

**EMISSION SUMMARY AND
DISPERSION MODELLING REPORT**

**TOM HOWE LANDFILL SITE
LANDFILL GAS FLARING FACILITY
Haldimand, Ontario**

Prepared for

HALDIMAND COUNTY
1162 Kohler Road
P.O. Box 5000
Haldimand, Ontario
N0A 1E0

Prepared by

COMCOR ENVIRONMENTAL LIMITED
320 Pinebush Road, Suite 12
Cambridge, Ontario
N1T 1Z6

Company Name

The Corporation of Haldimand County

Company Address

Unit Number	Street Number	Street Name	PO Box
	53	Thorburn Street South	
City/Town	Province		Postal Code
Cayuga	Ontario		NOA 1E0

Location of Facility

Tom Howe Landfill Site, Lots 7 and 8, Concession 16, Walpole Township, Haldimand County

The attached Emission Summary and Dispersion Modeling Report was prepared in accordance with s. 26 of O. Reg. 419/05 and the guidance in the MECP document "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated March 2009 and "Air Dispersion Modelling Guideline for Ontario" dated March 2009 and the minimum required information identified in the check-list on the reverse of this sheet has been submitted.

Company Contact

Company Contact
Nancy McKinnon

Company Contact Name

Last Name	First Name	Middle Initial
McKinnon	Nancy	

Title	Telephone Number
Environmental Operations Supervisor	905-318-5932

Signature	Date (yyyy/mm/dd)
	2021/09/20

Technical Contact

Technical Contact
Jonathan Petsch, P.Eng.

Technical Contact Name

Last Name	First Name	Middle Initial
Petsch	Jonathan	

Representing	Telephone Number
Comcor Environmental Limited	519-621-6669

Signature	Date (yyyy/mm/dd)
	2021/09/20

* This checklist is taken from the document titled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated March 2009.

Emission Summary and Dispersion Modelling Report Checklist

	Required Information	Submitted	Explanation/Reference
-	Executive Summary and Emission Summary Table	-	-
-	1.1 Overview of ESDM Report	<input checked="" type="checkbox"/> Yes	
-	1.2 Emission Summary Table	<input checked="" type="checkbox"/> Yes	
1.0	Introduction and Facility Description	-	-
-	1.1 Purpose and Scope of ESDM Report (when report only represents a portion of facility)	<input checked="" type="checkbox"/> Yes	Sections 1.1 and 1.2
-	1.2 Description of Processes and NAICS code(s)	<input checked="" type="checkbox"/> Yes	Sections 1.3 and 1.4
-	1.3 Description of Products and Raw Materials	<input checked="" type="checkbox"/> Yes	Section 1.3
-	1.4 Process Flow Diagram	<input checked="" type="checkbox"/> Yes	Figure 3
-	1.5 Operating Schedule	<input checked="" type="checkbox"/> Yes	Section 1.4
2.0	Initial Identification of Sources and Contaminants	-	-
-	2.1 Sources and Contaminants Identification Table	<input checked="" type="checkbox"/> Yes	Section 2.0 and Table 1
3.0	Assessment of the Significance of Contaminants and Sources		
-	3.1 Identification of Negligible Contaminants and Sources	<input checked="" type="checkbox"/> Yes	Sections 3.0 and 7.3
-	3.2 Rationale for Assessment	<input checked="" type="checkbox"/> Yes	Sections 3.0 and 7.3
4.0	Operating Conditions, Emission Rate Estimating and Data Quality		
-	4.1 Description of operating conditions, for each significant contaminant that results in the maximum POI concentration for that contaminant	<input checked="" type="checkbox"/> Yes	Section 4.0
-	4.2 Explanation of Method used to calculate the emission rate for each contaminant	<input checked="" type="checkbox"/> Yes	Section 4.0
-	4.3 Sample calculation for each method	<input checked="" type="checkbox"/> Yes	Appendix D
-	4.4 Assessment of Data Quality for each emission rate	<input checked="" type="checkbox"/> Yes	Section 4.0
5.0	Source Summary Table and Property Plan	-	-
-	5.1 Source Summary Table	<input checked="" type="checkbox"/> Yes	Table 2
-	5.2 Site Plan (scalable)	<input checked="" type="checkbox"/> Yes	Figure 5
6.0	Dispersion Modelling	-	-
-	6.1 Dispersion Modelling Input Summary Table	<input checked="" type="checkbox"/> Yes	Table 3
-	6.2 Land Use Zoning Designation Plan	<input checked="" type="checkbox"/> Yes	Appendix F
-	6.3 Dispersion Modelling Input and Output Files	<input checked="" type="checkbox"/> Yes	Appendix G
7.0	Emission Summary Table and Conclusions	-	-
-	7.1 Emission Summary Table	<input checked="" type="checkbox"/> Yes	Table 4
-	7.2 Assessment of Contaminants with no MECP POI Limits	<input checked="" type="checkbox"/> Yes	Section 7.4
-	7.3 Conclusions	<input type="checkbox"/> Yes	Section 8.0
-	Appendices (Provide supporting information or details such as...)	-	-
	Current ECA	<input checked="" type="checkbox"/> Yes	Appendix A
	Flare Specifications	<input checked="" type="checkbox"/> Yes	Appendix C
	USEPA AP-42 Compilation of Emission Factors - Section 2.4	<input checked="" type="checkbox"/> Yes	Appendix E

EXECUTIVE SUMMARY

Comcor Environmental Limited (Comcor) was retained by Haldimand County (the County) to prepare this Emission Summary and Dispersion Modelling (ESDM) Report for the operation of a Landfill Gas Flaring Facility (Facility) at the closed Tom Howe Landfill Site (Site) in Haldimand, Ontario. This application is being submitted to achieve compliance of the Facility's operations with the requirements of Section 9 of the Environmental Protection Act, R.S.O. 1990 as amended.

This ESDM Report has been prepared in support of an application for amendment to Environmental Compliance Approval (ECA) No. 8901-5W2QQ8 and presents the results of dispersion modelling and calculates contaminant concentrations which are compared to the corresponding contaminant Point of Impingement (POI) limits.

The County currently operates a Landfill Gas Flaring Facility at the Site and is seeking to replace the enclosed flare due to the age and size of the equipment. A smaller enclosed flare will be installed in the same location as the existing enclosed flare to handle the decreasing quantities of landfill gas produced at the Site. The enclosed flare will operate 24 hours per day, 365 days per year to control landfill gas emissions from the Site.

The proposed Facility is located at an approved waste disposal site on land that is zoned as Disposal Industrial. Land use surrounding the Facility includes Agricultural to the south and west, and the Tuscarora Indian Reservation to the north and east. The closest Point of Reception is a rural dwelling approximately 300 m north of the Facility. A Secondary Noise Screening assessment was completed as part of this amendment application, and shows that the Facility is below the applicable noise limits. The Secondary Noise Screening form and supporting documentation are provided under a separate cover.

The Ministry of the Environment, Conservation and Parks (MECP) approved SCREEN3 air dispersion model (Lakes Environmental SCREEN View Version 4.0.1) was used to predict the Point of Impingement concentrations that were used in this assessment. Full meteorology and simple/flat terrain were used as model options.

An Emission Summary Table, provided below and attached in the Report as Table 4, summarizes the emission rates and the maximum calculated POI concentrations for all significant contaminants under the maximum emission scenario. The POI concentrations were compared to Schedule 3 standards when available. The Percentage of Criteria Column of Table 4 shows that the maximum Point of Impingement concentrations for all significant contaminants are below their respective standards.

The enclosed flare has been modelled in accordance with Ontario Regulation 419/05 and it has been determined that the maximum Point of Impingement concentration for all compounds modelled are below the POI Standards for all parameters considered.

**Table 4
Emission Summary Table
Tom Howe Landfill Gas Flare Replacement
Haldimand County, Ontario**

Contaminant	Contaminant Code (CAS No.)	MECP Criteria (ug/m ³)	Limiting Effect	Regulation Schedule #/ Guideline	Averaging Period (hr)	Emission Summary		
						Facility Emission Rate (g/s)	POI Concentration ¹ (ug/m ³)	Percentage of Criteria
Landfill Gas Constituents								
1,1,2,2-Tetrachloroethane	79-34-5	0.1	Health	JSL	24	1.44E-05	2.15E-04	0.2%
Combustion By-products								
Carbon Monoxide	630-08-0	6000	Health	3	0.5	5.66E-01	2.50E+01	0.4%
Nitrogen Dioxide	10102-44-0	400	Health	3	1	3.07E-02	1.11E+00	0.3%
Nitrogen Dioxide	10102-44-0	200	Health	3	24	3.07E-02	4.58E-01	0.2%
Sulphur Dioxide	7446-09-5	830	Health	2	0.5	1.16E-02	5.13E-01	0.1%
Sulphur Dioxide ²	7446-09-5	100	Hlth & Veg	3	1	1.16E-02	4.22E-01	0.4%
Sulphur Dioxide	7446-09-5	275	Hlth & Veg	3	24	1.16E-02	1.73E-01	0.1%
Sulphur Dioxide ^{2,3}	7446-09-5	10	Hlth & Veg	3	Annual	1.16E-02	4.65E-02	0.5%
Hydrogen Chloride	7647-01-0	20	Health	3	24	5.80E-03	8.66E-02	0.4%

Notes:

- ¹ POI concentration obtained by multiplying the facility emission rate by the unit concentration factor from SCREEN3, and converting to the appropriate averaging time if applicable.
- ² Updated 1 hr and annual air standards used for Sulphur Dioxide (EBR# 013-0903).
- ³ The maximum annual POI for contaminants with annual averages were multiplied by 140% for comparison with their annual air standards as per the MECP Technical Bulletin - Methodology for Using "Assessment Values" for Contaminants with Annual Air Standards.



Haldimand County Administration Building
53 Thorburn Street South
Cayuga, ON N0A 1E0

March 13, 2023

Hamilton District Office
Ministry of the Environment, Conservation and Parks
119 King St. West, 9th Floor
Hamilton, ON L8P 4Y7
Attn.: Chris O'Connor

RE: Emission Summary and Dispersion Modelling (ESDM) Report 2022 Annual Update for the Tom Howe Landfill Site ECA# 9931-C9GP4T (AIR)

The Tom Howe Landfill site is located on Lots 7 and 8, Concession 15, in the geographic township of Walpole, in the former City of Nanticoke, in the former Regional Municipality of Haldimand Norfolk, now Haldimand County.

The Tom Howe Landfill site is jointly owned by Haldimand and Norfolk Counties. Haldimand County's Public Works Operations Department, Environmental Operations Division, operates and maintains the site on behalf of both Counties. The site operates a Gas Flaring System that is captured under *Ontario Regulation 419* as a Schedule 5 facility.

In accordance with *Ontario Regulation 419/05: Air Pollution - Local Air Quality*, an updated Emission Summary and Dispersion Modelling (ESDM) report was submitted to the MECP dated *September 20, 2021*. Please accept this letter as the 2022 annual update to the ESDM report on the basis that the existing ESDM is considered up-to-date. No changes have been made to the flaring system and the landfill gas flow rate to the flare has not increased. As a result, the POI concentrations estimated in the ESDM report are still reflective of current conditions.

The most recent executive summary of the ESDM report is available to the public on the Haldimand County website, in addition, a copy of the report is kept at the site.

A copy of this letter will be appended to the existing ESDM report, indicating that it is up-to-date.

Should you have any questions or require further information in regards to this matter please don't hesitate to call.

Yours truly,

Mark Loney
Mark Loney
Environmental Operations Technologist
Haldimand County
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905-318-5932 Ext. 6129



Haldimand County Administration Building
53 Thorburn Street South
Cayuga, ON N0A 1E0

March 18, 2024

Hamilton District Office
Ministry of the Environment, Conservation and Parks
119 King St. West, 9th Floor
Hamilton, ON L8P 4Y7

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Yours truly,

Mark Loney

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