amend the Public Notification Plan, the *Owner* shall apply to the *Director* for an amendment to this approval and include in the Application a list of interested persons that were consulted on the proposed amendments and a summary of their comments.

Semi Annual Monitoring Reporting

14.1 By **January 15** and **July 15** of each year, the *Owner* shall submit semi-annual monitoring reports to the *District Office* and post the reports on a publicly accessible website. These semi-annual reports shall include:

a. The results in tabular form and an interpretive analysis of the results from the leachate, groundwater, surface water, and landfill gas monitoring programs approved by this *ECA*, including:

i. an assessment of the need to amend the monitoring programs;

CONTENT COPY OF ORIGINAL

- ii. an evaluation of any observations of saline upwelling in the groundwater;
- iii. an estimation of the leachate generated at the *Site*;
- iv. an evaluation of leachate quality, levels, and mounding within the landfill;
- v. figure(s) showing the landfill site and contaminant attenuation zone;
- vi. maps or figures showing groundwater concentrations of alkalinity, tritium, 1-4 dioxane, and ammonia in the shallow and intermediate aquifers;
- vii. figure(s) showing the off-site properties suspected or confirmed of being impacted by leachate from the landfill;
- viii. a complete inventory of the groundwater monitoring well locations;
- ix. detailed analysis on groundwater quality trends on downgradient groundwater wells which have been impacted or are suspected of being impacted by leachate from the landfill.

b. An assessment with regards to the compliance of the groundwater quality at the property boundary and compliance points with regards to Guideline B-7 Reasonable Use Concept;

c. A report on the status of any monitoring wells required to be tested pursuant to the EMP and a statement as to whether those wells are in compliance with Ontario Regulation 903;

d. The second semi-annual report will include an Annual Summary section which describes the results from the current calendar year and any data quality changes identified from previous years, or through the current year.

e. All surface and groundwater analytical results reported in future Semi-Annual and Annual Monitoring Reports shall be reported by groups of substances (i.e. VOCs, PAHs, inorganics, etc.) and by numeric location, and shall be posted by WMC on a publicly accessible website, with the data being posted on such website being updated annually.

14.2 A written report on the development, operation, and closure of the *Site* shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the *District Manager, the PLC, the Town of Greater Napanee, the Township of Tyendinaga, the Mohawks of the Bay of Quinte, and a representative of the Concerned Citizens Committee of Tyendinaga and Environs* by **March 31st** of each year and shall cover the year ending the preceding December 31st.

14.3 The Annual Report shall include the following:

- i. an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the *Site*, and the adequacy of and need to implement the contingency plans;
- ii. an assessment of the efficiency of the leachate collection system;
- iii. Site plans showing the existing contours of the *Site*;
- iv. areas of landfilling operation during the reporting period;
- v. areas of intended operation during the next reporting period;
- vi. areas of excavation during the reporting period;
- vii. a summary of the inspection of the final cover and vegetative cover including identification of any seepages and remedial actions taken;
- viii. previously existing *Site* facilities;
- ix. facilities installed during the reporting period;
- x. A discussion on any facilities planned for installation during the next reporting period;
- xi. a summary of the quantity of any leachate or pre-treated leachate removed from the north and south pumping stations at the *Site* during each operating week;
- xii. a discussion of the results of the toxicity testing of the landfill stormwater management ponds which includes potential impacts to the groundwater by the SWMP;
- xiii. a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the *Site*.
- xiv. a summary of any complaints received, the responses made and corrective/remedial taken if required;
- xv. a summary of any seeps, upset conditions or emergency situations and or corrective/remedial actions taken
- xvi. a discussion of any operational problems encountered at the *Site* and corrective action taken;
- xvii. a summary of the amount of wastes refused for disposal at the *Site*, the reasons for refusal and the carrier who brought the waste to the *Site*;

CONTENT COPY OF ORIGINAL

- xviii. a summary of the leachate collection system cleaning and inspection activities;
- xix. an update summary of the amount of financial assurance which has been provided to the *Director*;
- xx. a table detailing the chronology of significant landfill design, operational, and land use changes for the landfill and any other information with respect to the site which the *District Manager or Regional Director* may require from time to time;
- xxi. a statement of compliance with all conditions of this *ECA* and other relevant *Ministry* groundwater and surface water requirements;
- xxii. a confirmation that the *Site* inspection program as required by this *ECA* has been complied with by the *Owner*;
- xxiii. any changes in operations, equipment or procedures employed at the *Site*; and recommendations regarding any proposed changes in operations of the *Site*.

The following Conditions are hereby added to the ECA:

14.4 (a) In the event the *District Manager* requires additional information to be submitted to complete the *District Office's* assessment on whether or not the *Site* is in compliance, the *District Manager* shall provide written notification to the *Owner* at least sixty (60) days before the submission of the next Semi-Annual or Annual Report submission date on the type of additional information to be included in the report.

(b) In the event the *District Manager* determines that the inclusion of information in either the annual or semi-annual report annual for which notification under 14.4(a) was provided is no longer warranted or needed for the *Ministry's* assessment of whether or not the *Site* is in compliance, the *District Manager* shall notify the *Owner* in writing of the information that is no longer required. The *District Manager* can later request the information be re-included in the report as per Condition 14.4 (a).

The following Items are hereby added to Schedule "A":

- 56. Report entitled "Richmond Sanitary Landfill Site- Odour Monitoring Plan - Revision No. 1" prepared for WMCC by GENIVAR Inc and dated March 22, 2012.
- 57. Protocol entitled "Odour Survey Protocol February 2013" prepared for WMCC by GENIVAR Inc.
- 58. Report entitled "Richmond Sanitary Landfill Site (081-12459-00) - Public Notification Plan - February 2013" prepared for WMCC by GENIVAR Inc. and dated February 2013.

The reasons for this amendment to the Approval is as follows:

- 1. Conditions 8.2, 8.5, 9.5, 14.1, 14.2, 14.3 and 14.4 are included in the ECA to reflect the interim order issued by the ERT.

This Notice shall constitute part of the approval issued under Approval No. A371203 dated January 9, 2012

In accordance with Section 139 of the Environmental Protection Act, 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 Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

CONTENT COPY OF ORIGINAL

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

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, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of
the Environmental Protection 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) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 3rd day of May, 2013

Tesfaye Gebrezghi, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

DG/
c: District Manager, MOE Kingston - District
David Arnott, MOE, Kingston District
Randy Harris, WMCC, Richmond Landfill
Reid Cleland, WMCC
Chief Don Maracle, Mohawks of the Bay of Quinte First Nation
Mike Bossio, Concerned Citizens Committee of Tyendinaga and Environs
Dr. Tom Touzel, Napanee Green Lights
Reeve Margaret Walsh, The Corporation of the Township of Tyendinaga
Steve Mercer, Clerk/Treasurer, The Corporation of the Township of Tyendinaga
Mayor Gordon Schermerhorn, Town of Greater Napanee
Rebecca Murphy, Clerk/Treasurer, Town of Greater Napanee

A.1.3

**AMENDMENT TO ENVIRONMENTAL COMPLIANCE
APPROVAL NO. A371203, DATED OCTOBER 4, 2013,
AMENDING CONDITIONS 2.5 AND 2.6 I THROUGH III**

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER A371203

Notice No. 2

Issue Date: October 4, 2013

Waste Management of Canada Corporation
2301 Carp Rd
Ottawa, Ontario
K0A 1L0

Site Location: Richmond Landfill Site
Lot Pt 1, 2, 3, Concession 4
Greater Napanee Town, County of Lennox and Addington
K7R 3L1

You are hereby notified that I have amended Approval No. A371203 issued on January 9, 2012 for the use, operation, and closure of a 16.2 hectare waste disposal landfill site including a landfill gas collection system and landfill gas flare within a total site area of 138 hectares , as follows:

The following Conditions are hereby amended as follows:

Proposed Payment Schedule

- 2.5. The *Owner* shall ensure financial assurance in a form acceptable to the *Director* in the amount of \$12,478,791.00 has been provided to the *Director* . If these amount has not been provided, the *Owner* shall within thirty (30) business days of issuance of this *ECA* , provide to the *Director* the financial assurance as required by this condition in a form that is in a form acceptable to the *Director* .
- 2.6. The *Owner* shall provide the *Ministry* financial assurance (total amount, not additional amount) in a form acceptable to the *Director* as follows for the following years:
- i. March 31, 2014 - \$12,049,585.00;
 - ii. March 31, 2015 - \$11,549,022.00; and
 - iii. March 31, 2016 - \$11,152,473.00.

The reasons for this amendment to the Approval are as follows:

1. *The reasons for the amendments to Conditions 2.5 and 2.6 are to ensure that sufficient funds are*

available to the Ministry to close the landfill, and to carry out all expected post-closure care activities and any contingencies. Failure to include requirements for financial assurance would not be in the public interest and may result in a hazard or nuisance to the natural environment or any person.

This Notice shall constitute part of the approval issued under Approval No. A371203 dated January 9, 2012

In accordance with Section 139 of the Environmental Protection Act, 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 Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in

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, Suite 1500
Toronto, Ontario
M5G 1E5

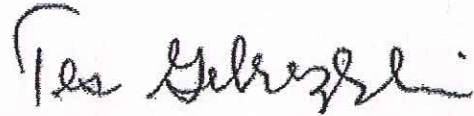
AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection 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) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 4th day of October, 2013



Tesfaye Gebrezghi, P.Eng.

Director

appointed for the purposes of Part II.1 of the
Environmental Protection Act

DG/

c: District Manager, MOE Kingston - District
Jeff E. Armstrong, GENIVAR Inc.

A.1.4

**AMENDMENT TO ENVIRONMENTAL COMPLIANCE
APPROVAL NO. A371203, DATED AUGUST 14, 2015,
ADDING A DEFINITION, REVOKING CONDITION 8.5,
IMPOSING CONDITIONS 8.5 (A) I, II, AND III, (B), AND
(C) I, II, III, AND IV, 8.7 AND 8.8, AND ADDING ITEMS
59 AND 60**



AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER A371203

Notice No. 3

Issue Date: August 14, 2015

Waste Management of Canada Corporation
2301 Carp Rd
Ottawa, Ontario
K0A 1L0



Site Location: Richmond Landfill Site
Lot Pt 1, 2, 3, Concession 4
Greater Napanee Town, County of Lennox and Addington
K7R 3L1

You are hereby notified that I have amended Approval No. A371203 issued on January 9, 2012, and amended on May 3, 2013 for the use, operation, and closure of a 16.2 hectare waste disposal landfill site including a landfill gas collection system and landfill gas flare within a total site area of 138 hectares, as follows:

I. The following definition is added to this ECA:

"Parties" mean Concerned Citizens Committee of Tyendinaga and Environs; Director, Ministry of the Environment and Climate Change; Waste Management of Canada Corporation; Mohawks of the Bay of Quinte; and Tom Touzel on behalf of Napanee Green Lights.

II. Condition 8.5 is hereby revoked and replaced with the following:

8.5 (a) The Owner shall submit to the District Manager by no later than August 31, 2015, with copies to the Parties, a revised interim Environmental Monitoring Plan ("EMP") to be implemented on an interim basis pending the final decision of the Tribunal with respect to the appeal of the ECA. The interim EMP shall implement all of the provisions of the Environmental Monitoring Plan Revision No. 03, prepared by WESA, dated March 30, 2015, subject to the following modifications ordered by the Tribunal:

- i. Replacing Table 2 on page 11 of Environmental Monitoring Plan Revision No. 03 with the table attached to the Environmental Review Tribunal Order (Item 59 in Schedule "A") as Appendix A, which sets out revised monitoring frequencies and the addition of two

monitoring wells.

- ii. Adding a requirement that any new monitoring wells will be tested at least four times within the first year, on a quarterly basis, after being established, instead of the frequency set out in Environmental Monitoring Plan Revision No. 03.
 - iii. Adding one surface water monitoring event to section 4 of the EMP to occur at one point in time during the summer months after a rainfall of more than 25 millimetres.
- (b) The Owner shall carry out monitoring in accordance with the interim EMP submitted by August 31, 2015 as of September 1, 2015 on a going forward basis until such time as further amendment to the ECA and EMP are directed by the Tribunal.
- (c) The Owner Shall:
- i. Submit a proposal to the District Manager and the Parties by August 14, 2015 to replace monitoring well M178 and then replace and test the well in accordance with directions issued by the District Manager after considering input from the Parties.
 - ii. Submit a proposal to the District Manager and the Parties by August 14, 2015 to install two or three new monitoring wells to the east of the southern part of the eastern landfill boundary and then, subject to acquiring the legal right to do so, install the wells in accordance with directions issued by the District Manager after considering input from the Parties.
 - iii. Complete all further work and testing required for monitoring wells M187 to M191 by November 1, 2015.
 - iv. Test monitoring well M82-2 at least two more times over and above the twice yearly sampling required by Table 2 of the EMP prior to December 31, 2015.

III. The following Conditions are hereby added to this ECA:

- 8.7 Any off site exceedance of parameters for groundwater, surface water, or odour shall be reported to the District Manager within 48 hours of determination of the exceedance. In addition, a statement detailing which results are out of compliance with the Ministry's guidelines and objectives shall be provided at the same time as the results.
- 8.8 Any monitoring result that detects 1,4-dioxane at or above the detection limit of 1 µg/l at any groundwater well or domestic well at which 1,4-dioxane has not been detected in the past or at any surface water monitoring location shall be reported to the District Manager within 48 hours of determination of the exceedance.

IV. The following items are added to Schedule "A" of this ECA:

59. Environmental Review Tribunal Order for Case No. 12-033 issued on July 21, 2015.
60. Environmental Review Tribunal Order for Case No. 12-033 issued on August 13, 2015.

The reason for this amendment to the Approval is as follows:

Condition 8.5 is amended and Conditions 8.7 and 8.8 are added to incorporate the interim orders issued by the
ERT

This Notice shall constitute part of the approval issued under Approval No. A371203 dated January 9, 2012

In accordance with Section 139 of the Environmental Protection Act, 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 Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

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, Suite 1500
Toronto, Ontario
M5G 1E5

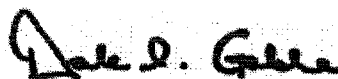
AND

The Director appointed for the purposes of Part II.1 of
the Environmental Protection Act
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of August, 2015



Dale Gable, P.Eng.

Director

appointed for the purposes of Part II.1 of the
Environmental Protection Act

RL/

c: District Manager, MOECC Kingston - District
na, Waste Management of Canada Corporation

A.1.5

**AMENDMENT TO ENVIRONMENTAL COMPLIANCE
APPROVAL NO. A371203, DATED NOVEMBER 5,
2015, AMENDING CONDITION 8.5 (C) III, AND
ADDING ITEM 61**

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER A371203

Notice No. 4

Issue Date: November 5, 2015

Waste Management of Canada Corporation
2301 Carp Rd
Ottawa, Ontario
K0A 1L0

Site Location: Richmond Landfill Site
Lot Pt 1, 2, 3, Concession 4
Greater Napanee Town, County of Lennox and Addington
K7R 3L1

RECEIVED
NOV 23 2015

You are hereby notified that I have amended Approval No. A371203 issued on January 9, 2012 and amended on May 3, 2013, October 4, 2014, and August 14, 2015 for the use, operation, and closure of a 16.2 hectare waste disposal landfill site including a landfill gas collection system and landfill gas flare within a total site area of 138 hectares , as follows:

Condition 8.5(c)iii is hereby amended as follows:

- 8.5 (c) The Owner shall:
- iii. Complete all further work and testing required for monitoring wells M187 to M191 by December 1, 2015.

The following item is hereby added to Schedule A:

61. Environmental Review Tribunal Order for Case No. 12-033 issued on October 29, 2015.

The reason for this amendment to the Approval is as follows:

Condition 8.5(c)iii is amended to incorporate the interim order issued by the Environmental Review Tribunal.

This Notice shall constitute part of the approval issued under Approval No. A371203 dated January 9, 2012

In accordance with Section 139 of the Environmental Protection Act, 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 Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

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, Suite 1500
Toronto, Ontario
M5G 1E5

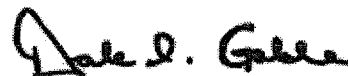
AND

The Director appointed for the purposes of Part II.1 of
the Environmental Protection Act
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 5th day of November, 2015



Dale Gable, P.Eng.

Director

appointed for the purposes of Part II.1 of the
Environmental Protection Act

AV/

c: District Manager, MOECC Kingston - District
na, Waste Management of Canada Corporation

APPENDIX A-2

**ENVIRONMENTAL COMPLIANCE APPROVAL
(SEWAGE WORKS) NO. 1688-8HZNJG, DATED
JANUARY 10, 2012**

AMENDED ENVIRONMENTAL COMPLIANCE APPROVALNUMBER 1688-8HZNJG
Issue Date: January 10, 2012

Waste Management Canada Corporation
1271 Beechwood Rd
Rural Route, No. 6
Napanee, Ontario
K7R 3L1

Site Location: Richmond Landfill Site
1271 Beechwood Road, Parts of Lots 1,2, &3, Concession 4, Richmond
Greater Napanee Town, County of Lennox and Addington

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

leachate collection and disposal facility and stormwater management facility to service the Richmond Landfill Site located on Parts of Lots 1, 2 and 3, Concession 4, in the Town of Greater Napanee as follows:

SEWAGE WORKS APPROVED ON AUGUST 19, 2008:**Stormwater Management Pond - SWM Pond No. 3**

a new stormwater management facility located south of the approved landfill footprint and north of Beechwood Road to service 20 ha drainage area of the Richmond Landfill Site, designed to provide quantity and quality control of stormwater runoff from storm events up to 1:100 return frequency consisting of the following:

- two (2) extended wet detention ponds interconnected by two (2) 750 mm diameter culverts providing a permanent pool storage capacity (including sediment storage) of 19,642 m³ between the elevations of 122.4 m ASL and 124.4 m ASL and active storage capacity of 7,620 m³ between the elevations of 124.4 m ASL and 124.73 m ASL (overall total storage capacity of 27,262 m³);
- each detention pond equipped with a rip rap lined inlet structure, a forebay, and cattails planted in the shallow areas surrounding the permanent pool;

- an outlet structure consisting of one (1) 600 mm x 600 mm precast concrete catch basin equipped with a 100 mm diameter inlet orifice, one (1) 300 mm diameter PVC discharge pipe equipped with one (1) 300 mm diameter gate valve, discharging through a drainage ditch to the Beechwood Road side ditch eventually flowing to Marysville Creek;
- one (1) 3.0 m wide rip rap lined emergency spillway with an invert elevation of 124.73 m ASL, discharging through a drainage ditch to the Beechwood Road side ditch; and
- including all controls and associated appurtenances.

all in accordance with the Application for Approval of Industrial Sewage Works submitted by Waste Management of Canada Corporation dated April 11, 2008, drawings and design specification prepared by Henderson Paddon & Associates Limited, Owen Sound, Ontario and the document listed in Schedule 'B'.

EXISTING LEACHATE MANAGEMENT FACILITY:

- one (1) approximately 504 m long 200 mm diameter perforated PVC or HDPE perimeter leachate collector pipe, installed in a 50 mm clear stone bedding wrapped in geotextile, extending through seven (7) 1200 mm diameter pre-cast concrete service manholes (MH12, MH11, MH10, MH9, MH8, MH7 and MH1) along the west side and north side of landfill footprint discharging to a 22.3 m³ capacity North Concrete Pumping Chamber which is not equipped with pumps;
- one (1) approximately 429 m long 150 mm diameter perforated PVC perimeter leachate collector pipe, installed in a 50 mm clear stone bedding wrapped in geotextile, extending through six (6) 1200 mm diameter pre-cast concrete service manholes (MH6, MH5, MH4, MH3, MH2 and MH1) along the east side and north side of landfill footprint discharging to a 22.3 m³ capacity North Concrete Pumping Chamber which is not equipped with pumps;
- one (1) approximately 393 m long 200 mm diameter perforated PVC perimeter leachate collector pipe, installed in a 50 mm clear stone bedding wrapped in geotextile, extending along the west side and south side of landfill footprint discharging to a leachate pumping station described below;
- one (1) approximately 296 m long 200 mm diameter perforated PVC perimeter leachate collector pipe, installed in a 50 mm clear stone bedding wrapped in geotextile, extending along the east side and south side of landfill footprint discharging to a leachate pumping station described below;
- one (1) side slope riser leachate pumping station equipped with two (2) 80 USGPM capacity submersible pumps and a sump with bottom dimension of 2 m x 2 m filled with 50 mm gravel, discharging to a leachate lagoon described below;

- one (1) 16,245 m³ storage capacity leachate lagoon, lined with clay and HDPE synthetic liner, located north of the landfill footprint used for temporary storage of leachate or leachate contaminated stormwater until disposed off site to a pre-approved sewage treatment plant;
- one (1) leachate storage lagoon located west of the landfill footprint used for collecting leachate and stormwater runoff from a composting facility until it is used for composting operations or disposed off-site to a pre-approved sewage treatment plant;
- including all controls and associated appurtenances.

SEWAGE WORKS APPROVED ON OCTOBER 21, 1991:

Stormwater Management Pond - SWM Pond No. 1

A stormwater management pond constructed on a site approximately 750 m north of Beechwood Road and north of the fill area for a 25 year design storm having a minimum storage volume of 228 m³ to retain surface runoff from an area of 3.38 ha (consisting of fill area) and to discharge at a rate of 70 L/s via a 375 mm diameter outlet pipe (fitted to a drop inlet pipe structure) to a Headwater Tributary of Marysville Creek (Intermittent), together with a drawdown structure, a 1200 mm diameter drop inlet pipe, a 3.5 m wide emergency spill-way channel, rock baffle, erosion and silt control protection;

Stormwater Management Pond - SWM Pond No. 2

A stormwater management pond constructed on a site approximately 750 m north of Beechwood Road and northwest of the fill area for a 25 year design storm having a minimum storage volume of 332 m³ to retain surface runoff from an area of 4.94 ha (consisting of fill area) and to discharge at a rate of 103 L/s via a 375 mm diameter outlet pipe (fitted to a drop inlet pipe structure) to a Headwater Tributary of Marysville Creek (Intermittent), together with a drawdown structure, a 1200 mm diameter drop inlet pipe, a 3.5 m wide emergency spill-way channel, rock baffle, erosion and silt control protection;

all in accordance with the information submitted by Henderson Paddon and Associates Limited Consulting Engineers and the following documents listed in Schedule 'A'.

For the purpose of this environmental compliance approval, the following definitions apply:

“*Approval* ” means this Environmental Compliance Approval and any schedules attached to it, and the application .

“*By-pass*” means any discharge from the *Works* that does not undergo any treatment before it is discharged to the environment;

"*Director*" means a person appointed by the Minister pursuant to section 5 of the *EPA* for the purposes of Part II.1 of the *EPA*.

"*District Manager*" means the District Manager of the Kingston District Office;

"*EPA*" means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended.

"*Ministry*" means the ministry of the government of Ontario responsible for the *EPA* and *OWRA* and includes all officials, employees or other persons acting on its behalf.

"*Owner*" means Waste Management of Canada Corporation and its successors and assignees;

"*OWRA*" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended.

"*Substantial Completion*" has the same meaning as "*substantial performance*" in the Construction Lien Act; and

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

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

TERMS AND CONDITIONS

I - GENERAL

1. GENERAL PROVISIONS

- (1) The *Owner* shall ensure that any person authorized to carry out work on or operate any aspect of the *Works* is notified of this *Approval* and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
- (2) 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 *Approval*, the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this *Approval*.
- (3) Where there is a conflict between a provision of any submitted document referred to in this *Approval* and the Conditions of this *Approval*, the Conditions in this *Approval* shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

- (4) 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.
- (5) The requirements of this *Approval* are severable. If any requirement of this *Approval* , or the application of any requirement of this *Approval* to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this *Approval* shall not be affected thereby.

2. EXPIRY OF APPROVAL

The approval issued by this *Approval* will cease to apply to those parts of the *Works* which have not been constructed by August 19, 2013.

3. CHANGE OF OWNER

- (1) The *Owner* shall notify the *District Manager* and the *Director* , in writing, of any of the following changes within 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 Business Names Act, R.S.O. 1990, c. B17 shall be included in the notification to the *District Manager* ;
 - (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 Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the *District Manager* ;
- (2) In the event of any change in ownership of the *Works* , other than a change to a successor municipality, the *Owner* shall notify in writing the succeeding owner of the existence of this *Approval* , and a copy of such notice shall be forwarded to the *District Manager* and the *Director* .

4. UPON THE SUBSTANTIAL COMPLETION OF THE WORKS

- (1) Within one year of the *Substantial Completion* of the *Works* , a set of as-built drawings showing the works “as constructed” shall be prepared. These drawings shall be kept up to date

through revisions undertaken from time to time and a copy shall be retained at the *Works* or at operational office of the *Owner* for the operational life of the *Works* .

5. BY-PASSES

- (1) Any *By-pass* of sewage from any portion of the *Works* is prohibited, except where:
 - (a) it is necessary to avoid loss of life, personal injury, danger to public health or severe property damage;
 - (b) the *District Manager* agrees that it is necessary for the purpose of carrying out essential maintenance and the *District Manager* has given prior written acknowledgment of the *By-pass* ; or
- (2) The *Owner* shall maintain a logbook of all *By-pass* events which shall include, at a minimum, the time, location, duration, quantity of *By-pass* , the authority for *By-pass* pursuant to subsection (1), and the reasons for the occurrence.

II - LEACHATE COLLECTION AND DISPOSAL SYSTEM

6. LEACHATE MONITORING AND RECORDING

The *Owner* shall, upon commencement of operation of the *Works* , carry out the following monitoring program:

- (1) All samples and measurements taken for the purposes of this *Approval* are to be taken at a time and in a location characteristic of the quality and quantity of the leachate stream over the time period being monitored.
- (2) For the purposes of this condition, the following definitions apply:
 - (a) Monthly means once every month;
 - (b) Quarterly means once every three months;
 - (c) Semi-annually means once every six months; and
 - (d) Annually means once every twelve months;
- (3) **Leachate grab samples** shall be collected from a designated sampling location at the indicated

monitoring frequency and analyzed for each parameter listed in Table 1 and all results recorded:

Table 1		
Leachate Monitoring		
Sampling Location: North Pumping Chamber		
Sampling Frequency: Quarterly		Sampling Frequency: Annually
Parameter	Parameter	Parameter
Alkalinity	Arsenic	Silver
Dissolved Organic Carbon (DOC)	Cadmium	Aluminum
Hardness	Chromium	Boron
pH	Cobalt	Barium
Total Ammonia Nitrogen	Copper	Beryllium
Nitrate Nitrogen	Mercury	Calcium
Nitrite Nitrogen	Molybdenum	Sodium
Total Kjeldahl Nitrogen	Nickel	Magnesium
Phenols	Lead	Manganese
PAHs	Selenium	Iron
BTEX	Zinc	Total Phosphorus
USEPA 624		Conductivity
		Hydrogen Sulphide
		Sulphate
		BOD5
		Total Trihalomethanes (THM)

- (4) 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 Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;
 - (b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;
 - (c) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions; and
 - (d) the Environment Canada publications "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" (July 1990) and "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia

magna" (July 1990), as amended from time to time by more recently published editions.

- (5) The *Owner* shall retain for a minimum of three (3) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this *Approval* .

7. OPERATION AND MAINTENANCE

- (1) The *Owner* shall exercise due diligence in ensuring that, at all times, the *Works* and the related equipment and appurtenances used to achieve compliance with this *Approval* are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator training, including training in all procedures and other requirements of this *Approval* and the *Act* and regulations, process controls and alarms.
- (2) By February 19, 2009, the *Owner* shall prepare an operations manual, that includes, but not necessarily limited to, the following information:
 - (a) operating procedures for routine operation of the *Works* ;
 - (b) inspection programs, including frequency of inspection, for the *Works* and the methods or tests employed to detect when maintenance is necessary;
 - (c) repair and maintenance programs, including the frequency of repair and maintenance for the *Works* ;
 - (d) procedures for the inspection and calibration of monitoring equipment;
 - (e) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the *District Manager* ; and
 - (f) procedures for receiving, responding and recording public complaints, including recording any follow up actions taken.
- (3) The *Owner* shall maintain the operations manual current and retain a copy at the *Works* or *Owner* 's Head Office for the operational life of the *Works* . Upon request, the *Owner* shall make the manual available to *Ministry* staff.
- (4) The *Owner* shall maintain a logbook to record and report the volume of leachate disposed off-site, the date, and the name of the receiving sewage treatment plant;

III - STORMWATER MANAGEMENT FACILITY

8. MONITORING AND RECORDING

The *Owner* shall carry out the following monitoring program:

- (1) All samples and measurements taken for the purposes of this *Approval* are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.
- (2) The *Owner* shall collect stormwater grab samples from the following designated sampling locations at a **monthly** sampling frequency during spring and fall (**March, April, May, September, October, and November**) and analyse for the parameters listed in Table 2;

Table 2		
Stormwater and Surface Water Monitoring		
Sampling Location: SWM Ponds No. 1, No. 2, and No. 3		
Parameter	Parameter	Field Parameter
pH	Aluminum	pH
Alkalinity	Arsenic	Temperature
Hardness	Barium	Conductivity
Biological Oxygen Demand (CBOD5)	Boron	
Un-ionized Ammonia	Cobalt	
Total Ammonia Nitrogen	Beryllium	
Total Kjeldahl Nitrogen	Cadmium	
Nitrate Nitrogen	Chromium	
Total Phosphorus	Copper	
Total Suspended Solids	Iron	
Total Dissolved Solids	Mercury	
Total Organic Carbon	Nickel	
Chloride	Potassium	
Chemical Oxygen Demand (COD)	Sodium	
Phenols	Selenium	
BTEX	Silver	
Naphthalene	Zinc	

- (3) The *Owner* shall collect stormwater grab samples from **SWM Ponds No. 1, No. 2, and No. 3** sampling locations at a **Quarterly** frequency and conduct acute lethality tests for *Daphnia magna* and Rainbow Trout;
- (4) The methods and protocols for sampling, analysis and recording shall conform, in order of

precedence, to the methods and protocols specified in Condition 6 (4);

- (5) The measurement frequencies specified in subsection (2) in respect to any parameter are minimum requirements which may, after two (2) years of monitoring in accordance with this Condition, be modified by the *District Manager* in writing from time to time.
- (6) The *Owner* shall retain for a minimum of three (3) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this *Approval* at the *Works* or *Owner*'s Head Office.

9. OPERATION AND MAINTENANCE

- (1) Within six (6) months of the issuance date of this *Approval*, the *Owner* shall prepare a "Stormwater Contingency and Remedial Action Plan" for the *Works* and submit to the *District Manager* for approval.
- (2) The *Owner* shall operate the *Works* (**SWM Pond No. 1, SWM Pond No. 2, and SWM Pond No. 3**) in a **normally open position**.
- (3) Using the monitoring results obtained under Condition 8 (3), the *Owner* shall ensure that the stormwater runoff discharged from the *Works* (**SWM Pond No. 1, SWM Pond No. 2, and SWM Pond No. 3**) is not acutely lethal to *Daphnia magna* and Rainbow Trout.
- (4) In the event that monitoring results obtained under Condition 8 (3) show that the stormwater is acutely lethal either to *Daphnia magna* or Rainbow Trout, then, the *Owner* shall resample within two (2) weeks period after receiving the lab results to confirm the toxicity results.
- (5) In the event that the toxicity results **are not confirmed** during the second round of sampling conducted under Condition 9 (4), then, normal stormwater monitoring shall be resumed.
- (6) In the event that the toxicity results **are confirmed** after the second round of sampling conducted under Condition 9 (4), the *Owner* shall operate the *Works* in a **normally closed position**, notify the *District Manager* forthwith, and conduct acute lethality tests for *Daphnia magna* and Rainbow Trout at a **monthly frequency**.
- (7) While operating the *Works* in a **normally closed position**, the *Owner* shall implement the "Stormwater Contingency and Remedial Action Plan" prepared under Condition 9 (1) and continue conducting the toxicity monitoring program required under Condition 9 (6).
- (8) The *Owner* shall resume operating the *Works* in a **normally open position** if toxicity monitoring results from **two (2) consecutive sampling events** conducted under Condition 9(6) show that the stormwater is not acutely lethal to *Daphnia magna* and Rainbow Trout.

- (9) Discharge of contaminated stormwater from the *Works* to storm sewer/surface water is prohibited, except where it is necessary to avoid loss of life, personal injury, danger to public health or severe property damage;
- (10) The *Owner* shall prepare an operations manual prior to the commencement of operation of the *Works* , that includes, but not necessarily limited to, the following information:
 - (a) operating procedures for routine operation of the *Works* ;
 - (b) inspection programs, including frequency of inspection, for the *Works* and the methods or tests employed to detect when maintenance is necessary;
 - (c) repair and maintenance programs, including the frequency of repair and maintenance for the *Works* ;
 - (d) procedures for the inspection and calibration of monitoring equipment;
 - (e) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the *District Manager* ; and
- (10) The *Owner* shall maintain the operations manual current and retain a copy at the *Works* or *Owner* 's Head Office for the operational life of the *Works* . Upon request, the *Owner* shall make the manual available to *Ministry* staff.
- (11) The *Owner* shall maintain a record of the date and the estimated volume of leachate contaminated stormwater disposed off site under the approved "Stormwater Contingency and Remedial Action Plan" for the *Works* .
- (12) The *Owner* shall notify the *District Manager* orally, as soon as possible, and in writing within seven days of any discharge of leachate contaminated stormwater to receiving surface water including an assessment of the relative extent of leachate contamination, estimated volume of stormwater discharged, and proposed or completed remedial actions.
- (13) The *Owner* shall inspect the *Works* (**SWM Ponds**) at least once a year and, if necessary, clean and maintain the *Works* to prevent the excessive build-up of sediments and/or vegetation.
- (14) The *Owner* shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken, and shall keep the logbook at the site and/or *Owner's* operational headquarter for inspection by the *Ministry* . The logbook shall include the following:
 - (a) the name of the *Works* ;

- (b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed; and
- (c) the volume of contaminated stormwater disposed off-site, the date, and the name of the receiving sewage treatment plant;

IV - GENERAL

10. REPORTING

- (1) Ten (10) days prior to the date of a planned *By-pass* being conducted pursuant to Condition 5 and as soon as possible for an unplanned *By-pass*, the *Owner* shall notify the *District Manager* (in writing) of the pending start date, in addition to an assessment of the potential adverse effects on the environment and the duration of the *By-pass*.
- (2) In addition to the obligations under Part X of the Environmental Protection Act, the *Owner* shall, within 10 working days of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by product, intermediate product, oils, solvents, 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.
- (3) The *Owner* shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to *Ministry* staff.
- (4) The *Owner* shall prepare on an annual basis, and submit upon request, a performance report within ninety (90) days following the end of the calendar year being reported upon. The first such report shall cover the period following the commencement of operation of the *Works* and subsequent reports shall be prepared to cover successive calendar years following thereafter. The reports shall contain, but shall not be limited to, the following information:
 - (a) a summary and interpretation of all stormwater monitoring data and a comparison to the Provincial Water Quality Objectives (PWQO), including an overview of the success and adequacy of the *Works* ;
 - (b) a summary of the monthly quantity of leachate disposed off site and corresponding average leachate quality;
 - (c) a description of any operating problems encountered and corrective actions taken;
 - (d) a summary of all maintenance carried out on any major structure, equipment,

apparatus, mechanism or thing forming part of the *Works* ;

- (e) a summary of the calibration and maintenance carried out on all leachate monitoring equipment; and
- (f) a summary of any complaints received during the reporting period and any steps taken to address the complaints;
- (g) a summary of all *By-pass* , spill or abnormal discharge events; and
- (h) any other information the *District Manager* requires from time to time.

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 *Approval* and the practice that the *Approval* is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the *Owners* their responsibility to notify any person they authorized to carry out work pursuant to this *Approval* the existence of this *Approval* .
2. Condition 2 is included to ensure that, when the *Works* are constructed, the *Works* will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.
3. Condition 3 is included to ensure that the *Ministry* records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the *Works* are made aware of the *Approval* 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 indicate that by-passes of untreated sewage to the receiving watercourse is prohibited, save in certain limited circumstances where the failure to *By-pass* could result in greater injury to the public interest than the *By-pass* itself where a *By-pass* will not violate the approved leachate requirements, or where the *By-pass* can be limited or otherwise mitigated by handling it in accordance with an approved contingency plan. The notification and documentation requirements allow the *Ministry* to take action in an informed manner and will ensure the *Owner* is aware of the extent and frequency of *By-pass* events.
6. Conditions 6 and 8 are included to enable the *Owner* to evaluate and demonstrate the performance of the *Works* , on a continual basis, so that the *Works* are properly operated and maintained at a level which is consistent with the design objectives specified in the *Approval* and that the *Works* does not cause any impairment to the receiving watercourse.

7. Conditions 7 and 9 are included to require that the *Works* be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, damage to any property or injury to any person is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the *Owner* and made available to the *Ministry* .
8. Condition 10 is included to provide a performance record for future references, to ensure that the *Ministry* is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this *Approval*, so that the *Ministry* can work with the *Owner* in resolving any problems in a timely manner.

SCHEDULE 'A'

1. Application for the sewage works dated March 20, 1990, signed by 171496 Canada Inc., F.C. Ford, P. Eng., Henderson, Paddon and Associates and Township of Richmond.
2. Report entitled "Tricil Limited Landfill site parts of Lots 1, 2 and 3, Concession IV, Township of Richmond, County of Lennox and Addington" dated September 1988, prepared by Henderson Paddon and Associates Limited.
3. Letter dated July 19, 1990, signed by Dick Van Wyck, Legal Counsel, Laidlav Waste System, addressed to Ranee Mahalingam, Review Engineer, Ministry of the Environment.
4. Letter dated September 6, 1990, signed by J. M. Tomlinson. P.Eng., Henderson Paddon and Associates Limited, addressed to Ranee Mahalingam, Approvals Branch, Ministry of the Environment, together with revised section entitled "Stormwater management facilities" of the report entitled "Tricil Limited Landfill Site Parts of Lots 1, 2 and 3, Concession IV, Township of Richmond, County of Lennox and Addington" dated September 1988, prepared by Henderson Paddon and Associates Limited.
5. Letter dated September 6, 1990, signed by Jay Clark, P.Eng., Henderson Paddon and Associates Limited, addressed to Ranee Mahalingam, P. Eng., Review Engineer, Approvals Branch, Ministry of the Environment.
6. Letter dated April 29, 1991, signed by Ranee Mahalingam. P.Eng., Review Engineer, Approvals Branch, Ministry of the Environment, addressed to J. K. Tomlinson. P.Eng., Henderson Paddon and Associates Limited.
7. Letter dated May 23, 1991, signed by Jay Clark, P.Eng., Henderson Paddon and Associates Limited, addressed to Ranee Mahalingam, P.Eng., Review Engineer, Approvals Branch, Ministry of the Environment.

8. Minutes of the meeting held at Ministry of the Environment, 250 Davisville Avenue, Toronto, on June 25, 1991.
9. Letter dated July 24, 1991, signed by J. M. Tomlinson, P.Eng., Henderson Paddon and Associates Limited, addressed to Bruce W. Metcalfe, Surface Water Technologist, Southeastern Region, Ministry of the Environment.
10. Letter dated July 25, 1991, signed by Bruce W. Metcalfe, Surface Water Technologist, Southeastern Region, Ministry of the Environment, addressed to J. M. Tomlinson, P.Eng., Henderson Paddon and Associates Limited.
11. Letter dated July 29, 1991, signed by J. M. Tomlinson, P. Eng., Henderson Paddon and Associates Limited, addressed to Rane Mahalingan, Approvals Branch, Ministry of the Environment, enclosing a copy of the revised application and revised drawings No. 8570A (1, 2, 3, 4) and 8570 -7.
12. Application for Approval of Sewage Works dated May 19, 2011, submitted by Waste Management of Canada and prepared by Genivar Inc., Owen Sound, Ontario.

SCHEDULE 'B'

1. "Final Report - 2007 Annual Monitoring Report, Waste Management of Canada Richmond Landfill, Town of Napanee, Ontario" dated March 2008, prepared by Water and Earth Science Associates Ltd. (WESA), Kingston, Ontario.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 5268-7E8LJW issued on August 19, 2008

In accordance with Section 139 of the Environmental Protection Act, 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 Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

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, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection 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) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 10th day of January, 2012



Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

SH/

c: District Manager, MOE Kingston - District
Jeff Armstrong, GENIVAR Inc.

APPENDIX A-3

**CERTIFICATE OF APPROVAL (INDUSTRIAL
SEWAGE) NO. 4-0129-64-956 (OIL/SEDIMENT
INTERCEPTOR), DATED JANUARY 24, 1995**



Ministry of
Environment
and Energy

Ministère de
l'Environnement
et de l'Énergie

CERTIFICATE OF APPROVAL
INDUSTRIAL SEWAGE
NUMBER 4-0129-94-956

Page 1 of 3

Laidlaw Waste Systems (Canada) Ltd.
3410 South Service Road
Burlington, Ontario
L7R 3Y8

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

Establishment of sewage works for the collection, transmission, treatment and disposal of stormwater from Laidlaw Landfill, Richmond Township, Ontario, consisting of the following:

- collection and transmission of stormwater and other drainage from a petroleum hydrocarbon contaminated soils storage area of 3,200 square metres, with collected drainage discharging at a maximum rate of 15,000 Litres per hour, via a catch basin and 150 millimetre diameter piping to a three chambered oil/sediment interceptor,
- one oil interceptor with three interconnected chambers, with each chamber having dimensions of 1.15 metres length, 1.34 metre width, and a liquid depth of 0.925 metres, discharging via 150 millimetre diameter piping to the sediment control ditch leading to the downstream sedimentation pond,
- all other controls, electrical equipment, instruments, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works,

all in accordance with the Application for Approval of Industrial Sewage Works dated November 11, 1994 signed by J. Pullen, P.Eng. (Regional Manager, Engineering and Compliance), Laidlaw Waste Systems (Canada) Ltd. ("the Owner"), and all supporting documentation and information.

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

TERMS AND CONDITIONS

1. OPERATION

- (1) The Owner shall prepare a draft operations manual prior to the commencement of operation of the works and shall revise and implement the operations manual within six (6) months of the commencement of operation of the works.



Ministry of
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CERTIFICATE OF APPROVAL
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(2) The Owner shall ensure that both the draft and revised manuals include as a minimum:

- (a) operating procedures for routine operation of the works, including but not limited to, routine inspection of the oil interceptor chambers, and removal of accumulating solid and liquid wastes;
- (b) operating procedures for operation of the works during spills, fires, equipment malfunction, power outages, and other emergency or abnormal operating conditions, including notification procedures for the Ministry;
- (c) best management practices to minimize contaminant discharges to the oil interceptor; and,
- (d) any other procedures the Owner deems necessary for the proper operation of the works.

(3) The Owner shall maintain the operations manual, as revised from time to time, at the location of the works for so long as it is in operation, and shall make the manual available to Ministry personnel for inspection and copying, upon request.

(4) The Owner shall keep the operations manual up to date through revisions undertaken from time to time, so as to reflect any changes in described operation and maintenance procedures for the works or any newly introduced operation and maintenance procedures made necessary by good engineering practice, this certificate or the requirements of the Ministry.

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

1. Condition No. 1 is included to ensure certain operation procedures are followed to prevent deleterious effects on the environment.

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter O.40, provides that the Notice requiring the hearing shall state:

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



Ministry of
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and Energy

Ministère de
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Ontario

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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 sewage works are located;

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

This Notice must be served upon:

The Secretary,
Environmental Appeal Board,
112 St. Clair Avenue West,
Suite 502,
Toronto, Ontario.
M4V 1N3

AND

The Director,
Section 53, Ontario Water Resources Act,
Ministry of Environment and Energy,
250 Davisville Avenue, 3rd Floor,
Toronto, Ontario.
M4S 1H2

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

DATED AT TORONTO this 24th day of January 1995

R.P. Cornelius
R. P. Cornelius, P. Eng.
Director
Section 53
Ontario Water Resources Act

AA/pm

cc District Manager, MOEE Kingston District Office

APPENDIX A-4

**CERTIFICATE OF APPROVAL NO. A710003 (SOIL
RECYCLING), DATED DECEMBER 20, 1993**



ario

Ministry
of the
Environment

Ministère
de
l'Environnement

**PROVISIONAL CERTIFICATE OF APPROVAL
FOR A WASTE DISPOSAL SITE**

**CERTIFICAT D'AUTORISATION PROVISOIRE
DE DÉCHARGE**

Provisional Certificate Number A710003
Certificat provisoire no.

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Under the Environmental Protection Act and Regulations, and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Aux termes de la Loi sur la protection de l'environnement et des règlements et sous réserve des restrictions qui y sont stipulées, le présent certificat provisoire d'autorisation est délivré à:

Laidlaw Waste Systems (Canada) Ltd.
3410 South Service Road
BURLINGTON, Ontario
L7R 3Y8

the use and operation of a waste processing facility

..ll in accordance with the plans and specifications:

1. Application for a Certificate of Approval for a Waste Disposal Site (Processing) dated August 30, 1993.
2. Letter from Laidlaw Waste Systems Ltd. to the Ministry of Environment and Energy, dated July 12, 1993, briefly describing the proposal for recycling petroleum contaminated soils and listing supporting documentation.
3. Letter from Laidlaw Waste Systems Ltd. to the Ministry of Environment and Energy, dated July 12, 1993, explaining the soil recycling process. Supporting information includes District Office Notification Form - Mobile Soil Reclamation, Certificate of Insurance, letter of credit, site plan and layout drawings, and detail drawings of sediment/oil interceptor system for quality control of leachate run-off.
4. Letter and supporting documentation from Laidlaw Waste Systems Ltd. to the Ministry of Environment and Energy dated November 5, 1993 providing additional information on emergencies and contingencies, public information (including public notice and newspaper advertisement), hours of operation, and a monitoring plan for the soil storage pad at the Laidlaw landfill site in Richmond Township.

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5. Memo to the Ministry of Environment and Energy from Laidlaw Waste Systems Ltd. dated November 9, 1993, providing list of property owners which received a hand delivered public notice explaining the proposal.
6. Letter from the Richmond-Tyendinaga Environmental Association to the Ministry of Environment and Energy dated September 23, 1993 providing support for the soil recycling proposal.
7. Letter from the Township of Richmond to the Ministry of Environment and Energy dated October 8, 1993 and Resolution No. 316/93, dated October 4, 1993, providing Council's support for the proposal.

Ontario Ministry of Environment and Energy Provisional Certificate of Approval for a Waste Disposal Site A210222 dated September 18, 1992, or as amended.

9. Ontario Ministry of Environment and Energy Provisional Certificate of Approval for a Waste Management System A840681 dated March 18, 1992, or as amended.
10. Ontario Ministry of Environment and Energy Certificate of Approval (Air) Number 8-J212-88-919 dated April 23, 1992, or as amended.

located in: Township of Richmond
Part of Lot 2, Concession IV
(Beechwood Road)

and is subject to the following definitions and conditions:

Definitions:

"certificate" means the entire certificate of approval including its schedules, if any, issued in accordance with Section 27, Part V of the Environmental Protection Act;

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"Director" means Director of the Southeastern Region of the Ministry or his appointee;

"District Manager" means the District Manager of Kingston District Office, Southeastern Region of the Ministry;

"Ministry" means the Ontario Ministry of Environment and Energy;

"Owner" means Laidlaw Waste Systems (Richmond) Ltd.;

"Operator" means Laidlaw Waste Systems (Canada) Ltd.; its officers, or loyees, agents or contractors;

"Site" means the area(s) on landfill site, Certificate of Approval No. .371203, to be used by the processing facility described in this Certificate.

General Conditions

1. The requirements of this Certificate are imposed pursuant to Part V of the Environmental Protection Act. The issuance of this Certificate in no way abrogates the operator's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.
2. (1) The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

(2) In all matters requiring the interpretation and implementation of this Certificate, the conditions of the certificate shall take precedence, followed in descending order by the application and the documentation, referred to in this Certificate, which is submitted in support of the application.

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3. The operator must ensure compliance with all the terms and conditions of this Certificate. Non-compliance constitutes a violation of the Environmental Protection Act and is grounds for enforcement.
4. (1) The operator shall, forthwith upon the request of the Director or District Manager, furnish any information requested concerning compliance with this Certificate including any records required to be kept by this Certificate.

(2) In the event the operator provides to the Ministry information, records, documentation of notification in accordance with this Certificate,
 - (a) the receipt of said information by the Ministry;
 - (b) the acceptance by the Ministry of the information's completeness or accuracy; or,
 - (c) the failure of the Ministry to prosecute the operator, or to require the operator to take any action, under this Certificate of any statute or regulation in relation to said information;

shall not be construed as the approving, excusing or justifying by the Ministry of any act or omission of the operator relating to said information, amounting to non-compliance with this Certificate or any statute or regulation.
- (3) All records referred to in this Certificate shall be retained on file in a secure manner for a period not less than two years.
5. The owner/operator shall allow Ministry personnel, or a Ministry authorized representative(s) to:
 - (1) carry out any and all inspections authorized by Section 156, 157 or 158 of the Environmental Protection Act, as amended from time to time, of any place to which this Certificate relates; and, without restricting the generality of the foregoing, to:

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- (a) enter at reasonable times upon the premises, or the location where the records required by the conditions of this Certificate are kept;
 - (b) have access to and copy, at reasonable times, any records required by the conditions of this Certificate;
 - (c) inspect at reasonable times any facilities, equipment, practices, or operations required by the conditions of this Certificate; and
 - (d) sample and monitor at reasonable times for the purpose of assuring compliance with the conditions of this Certificate.
6. (1) The owner/operator shall notify the District Manager in writing of any change in ownership, name of corporation, the operator, or termination of the facility within 30 days of the change occurring.
- (2) In the event the facility is permanently closed a Provincial Officer shall inspect the site and the site shall not be used for any other purpose prior to the inspection and written clearance by the District Manager.
- (3) The operator shall ensure that all communications made pursuant to this condition will refer to this Certificate's number.
7. (1) In accordance with Section 19(4) of the Environmental Protection Act this Certificate, the application filed to obtain and documentation referred to in the certificate which may be reasonably necessary for a proper reading and understanding of it, with the exclusion of those documents marked "confidential" by the operator shall be made available for public inspection at the request of any person.
- (2) Additional information to that set out in subcondition (1) 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 Protection of Privacy Act.

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8. Except as specified in this Certificate the site shall be operated in accordance with the application for this Provincial Certificate of Approval dated August 30, 1993 and its supporting information described in items 1 to 10 on pages 1 and 2 of this Certificate.
9.
 - (1) The operation of this site is limited to the storage and processing of non hazardous waste soils contaminated with petroleum hydrocarbons, liquid waste classes 211, 212, 213, 221, 222, 251, 252, 253 and 254 as defined in the Ministry of the Environment "New Ontario Waste Classes" document, dated January, 1986 from the Province of Ontario.
 - (2) No wastes other than those listed in subcondition (1) shall be collected and stored at this site without amendment to this Certificate.
 - (3) No wastes contaminated with halogenated organics, including PCBs, with concentrations greater than two (2) micrograms per grams shall be accepted at this site.
 - (4) No waste mixing or diluting with uncontaminated soil shall occur at the site. No waste mixed or diluted with uncontaminated soil shall be accepted at the site.
 - (5) No users outside the areas listed in subcondition (1) shall use this site without amendment to this Certificate.
10.
 - (1) The operator shall ensure that site personnel, trained in contingency measures are on duty at all times during normal operating hours or during any additional hours the facility may be open. Public access to the site shall be restricted.

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(2) All site personnel shall have practical knowledge of the waste material to be handled under this Certificate and shall be fully trained and knowledgeable about all aspects of the site operation including the requirements of this Certificate which relate to the work they are doing and their safety on the site.

(3) Prior to operating the site the operator shall prepare an operation manual for use by site personnel which shall contain, but not necessarily be limited to the following:

- (a) an outline of the responsibilities of site personnel;
- (b) operation and receiving procedures;
- (c) storage, handling, sorting and shipping procedures;
- (d) contingency procedures to be followed by personnel in the event of fire and other emergencies.

(4) A copy of the manual shall be placed in a central location on the site and this manual shall be accessible to all site personnel during operating hours.

(5) Within 30 days of the issuance date of this Certificate a copy of the operation manual shall be submitted to the District Manager.

11. (1) The operator shall establish a record system for all waste received at the site which shall include, but not necessarily be limited to, the documentation of quantities received and processed at the site each month; source of generation; receiving and shipping dates and volumes of wastes or processed soils shipped to approved markets, transfer/processing facilities and waste landfill sites; and documentation of environmental and other problems experienced in operating this site.

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Certificat provisoire no.

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(2) The information collected under subcondition (1) shall be submitted in a report to the District Manager on or before the first day of December during each year of operation or until the Director or the District Manager has given notice in writing that these submissions are no longer required.

12. (1) The operator shall ensure that the site is operated in a safe and secure manner; that the operation of this site does not impede or is impeded by the landfilling operation on which this site is located; and that the wastes are properly handled, contained, stored, tested and processed at the site; so as not to pose a threat to the general public, site personnel and the environment.

(2) The operator shall ensure that wastes received at the facility are processed and moved from the site to approved markets, processing facilities and landfill sites on a regular basis; and that waste processing does not exceed 5,000 tonnes per day and waste storage on site does not exceed 40,000 tonnes.

(3) Notwithstanding Condition 1 the operator shall ensure that the processing operation is in compliance with noise, hours of operation, fire regulations and any other applicable by-laws of the local municipality/regional governments; and the requirements of Ontario Provisional Certificate of Approval for a Waste Disposal Site A210222; and Ontario Provisional Certificate of Approval for a Waste Management System A840681 described in items 8 and 9 on page 2 of this Certificate.

(4) The operator shall take all necessary measures possible to contain and minimize all emissions, including air emissions caused by the operation of the processing equipment, waste storage and the processed soil storage; and shall comply with Ontario Certificate of Approval (Air) 8-3212-88-919 described in item 10 on page 2 of this Certificate; and all other applicable legislation governing emissions.

(5) Any waste water collected in the catchment basin for the soil storage pad described in item 3 on page 1 of this Certificate shall be disposed of in a proper manner under Section 51 of the Ontario Water Resources.

PROVISIONAL CERTIFICATE OF APPROVAL
FOR A WASTE DISPOSAL SITE

CERTIFICAT D'AUTORISATION PROVISOIRE
DE DÉCHARGE

Provisional Certificate Number A710003
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(6) Only waste processing equipment as approved under Certificates of Approval A210222 and 8-3212-88-919 described in items 8 and 10 on page 2 of this Certificate shall be used at this site.

13. The local fire department shall be informed of the processing facility and this Certificate.
14. (1) Processed waste which contains Total Volatile Hydrocarbons above (100) micrograms per gram which are not reprocessed or soil waste which is not processed shall be taken from the site for disposal to approved landfill sites or to approved transfer or processing sites for further processing shall be transported under a approved waste management system.

(2) Testing of waste soils and processed soils on this site shall be carried out as specified in Certificates of Approval A210222 and 8-3212-88-919 described in items 8 and 10 on page 2 of this Certificate.
15. This Certificate expires with the termination of the site; when all the wastes have been removed from the site; and the restoration of the site has been approved, in writing, by the District Manager.
16. (1) Within 90 days of the date of this Certificate the operator shall provide financial security for the closure of the site in an amount acceptable to the Director. The security can be in the form of a fund, bond, an irrevocable letter of credit or any other form as may be acceptable to the Director. The amount of financial assurance shall be established based on current costs for cleaning up the site and the assessed value of the fund, bond, or letter of credit shall be approved by the Director, in writing, before being submitted to the Ministry. The assessed value submitted to the Director for approval shall be an independent estimate which shall include, but not necessarily be limited to:

PROVISIONAL CERTIFICATE OF APPROVAL
FOR A WASTE DISPOSAL SITE

CERTIFICAT D'AUTORISATION PROVISOIRE
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- i) trucking, disposal and labour costs for removal of all waste from the site;
- ii) costs of equipment dismantling and cleaning on the site.
- iii) any legal and contractual costs associated with the closure of the site.

(2) In the event the financial assurance is scheduled to expire or notice is received that it will not be renewed and a replacement in a form satisfactory to the Director is not received at least 60 days before the expiry or renewal date, the operator shall forthwith replace it with a cash deposit.

(3) The operator shall review the closure costs as specified in subcondition (1) on a yearly basis and shall increase, or may decrease the financial assurance when instructed, in writing, by the Director. A copy of the review assessment shall be provided in the report specified in Condition 11(2).

(4) The operator shall at all times while the site is operating maintain the ten million dollars (\$10,000,000) third party liability insurance described in item 3 on page 1 of this Certificate and a copy of the policy shall be submitted to the Director within 30 days of the date of this Certificate.

17. The obligations imposed by the terms and conditions of this Certificate of Approval are obligations of due diligence.

The reasons for the imposition of these condition are as follows:

1. Conditions 1, 2, 3, 4 and 7 are to clarify the legal rights and obligations of this Provisional Certificate of Approval.

PROVISIONAL CERTIFICATE OF APPROVAL
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2. Condition 5 is to ensure that the appropriate Ministry staff have ready access to the waste disposal site to inspect the operations that are approved under this Provisional Certificate of Approval. The condition is supplementary to the powers of entry afforded a Provincial Manager pursuant the Environmental Protection Act, as amended.
3. Conditions 6, 8 and 15 are to ensure that the waste disposal site is operated in accordance with the application for this Certificate and supporting information and not under any name or in any way which the Director has not been asked to consider; and to ensure the property is cleaned up and restored to the satisfaction of the Ministry prior to closure.
4. Condition 9 is to ensure that this site is used only to collect, handle and transport waste within the limitations approved under this Provisional Certificate of Approval.
5. Conditions 10 and 12 are to ensure that the waste recycling site is properly managed in an organized manner by adequately trained persons, in order to prevent environmental detriment; and to ensure the safety of the general public and site personnel.
6. Condition 11 is to provide both the operator and the Ministry of Environment and Energy with an assessment of the waste recycling site.
7. Condition 13 is to ensure fire personnel are informed of the this waste processing site and the type of waste which is stored on this site.
8. Condition 14 is to ensure that the collection, handling, and transportation of all waste materials are conducted in an environmentally acceptable manner in accordance with provincial regulations.

PROVISIONAL CERTIFICATE OF APPROVAL
FOR A WASTE DISPOSAL SITE

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9. Condition 16 is to ensure funds are available from the operator for site closure in the event the site needs to be closed and the operator is not able to do the work; and to clean up any environmental impairment should the operator be unable or refuse to do so. The use and operation of the site without this condition would not be in the public interest.
10. Condition 17 is required to clarify that the terms and conditions of this Certificate of Approval impose a standard of due diligence and not absolute liability.

You may, by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Certificate, require a hearing by the Board. Section 142 of the Environmental Protection Act, R.S.O. 1990 c. E-19, as amended, provides that the notice requiring the hearing shall state:

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

In addition to these legal requirements, the notice should 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.

PROVISIONAL CERTIFICATE OF APPROVAL
FOR A WASTE DISPOSAL SITE

CERTIFICAT D'AUTORISATION PROVISOIRE
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Provisional Certificate Number A710003
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de

This notice should be served upon:

The Secretary
Environmental Appeal Board
112 St. Clair Avenue West
5th Floor
TORONTO, Ontario
M4V 1N3

AND

The Director
Section 39, E.P.A.
Ministry of Environment and Energy
133 Dalton Avenue, Box 820
KINGSTON, Ontario
K7L 4X6

ated at Kingston this 20th day of December, 1993.



Director
Section 39, E.P.A.
Ministry of Environment and Energy

(Pour obtenir une copie du present document certificat en francais,
communiquer le Ministère de l'Environnement et de l'Énergie 613
549-4000.)

A.4.1

**AMENDMENT TO CERTIFICATE OF APPROVAL NO.
A710003 DATED AUGUST 25, 1999, REGARDING
NOTIFICATION OF CHANGE OF NAME**



Ministry of the Environment
Ministère de l'Environnement

NOTICE
Page 1 of 2

Canadian Waste Services Inc.
1275 North Service Road, Suite 700
Oakville, Ontario
L6M 3G4

You are hereby notified that the Provisional Certificate of Approval No. A 710003, dated December 20, 1993, which was issued to Laidlaw Waste Systems (Canada) Ltd., as amended, is further amended as follow:

The Name and Address of the Company have changed:

FROM: Laidlaw Waste Systems (Canada) Ltd.
3410 South Service Road
Burlington, Ontario
L7R 3Y8

TO: Canadian Waste Services Inc.
1275 North Service Road, Suite 700
Oakville, Ontario
L6M 3G4

The following definitions in "Definitions" are revoked and replaced with:

"Operator" means Canadian Waste Services Inc.; its officers, employees, agents or contractors; and

"Owner" means Canadian Waste Services Inc.

The list of Plans and Specifications is hereby amended, by adding the following:

1. Letter and its attachment dated June 22, 1999, from Michael J. Pullen, Director, Canadian Waste Services Inc., to Geoff Carpentier, Ministry of the Environment (MOE), notifying the Ministry of a change in Corporate name, address and providing list of their officers.

The reason for the imposition of these conditions is as follows:

1. The reason for the above changes is to acknowledge the letter regarding the notification of name and address change, dated June 22, 1999.

All other conditions on the original Certificate and as amended, not affected by this amendment, remain in effect.



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

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

In addition to these legal requirements, 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 waste disposal site is located;

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

This Notice must be served upon:

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

AND

The Director,
Section 39, Environmental Protection Act,
Ministry of the Environment,
250 Davisville Avenue, 3rd Floor,
Toronto, Ontario.
M4S 1H2

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

DATED AT TORONTO this 25th day of August, 1999.

A. Dominski, P. Eng.
Director
Section 39
Environmental Protection Act

A.4.2

**AMENDMENT TO CERTIFICATE OF APPROVAL NO.
A710003 DATED MARCH 26, 2004, REGARDING
NOTIFICATION OF CHANGE OF NAME**

Ministry of the Environment
 Environmental Assessment and
 Approvals Branch
 Floor 12A
 2 St Clair Ave W
 Toronto ON M4V 1L5
 Fax: (416)314-8452
 Telephone: (416) 314-7902

Ministère de l'Environnement
 Direction des évaluations et des
 autorisations environnementales
 Étage 12A
 2 av St Clair O
 Toronto ON M4V 1L5
 Télécopieur: (416)314-8452
 Téléphone : (416) 314-7902



March 26, 2004

Jessica Campbell, Director, Regulatory Affairs & Environmental Compliance
 Waste Management of Canada Corporation
 5045 South Service Road, Suite 300
 Burlington, Ontario
 L7L 5Y7

Dear Sir/Madam:

Re: Notification of Change of Name
MOE Reference Number 9673-5XFSHB

The Ministry of the Environment (the "Ministry") acknowledges receipt of your letter dated February 2, 2004 requesting a change in company name:

FROM: Canadian Waste Services Inc.

TO: Waste Management of Canada Corporation

By this letter, the Ministry advises you that your notification of change in company name has been registered in our records for the following Certificate(s) of Approval:

Certificate(s) of Approval for Waste Disposal Sites, Section 27, EPA:

A230901 East Gwillimbury
 A230701 Hwy 48
 A230201 Aurora
 A032006 Blackwell LF
 A380103 Kingston - St. Remy Place
 A100144 Brant St. Hamilton
 A620042 Sarina MacGregor Rd.
 A210237 Mavis, Mississauga
 A031810 LaSalle LF
 A021601 Ridge LF
 8602-4HQQZW Trenton, Chester Rd.
 A253001 Tecumseth LF
 A100130 Lottridge - Hamilton

A440109 California Ave. - Brockville
A120138 Cushman Rd. - St. Catharines
A030309 Petrolia MRF
A140327 Conrad Place, Waterloo
A580730 Timmins - De loro
A580731 Timmins - Ogden
A580732 Timmins - German
A170404 Mount Forest - Sligo Rd.
A100139 Lansdowne Ave - Hamilton
A450707 Carleton Place
A010128 Maidstone
A230615 Bowes Rd.
A680243 Esandar
A210622 Brydon
A461002 Ottawa LF
A032203 Warwick LF
A030303 Petrolia LF
A021603 Blenheim LF
A040213 Exeter Rd. - London
A280229 Unwin
A210328 New Toronto
4458-5QTLS3 Timmins MRF
A250111 Saunders Rd - Barrie
1308-5HNR6 Wentworth - Brampton
A371203 Richmond LF
A710003 Richmond LF

The Ministry will not be providing you with an amended certificate(s) to reflect the change in company name. Therefore, this letter must be appended to its corresponding Certificate(s) of Approval. The name change will be included in any future amended Certificate(s) of Approval.

If you have any questions regarding the above, please contact me at the above phone number.

Yours truly,

Sanja Jankovic
Sanja Jankovic
Application Processor

cc: District Manager, MOE York-Durham
District Manager, MOE, Sarnia
District Manager, MOE Kingston
District Manager, MOE Hamilton
District Manager, MOE Halton-Peel
District Manager, MOE Peterborough

District Manager, MOE Barrie
District Manager, MOE Niagara
District Manager, MOE Guelph
District Manager, MOE Timmins
District Manager, MOE Ottawa
District Manager, MOE Toronto
District Manager, MOE London
Area Manager, MOE Windsor
Area Manager, MOE Belleville

File Storage Number: 230901, 230701, 230201, 032006, 380103, 100144, 620042, 210237,
031810, 021601, 0209, 253001, 100130, 440109, 120138, 030309, 140327, 580730, 580731,
580732, 170404, 100139, 450707, 010128, 230615, 680243, 210622, 461002, 032203, 030303,
021603, 040213, 280229, 210328, 0822, 250111, 0611, 371203

APPENDIX A-5

**ENVIRONMENTAL COMPLIANCE APPROVAL (AIR)
NO. 5970-9HKP3V (LANDFILL GAS COLLECTION
AND FLARING SYSTEM, INCLUDING CANDLESTICK
FLARE) DATED APRIL 29, 2014**


AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

 NUMBER 5970-9HKP3V
 Issue Date: April 29, 2014

 Waste Management of Canada Corporation
 117 Wentworth Crt
 Brampton, Ontario
 L6T 5L4

Site Location: Richmond Landfill
 1271 Beechwood Road, RR #6 Lots 1,2 and 3, Conc.4, Reference Plan 29R-6605, Geo. Twp. of Richmond
 Greater Napanee Town, County of Lennox and Addington
 K7R 3L1

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

- one (1) enclosed flare used to incinerate the landfill gases from an expanded landfill gas collection system to include landfill gas collection from a maximum of 54 landfill gas wells, 12 leachate manhole and 9 cleanouts, having a landfill gas burning capacity of 0.61 standard cubic metre per second with the combustible levels ranging from 30 to 55 percent by volume. The flare has a maximum heat input of 41 gigajoules per hour, exhausting into the atmosphere through a stack, having an exit diameter of 2.1 metres, extending 12.2 metres above grade;
- one (1) backup candlestick flare used to incinerate the landfill gases from an expanded landfill gas collection system, having a landfill gas burning capacity of 0.354 cubic metres per second with the combustible levels ranging from 30 to 50 percent by volume, exhausting into the atmosphere through a stack, having an exhaust tip diameter of 0.15 metres, extending 6.7 metres above grade;

all in accordance with the Application for Approval (Air & Noise) submitted by Waste Management of Canada Corporation, dated August 5, 2011 and signed by Reid Cleland, Director of Disposal Operations; and the supporting information, including the Emission Summary and Dispersion Modelling Report, submitted by Comcor Environmental Limited, dated September 16, 2011 and signed by Jonathan Petsch, and additional information provided by Comcor Environmental Limited, dated March 21, 2014, and signed by Jonathan Petsch.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Approval" means this Environmental Compliance Approval, including the application and supporting documentation listed above.
2. "CEM System" means the continuous monitoring and recording system used to optimize the operation of the Equipment to minimize the emissions from the Equipment, as described in the Company's application, this Approval, including Schedule "A", and in the supporting documentation referred to herein, to the extent approved by this Approval;
3. "Company" means Waste Management of Canada Corporation that is responsible for the construction or operation of the Facility and includes any successors and assigns.
4. "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Facility is geographically located.
5. "EPA" means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended.
6. "Equipment" means the equipment and processes described in the Company's application, this Approval and in the

CONTENT COPY OF ORIGINAL

supporting documentation referred to herein, to the extent approved by this Approval.

7. "Facility" means the entire operation on the property where the Equipment is located.

8. "Manual" means a document or a set of documents that provides written instructions to staff of the Company.

9. "Ministry" means the ministry of the government of Ontario responsible for the EPA and includes all officials, employees or other persons acting on its behalf.

10. "Publication NPC-232" means the Ministry Publication NPC-232, "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", October, 1995, as amended.

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

TERMS AND CONDITIONS

PERFORMANCE REQUIREMENTS

1. The Company shall ensure that the noise emissions from the Facility comply with the limits determined in accordance with Publications NPC-232.

2. The Company shall operate the Equipment in such a manner that the minimum temperature shall be 900 degrees Celsius at a point representing a minimum retention time of 0.75 second, at all times the landfill gases are flowing to the enclosed flare system.

3. The Company shall operate the Equipment in such a manner that a flame is present at all times when landfill gases are flowing to the candlestick flare system.

OPERATION AND MAINTENANCE

4. The Company shall ensure that the Facility and the Equipment, including the CEM System, is properly operated and maintained at all times. The Company shall:

(1) prepare, not later than three (3) months after the date of this Approval, and update, as necessary, a Manual outlining the operating procedures and a maintenance program for the Facility and the Equipment, including:

(a) routine operating and maintenance procedures in accordance with good engineering practices, and as recommended by the Equipment and CEM System supplier;

(b) emergency procedures;

(c) procedures for any record keeping activities relating to the operation and maintenance of the Facility and the Equipment, including the CEM System;

(d) all appropriate measures to minimize noise and odourous emissions from all potential sources;

(e) periodic inspection of the Equipment which is to be conducted by individuals experienced with the Equipment; and timetables for work to be carried out;

(f) procedures for recording and responding to environmental complaints relating to the operation of the Facility; and

(g) operator training which is to be provided by an individual experienced with the Equipment; and,

(2) implement the recommendations of the Manual;

RECORD RETENTION

5. The Company shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this Approval, and make these records available for review by staff of the Ministry upon request. The Company shall retain:

- (1) all records on maintenance, repair and inspection of the Facility, the Equipment, and the CEM System;
- (2) all records produced by the CEM System;
- (3) all records on operator training;
- (4) all records on the environmental complaints, including:
 - (a) a description, time and date of the incident;
 - (b) wind direction and other weather conditions at the time of the incident; and,
 - (c) a description of the measures taken to address the cause of the incident and to prevent a similar occurrence in the future, and the outcome of the measures taken; and,
- (5) all records of any upset conditions associated with the operation of the Equipment;

NOTIFICATION OF COMPLAINTS

6. The Company shall notify the District Manager, in writing, of each environmental complaint within two (2) business days of the complaint. The notification shall include:

- (1) a description of the nature of the complaint;
- (2) the time, date and location of the incident; and,
- (3) the wind direction and other weather conditions at the time of the incident;

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

- 1. Condition Nos. 1 to 3 inclusively are included to provide the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.
- 2. Condition No. 4 is included to emphasize that the Facility must be maintained and operated according to a procedure that will result in compliance with the EPA, the regulations and this Approval.
- 3. Condition No. 5 is included to require the Company to keep records and to provide information to the Ministry so that compliance with the EPA, the regulations and this Approval can be verified.
- 4. Condition No. 6 is included to require the Company to notify/report to the Ministry so that compliance with the EPA, the regulations and this Approval can be verified.

SCHEDULE "A"

This Schedule "A" forms part of this Approval.

CONTENT COPY OF ORIGINAL

PARAMETER:	Temperature (enclosed flare system)						
LOCATION:	The sample point for the continuous temperature monitoring and recording system shall be located at a location in the combustion chamber where the minimum retention time of the combustion gases at a minimum temperature of 900 degrees Celsius for at least 0.75 second is achieved.						
PERFORMANCE:	The continuous temperature monitoring and recording system shall meet the following minimum performance specifications for the following parameters.						
	<table border="1"> <thead> <tr> <th>PARAMETERS</th> <th>SPECIFICATION</th> </tr> </thead> <tbody> <tr> <td>Type:</td> <td>shielded "K" type thermocouple, or equivalent</td> </tr> <tr> <td>Accuracy:</td> <td>±1.5 percent of the minimum gas temperature</td> </tr> </tbody> </table>	PARAMETERS	SPECIFICATION	Type:	shielded "K" type thermocouple, or equivalent	Accuracy:	±1.5 percent of the minimum gas temperature
PARAMETERS	SPECIFICATION						
Type:	shielded "K" type thermocouple, or equivalent						
Accuracy:	±1.5 percent of the minimum gas temperature						
DATA RECORDER:	The data recorder must be capable of registering continuously the measurement of the monitoring system without a significant loss of accuracy and with a time resolution of 1 minute or better.						
RELIABILITY:	The monitoring system shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.						

PARAMETER:	Temperature (candlestick flare system)						
LOCATION:	The sample point for the continuous temperature monitoring and recording system shall be located as close to the combustion zone of the candlestick flare as possible.						
PERFORMANCE:	The continuous temperature monitoring and recording system shall meet the following minimum performance specifications for the following parameters.						
	<table border="1"> <thead> <tr> <th>PARAMETERS</th> <th>SPECIFICATION</th> </tr> </thead> <tbody> <tr> <td>Type:</td> <td>shielded "K" type thermocouple, or equivalent</td> </tr> <tr> <td>Accuracy:</td> <td>±1.5 percent of the minimum gas temperature</td> </tr> </tbody> </table>	PARAMETERS	SPECIFICATION	Type:	shielded "K" type thermocouple, or equivalent	Accuracy:	±1.5 percent of the minimum gas temperature
PARAMETERS	SPECIFICATION						
Type:	shielded "K" type thermocouple, or equivalent						
Accuracy:	±1.5 percent of the minimum gas temperature						
DATA RECORDER:	The data recorder must be capable of registering continuously the measurement of the monitoring system without a significant loss of accuracy and with a time resolution of 2 minutes or better.						
RELIABILITY:	The monitoring system shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.						

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 1355-5LRN9N issued on May 8, 2003

CONTENT COPY OF ORIGINAL

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, 1993, S.O. 1993, c. 28 (Environmental Bill of Rights), the Environmental Commissioner, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

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, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Environmental Commissioner
1075 Bay Street, Suite 605
Toronto, Ontario
M5S 2B1

AND

The Director appointed for the purposes of Part II.1 of
the Environmental Protection 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) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

This instrument is subject to Section 38 of the Environmental Bill of Rights, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at www.ebr.gov.on.ca, you can determine when the leave to appeal period ends.

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 29th day of April, 2014

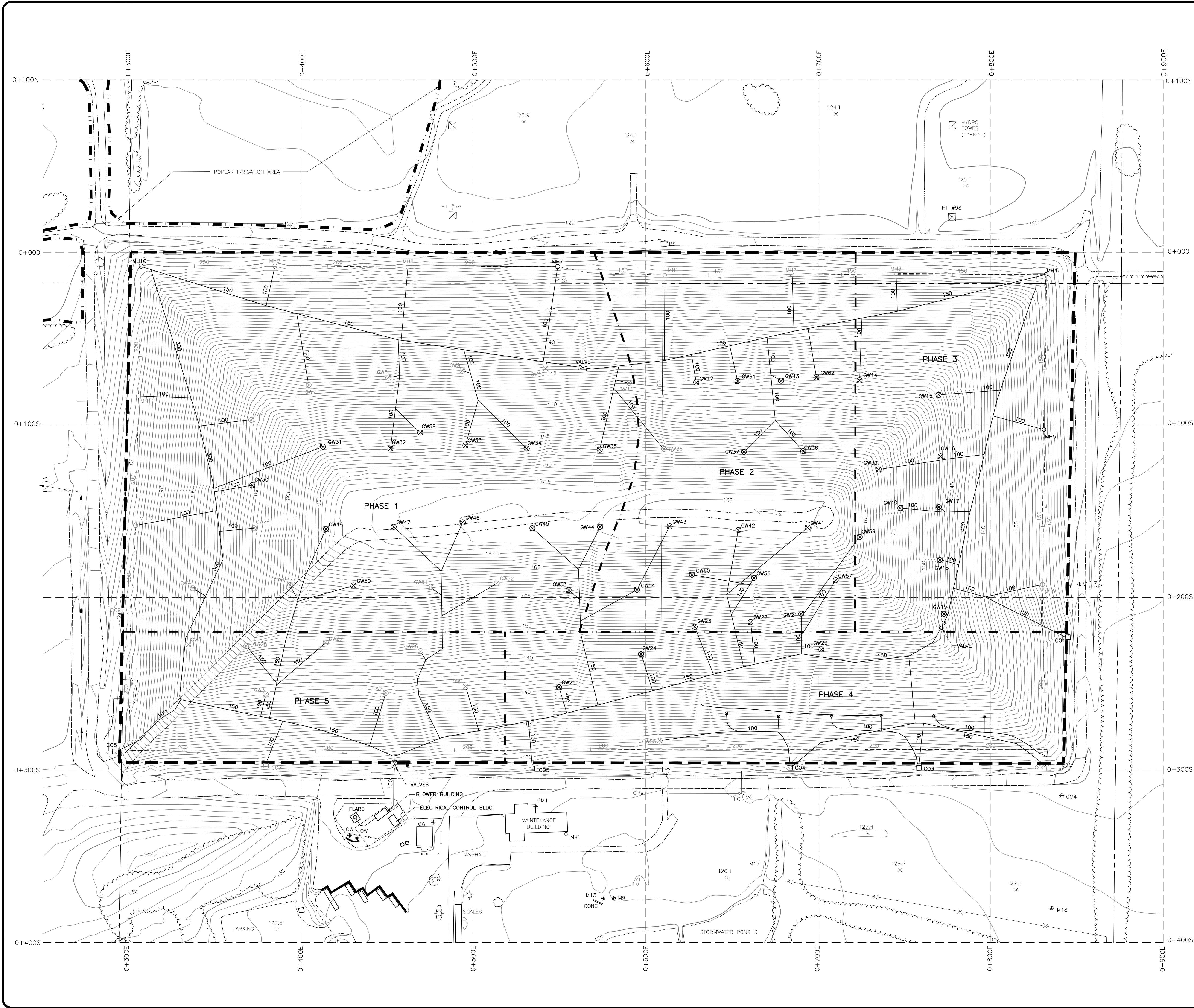
Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

AB/
c: District Manager, MOE Kingston - District
Jonathan Petsch, Comcor Environmental Limited

Appendix B

**LANDFILL GAS COLLECTION SYSTEM AS BUILT DRAWING TO
DECEMBER 2015**

G:\1985\6570\DRAWINGS\2016\6570_GAS AS-BUILT MARCH 2016.dwg Mar 29, 2016 - 1:19pm



LEGEND:

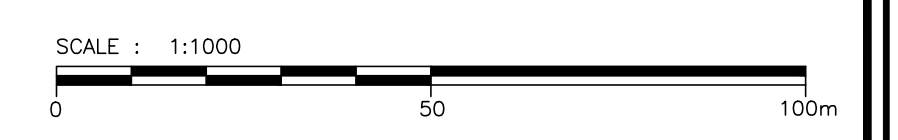
- 125 — EXISTING GROUND
- — INTERVAL CONTOURS
- - - REFERENCE GRID LINE
- - - LEGAL BOUNDARIES
- - - APPROVED LIMIT OF LANDFILL
- - - EXISTING DRAINAGE DITCH
- - - EXISTING FENCE LINE
- - - EXISTING TREE LINE
- - - EXISTING TREE
- HT #98 EXISTING HYDRO TOWER (ID #)
- EXISTING HYDRO POLE
- - - EXISTING ROAD EDGE
- MH3 EXISTING LEACHATE MANHOLE
- 150 EXISTING GAS HEADER & DIAMETER (mm)
- 100 EXISTING GAS LATERAL & DIAMETER (mm)
- ⊕ GAS MONITOR
- ⊕ GROUNDWATER MONITOR
- ⊗ GW62 ACTIVE VERTICAL EXTRACTION GAS WELL
- ⊗ GW52 NON-ACTIVE VERTICAL EXTRACTION GAS WELL
- MH4 ACTIVE GAS EXTRACTION MANHOLE
- MH3 NON-ACTIVE GAS EXTRACTION MANHOLE
- CO4 ACTIVE GAS EXTRACTION CLEANOUT
- CO2 NON-ACTIVE GAS EXTRACTION CLEANOUT

NOTES:

- 1) EXISTING GROUND CONTOURS AND TOPOGRAPHIC FEATURES SHOWN ON THIS PLAN ARE BASED ON INFORMATION OBTAINED FROM AERIAL PHOTOGRAPHY FLOWN ON JUNE 27, 2009 BY BASE MAPPING AND FIELD SURVEY DATA BY GENIVAR INC. (NOW WSP INC.) TO FEBRUARY 22, 2012.
- 2) CONTOUR INTERVAL SHOWN IS 0.5m.
- 3) THE LOCAL SITE GRID IS BASED ON 0+000 BEING THE NORTH LANDFILL LIMIT. THE NORTHWEST CORNER OF THE LANDFILL LIMIT IS 0+300E AND IS PERPENDICULAR TO THE EAST/WEST GRID LINE. THE WEST LIMIT OF THE LANDFILL IS LOCATED ALONG THE LOT LINE BETWEEN LOTS 1 AND 2, CONCESSION 4.
- 4) ASBUILT INFORMATION SHOWN FOR HDPE GAS PIPING WAS PROVIDED BY WM AND IS APPROXIMATE ONLY. THE LOCATION OF ALL THE GAS WELLS SHOWN ON THIS PLAN ARE BASED ON FIELD SURVEY DATA OBTAINED BY WSP (FORMERLY GENIVAR INC) ON NOVEMBER 17, 2011.
LOCATION OF GAS WELLS 59 THROUGH 62 AND ASSOCIATED LATERALS WAS PROVIDED BY WM AND IS APPROXIMATE ONLY.
- 5) WM REPORTS NO GAS COLLECTION WELLS WERE INSTALLED IN 2015. WM ALSO REPORTS THAT THE PRESENT SYSTEM COLLECTS GAS FROM FIVE LEACHATE CLEANOUTS, FOUR LEACHATE COLLECTION MANHOLES AND 42 VERTICAL GAS WELLS, OF THE 62 INSTALLED, 20 DECOMMISSIONED VERTICAL GAS WELLS ARE ALSO PRESENT ON THE LANDFILL MOUND.

B.M. #1 ELEV. = 124.667
TOP OF BRACKET, NORTH WEST LEG OF HYDRO TOWER No. 99, LOCATED ±25m NORTH AND ±180m EAST OF NORTH WEST CORNER OF APPROVED LANDFILL LIMIT.

B.M. #2 ELEV. = 125.146
TOP OF BRACKET, NORTH WEST LEG OF HYDRO TOWER No. 100, LOCATED ±25m NORTH AND ±80m WEST OF NORTH WEST CORNER OF APPROVED LANDFILL LIMIT.



DATE	DESCRIPTION	APP. BY

WSP
101-1450 14 AVENUE W
OWEN SOUND (ONTARIO) CANADA N4K 6W2
TEL: 519-376-7612 FAX: 519-376-8008 | WWW.WSPGROUP.COM

WASTE MANAGEMENT

LANDFILL GAS COLLECTION SYSTEM
AS BUILT DRAWING TO DECEMBER 2015
RICHMOND LANDFILL
NAPANEE, ONTARIO

WASTE MANAGEMENT OF CANADA CORP.
DRAWING NO. 8570 - 2015 GAS AS BUILT

SHEET
2015GAB

Appendix C

**MEMORANDUM: 2015 STORMWATER MANAGEMENT PONDS AND
LEACHATE MONITORING RESULTS, PREPARED BY BLUMETRIC
ENVIRONMENTAL INC. (FORMERLY WATER AND EARTH SCIENCE
ASSOCIATES (WESA))**



MEMORANDUM

Date: March 23, 2016
To: Tim Haaf and Jim Forney, Waste Management (WM)
Cc: Chris Prucha (WM) and Beverly Leno, WSP Canada Inc.
From: François Richard and Madeleine Corriveau, BluMetric Environmental Inc.
Project No: KB13060-00-05
Re: 2015 Stormwater Management Ponds and Leachate Monitoring Results
WM Richmond Landfill, Town of Greater Napanee, Ontario

The purpose of this memorandum is to provide a summary and interpretation of the stormwater and leachate monitoring data collected from the WM Richmond Landfill in 2015, in accordance with Conditions 6 and 8 of Environmental Compliance Approval (ECA) No. 1688-8HZNJC issued January 10, 2012. This memorandum is prepared in accordance with Conditions 10(4)(a) and (b) of the ECA.

STORMWATER MANAGEMENT PONDS

A summary of the stormwater monitoring results is attached in **Table 1**. Samples were collected during six events in 2015 from the discharge points of each of the three stormwater management ponds: Northeast (NE) Pond, Northwest (NW) Pond and Southwest (SW) Pond. The results of the chemical analyses are compared to the Provincial Water Quality Objectives (PWQO) in **Table 1**. The concentrations of the following parameters exceeded the PWQO on occasion: aluminum, iron, phenols and total phosphorus; unionized ammonia (one time only on April 21 at SW Pond) and pH (on October 22 and November 24 at NW Pond) also exceeded PWQO.

The results of the surface water monitoring program of the receiving waters for these ponds (Marysville Creek and Beechwood Ditch), as reported in the 2015 Semi-Annual Monitoring Reports, indicate that there are no measurable impacts to water quality from landfill-related activities, including operation of the stormwater management ponds.

Samples were also collected from the stormwater management ponds and analyzed for acute lethality of Rainbow Trout (RBT) and *Daphnia magna* (DM) on a quarterly frequency, as per Condition 8.(3) of the ECA. Condition 14.3(xii) of ECA No. A371203 for the waste disposal site



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requires that the Annual Report includes a discussion of the results of the toxicity testing which includes potential impacts to the groundwater by the stormwater management ponds. The results are summarized below; there was no mortality of any test organisms observed in the samples, with the exception of a 10% mortality reported for Daphnia Magna in the September sample collected from the SW pond ($\leq 50\%$ mortality is considered a “pass”).

Percent Mortality of Rainbow Trout (RBT) and Daphnia Magna (DM) in Stormwater Management Pond Samples, 2015

	March 31, 2015		June 4, 2015		Sept. 10, 2015		December 21, 2015	
	RBT	DM	RBT	DM	RBT	DM	RBT	DM
SW Pond	0	0	0	0	0	10	0	0
NE Pond	0	0	0	0	0	0	0	0
NW Pond	0	0	0	0	0	0	0	0

The acute lethality results from the 2015 samples indicate that the stormwater management ponds were operating as designed, and discharging non-lethal effluent to the receiving waters. The data do not indicate any potential impacts to shallow groundwater from the stormwater management ponds.

Based on the 2015 stormwater management data, as well as the results from the semi-annual surface water monitoring program, it is our opinion that the stormwater management ponds are adequate for the WM Richmond Landfill.

LEACHATE MONITORING

The requirements for leachate monitoring under ECA No. 1688-8HZNJG are presented in Condition 6 and Table 1 of the ECA. The leachate monitoring results for 2015 are presented in the attached **Table 2**. The results are indicative of the leachate quality from the North Chamber and South Chamber that is disposed off-site.

We trust you will find this evaluation of the 2015 stormwater and leachate monitoring data for the WM Richmond Landfill site to be satisfactory. If you have any questions regarding the above information, please contact the undersigned anytime.

Respectfully Submitted,
BluMetric Environmental Inc.



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



Madeleine Corriveau, M.Sc., P.Geo.
Intermediate Hydrogeologist

Encl.

Ref: KB13060-00-05 2015 Ponds-Leachate Memo_FINAL-20160323.docx

TABLES

WM-Richmond Landfill
 ECA 1688-8HZNJG
 Table 1: 2015 Pond Sampling Results

Parameter	Units	PWQO	NE Pond 2015-03-31	NW Pond 2015-03-31	SW Pond 2015-03-31	NE Pond 2015-04-21	SW Pond 2015-04-21	NW Pond 2015-04-21
Alkalinity	mg/L		140	67	110	260	190	190
Aluminum	mg/L	0.075	0.12	0.12	0.15	0.044	0.021	0.016
Ammonia	mg/L		0.75	0.67	0.1	< 0.05	3.4	0.051
Unionized Ammonia	mg/L	0.02	0.0055	0.0039	< 0.0005	< 0.001	0.076	0.0007
Arsenic	mg/L	0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Barium	mg/L		0.051	0.027	0.031	0.065	0.049	0.049
Benzene	mg/L	0.1	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Beryllium	mg/L	1.1	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Boron	mg/L	0.2	0.054	0.016	0.017	0.11	0.029	0.035
Cadmium	mg/L	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Carbonaceous BOD	mg/L		4	6	4	< 2	< 2	< 2
Chemical Oxygen Demand	mg/L		46	44	33	36	26	37
Chloride	mg/L		23	12	13	33	28	31
Chromium (III)	mg/L	0.0089	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Chromium (Total)	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Chromium (VI)	mg/L	0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cobalt	mg/L	0.0009	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper	mg/L	0.005	0.0027	0.0035	0.002	0.0016	< 0.001	0.0017
Ethylbenzene	mg/L	0.008	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Field Conductivity	µS/cm		280	100	160	610	500	490
Field Temperature	°C		3.54	3.84	2.22	10.57	9.98	10.61
Hardness	mg/L		120	72	110	240	190	190
Iron	mg/L	0.3	0.35	0.22	0.27	0.17	0.17	0.2
m+p-Xylene	mg/L	0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Naphthalene	mg/L	0.007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Nickel	mg/L	0.025	0.0015	< 0.001	< 0.001	0.0025	0.001	0.0013
Nitrate	mg/L		0.63	0.66	< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene	mg/L	0.04	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
pH (Field)	-	6.5-8.5	7.74	7.62	7.16	8.02	8	7.77
pH (Lab)	-	6.5-8.5	7.76	7.61	7.77	8.07	7.95	7.87
Phenols	mg/L	0.001	0.0077	0.0093	0.0047	0.0048	0.0037	0.0053
Phosphorus (total)	mg/L	0.03	0.084	0.13	0.055	0.054	0.05	0.08
Potassium	mg/L		13	13	5.3	9	5.4	9.7
Selenium	mg/L	0.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L		19	4.7	8.6	37	21	21
Toluene	mg/L	0.0008	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Dissolved Solids	mg/L		200	90	156	330	258	280
Total Kjeldahl Nitrogen	mg/L		2.3	1.9	1	1.2	6.1	1.1
Total Organic Carbon	mg/L		18	17	12	13	10	14
Total Suspended Solids	mg/L		< 10	< 10	< 10	< 10	< 10	< 10
Total Xylenes	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	0.03	0.0092	0.013	0.0071	< 0.005	< 0.005	< 0.005

Shaded values indicate PWQO exceeded

WM-Richmond Landfill
 ECA 1688-8HZNJG
 Table 1: 2015 Pond Sampling Results

Parameter	Units	PWQO	NW Pond 2015-05-22	NE Pond 2015-05-22	SW Pond 2015-05-22	NE Pond 2015-09-10	NW Pond 2015-09-10	SW Pond 2015-09-10
Alkalinity	mg/L		180	270	230	230	180	210
Aluminum	mg/L	0.075	0.0079	0.054	0.011	0.023	0.11	0.14
Ammonia	mg/L		< 0.05	< 0.05	0.17	0.38	0.15	0.15
Unionized Ammonia	mg/L	0.02	< 0.00085	< 0.0019	0.0029	0.0091	0.0016	0.0018
Arsenic	mg/L	0.1	0.001	< 0.001	< 0.001	0.0015	0.0017	0.0016
Barium	mg/L		0.041	0.053	0.057	0.044	0.043	0.068
Benzene	mg/L	0.1	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Beryllium	mg/L	1.1	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Boron	mg/L	0.2	0.044	0.13	0.044	0.15	0.082	0.039
Cadmium	mg/L	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Carbonaceous BOD	mg/L		3	< 2	< 2	< 2	< 2	3
Chemical Oxygen Demand	mg/L		53	39	38	49	50	48
Chloride	mg/L		41	42	35	40	39	36
Chromium (III)	mg/L	0.0089	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Chromium (Total)	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Chromium (VI)	mg/L	0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cobalt	mg/L	0.0009	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper	mg/L	0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	mg/L	0.008	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Field Conductivity	µS/cm		510	650	580	495	441	485
Field Temperature	°C		20	19.5	17.6	20.32	20.38	21.21
Hardness	mg/L		190	220	240	190	160	200
Iron	mg/L	0.3	0.29	0.2	0.16	0.34	0.98	0.81
m+p-Xylene	mg/L	0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Naphthalene	mg/L	0.007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Nickel	mg/L	0.025	0.0016	0.0028	0.0011	0.0024	0.0032	0.0012
Nitrate	mg/L		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene	mg/L	0.04	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
pH (Field)	-	6.5-8.5	7.64	8.02	7.62	7.78	7.42	7.45
pH (Lab)	-	6.5-8.5	8.05	8.2	8.10	8.05	7.89	7.64
Phenols	mg/L	0.001	< 0.001	< 0.001	0.0033	< 0.001	< 0.001	< 0.001
Phosphorus (total)	mg/L	0.03	0.041	0.026	0.03	0.039	0.041	0.082
Potassium	mg/L		8.5	8.9	7.6	12	11	9.6
Selenium	mg/L	0.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L		32	47	28	48	38	32
Toluene	mg/L	0.0008	0.00021	< 0.0002	< 0.0002	< 0.0002	0.00053	< 0.0002
Total Dissolved Solids	mg/L		314	396	348	334	298	296
Total Kjeldahl Nitrogen	mg/L		1	1	1.2	2.1	1.3	1.2
Total Organic Carbon	mg/L		15	13	12	16	17	16
Total Suspended Solids	mg/L		< 10	< 10	< 10	< 10	< 10	< 10
Total Xylenes	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Shaded values indicate PWQO exceeded

WM-Richmond Landfill
 ECA 1688-8HZNJG
 Table 1: 2015 Pond Sampling Results

Parameter	Units	PWQO	NE Pond 2015-10-22	NW Pond 2015-10-22	SW Pond 2015-10-22	NE Pond 2015-11-24	NW Pond 2015-11-24	SW Pond 2015-11-24
Alkalinity	mg/L		220	120	170	210	140	180
Aluminum	mg/L	0.075	0.016	0.022	0.048	0.019	0.014	0.088
Ammonia	mg/L		< 0.05	< 0.05	0.069	< 0.05	< 0.05	< 0.05
Ionized Ammonia	mg/L	0.02	< 0.0015	< 0.0022	0.0012	< 0.0005	< 0.002	< 0.0005
Arsenic	mg/L	0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Barium	mg/L		0.045	0.021	0.038	0.05	0.03	0.046
Benzene	mg/L	0.1	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Beryllium	mg/L	1.1	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Boron	mg/L	0.2	0.12	0.047	0.027	0.11	0.05	0.033
Cadmium	mg/L	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Carbonaceous BOD	mg/L		< 2	< 2	< 2	< 2	< 2	< 2
Chemical Oxygen Demand	mg/L		37	35	27	26	22	20
Chloride	mg/L		36	34	33	33	31	34
Chromium (III)	mg/L	0.0089	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Chromium (Total)	mg/L		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Chromium (VI)	mg/L	0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cobalt	mg/L	0.0009	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper	mg/L	0.005	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	mg/L	0.008	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Field Conductivity	µS/cm		520	359	434	520	400	480
Field Temperature	°C		11.3	11.01	13.87	4.27	4.81	2.89
Hardness	mg/L		190	120	170	200	150	190
Iron	mg/L	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1
m+p-Xylene	mg/L	0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Naphthalene	mg/L	0.007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Nickel	mg/L	0.025	0.0016	0.0011	< 0.001	0.0019	0.0013	< 0.001
Nitrate	mg/L		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene	mg/L	0.04	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
pH (Field)	-	6.5-8.5	8.17	8.35	7.77	7.56	8.52	7.57
pH (Lab)	-	6.5-8.5	8.41	8.7	8.23	8.25	8.37	7.91
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus (total)	mg/L	0.03	0.014	0.014	0.01	0.014	0.022	0.02
Potassium	mg/L		9.2	7.9	5.7	12	9.5	5.9
Selenium	mg/L	0.1	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L		40	29	26	34	27	28
Toluene	mg/L	0.0008	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Dissolved Solids	mg/L		320	242	270	308	242	274
Total Kjeldahl Nitrogen	mg/L		0.95	0.98	0.93	0.89	0.73	0.67
Total Organic Carbon	mg/L		13	13	10	11	10	7.7
Total Suspended Solids	mg/L		< 10	< 10	< 10	< 10	< 10	11
Total Xylenes	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Zinc	mg/L	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Shaded values indicate PWQO exceeded

WM-Richmond Landfill
 ECA 1688-8HZNJG
 Table 2: 2015 Leachate Sampling Results

Reading Name	Units	North Chamber 2015-03-31	NORTH/SOUTH COMBINED 2015-07-17	NORTH/SOUTH COMBINED 2015-09-17	NORTH/SOUTH COMBINED 2015- 12-01
1,1,1,2-Tetrachloroethane	mg/L	< 0.002	< 0.005	< 0.002	< 0.004
1,1,1-Trichloroethane	mg/L	< 0.001	< 0.002	< 0.001	< 0.002
1,1,2,2-Tetrachloroethane	mg/L	< 0.002	< 0.005	< 0.002	< 0.004
1,1,2-Trichloroethane	mg/L	< 0.002	< 0.005	< 0.002	< 0.004
1,1-Dichloroethane	mg/L	0.0013	< 0.002	< 0.001	< 0.002
1,1-Dichloroethylene	mg/L	< 0.001	< 0.002	< 0.001	< 0.002
1,2-Dibromoethane	mg/L	< 0.002	< 0.002	< 0.002	< 0.004
1,2-Dichlorobenzene (o)	mg/L	< 0.002	< 0.005	< 0.002	< 0.004
1,2-Dichloroethane	mg/L	< 0.002	< 0.005	< 0.002	< 0.004
1,2-Dichloropropane	mg/L	< 0.001	< 0.002	< 0.001	< 0.002
1,3-Dichlorobenzene (m)	mg/L	< 0.002	< 0.005	< 0.002	< 0.004
1,4-Dichlorobenzene (p)	mg/L	0.0075	0.0086	0.0042	< 0.004
1-Methylnaphthalene	mg/L	0.0011	0.000075	0.0021	0.001
2-Methylnaphthalene	mg/L	0.0013	0.000075	0.0012	0.001
Acenaphthene	mg/L	0.0013	0.00012	0.0045	0.0023
Acenaphthylene	mg/L	< 0.00005	< 0.00005	< 0.002	< 0.00005
Acetone	mg/L	< 0.1	< 0.1	< 0.1	< 0.2
Alkalinity	mg/L	3300	4400	5700	4000
Ammonia	mg/L	510	760	910	627
Anthracene	mg/L	0.00025	< 0.00005	0.0015	0.0014
Arsenic	mg/L	0.011	0.022	0.025	0.017
Benzene	mg/L	0.0027	< 0.002	0.0033	0.0032
Benzo(a)anthracene	mg/L	0.00014	< 0.00005	0.00086	0.00039
Benzo(a)pyrene	mg/L	0.00006	< 0.00001	0.00036	0.00016
Benzo(b)fluoranthene	mg/L	0.00009	< 0.00005	0.00055	0.00021
Benzo(g,h,i)perylene	mg/L	< 0.00005	< 0.00005	< 0.0005	0.000068
Benzo(k)fluoranthene	mg/L	< 0.00005	< 0.00005	< 0.0005	0.000074
Biphenyl	mg/L	0.00051	0.0001	0.0019	0.0019
Bromodichloromethane	mg/L	< 0.001	< 0.005	< 0.001	< 0.002
Bromoform	mg/L	< 0.002	< 0.01	< 0.002	< 0.004
Bromomethane	mg/L	< 0.005	< 0.005	< 0.005	< 0.01
Cadmium	mg/L	< 0.0001	< 0.001	< 0.001	< 0.0005
Carbon Tetrachloride	mg/L	< 0.001	< 0.002	< 0.001	< 0.002
Chlorobenzene	mg/L	0.0019	< 0.002	0.0015	0.002
Chloroform	mg/L	< 0.001	< 0.002	< 0.001	< 0.002
Chromium	mg/L	0.069	0.11	0.12	0.077
Chrysene	mg/L	0.00011	< 0.00005	0.00067	0.00028
Cis-1,2-Dichloroethylene	mg/L	< 0.001	< 0.005	< 0.001	< 0.002
Cis-1,3-Dichloropropylene	mg/L	< 0.002	< 0.003	< 0.002	< 0.004
Cobalt	mg/L	0.027	0.034	0.042	0.027
Copper	mg/L	0.0077	0.018	0.016	< 0.01
Dibenzo(a,h)anthracene	mg/L	< 0.00005	< 0.00005	< 0.0005	< 0.00005
Dibromochloromethane	mg/L	< 0.002	< 0.005	< 0.002	< 0.004
Dichlorodifluoromethane	mg/L	< 0.005	< 0.01	< 0.005	< 0.01
Dichloromethane	mg/L	< 0.005	< 0.02	< 0.005	< 0.01
Dissolved Organic Carbon	mg/L	230	360	370	300

WM-Richmond Landfill
 ECA 1688-8HZNJG
 Table 2: 2015 Leachate Sampling Results

Reading Name	Units	North Chamber 2015-03-31	NORTH/SOUTH COMBINED 2015-07-17	NORTH/SOUTH COMBINED 2015-09-17	NORTH/SOUTH COMBINED 2015- 12-01
Ethylbenzene	mg/L	0.013	< 0.002	< 0.001	0.0035
Fluoranthene	mg/L	0.00061	0.00008	0.0044	0.002
Fluorene	mg/L	0.00091	0.00008	0.0044	0.0017
Hardness	mg/L	820	890	790	800
Hexane	mg/L	< 0.005	< 0.01	< 0.005	< 0.01
Indeno(1,2,3-cd)pyrene	mg/L	< 0.00005	< 0.00005	< 0.0005	0.000054
Lead	mg/L	0.0016	< 0.005	< 0.005	< 0.003
m+p-Xylene	mg/L	0.054	0.019	0.017	0.016
Mercury	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0002
Methyl Ethyl Ketone	mg/L	< 0.05	< 0.1	< 0.05	< 0.1
Methyl Isobutyl Ketone	mg/L	< 0.05	< 0.05	< 0.05	< 0.1
Methyl Tert Butyl Ether	mg/L	0.0021	< 0.005	< 0.002	< 0.004
Molybdenum	mg/L	0.0038	< 0.005	0.0057	< 0.01
Naphthalene	mg/L	0.0086	0.00013	0.0011	0.0026
Nickel	mg/L	0.11	0.16	0.2	0.13
Nitrate	mg/L	< 1	< 2	< 1	0.54
Nitrite	mg/L	< 0.1	< 0.2	0.1	< 0.05
Nitrite + Nitrate	mg/L	< 1	< 2	< 1	0.54
o-Xylene	mg/L	0.014	0.0078	0.0071	0.0059
pH (Lab)	unitless	7.29	7.51	7.76	7.78
Phenanthrene	mg/L	0.0012	0.00015	0.0078	0.004
Phenols	mg/L	< 0.1	0.042	0.042	0.036
Pyrene	mg/L	0.00046	0.000065	0.0036	0.0015
Selenium	mg/L	< 0.004	< 0.02	< 0.02	< 0.03
Styrene	mg/L	< 0.002	< 0.005	< 0.002	< 0.004
Tetrachloroethylene	mg/L	< 0.001	< 0.002	< 0.001	< 0.002
Toluene	mg/L	0.0065	0.0024	0.0041	< 0.004
Total Kjeldahl Nitrogen	mg/L	530	810	840	650
Total Xylenes	mg/L	0.068	0.027	0.024	0.022
Trans-1,2-dichloroethylene	mg/L	< 0.001	< 0.005	< 0.001	< 0.002
Trans-1,3-dichloropropylene	mg/L	< 0.002	< 0.004	< 0.002	< 0.004
Trichloroethylene	mg/L	< 0.001	< 0.002	< 0.001	< 0.002
Trichlorofluoromethane	mg/L	< 0.002	< 0.005	< 0.002	< 0.004
Vinyl Chloride	mg/L	< 0.002	< 0.002	< 0.002	< 0.004
Zinc	mg/L	0.025	< 0.05	< 0.05	< 0.05

Appendix D

**DETAILED CHRONOLOGY OF SIGNIFICANT LANDFILL DESIGN AND
OPERATION, AND LAND USE CHANGES, AND POTENTIAL VOLATILE
ORGANIC COMPOUND SOURCES AT THE SITE**

**Detailed Chronology of Significant Landfill Design & Operation,
and Land Use Changes
Richmond Landfill Site**

8570

Date	Description
1954	<ul style="list-style-type: none"> ▪ Landfill operations began at the site under Sutcliffe Sanitation Services Limited.
1971	<ul style="list-style-type: none"> ▪ Service area expanded to include the Town of Napanee and Desoronto.
1971	<ul style="list-style-type: none"> ▪ Ministry of the Environment issued Provisional Certificate of Approval No. A 371203 for a 10.1 hectare landfill footprint.
1974	<ul style="list-style-type: none"> ▪ Burning operations ceased at the site.
1979	<ul style="list-style-type: none"> ▪ Service area increased to include the Town of Picton, Richmond Township, Township of Tyendinaga, North Fredericksburg, Adolphustown and Sophiasburgh. Waste tonnage was also increased.
August 11, 1987	<ul style="list-style-type: none"> ▪ Landfill site expansion approved to 16.2 hectares and to include the site service area with the Counties of Lennox and Addington, Prince Edward, Hastings and Frontenac.
January 1988	<ul style="list-style-type: none"> ▪ Tricil Limited purchased the landfill site from Sutcliffe Sanitation Services Limited.
September 1989	<ul style="list-style-type: none"> ▪ From Aerial photography - landfilling in Phase 1. Sewage lagoon is present and located in Phase 4. All farm buildings exist.
1990	<ul style="list-style-type: none"> ▪ The site came under ownership of Laidlaw as a result of the acquisition of Tricil Limited.
December 1990	<ul style="list-style-type: none"> ▪ Landfill operations began in the Phase 2 cell area on prepared clay base.
1991	<ul style="list-style-type: none"> ▪ Leachate holding lagoon was constructed north of the hydro corridor.
Summer 1993	<ul style="list-style-type: none"> ▪ Contaminated soil pad constructed to the east of the maintenance building.
1993	<ul style="list-style-type: none"> ▪ Phase 3 landfill base was constructed during the summer with waste placed in the fall.
September 2, 1994	<p>Notice to amend Certificate of Approval (Waste) No. A371203 was issued by MOE. The amendment approved the construction and operation of a composting facility.</p>
December 1994	<ul style="list-style-type: none"> ▪ From Aerial photography - landfilling is being completed in Phase 3. Compost pad is being constructed. Sedimentation pond in the northeast (Pond 1) and south (Pond 3) is being constructed; northwest is not constructed and soil stockpile exists on top of Phase 1
January 24, 1995	<p>Certificate of Approval (Industrial Sewage No. 4-0129-94-956) issued by MOE. Approval was granted for the oil/water separator at the contaminated soil stockpile.</p>
1995	<ul style="list-style-type: none"> ▪ Phase 4 Cell was constructed in the summer/fall of 1995 with landfilling commencing in the summer of 1996.
August 1, 1995	<p>Notice to amend Certificate of Approval (Waste) No. A371203 was issued by MOE. The amendment prohibited leachate recirculation in Phases 1, 2, and 3.</p>
December 1995	<ul style="list-style-type: none"> ▪ From Aerial photography - landfilling is occurring on the top of Phase 3. Phase 4 recently constructed. Soil stockpile is being constructed on top of Phase 1.
September 1996	<ul style="list-style-type: none"> ▪ Leachate haulage to Napanee started
September 11, 1996	<p>Notice to amend Certificate of Approval (Waste) No. A371203 was issued by MOE. The amendment approved the expansion of the leaf and yard waste facility to an organic waste composting facility.</p>
November 1996	<ul style="list-style-type: none"> ▪ From Aerial mapping - active area is Phase 4 with soil stockpiled on Phases 1, 2 and 3.
1997	<p>Change in ownership - Canadian Waste Services Inc.</p>
January 1997	<ul style="list-style-type: none"> ▪ North Leachate Pump chamber installed
February 1997	<ul style="list-style-type: none"> ▪ First phase of leachate recirculation system installed in Phase 4
November 1997	<ul style="list-style-type: none"> ▪ Landfilling is occurring on the top portion of Phase 4. Contaminated soil stockpile on top of Phase 1 is in place. Sedimentation pond in northwest corner (Pond 2) is not yet constructed.
1998	<ul style="list-style-type: none"> ▪ Last level of recirculation piping installed in Phase 4
Summer 1998	<ul style="list-style-type: none"> ▪ Phase 5 constructed
Fall 1998	<ul style="list-style-type: none"> ▪ Installation of temporary gas collection and flaring system to establish gas generation rates - two temporary vertical gas extraction wells, a temporary gas collection trench, and temporary flaring/mechanical system.
November 5, 1998	<ul style="list-style-type: none"> ▪ Small landfill fire in Phase 5 waste. Soil sampling of adjacent properties indicated no impact to surrounding environment.
December 1998	<ul style="list-style-type: none"> ▪ From Aerial photography - Phase 5 has been constructed and waste placement has begun in Phase 5. Soil is being stockpiled on top of Phases 1, 2 and 3.
1999	<ul style="list-style-type: none"> ▪ Two levels of leachate recirculation installed in Phase 5
Summer 1999	<ul style="list-style-type: none"> ▪ Northwest sedimentation pond (Pond 2) constructed

**Detailed Chronology of Significant Landfill Design & Operation,
and Land Use Changes
Richmond Landfill Site**

8570

Date	Description
November 1999	<ul style="list-style-type: none"> • From Aerial photography - landfilling is occurring in Phase 5. Northwest sedimentation pond (Pond 2) has been constructed. Landfill flare is not in place.
December 21, 1999	Certificate of Approval (Air) No. 8-4076-99-006 issued by MOE. The certificate was issued for a permanent, enclosed flare.
2000	<ul style="list-style-type: none"> • First loads of biosolids received at compost pad for composting
April to May 2000	Installation of 24 vertical gas extraction wells in landfill mound. Throughout the year, connection of 12 cleanouts and 9 leachate cleanouts, along with the landfill gas wells, to the system occurred.
August 29, 2000	Certificate of Approval issued by MOE, approving the installation of the Phase 1 leachate collection system.
Fall 2000	<ul style="list-style-type: none"> • Leachate collector installed on north and west sides of Phase 1
December 2000	<ul style="list-style-type: none"> • From Aerial photography - landfilling on top of Phase 3. Soil stockpile on top of Phase 1 is being depleted. The peripheral leachate collector on Phase 1 has been constructed. Sedimentation pond in northwest corner (Pond 2) is in place. Landfill flare has been installed.
February 2001	<ul style="list-style-type: none"> • Landfill gas collection and flaring started
Summer 2001	<ul style="list-style-type: none"> • Leachate collector replaced between Manhole 1 to 4.
July 10, 2001	<ul style="list-style-type: none"> • Landfilling on the north slope of Phase 2.
2002	Condensate drain traps were installed at low points in the gas collection system to reduce the amount of moisture at the flare.
Summer 2002	<ul style="list-style-type: none"> • Leachate collector replaced between Manhole 1 and 7.
July 2002	<ul style="list-style-type: none"> • Landfilling is occurring on the north face of Phase 1. Contaminated soil stockpile on top of Phase 1 is nearly completed.
2003	<ul style="list-style-type: none"> • Change in ownership - Waste Management of Canada Corporation
2003	<ul style="list-style-type: none"> • High pressure odour misting system installed
2003	<ul style="list-style-type: none"> • 10 new vertical gas collection well installed
May 8, 2003	Certificate of Approval (Air) No. 1355-5LRN9N issued, which revoked the previous Certificate of Approval. The notice approved the operation of the flare and gas collection system, comprising of a maximum of 54 wells, 12 leachate manholes and 9 cleanouts.
2004	<ul style="list-style-type: none"> • 6 new vertical gas collection well installed
Spring 2004	<ul style="list-style-type: none"> • Leachate receiving station was constructed in Napanee
2006	<ul style="list-style-type: none"> • Final year of odour spray system operation
June 18, 2007	Submission of final closure plan to MOE
2007	<ul style="list-style-type: none"> • 3 new vertical gas collection wells installed, and 5 vertical gas collection wells were redrilled. Pumps were also placed in select wells to lower leachate levels and improve gas collection.
Summer 2008	<ul style="list-style-type: none"> • 5 vertical gas collection wells were redrilled, and the gas header pipe on the east and west slopes was upgraded from 150mm diameter to 300mm diameter to improve flow and decrease friction loss. Isolation valves were also added at various locations on the gas header.
August 19, 2008	<ul style="list-style-type: none"> • Certificate of Approval (Industrial Sewage Works No. 5268-7E8LJW) issued, approving upgrades/construction to the south sedimentation pond (Pond 3).
Fall 2008 through Summer 2009	<ul style="list-style-type: none"> • Upgrades/construction of south sedimentation pond (Pond 3).
2009	<ul style="list-style-type: none"> • Landfilling in old access road area - south slope
July through September 2009	<ul style="list-style-type: none"> • Installation of seven (7) vertical gas extraction wells over the crest of the landfill mound, and redrilling of 12 wells on the upper north, east, and south slopes.
2010	<ul style="list-style-type: none"> • Decommissioning of leachate holding lagoon north of landfill mound.
March 31, 2010	<ul style="list-style-type: none"> • Notice 5 to Certificate of Approval No. A371203, issued by MOE. The amendment approved the final closure plan, listed a date of closure for the landfill, and dates for completion of final cover installation for various phases of the landfill. The notice also requested the submission of a revised financial assurance calculation, contingency plans, design for the final cover system, design for low permeability liner for compost pad and pond, and revised environmental monitoring plan, by June 30, 2010.
June 25, 2010	<ul style="list-style-type: none"> • Submission of financial assurance plan, final cover construction quality assurance plan, contingency plans for the leachate and landfill gas collection systems, design for low permeability liner for compost pad and pond, and odour monitoring plan, to MOE to satisfy various conditions from March 31, 2010 Certificate of Approval amendment.

**Detailed Chronology of Significant Landfill Design & Operation,
and Land Use Changes
Richmond Landfill Site**

8570

Date	Description
June 29, 2010	<ul style="list-style-type: none"> Submission of environmental monitoring plan and groundwater/surface water contingency plan, to MOE to satisfy various conditions from March 31, 2010 Certificate of Approval amendment.
August 25, 2010	<ul style="list-style-type: none"> Notice 6 to Certificate of Approval No. A371203, issued by MOE. The amendment approved the construction quality assurance plan for the final cover system.
August 27, 2010	<ul style="list-style-type: none"> Start of installation of final cover system on Phase 1.
October 28, 2010	<ul style="list-style-type: none"> Completion date of final cover placed on entire Phase 1 portion of landfill
December 2010	<ul style="list-style-type: none"> Submission of phytoremediation plan for northwest corner of property.
Spring 2011	<ul style="list-style-type: none"> Installation of three (3) vertical gas extraction wells
May 2, 2011	<ul style="list-style-type: none"> Notice 8 to Certificate of Approval No. A371203, issued by MOE. The amendment approved the construction/operation of the phytoremediation plan in the northwest corner of the property.
May 25, 2011	<ul style="list-style-type: none"> Application submitted to MOE requesting continued operation of the public drop off facility
May 25, 2011	<ul style="list-style-type: none"> Application submitted to MOE requesting that the operation of the stormwater ponds be as designed (free flowing).
June 30, 2011	<ul style="list-style-type: none"> Last load of waste accepted and disposed in landfill mound Closure of the public drop off facility Decommissioning of contaminated soil pad
July 4, 2011	<ul style="list-style-type: none"> Start of installation of final cover system on Phases 2, 3, 4, and 5
August 2011	<ul style="list-style-type: none"> Decommissioning of compost pad and pond completed.
September 23, 2011	<ul style="list-style-type: none"> Final cover system over entire Phases 2, 3, 4, and 5 completed.
January 9, 2012	<ul style="list-style-type: none"> MOE issues Environmental Compliance Approval No. A371203, consolidating the previous Certificate of Approvals and amendments. The permit also approved several submissions from June 2010, subject to various conditions. MOE issues amendment to Environmental Compliance Approval No. A371203, approving the re-opening of the public drop off facility, subject to conditions.
January 10, 2012	<ul style="list-style-type: none"> MOE issues Environmental Compliance Approval No. 1688-8HZNJG, consolidating the previous Certificate of Approvals and amendments for Industrial Sewage Works. Approval also granted under this document to allow the stormwater management ponds to operate in a free flowing manner.
February 1, 2012	<ul style="list-style-type: none"> The public drop off facility re-opened to the public, subject to the conditions listed under the amendment to Environmental Compliance Approval A371203 issued January 9, 2012.
May 3, 2013	<ul style="list-style-type: none"> MOE issues amendment to Environmental Compliance Approval No. A371203, reflecting the Environmental Review Tribunal (ERT) settlement of five of the seven conditions of the January 9, 2012 ECA that were appealed by the Concerned Citizens' Committee of Tyendinaga and Environs in March 2012. The notice amended and added conditions regarding the assessment of groundwater monitoring wells, odour monitoring and abatement activities (including frequency of surface emission surveys after 2014), public notification plan, semi-annual and annual monitoring reporting, additional information pertaining to site compliance, and removal of information from the annual monitoring report. Odour monitoring and reporting will follow the "Odour Monitoring Plan - Revision No. 1" and "Odour Survey Protocol" submitted in March 2012 and February 2013, respectively, while implementation of the Public Notification Plan will occur in accordance with the "Public Notification Plan - February 2013".
October 4, 2013	<ul style="list-style-type: none"> MOE issues amendment to Environmental Compliance Approval No. A371203, approving the March 2013 financial assurance submission. Conditions regarding the amounts of financial assurance to be posted through 2016 were amended.
February 28, 2014	<ul style="list-style-type: none"> The public drop off facility was closed by WM. All approvals remain in place should WM elect to re-open the facility in the future.
April 29, 2014	<ul style="list-style-type: none"> MOE issues Environmental Compliance Approval No. 5970-9HKP3V, approving the operation of a candlestick flare. The candlestick flare installation addresses a contingency plan for the landfill gas collection system, in that it would be operational only when the enclosed flare is shut down for maintenance and repair.

**Detailed Chronology of Significant Landfill Design & Operation,
and Land Use Changes
Richmond Landfill Site**

8570

Date	Description
August 14, 2015	<ul style="list-style-type: none"> ▪ Ministry of Environment and Climate Change (MOECC) issues Notice 3 to amend Environmental Compliance Approval No. A371203 reflecting the ERT interim order regarding one of the conditions of the January 9, 2012 ECA that were appealed by the Concerned Citizens' Committee of Tyendinaga and Environs in March 2012. The notice amended the former Environmental Monitoring Plan condition, and also Conditions 8.5 (a) i, ii, and iii (Environmental Monitoring Plan, and Replacement/Installation/Testing of Monitoring Wells), and adding two (2) conditions to the ECA for protocols of reporting exceedances to the MOECC District Manager, and the reporting of 1,4-dioxane levels.
November 5, 2015	<ul style="list-style-type: none"> ▪ MOECC issues Notice 4 to amend Environmental Compliance Approval No. A371203, reflecting the ERT interim order to amend of the conditions of the January 9, 2012 ECA that was appealed by the Concerned Citizens' Committee of Tyendinaga and Environs in March 2012. The notice amended the date of completion of testing of groundwater monitoring wells M-187 through M-190 to December 1, 2015.
December 24, 2015	<ul style="list-style-type: none"> ▪ The ERT issues a decision with an accompanying order regarding the appeal of the January 9, 2012 Environmental Compliance Approval No. A371203 by the Concerned Citizens' Committee of Tyendinaga and Environs. The ERT has ordered that additional field work be completed and a report prepared that is to be provided to all parties to the hearing. The report is to be completed by April 15, 2016. After the report is reviewed, the parties will meet to discuss the contents. After reviewing input from all parties, the MOECC will determine if the Contaminant Attenuation Zone (CAZ) has been adequately defined. If the MOECC agrees the CAZ has been adequately defined, WM will submit the CAZ application. If the MOECC does not agree the CAZ has been adequately defined, more field work will be ordered.

The potential sources of Volatile Organic Compounds (VOCs) on the landfill site include the following	
	<ul style="list-style-type: none"> ▪ The unlined Phase 1 area of the landfill, operated since 1954 until site closure in 2011;
	<ul style="list-style-type: none"> ▪ Maintenance shop located south of the landfill footprint (date of initial operation unknown);
	<ul style="list-style-type: none"> ▪ Sewage lagoon operated by Sutcliffe Sanitation, located on the south side of the landfill in the area now covered by Phase 4 (date of initial operation unknown, but decommissioned in 1990 prior to Phase 2 construction of the landfill);
	<ul style="list-style-type: none"> ▪ Stormwater runoff from the contaminated soil pad constructed in 1993, located to the east of the maintenance shop;
	<ul style="list-style-type: none"> ▪ Historic sporadic leachate seep breakouts (typically along the south and northwest sides of the landfill);
	<ul style="list-style-type: none"> ▪ Septic sewage systems with distribution tile fields, located east of the scalehouse and maintenance ship (dates of installation unknown); and
	<ul style="list-style-type: none"> ▪ Former abattoir located immediately south of the site (operated from the mid-1960s to early 2000s).

Appendix E

**STATEMENT OF COMPLIANCE - 2015 ENVIRONMENTAL MONITORING
AND REPORTING, PREPARED BY BLUMETRIC ENVIRONMENTAL INC.
(FORMERLY WATER AND EARTH SCIENCE ASSOCIATES (WESA))**



MEMORANDUM

Date: March 23, 2016
To: Tim Haaf and Jim Forney, Waste Management (WM)
Cc: Chris Prucha (WM) and Beverly Leno, WSP Canada Inc.
From: François Richard and Madeleine Corriveau, BluMetric Environmental Inc.
Project No: KB13060-00-05
Re: Statement of Compliance, 2015 Environmental Monitoring and Reporting
WM Richmond Landfill, Town of Greater Napanee, Ontario

Condition 14.3, paragraph xx of Environmental Compliance Approval (ECA) No. A371203, Notice No. 1 issued January 9, 2012 and amended May 3, 2013 for the WM Richmond Landfill requires that the Annual Report includes a statement of compliance with all conditions of the ECA and other relevant Ontario Ministry of Environment and Climate Change (MOECC) groundwater and surface water requirements. BluMetric Environmental Inc. is contracted by WM to complete the environmental monitoring program at the landfill, and to prepare the Semi-Annual Monitoring Reports as required by Condition 14.1 of the ECA. The purpose of this memorandum is to provide a statement of compliance with the environmental monitoring and reporting requirements of the ECA.

During the 2015 calendar year, the environmental monitoring program was conducted in accordance with the Environmental Monitoring Plan (EMP) for the site. The EMP dated June 29, 2010, as specified in Condition 8.5(a) of the ECA, was applied until August 2015. Starting on September 1, 2015, Interim EMP revision 04, dated August 2015, was implemented as required by the Environmental Review Tribunal (ERT) Order dated July 21, 2015. Any specific exceptions to the sampling program (i.e., dry or damaged monitoring wells, dry surface water locations, etc.) are described in the Spring and Fall 2015 Semi-Annual Monitoring Reports.

The two Semi-Annual Monitoring Reports prepared in 2015 were submitted to MOE and other stakeholders in compliance with Condition 14.1 of the ECA. The reports were posted by WM on a publicly accessible website.



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The Semi-Annual Monitoring Reports include an assessment with regard to the compliance of groundwater quality in comparison to MOECC Guideline B-7. The reports also include a statement of compliance of the monitoring well conditions to Ontario Regulation 903.

We trust you will find this statement of compliance with the environmental monitoring and reporting requirements of ECA No. A371203 to be satisfactory. If you have any questions regarding the above information, please contact the undersigned anytime.

Respectfully Submitted,
BluMetric Environmental Inc.



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



Madeleine Corriveau, M.Sc., P.Geo.
Intermediate Hydrogeologist

Ref: KB13060-00-05 2015 Statement of Compliance Memo_FINAL-20160323.docx

Appendix F

**2015 PHYTOREMEDIATION SYSTEM MONITORING RESULTS,
PROVIDED BY BLUMETRIC ENVIRONMENTAL INC. (FORMERLY
WATER AND EARTH SCIENCE ASSOCIATES (WESA))**



MEMORANDUM

Date: March 23, 2016
To: Tim Haaf and Jim Forney, Waste Management (WM)
Cc: Chris Prucha (WM) and Beverly Leno, WSP Canada Inc.
From: François Richard and Madeleine Corriveau, BluMetric Environmental Inc.
Project No: KB13060-00-05
Re: 2015 Monitoring Results, Phytoremediation System
WM Richmond Landfill, Town of Greater Napanee, Ontario

Condition 5.11 of Environmental Compliance Approval (ECA) No. A371203, Notice No. 1 issued January 9, 2012 and amended May 3, 2013 for the WM Richmond Landfill requires that the Annual Report includes an assessment of the results of the phytoremediation system as related to the stated objectives for the existing and proposed phytoremediation system, as well as an assessment of the need to change the monitoring program for the phytoremediation system and a recommendation of the required changes.

BluMetric Environmental Inc. is contracted by WM to complete the environmental monitoring program at the landfill, and to prepare the Semi-Annual Monitoring Reports as required by Condition 14.1 of the ECA. The purpose of this memorandum is to provide the monitoring results for the phytoremediation system and related assessments required by Condition 5.11 of the ECA.

During the 2015 calendar year, the results from the environmental monitoring program, conducted in accordance with the Environmental Monitoring Plan (EMP), were also used to monitor groundwater levels and quality around the phytoremediation system in the northwest corner of the Site. A revised interim EMP (rev. 04) dated August 2015 was implemented starting on September 1, 2015 as required by Environmental Review Tribunal (ERT) Order dated July 21, 2015, and was used to conduct the fall 2015 monitoring event.

To address Condition 5.11 (i), groundwater levels were recorded from the monitoring wells specified in Condition 5.10 (1) and are provided in **Table 1**, including from the Shallow Flow Zone (M27, M29, M30, M31, M38, M66-2, M67-2, M100, M101, M102 and M103) as well as the Intermediate Bedrock Flow Zone (M3A-3, M5-3, M6-3, M74 and M75. Similarly, groundwater quality results from monitoring wells specified in Condition 5.10 (2) are provided in **Table 2**, including from the Shallow Flow Zone (M66-2, M67-2, M101, M102 and M103) as well



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as the Intermediate Bedrock Flow Zone (M5-3, M6-3, M74 and M75); shallow monitor M29 had insufficient water for sampling. A few of the listed wells were removed from the fall 2015 monitoring program which was conducted following the latest EMP. As a result, water levels at M29, M30, M31 and M38 were recorded in spring and summer but not in fall 2015, and groundwater samples were not collected at M29 and M102 during the fall 2015 monitoring event. Additional details related to the 2015 monitoring results are available in the Spring and Fall 2015 Semi-Annual Monitoring Reports.

The phytoremediation system was initially planted in May 2011, and following some start-up issues was completely removed in 2012. The ground reworked was and 6,700 dogwoods and willows were planted in May 2013. Since the plantation has yet to become fully established, no trends are apparent from the monitoring results in relation to the operation of the phytoremediation system. No information is available to address Conditions 5.11 (ii and iii), as the system is establishing itself. These conditions will be addressed in future monitoring reports.

We trust you will find this statement of compliance with the environmental monitoring and reporting requirements of ECA No. A371203 to be satisfactory. If you have any questions regarding the above information, please contact the undersigned anytime.

Respectfully Submitted,
BluMetric Environmental Inc.



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



Madeleine Corriveau, M.Sc., P.Geo.
Intermediate Hydrogeologist

Ref: KB13060-00-05 2015 Phytoremediation System Memo_FINAL-20160323.docx

Table 1: 2015 Phytoremediation System Monitoring Results (Water Levels)

Monitoring Well	Water Level masl	Monitoring Well	Water Level masl	Monitoring Well	Water Level masl
16-Apr-15		04-Aug-15		20-Nov-15	
Shallow Groundwater Flow Zone					
M27	126.27	M27	125.48	M27	126.40
M29	123.64	M29	123.65	M29	NM
M30	124.57	M30	123.35	M30	NM
M31	124.32	M31	123.30	M31	NM
M38	125.42	M38	124.22	M38	NM
M66-2	123.29	M66-2	122.41	M66-2	123.29
M67-2	122.63	M67-2	122.45	M67-2	122.53
M100	125.34	M100	124.18	M100	125.16
M101	124.10	M101	123.29	M101	124.08
M102	124.20	M102	123.20	M102	124.19
M103	123.83	M103	122.91	M103	123.76
Intermediate Bedrock Groundwater Flow Zone					
M3A-3	124.71	M3A-3	124.65	M3A-3	124.93
M5-3	122.32	M5-3	122.07	M5-3	123.29
M6-3	123.61	M6-3	123.29	M6-3	123.44
M74	123.69	M74	123.45	M74	123.93
M75	122.75	M75	123.07	M75	123.30

NM: Not measured

WM-Richmond Landfill
 ECA A371203
 Table 2a: 2015 Phytoremediation System Monitoring Results (Spring Groundwater Quality)

Name	Date	Alkalinity mg/L	Ammonia mg/L	Arsenic mg/L	Barium mg/L	Biochemical Oxygen Demand mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium mg/L	Cobalt mg/L	Conductivity µS/cm	Copper mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Mercury mg/L	Naphthalene mg/L	Nickel mg/L	Nitrate mg/L	Nitrite mg/L	pH (Lab) unitless	Phenols mg/L	Phosphorus (total) mg/L	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L	Zinc mg/L		
Shallow Groundwater Flow Zone																																					
M66-2	23/04/2015	320	< 0.15	0.0013	0.025	< 2	0.33	< 0.0001	120	8.3	100	0.0086	< 0.0005	1330	< 0.001	1.9	470	0.74	< 0.0005	40	0.069	< 0.0002	< 0.013	0.0014	< 0.1	< 0.01	7.92	0.014	0.11	4	100	240	834	< 0.7	< 0.005		
M67-2	22/04/2015	350	0.55	0.0014	0.24	< 2	0.79	< 0.0001	49	7.5	6	0.0067	< 0.0005	682	< 0.001	2.2	250	0.59	< 0.0005	30	0.052	< 0.0002	< 0.01	< 0.001	< 0.1	0.035	8.18	0.0096	0.06	7.8	62	20	410	< 0.7	< 0.005		
M101	23/04/2015	480	< 0.15	< 0.001	0.17	< 2	0.075	< 0.0001	170	5.5	86	0.005	< 0.0005	1220	< 0.001	3	640	< 0.1	< 0.0005	55	0.0066	< 0.0002	< 0.0005	0.0012	< 0.1	< 0.01	7.66	< 0.001	0.09	3.8	15	63	742	< 0.7	< 0.005		
M102	23/04/2015	440	< 0.15	< 0.001	0.12	< 2	0.021	< 0.0001	150	< 4	26	< 0.005	0.0026	934	< 0.001	3.5	490	0.94	< 0.0005	28	0.3	< 0.0002	< 0.0005	0.001	< 0.1	< 0.01	7.69	< 0.001	< 0.03	1.9	22	38	536	< 0.7	< 0.005		
M103	23/04/2015	750	< 0.15	< 0.001	0.18	< 2	0.29	< 0.0001	150	9.3	180	< 0.005	< 0.0005	1920	< 0.001	4.8	770	< 0.1	< 0.0005	97	0.0037	< 0.0002	< 0.0005	0.012	< 0.1	< 0.01	7.67	< 0.001	0.05	6.4	150	46	1120	< 0.7	0.0082		
Intermediate Bedrock Groundwater Flow Zone																																					
M5-3	22/04/2015	460	1.3	< 0.001	0.16	11	1.2	< 0.0001	31	13	40	< 0.005	< 0.0005	974	< 0.001	1.4	190	< 0.1	< 0.0005	27	0.0032	< 0.0002	< 0.0005	< 0.001	< 0.1	< 0.01	8.26	0.031	0.05	13	140	23	604	1.3	< 0.005		
M6-3	22/04/2015	650	4.35	< 0.002	1.1	6	0.31	< 0.0001	640	130	1400	0.016	< 0.0025	7330	0.0017	46	1600	< 0.1	< 0.0005	1.2	< 0.002	< 0.0002	< 0.001	0.038	< 0.1	< 0.01	11.9	0.018	0.04	47	610	84	3790	7.5	< 0.005		
M74	23/04/2015	330	1.95	0.0026	0.088	< 2	0.95	< 0.0001	37	32	59	< 0.005	< 0.0005	970	< 0.001	1.9	180	< 0.1	< 0.0005	22	0.026	< 0.0002	< 0.0005	< 0.001	< 0.1	< 0.01	8.1	< 0.001	0.66	15	130	80	548	2.1	< 0.005		
M75	23/04/2015	420	1.49	< 0.001	0.081	3	1.2	< 0.0001	35	22	63	< 0.005	< 0.0005	1120	< 0.001	1.4	190	< 0.1	< 0.0005	24	0.011	< 0.0002	< 0.0005	< 0.001	< 0.1	< 0.01	7.98	0.031	0.11	15	170	80	636	1.4	< 0.005		

Name	Date	1,1,1,2-Tetrachloroethane mg/L	1,1,1-Trichloroethane mg/L	1,1,2,2-Tetrachloroethane mg/L	1,1,2-Trichloroethane mg/L	1,1-Dichloroethane mg/L	1,1-Dichloroethylene mg/L	1,2-Dibromoethane mg/L	1,2-Dichlorobenzene mg/L	1,2-Dichloroethane mg/L	1,2-Dichloropropane mg/L	1,3,5-Trimethylbenzene mg/L	1,3-Dichlorobenzene mg/L	1,4-Dichlorobenzene mg/L	Benzene mg/L	Bromodichloromethane mg/L	Bromoform mg/L	Bromomethane mg/L	Carbon Tetrachloride mg/L	Chlorobenzene mg/L	Chloroethane mg/L	Chloroform mg/L	Chloromethane mg/L	Cis-1,2-Dichloroethylene mg/L	Cis-1,3-Dichloropropylene mg/L	Dibromochloromethane mg/L	Dichloromethane mg/L	Ethylbenzene mg/L	m,p-Xylene mg/L	o-Xylene mg/L	Styrene mg/L	Tetrachloroethylene mg/L mg/L	Toluene mg/L mg/L	Trans-1,2-dichloroethylene mg/L mg/L	Trans-1,3-dichloropropylene mg/L mg/L	Trichloroethylene mg/L mg/L	Trichlorofluoromethane mg/L	Vinyl Chloride mg/L			
Shallow Groundwater Flow Zone																																									
M66-2	23/04/2015	< 0.005	< 0.0025	< 0.005	< 0.005	< 0.0025	< 0.0025	< 0.005	< 0.005	< 0.005	< 0.0025	< 0.005	< 0.005	< 0.005	< 0.0025	< 0.0025	< 0.005	< 0.0025	< 0.013	< 0.0025	< 0.0025	< 0.005	< 0.0025	< 0.013	< 0.0025	< 0.005	< 0.005	< 0.013	< 0.0025	< 0.0025	< 0.0025	< 0.005	< 0.0025	0.26	< 0.0025	< 0.005	< 0.0025	< 0.005	< 0.0025	< 0.005	
M67-2	22/04/2015	< 0.004	< 0.002	< 0.004	< 0.004	< 0.002	< 0.002	< 0.004	< 0.004	< 0.004	< 0.002	< 0.004	< 0.004	< 0.004	< 0.002	< 0.002	< 0.004	< 0.01	< 0.002	< 0.002	< 0.004	< 0.002	< 0.01	< 0.002	< 0.004	< 0.004	< 0.01	< 0.002	< 0.002	< 0.002	< 0.004	< 0.002	0.13	< 0.002	< 0.004	< 0.002	< 0.004	< 0.002	< 0.004		
M101	23/04/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.00051	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002
M102	23/04/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002
M103	23/04/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002
Intermediate Bedrock Groundwater Flow Zone																																									
M5-3	22/04/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	0.00015	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0005	< 0.0001	0.00015	0.00014	< 0.0002	< 0.0001	0.00027	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
M6-3	22/04/2015	< 0.0004	< 0.0002	< 0.0004	< 0.0004	< 0.0002	< 0.0002	< 0.0004	< 0.0004	< 0.0004	< 0.0002	< 0.0004	< 0.0004	< 0.0004	0.00098	< 0.0002	< 0.0004	< 0.001	< 0.0002	< 0.0002	< 0.0004	< 0.0002	< 0.001	< 0.0002	< 0.0004	< 0.0004	< 0.001	< 0.0002	0.0014	0.00043	< 0.0004	< 0.0002	0.0096	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0002	< 0.0004		
M74	23/04/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002	
M75	23/04/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002

NOTE: M29 not sampled (insufficient water)

WM-Richmond Landfill
 ECA A371203
 Table 2b: 2015 Phytoremediation System Monitoring Results (Fall Groundwater Quality)

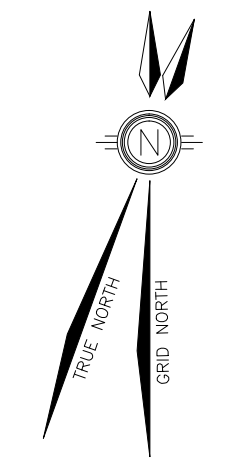
Name	Date	Alkalinity mg/L	Ammonia mg/L	Boron mg/L	Calcium mg/L	Chloride mg/L	Conductivity mS/cm	Dissolved Organic Carbon mg/L	Iron mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite + Nitrate mg/L	Nitrite mg/L	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L
Shallow Groundwater Flow Zone																		
M66-2	24/11/2015	330	< 0.15	0.78	100	95	1290	1.6	0.49	40	0.018	< 0.1	< 0.1	< 0.01	6.2	140	220	800
M67-2	25/11/2015	350	0.56	0.85	49	5.8	662	1.8	< 0.1	27	0.098	< 0.1	< 0.1	< 0.01	8.7	56	4.9	370
M101	25/11/2015	490	< 0.15	0.086	170	77	1210	2.9	< 0.1	55	0.0037	< 0.1	< 0.1	< 0.01	4.6	17	60	796
M103	24/11/2015	740	< 0.15	0.32	150	170	1920	5.1	< 0.1	99	0.019	< 0.1	< 0.1	< 0.01	7.4	160	41	1120
Intermediate Bedrock Groundwater Flow Zone																		
M5-3	25/11/2015	440	1.36	1.2	35	45	964	1.3	< 0.1	27	0.0022	< 0.1	< 0.1	< 0.01	14	150	1.1	556
M6-3	24/11/2015	1300	4.98	0.17	930	1300	9230	44	< 0.5	< 0.25	< 0.01	< 0.1	0.14	0.16	56	750	39	4300
M74	24/11/2015	370	3.47	1.1	31	43	943	1.9	< 0.1	18	0.032	< 0.1	< 0.1	< 0.01	16	130	54	662
M75	24/11/2015	430	1.56	1.3	36	59	1130	1.3	< 0.1	25	0.0099	< 0.1	< 0.1	< 0.01	17	180	75	708

Name	Date	1,1,1,2-Tetrachloroethane mg/L	1,1,1-Trichloroethane mg/L	1,1,2,2-Tetrachloroethane mg/L	1,1,2-Trichloroethane mg/L	1,1-Dichloroethane mg/L	1,1-Dichloroethylene mg/L	1,2-Dichlorobenzene (o) mg/L	1,2-Dichloroethane mg/L	1,3,5-Trimethylbenzene mg/L	1,3-Dichlorobenzene (m) mg/L	1,4-Dichlorobenzene (p) mg/L	1,4-Dioxane mg/L	Benzene mg/L	Chlorobenzene mg/L	Chloroethane mg/L	Chloromethane mg/L	Cis-1,2-Dichloroethylene mg/L	Dichloromethane mg/L	Ethylbenzene mg/L	m+p-Xylene mg/L	o-Xylene mg/L	Styrene mg/L	Tetrachloroethylene mg/L	Toluene mg/L	
Shallow Groundwater Flow Zone																										
M66-2	24/11/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	
M67-2	25/11/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	0.00042
M101	25/11/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.00068	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0087	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002
M103	24/11/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.02	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002
Intermediate Bedrock Groundwater Flow Zone																										
M5-3	25/11/2015	< 0.0005	< 0.00025	< 0.0005	< 0.0005	< 0.00025	< 0.00025	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.001	< 0.00025	< 0.00025	< 0.0005	< 0.0013	< 0.00025	< 0.0013	< 0.00025	0.00026	< 0.00025	< 0.0005	< 0.00025	< 0.0005	< 0.0005
M6-3	24/11/2015	< 0.0004	< 0.0002	< 0.0004	< 0.0004	< 0.0002	< 0.0002	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	0.32	0.00099	< 0.0002	< 0.0004	< 0.001	< 0.0002	< 0.001	0.00021	0.0015	0.00046	< 0.0004	< 0.0002	< 0.0002	0.0097
M74	24/11/2015	< 0.0004	< 0.0002	< 0.0004	< 0.0004	< 0.0002	< 0.0002	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.001	< 0.0002	< 0.0002	< 0.0004	< 0.001	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0004
M75	24/11/2015	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002

Appendix G

SITE LOCATION PLAN – PHYTOREMEDIATION SYSTEM

c:\1985\8570\DRAWINGS\2016\8570-2014_phytoremediation_system.dwg Mar 29, 2016 - 1:17pm



LEGEND:

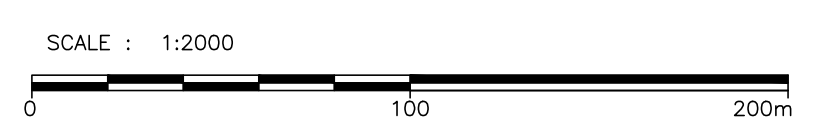
- INDEX CONTOURS
- INTERVAL CONTOURS
- REFERENCE GRID LINE
- LEGAL BOUNDARIES
- APPROVED LIMIT OF LANDFILL
- PHASING LIMITS
- EXISTING DRAINAGE DITCH
- EXISTING WEEPER
- EXISTING GAS LATERAL
- EXISTING FENCE LINE
- EXISTING TREE LINE
- EXISTING TREE
- HT #98
- EXISTING HYDRO TOWER (D #)
- EXISTING HYDRO POLE
- EXISTING ROAD EDGE
- BEDROCK WELL LOCATION
- GAS MONITOR LOCATION
- OVERBURDEN WELL LOCATION
- EXISTING LEACHATE MANHOLE
- MH-3
- CW
- ACTIVE VERTICAL EXTRACTION GAS WELL
- CW
- NON-ACTIVE VERTICAL EXTRACTION GAS WELL

NOTES:

- 1) EXISTING GROUND CONTOURS AND TOPOGRAPHIC INFORMATION SHOWN IS BASED ON INFORMATION OBTAINED FROM AERIAL PHOTOGRAPHY FLOWN ON JUNE 27, 2009 BY BASE MAPPING. WELL LOCATIONS AND LANDFILL MOUND CONTOURS WERE UPDATED FROM FIELD SURVEY DATA BY GENIVAR INC. (NOW WSP INC.) ON NOVEMBER 22, 2011 AND FEBRUARY 22, 2012.
- 2) CONTOUR INTERVAL SHOWN IS 0.5m
- 3) THE LOCAL SITE GRID IS BASED ON 0+000N BEING THE NORTH LANDFILL LIMIT. THE NORTH WEST CORNER OF THE LANDFILL LIMIT IS 0+300E AND IS PERPENDICULAR TO THE EAST/WEST GRID LINE. THE WEST LIMIT OF THE LANDFILL IS LOCATED ALONG THE LOT LINE BETWEEN LOTS 1 AND 2, CONCESSION 4.
- 4) THE PHYTOREMEDIATION SYSTEM IN THE NORTHWEST CORNER OF THE LANDFILL WAS PLANTED IN THE SPRING OF 2011. DUE TO WET CONDITIONS AND POOR GROWTH, ALL AREAS WERE PLOWED UNDER IN SEPTEMBER 2012, AND GROUND CONDITIONS WERE REWORKED. ALL AREAS WERE REPLANTED IN SPRING 2013. IN 2014, WM REPORTS THAT VEGETATION HAD RE-ESTABLISHED WELL. VARIOUS CHEMICALS WERE USED TO PROMOTE GROWTH AND REMOVE GRASS AND WEEDS. THE HEIGHT OF PLANTS VARIES FROM 50 CM TO 100 CM.
- 5) IN 2015, WM REPORTS THE PLANTATION EXPERIENCED GOOD GROWTH. THE WILLOWS ARE APPROXIMATELY 1.5m TO 2.4m IN HEIGHT, AND THE DOGWOODS ARE APPROXIMATELY 0.9m TO 1.2m IN HEIGHT. APPROXIMATELY FIVE (5) TO TEN (10) PERCENT MORE SHRUBS THAT WERE NOT ABLE TO BE SEEN PREVIOUSLY IN THE WEEDS, HAVE SHOWN SIGNS OF GROWTH. ALL PLANT LIFE WILL CONTINUE TO BE MONITORED FOR ANY SIGN OF IMPAIRMENT.

B.M. #1 ELEV. = 124.667
 TOP OF BRACKET, NORTH WEST LEG OF HYDRO TOWER No. 99, LOCATED ±25m NORTH AND ±180m EAST OF NORTH WEST CORNER OF APPROVED LANDFILL LIMIT.

B.M. #2 ELEV. = 125.146
 TOP OF BRACKET, NORTH WEST LEG OF HYDRO TOWER No. 100, LOCATED ±25m NORTH AND ±80m WEST OF NORTH WEST CORNER OF APPROVED LANDFILL LIMIT.



DATE	DESCRIPTION	APP BY

Appendix H

**LETTERS OF APPROVAL FOR ALTERNATE LEACHATE TREATMENT
SITES**



The Corporation of the Town of Cobourg
55 King Street West
Cobourg, ON, K9A 5H3

May 28, 2014

WM Waste Management
Linda Cooper, Public Relations Manager
1271 Beechwood Road
RR #6, Napanee, ON, K7R 3L1

Dear Ms. Cooper:

We have reviewed the analytical data for the leachate collected from the Richmond Landfill site in Napanee, ON. Based on this data we are confident that our Sequence Batch Reactor (SBR), located at the Lucas Point Water Pollution Control Plant on Normar Road, will be able to adequately treat this material on a contingency basis.

The available capacity in the SBR varies from day to day, depending on others who have elected to use our facility for similar purposes. In this regard we would ask that you please contact us prior to sending this material, to arrange an appropriate time for delivery. Verbal consent to discharge at the Lucas Point facility can be obtained from one of the following:

1. Bill Peeples (WPCP Manager): 905-372-7332
2. Jennifer Leno (Environmental Technician): 905-372-5539
3. Scott Huffman (Foreman, Plant #2): 905-372-5539
4. Barry Thrasher (Deputy Director of Public Works): 905-372-9971

It is understood by all parties that there can be no guarantees that the Town of Cobourg can unconditionally accept the leachate from your landfill site. Domestic leachate from our own landfill sites must be accepted on a priority basis. If the incoming volume from your landfill site would cause us to exceed the maximum capacity of the SBR unit, we would not be able to accept it. Historically, such conditions have never occurred; however, we would like you to be aware that this is a possibility.

Mr. Randy Harris
May 28, 2014
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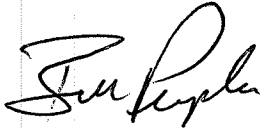
The address of the facility to which you are to discharge your leachate is:

Lucas Point Water Pollution Control Plant (Plant #2)
95 Normar Road
Cobourg, ON, K9A 4J8
905-372-5539

The disposal rate for leachate is dependant upon the organic strength of the material received. Our rate schedule can be obtained from the Town of Cobourg website at www.cobourg.ca or by contacting Jennifer Leno at the above listed phone number.

If you have any questions regarding this issue, please give me a call.

Regards,

A handwritten signature in black ink, appearing to read "Bill Peeples". The signature is written in a cursive style with a large initial "B".

Bill Peeples, Manager
Water Pollution Control Department
Town of Cobourg
905-372-7332