HANOVER-WALKERTON WASTE MANAGEMENT COMMITTEE AGENDA
Tuesday May 12, 2026 | 9:30am
Via Zoom
https://us02web.zoom.us/j/86974830296

1. **DISCLOSURE OF PECUNIARY INTEREST**

2. **DELEGATIONS**

3. **ADOPTION OF PREVIOUS MEETING MINUTES**
   - February 10, 2026 (attached)

   Motion:
   That the minutes of the February 10, 2026 meeting be approved as presented and circulated.

4. **BUSINESS ARISING**

5. **ITEMS FOR DECISION/DISCUSSION**

6. **ITEMS FOR INFORMATION/CORRESPONDENCE**

6.1. Styrofoam Recycling
- As directed at the previous meeting, Styrofoam collection has been discontinued at the Hanover/Walkerton Landfill Site. The trailer has been removed, and area has been cleaned up.

6.2. Annual Monitoring Report
- See attached background, purpose, site operations, conclusions and recommendations

6.3. 2026 Landfill Budget – YTD
- See attached budget status to April 30, 2026

6.4. Landfill Quantities
- See attached Quantity Report to March 31, 2026

6.5. Road Flooding
- Mid-March brought heavy rains with snowmelt causing the Saugeen River to rise. The area to the south (road and two private properties) of the Landfill flooded. The scale house and area to the north were not impacted by rising water levels.
- Area impacted by flood waters was a private property that collects scrap metal and those items ended up in the river. Hanover Parks and Recreation staff

collected items that reached the community trail, other items are for the property owner to collect. Hanover and Brockton staff are working collaboratively to deal with the issue.

7. NEW BUSINESS

8. NEXT MEETING

8.1. Tuesday, September 15, 2026 at 1:00 PM

9. ADJOURNMENT

HANOVER-WALKERTON WASTE MANAGEMENT COMMITTEE MINUTES
Tuesday February 10, 2025 | 1:10 PM
By Zoom

MEMBERS PRESENT: Jamie McCarthy | Warren Dickert | Peter Hambly (left at 1:29PM) | Nicholas Schnurr | Tim Elphick | Daniel Ferguson

1. DISCLOSURE OF PECUNIARY INTEREST

None.

2. DELEGATIONS

None.

3. ADOPTION OF PREVIOUS MEETING MINUTES

Moved by PETER HAMBLY / Seconded by WARREN DICKERT

That the minutes of the November 14, 2025, meeting be approved as presented and circulated.

Carried

4. BUSINESS ARISING

4.1. CAT Wheels

Ms. McCarthy informed the committee that the hours of the 2015 CAT Compactor were 9,500 and the wheels were reconditioned to provide compaction needed and reduce negative mechanical impacts to the unit.

4.2. Recycling Depot Costing

Ms. McCarthy provided clarification on the revenue that is provided by Circular Materials Ontario (CMO) for the shared recycling depot at the Landfill. CMO is now providing a set dollar amount for 870 multi-family units to continue to have access to the recycling depot. The 870 units was derived from gathering multi-residential properties that do not receive private collection for recycling.

CMO pays the Town approximately $3,000/month for the recycling depot. The recycling depot is for residential recycling; IC&I recycling is not permitted.

5. ITEMS FOR DECISION/DISCUSSION

None.

6. ITEMS FOR INFORMATION/CORRESPONDENCE

6.1. Landfill Quantities

Mr. Elphick noted that there was a reduction in the tonnage from Town of Walkerton residents in 2025 quantities versus the 2024 amounts.

6.2. Joint Municipal Services Committee agenda dated September 26, 2025

Discussion from the committee took place regarding providing feedback that could be used by the successful consultant regarding Waste Management Plans and regionalisation in Grey County.

Mr. Dickert indicated that it would be a while until the work commences and the County is aware of the joint ownership model that exists between Hanover and Brockton for waste disposal and recycling diversion.

6.3. ECA Update for Walkerton Organic Waste

Mr. Schnurr provided a brief overview of the progress related to the temporary organics bin that will be located at the Landfill Site. Brockton has worked with Cobide Engineering at completing the ECA application and Operations Manual. Brockton staff are also researching and looking at ways to provide organics collection to reduce costs.

Questions about the potential for the Town of Hanover to provide organics was asked and Ms. McCarthy indicated that currently Hanover Council has not directed staff to move forward with an organics program. The contract term for the waste collection program is done at the end of the year, and staff will be determining next steps.

Mr. Dickert mentioned that the Grey County Regional Waste Plan would delve into organics and potentially provide information and recommendations.

7. NEW BUSINESS

7.1. Styrofoam Recycling

The committee determined that collecting and densifying of Expanded Polystyrene (EPS) will cease at the end of February as it is now provided to residents in the recycling stream for both communities. Operational staff will move ahead with what is needed to inform residents and staff about the change.

8. NEXT MEETING

The next meeting is scheduled for Tuesday, May 12, 2026 at 9:30 AM via Zoom.

9. ADJOURNMENT

Moved by NICHOLAS SCHNURR / Seconded by TIM ELPHICK

That this meeting adjourns at 1:35 PM.

April 30, 2026

BY EMAIL ONLY

Sierra Lougheed, Provincial Officer
Owen Sound District Office
Ministry of the Environment, Conservation and Parks
101 17th St E, 3rd Floor
Owen Sound, ON N4K 0A5

Tel: (226) 668-5129
Email: sierra.lougheed@ontario.ca

Subject: **Hanover - Walkerton Waste Disposal Site**
2025 Annual Monitoring Report
O/Ref.: 10020

Dear Ms. Lougheed:

On behalf of the Town of Hanover and Municipality of Brockton, please find enclosed one (1) copy of the 2025 Annual Monitoring Report for the Hanover/Walkerton Waste Disposal Site.

Please note that we have uploaded the tables, figures and appendices for the report to our Google Drive account due to their large size. Instructions on how to access these files for downloading will be forwarded to you in a separate email.

We trust that this report adequately addresses the requirements contained in the Environmental Compliance Approval #9704-8YRQA9 that was issued for the site on October 18, 2012.

If you have any questions regarding the above, please contact the undersigned at 519-506-5959 ext. 102.

Yours truly,

Stephen J. Cobean, P.Eng. FEC
Director
Encl.

cc: Ms. Jamie McCarthy, Town of Hanover
Mr. Gary Hendy, GAMAN Consultants Inc.

HANOVER / WALKERTON WASTE DISPOSAL SITE

ANNUAL MONITORING REPORT 2025

PREPARED FOR:

TOWN OF HANOVER AND

MUNICPALITY OF BROCKTON

APRIL 2026

PROJECT NO: 10020

COBIDE Engineering Inc
517 10th Street
Hanover, ON N4N 1R4
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COBIDE ENGINEERING INC

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1 INTRODUCTION

1.1 BACKGROUND

The Hanover/Walkerton Waste Disposal Site (the 'Site') is located in the Municipality of Brockton on the property legally described as Part of Lots 68 to 73, Concessions 1 and 2, North of the Durham Road (NDR), former Township of Brant. The 'Site' includes the 'Existing Landfill' and the 'Expansion Landfill' as defined within the ECA. The location of the Site is shown on the **Figure 1 - Regional Location Map**.

The Site is operated in accordance with Amended Environmental Compliance Approval #9704-8YRQA9 dated October 18, 2012 ('ECA'). Issuance of the ECA revoked Provisional Certificate of Approval ('C of A') No. A271901, issued on May 6, 1988. This Provisional C of A was amended three times:

- May 9, 1991 to require an Annual Monitoring Report and to specify burning conditions.
- April 17, 1997 to incorporate the Development and Closure Report (Henderson, Paddon & Associates Ltd., 1994), and allowed for the inclusion of Township buffer lands. This amendment also referenced a letter from Gamsby & Mannerow Ltd. regarding landfill capacity a letter from the Town of Hanover regarding the Monitoring Program.
- May 22, 1997 to increase the service area to include the former Village of Neustadt.

The latest ECA, the revoked Provisional C of A, and relevant supporting documentation are all provided in **Appendix A.**

The Site is approximately 106.4 ha (262.9 ac) in area comprising of:

Part of Lot 68 (Landfill Gas Control),	
Part of Lot 69 (Expansion Landfill)	• 32.93 ha (81.37 ac)
Part of Lots 70 to 72 (Existing Landfill)	• 50.93 ha (125.87 ac)
Part of Lots 73 (Groundwater Attenuation Zone or GAZ	• 22.53 ha (55.67 ac)

The 'existing landfill' footprint, located on Part of Lots 70 to 72, has been divided into several sections which have been labelled A to E and are shown on the existing conditions drawing **SP1 - Site Plan** (enclosed). Areas A and B (3.4 ha) represent the extent of the footprint approved under the original Provisional C of A. Waste deposited prior to 1972 is in areas C and D (3.2 ha). Areas C and D have been completed to final contours, capped for many years and are vegetated with a well-established grassy cover and some small trees. The remaining area E (0.9 ha) is located outside of the licensed landfill footprint. The 'expansion landfill', including Cells 1 to 4, totals 4.0 ha and is located west of the existing landfill on Part of Lot 69. The combined total landfillable area is 10.6 ha.

The Site is approved to accept domestic, commercial and non-hazardous solid industrial waste from the service area including the Town of Hanover and the former Town of Walkerton, which forms part of the Municipality of Brockton.

The licensed 'existing landfill' reached capacity and was capped in 2015.

The Town of Hanover and Municipality of Brockton began the process of investigating waste management options for future waste in 2006 and the option of expanding the existing landfill was selected as the preferred option. The proposed landfill expansion was evaluated in accordance with the Environmental Assessment (EA) process and the Environmental Assessment Report was submitted in 2010. Expansion of the landfill was approved by the Ministry of the Environment (now Ministry of the Environment, Conservation and Parks or MECP) in April 2011.

An application for an ECA to amend the existing Provisional Certificate of Approval A271901 for the Hanover/Walkerton Landfill was submitted on January 16, 2012. The application and supporting documents were prepared by Stanec Consulting Ltd. ('Stanec') and GENIVAR (now WSP Canada Inc. or 'WSP'). Supporting documentation for the application included a Hydrogeological Assessment Update Report (Stantec, January 2012), Site Development and Operations Plan (Stantec, January 2012, revised November 27, 2012), and Leachate Management and Surface Water Management Plan (Stantec and GENIVAR, January 2012, revised November 27, 2012). The MECP issued the ECA on October 18, 2012.

1.2 PURPOSE

The purpose of this report is to address the requirement for an Annual Monitoring Report identified in the Condition 16.1 of the ECA. This report shall include at a minimum, the following 19 items:

- calculations of the volume of waste landfilled, the daily and intermediate covers, the final cover and the overall volume of the Site capacity used during the reporting period;
- a comparison of the actual capacity used to the estimates of the capacity;
- an estimate of the remaining site life;
- a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the site;
- a summary of quantities of all recyclables and diverted wastes received, stored and transferred from the Site, including Re-Used items, WEEE and MHSW;
- any changes in operations, equipment, or procedures used at the Site, any operating problems encountered, and corrective actions taken;
- a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the works;
- details of the site monitoring programs undertaken, outlining monitor locations, analytical parameters sampled, and frequency of sampling;
- an analysis and interpretation of the groundwater, surface water and subsurface gas monitoring data, a review of the adequacy of the monitoring program, conclusions of the monitoring data, and recommendations for any changes that may be necessary;
- a summary and interpretation of all storm water monitoring data and a comparison of the Provincial Water Quality Objectives (PWQOs), including an overview of the success and adequacy of the works;
- a summary report of the total volume of leachate removed (daily and annually) from the Site and the name of the approved sewage works receiving the leachate;
- summary of inspections undertaken at the site;
- summary of any public complaints received, and the responses made;

- a discussion of cover stockpile activities including use, timing, locations and erosion protection;
- status update on the final cover placement, and seeding activities undertaken in the closed sections of the landfill;
- a statement as to compliance with all conditions of this Approval and the other relevant Ministry groundwater and surface water requirements;
- recommendations respecting any proposed changes in the operation of the site;
- a report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903; and
- any other information that the District Manager may require.

2 SITE OPERATIONS

2.1 SITE USAGE AND WASTE QUANTITIES

Landfilling of waste within Cell 2 continued throughout 2025. A topographical survey of the active landfill area in Cell 2 was conducted on December 22, 2025. The results of the survey were used in preparing **SP1 - Site Plan**. The survey in December 2025 updated the previous survey completed in December 2024.

The development of the site was reviewed with landfill staff in the summer of 2025 with grades and fill limits for Cell 2 staked in the field. Once Cell 2 reaches the same elevation as Cell 1, landfill operations are proposed to move to Cell 3 which was constructed in the summer of 2025 and awaiting approval for commissioning.

The landfill site services an area comprised of the Town of Hanover and former Town of Walkerton (now part of the Municipality of Brockton). Based on information received from the municipalities, the population for the communities of Hanover and Walkerton are approximately 7,967 and 4,724, respectively (Statistics Canada 2021). The resulting service area population is 12,691. Incoming waste is weighed utilizing the Toledo truck scale located at the Site.

The tipping fee is $145.00/tonne (effective January 1, 2025)

The landfill operator maintains detailed records which indicated that a total of **7,445 tonnes** of material was received at the site which is approximately **897 tonnes more** than the 2024 total of **6,548 tonnes**. The waste tonnages are summarized in **Appendix B,** along with daily, weekly and monthly volumes for 2025.

In 2025, monthly receivables peaked in July and were the lowest in February.

Total diversions in 2025 were **592 tonnes** which is approx. **1.15% lower** than what was diverted in 2024.

The percent breakdown of the waste stream in 2024 and 2025 is summarized below:

Waste Type	2024(%)	2025(%)	% Change
Commercial	49	50	+1
Residential	23	19	-4
Cash customers	25	28	+3
Municipal Cleanup and Parks and Recreation	3	3	0
Demolition (includes asbestos)	0	0	0
TOTAL	**100**	100	

A summary of waste quantities historically received at the Site for the last ten years is provided in **Table 2-1** below.

Table 2-1: Summary of Historical Waste Disposal Quantities

Year	Measured Tonnes	Surveyed Volume (m^3)
2011	4,232	8,600
2012	4,706	7,718
2013	4,480	6,693
2014	3,989	8,767
2015	4,658	6,500
2016	5,124	9,568
2017	5,727	13,101
2018	5,688	15,155
2019	5,744	11,000
2020	6,776	11,100
2021	6,486	11,000
2022	7,179	11,417
2023	6,896	11,900
2024	6,548	9,202
2025	7,445	7,044

Notes:

1) Tonnages measured with Toledo scales, which were installed in 1993

2.2 SITE USAGE AND WASTE QUANTITIES

Total approved site capacity landfill volume is 917,000 m^3 including 411,000 m^3 in the 'expansion landfill' and 506,000 m^3 in the 'existing landfill'.

The former 'existing landfill' area of Hanover/Walkerton Waste Disposal Site reached landfill capacity

in 2015 and was capped in September 2015.

On December 23, 2025, a topographic survey was carried out over the Cell 1 and 2 landfill mound to determine the existing surface contours and remaining air space volume. A digital terrain model of the December 2025 contours was compared to the final contours minus the thickness of capping material. This volume represents the air space remaining (where overfilling represents negative airspace) for landfilling in Cells 1 and 2 at the time of the survey (i.e. December 23, 2025).

The total combined air space volume of Cells 1 and 2 is **133,562 m^3** (Development & Operation Plan, Stantec, 2012). The survey data determined that the volume landfilled in 2025 was approximately **7,044 m^3** in Cells 1 and 2. When added to the **117,519 m^3** that was landfilled at the end of 2024, the total volume that has been landfilled in Cells 1 and 2 is **124,563 m^3** leaving a total of **8,999 m^3** of air space left to be landfilled within the two cells.

The **7,044 m^3** volume landfilled in 2025 represents a **35.0% decrease** compared to the previous 3-year average landfilled volume of **10,840 m^3** (2022 - 2024).

To estimate the remaining landfill capacity in Cells 1 and 2, it was assumed that the future annual utilization volume would be equal to the 2025 volume (**7,044 m^3**). Under this assumption, the remaining capacity in Cells 1 and 2 will be utilized in **1.28 years** or **early 2027**. Using the current three-year average volume from 2023 to 2025 of **9,382 m^3**, the remaining capacity in Cells 1 and 2 will be utilized in **1.33 years** or **early-mid 2027**.

The construction of Cell 3 was completed in the summer of 2025, thus, increasing the airspace by **151,010 m^3**, to a total airspace volume of **160,009 m^3.** The cell is expected to be commissioned and approved by the MECP in early-mid 2026.

Based on the total approved site capacity volume of **411,000 m^3** in the expansion landfill area (i.e.. Cells 1 to 4), there is **286,347 m^3** of remaining air space which equates to **31 years (2057)** of remaining site life using the current (2023 - 2025) three-year average volume of **9,382 m^3**.

2.3 BURNING OPERATIONS

There were no burning operations in 2025 in accordance with the current ECA.

Clean wood and brush were segregated from the waste stream. In 2025, 217 tonnes were segregated. Brush, stumps and wood were shredded by Elliot Construction in September 2025.

2.4 WASTE DIVERSION AND RECYCLING

A detailed report of materials received at the Site in 2025 is provided in **Appendix B.** The various quantities of materials diverted from the landfill are summarized as follows:

Item	Quantity	Percentage
Blue Box Recyclable (cans, glass & paper)/ Re-Use Centre	51.42	8.6%
Cardboard	49.06	8.2%
Drywall	0.62	0.1%
Asphalt Shingles	10.71	1.8%
Metal	40.95	6.9%
Styrofoam	0	0%

Brush	217.23	36.5%
Compost	220.89	37.1%
Film and Plastics	1.36	0.2%
Electronics	3.60	0.6%
Total Tonnage Diverted	**595.84 tonnes**	**100%**

Quantities of some recycled materials may vary on an annual basis depending on the timing of shipments from the site.

The electronic diversion materials were deconstructed and recycled by Greentec Recycling Solutions. The amount collected shows a decrease of **9.5 tonnes**, compared to 2024. This practice should continue in order to provide diversion and proper management of electronics.

The above recyclable tonnage represents the 'Depot' portion or on-site collection bins only. Hanover and Walkerton each provide 'curbside' pickup of recyclables. Curbside pickup service is sub-contracted to Waste Management Inc. in Hanover and Bruce Area Solid Waste Recycling in Walkerton.

The total reported tonnage of recyclables collected by the curbside blue box program in both towns in 2025 compared to 2024 is summarized below:

	2025 (tonnes)	**2024 (tonnes)**	**% Change**
Hanover	348.27	402.71	-8.0%
Walkerton	247.57	229.23	+13.5%

Please note that the Walkerton Recycling Centre also collected 110.52 tonnes of cardboard as well for recycling.

Further diversions of materials at the landfill in 2025 included 13 appliances, 191 tires and 218 mattresses.

The following quantities of material, totaling **4,241.99 tonnes**, were also received at the landfill in 2025 and were stockpiled for use as cover material and/or on-site road building material (as required). These materials were not landfilled.

Item	**Quantity (tonnes)**
Clean Fill	3,826.23
Granular A	0
Sand - catch basins	92.62
Concrete	76.79
Asphalt	79.13

Topsoil	167.22
Non-hazardous soil	0.0
Total	**4,241.99 tonnes**

Landfill staff have used stockpiled gravel for access road maintenance and construction. Clean fill can be used for cover material. Past landfill reports have stated that other materials including compost, wood chips and used ash have been used as cover material, which is also acceptable. Landfill staff have also been stockpiling concrete in a separate area, so it is not landfilled with domestic waste.

Per Condition 16 n) of the ECA, any cover stockpile activities (i.e., use, timing, locations and erosion protections) are to be reported in the Annual Monitoring Report (AMR). The following activities were completed in 2025:

a) Cover material was stockpiled throughout 2025 and used for daily cover over the active landfilling area.

The status of final cover placement and seeding activities is required to be reported per Condition 16.1 o) of the ECA. No final cover or seeding activities were completed in 2025.

No activities were undertaken in closed section of the landfill in 2025.

It is planned to begin capping Cell 2 in 2026. Onsite stockpiles of clayey material have been tested and passed as landfill cover. Mulch and Organic Compost will also be used with topsoil above cap material.

2.5 DAILY OPERATIONS

Landfill hours of operation in 2025 remained the same as in 2024. The landfill is open on Tuesday, Thursday, Friday and Saturday from 8:00am to 3:00pm. The site is closed on Statutory Holidays. The landfill hours are posted at the entrance gate to the site.

Daily site operations are carried out by Town of Hanover staff. The detailed monthly landfill reports provided by the landfill operator indicated that good control is maintained on material entering the site. Vehicles entering the site pass over the scales and the quantity of refuse received at the site is recorded by the operator.

The site continues to be kept in a neat and tidy manner. As noted in the 2025 operator's reports, litter is regularly picked up and an increase in compost material is being noted. The access roadways are maintained with Granular 'A' and graded as necessary. Road salt was used for ice control in 2025 on the access roads. Calcium chloride was applied to the access roads in June, 2025, for dust control purposes during the construction of Cell 3.

The landfill site inspections were conducted weekly in 2025 using a check list form. Records are provided in **Appendix B.** Note that the Landfill's records are incomplete, largely due to staffing changes.

No leachate seeps were noted or required repair in 2025. Leachate inspection, findings and repairs are further discussed in Section 2.10.

The site office is equipped with a methane alarm.

The site includes low areas which are subject to seasonal spring inundation and flooding from the Saugeen River. SVCA may not permit changes to the access road as it is in the floodplain area.

2.6 EMPLOYEES AND TRAINING – 2025

Site Operator completed the Landfill Operations Basics Course provided by SWAWA in October 2024. No staff training was completed in 2025.

2.7 CHANGES IN OPERATIONS, EQUIPMENT OR PROCEDURES – 2025

Condition 16.1 t) of the ECA requires that changes in operations, equipment or procedures used at the site, any operating problems encountered, and corrective actions taken be reported.

No equipment changes were made in 2025.

An amendment to the existing ECA was submitted to the MECP Permissions Branch in January 2026 to authorize the establishment and operation of a permanent green waste transfer station at the landfill site. The proposed facility will service the former Town of Walkerton and will include construction of a granular pad to support the green bin waste storage container, along with a concrete block retaining wall configured to form a ramp to facilitate end-dump truck offloading into the container. The container will be located adjacent to the leachate collection tank and will be hauled to an off-site processing facility approximately monthly, or as required based on fill level.

2.8 SUMMARY OF MAINTENANCE ON WORKS – 2025

The following summarizes the maintenance work that was completed at the site in 2025:

- General litter cleanup was completed on a continuous basis throughout the year.

2.9 LEACHATE VOLUME REMOVED – 2025

In 2025, a total of **7,506,000 litres** of leachate was removed from the landfill site. From this total, **3,739,500 litres** of leachate was taken to the Hanover Water Pollution Control Plant and **3,766,500 litres** was taken to the Walkerton Water Pollution Control Plant. Daily leachate volumes are included in **Appendix B.**

Leachate continues to be hauled by Schaus Sanitation Limited.

Leachate samples were obtained from the leachate collection system in April, June, October and December and analyzed for the parameters in Schedule C, Table 1. Results are summarized in **Table 5.2b**.

2.10 INSPECTIONS COMPLETED – 2025

Landfill site inspections are completed weekly (see **Appendix B)** and include observations on the condition of the active disposal area, condition of surface water drainage works, the presence of ponded water at the site, the condition of the on-site roads, the presence of litter, the condition of the cover, the presence of vector vermin and animals and the presence of leachate springs/breakouts. These inspections should be continued in 2026. A weekly estimate of gulls is also recorded (see **Appendix B).**

In 2025, the following was noted and/or completed:

a) Weekly seagull counts were completed in 2025. A summary of the weekly totals is included in **Appendix B.** Seagull populations present at the site ranged daily between **0** and **42 birds**, averaging **25 birds** per day in 2025. The total number of seagulls counted in 2025 increased to **1,319** from 2024's reported total of **769**. Note that the Landfill Data provided was incomplete largely due to staffing changes in 2025. Data prior to August, 2025, was estimated based on the August-December average of 25 birds a day, resulting in a large increase of the total seagull count of 1,319.

2.11 PUBLIC COMPLAINTS – 2025

There were no formal public complaints received from residents regarding the operation of the landfill site in 2025.

Any public complaints received, and responses made in 2025 should be detailed in the monthly landfill reports and reported in the 2026 AMR**.**

2.12 REGULATORY AGENCY COMMENTS – 2025

There were no MECP Site Inspections in 2025.

3 SITE SETTING

3.1 PHYSICAL SETTING

The following information on the Site setting and hydrogeological conditions was obtained from the July 2009 Hydrogeologic Assessment report, prepared by Stantec for the Hanover/Walkerton Landfill Expansion EA.

The Site is located within the physiographic region identified by Chapman and Putnam (The Physiography of Southern Ontario, 1984) as the Horseshoe Moraines, a series of moraines associated with a system of spillways having broad sand and gravel terraces and swampy floors.

The ground surface at the Site and the adjacent property to the west generally slopes from northwest to southeast. The landfill mound represents a topographic high and is at an approximate elevation of 293 metres above sea level (masl) geodetic. The Saugeen River near the east side of the Site represents a topographic low, at an approximate elevation 259 masl. The Hydrogeologic Assessment report (Stantec, 2009) noted the presence of a scarp oriented from roughly northeast to southwest through the Site. The scarp was reported to be visible to the northeast and southwest of the landfill, but in the vicinity of the landfill had been altered by landfill-related activities. The scarp was reported to represent a decline in elevation of approximately 15 metres over a distance of approximately 50 metres and generally separates the Saugeen River floodplain from the remainder of the site.

Land use in the immediate vicinity of the Site is primarily agricultural and rural residential. The Town of Hanover is located on the east side of the Saugeen River, southeast and east of the Site. There are two private parcels of land located within the Site boundaries south of the landfill mound. On the west side of the access landfill road is the Dillon residential property (formerly Moore). On the east side of the access road is a vacant commercial property owned by Vic Butchart Service Centre.

3.2 SURFACE WATER FEATURES

The surface water features in the vicinity of the Site are shown on **Figure 2**. The Saugeen River, which generally flows in an east to west direction over its length, flows in a southerly direction along the east perimeter of the Site. The Saugeen River crosses and re-crosses the east boundary of the Site and then skirts the southeast boundary of the Site. The South Saugeen River tributary flows northward and joins with the Saugeen River approximately 300 m south of the southwest corner of the Site. From there, the Saugeen River flows generally in a westerly direction, skirting the community of Walkerton.

Marl Creek, a tributary to the Saugeen River is located on the west side of the active landfill site. The creek flows in a southerly to southeasterly direction crossing private lands (S. Stever and J. Craig) and the southern portion of the Town-owned lands located west of the site. Marl Creek passes beneath Bruce Road 4 and discharges into the Saugeen River, south of the Site. A drainage course that originates on the Town-owned lands west of the site flows intermittently in a westerly direction and discharges into Marl Creek.

Lake Rosalind and Marl Lake are located northwest of the Site. Both are man-made features, created by the excavation of marl for local cement plants in the early 1900s and the subsequent construction of dams in 1939 and 1947. Surface water flows from Lake Rosalind into Marl Lake via a culvert beneath Marl Lakes Road, and then into Marl Creek. Almost the entire shoreline of both lakes has been developed. As there are no surface water features that drain into the lakes, they have been interpreted to be sustained by local groundwater discharge.

3.3 HYDROGEOLOGICAL CONDITIONS

According to the Hydrogeologic Assessment report (Stantec, 2009), relevant mapping indicated that the overburden geology in the immediate vicinity of the Site is comprised of six different units. Modern alluvial deposits of silt, sand and gravel were reportedly mapped immediately adjacent to the Saugeen River. An area of older alluvium is reportedly present in the southeast corner of the Site. Adjacent to the older alluvium, also in the southeast corner of the Site, is an area mapped as organic soil (peat and muck). These units occur within the floodplain of the Saugeen River.

Stantec (2009) reported that glaciofluvial outwash deposits of fine to coarse sand with minor gravel and silt are mapped in a thin band oriented from northeast to southwest across the Site, approximately coincident with the scarp. The northwestern portion of the Site was reported to be covered with glaciolacustrine deposits of clay and silt with minor amounts of fine sand. Northwest of the Site, beyond the glaciolacustrine deposits, mapping indicates the presence of the same glaciofluvial outwash deposits that are present along the scarp. Lacustrine/glaciolacustrine deposits of sand and silt were reported to be mapped in the southwest corner of the Town-owned property, west of the Site.

The overburden at the Site is underlain by dolostone and shale of the Salina Formation. Shale bedrock was encountered in OW1-45 at the Site at a depth of approximately 45 m (approximate elevation 219 mASL).

Copies of an east-west trending stratigraphic section showing the inferred subsurface soil conditions at the Site (Cross-section A-A', Figure III-5) and a north-south trending stratigraphic section (Cross-section C-C', Figure III-7) prepared by Stantec and presented in the Hydrogeologic Assessment report (Stantec, 2009) are included in **Appendix D**.

Summarizing, the nine (9) stratigraphic units present at the Site, presented in descending order are:

1. localized deposit of organic material adjacent to the Saugeen River;
2. silts, sands and gravels of alluvial origin, present only below the scarp;
3. glaciolacustrine clay/silt, present only above the scarp;
4. glaciofluvial sand, present only above the scarp;
5. laminated clay and silt with sand interbeds;
6. a sand and gravel unit, found across most of the area but typically thinning near the Saugeen River.
7. undifferentiated till units;
8. basal sand and gravel unit formed from weathering of the upper bedrock surface prior to deposition of the overlying glacial tills; and
9. bedrock (dolostone and shale of the Salina Formation), which includes an upper weathered and fractured zone as well as the underlying more competent bedrock.

For the hydrogeologic modelling carried out for the site in conjunction with the EA for the landfill expansion, the stratigraphic units were incorporated into nine (9) hydrostratigraphic units, identified as follows:

1. Fill: municipal refuse and associated daily and final cover material;

2. Unit A – Upper Aquifer: silty clay noted at ground surface above the scarp (this unit is unsaturated and was combined with the Upper Aquifer in the hydrogeological flow model);
3. Unit B – Upper Aquifer: upper sand unit above the scarp (where saturated) and the surficial sand within the floodplain;
4. Unit C – Intermediate Aquitard: silty clay with sand interbeds (this unit was classified as an aquitard although it was anticipated that some water will be present in the sand interbeds; the unit was subdivided into 13 layers in the groundwater flow model to simulate its laminated nature);
5. Unit D – Lower Aquifer: sand and sand/gravel overlying till;
6. Unit E – Lower Aquitard: undifferentiated till units;
7. Unit F – Basal Aquifer: sand and gravel overlying the bedrock;
8. Unit G – Bedrock Contact Zone: upper weathered bedrock; and
9. Unit H – Bedrock Aquifer: dolostone with shale and evaporates.

The Hydrogeologic Assessment report (Stantec, 2009) indicated that the estimated hydraulic conductivity of the Intermediate Aquitard (Unit C), estimated from single well response tests, ranged from 1.0×10^{-7} to 6.4×10^{-6} m/s, with a geometric mean of 1.6×10^{-6} m/s. Stantec reported the results were more typical of a silty sand or silt than a silty clay and inferred that the majority of well screens for monitoring wells completed in this unit were placed within zones with sandy interbeds. Borehole logs and additional details are available in previous reports.

4 MONITORING PROGRAM

In 2025, environmental monitoring was completed in accordance with the Amended Environmental Compliance Approval #9704-8YRQA9 dated October 18, 2012 ('ECA') (**Appendix A**) and in general accordance with **Tables 16 and 17** of the Hydrogeologic Assessment Update Report (Stantec, January 2012) (**Appendix G**). The ECA requires semi-annual groundwater and surface water monitoring, as well as landfill gas monitoring.

Sampling events for groundwater and surface water were carried out in the spring during the months of April/May and in the fall during October/November. Landfill gas monitoring was carried out five (5) times in 2024 as documented in **Table 5-7**.

4.1 GROUNDWATER MONITORING LOCATIONS

The groundwater monitoring network is outlined in **Table E-1** in **Appendix E** and the locations are illustrated in **Figure 3**. The wells have been grouped by location relative to the existing landfill, consistent with the presentation in **Table 17** from the Hydrogeologic Assessment Update Report. Copies of available borehole logs appear in previous reports.

The groundwater monitoring network has been subject to maintenance and well replacements over the years. In 2013, the driller surged OW27-69 using potable water and removed approximately 4.5 m (15 ft.) of silt from the monitor. OW1-9, OW25-9, OW27-69, OW28-14 were surged to remove accumulated silt. The condition of the monitoring wells for the site in 2013 is as detailed in **Appendix F**. OW40, OW41 and OW42 were relatively shallow wells completed in the floodplain in 2007. In 2011, OW41 and OW42 were destroyed, most likely as a result of impact from ice and/or debris during the flooding stage of the river. In 2012, OW41 and OW42 were replaced with OW61 and OW56 respectively as similarly placed monitors in accessible locations.

4.2 SURFACE WATER SAMPLING STATIONS

The historical surface water monitoring program was (i.e. prior to the 2012 ECA) outlined in Table 1 of the April 9, 1997 letter from Gamsby & Mannerow, that was referenced in the former amended Provisional C of A. This letter identified ten (10) surface water monitoring locations designated SW1 to SW10. SW2, SW3 and SW10 were described as being discontinued. In the 2009 annual monitoring report, PSMI made reference to the Surface Water Assessment carried out in support of the proposed landfill expansion and noted that there were a number of new surface water monitoring stations added and several stations were discontinued due to dry or changing conditions.

Between 2007 and 2010, surface water monitoring was carried out at nine (9) locations, identified as SW7 to SW15. In 2011, two additional surface water sampling locations were added, identified as SW16 and SW17. The location of SW16 and SW17 were identified by Stantec. SW16 is located in a ravine northeast of the landfill mound and was established based on comments from a July 2010 peer review of the Hydrogeologic Assessment report that was carried out in conjunction with the EA for the landfill expansion. Monitoring at SW16 was reportedly intended to supplement the data from existing surface water monitoring station SW10 located further to the east. In identifying the location of SW16, Stantec noted that it was their understanding that the ravine area does not contain surface water at all times. SW17 is located in a wetland area south of the landfill mound and was established based on comments from an August 2010 peer review of the EA for the proposed landfill expansion.

In 2025 the spring and fall surface water monitoring sampling events were carried out in general accordance with Hydrogeologic Assessment Update Report (Stantec, January 2012) per **Table 16** and **18** of that report **(Appendix E)**, as required by ECA Condition 13.

The locations of the surface water monitoring stations are identified as follows:

- SW7 Saugeen River Upstream
- SW8 Saugeen River Downstream
- SW9 Marl Creek Downstream
- SW10 North Pond
- SW11 Saugeen Floodplain (East Pond)
- SW12 Marl Creek Upstream
- SW13A Immediately downstream of the stormwater pond ditch (replaces SW13 location)
- SW14 Saugeen River Midstream
- SW15 South Pond east of the access road
- SW16 Ravine northeast of landfill
- SW17 Wetland south of landfill

The location of SW13, in Marl Creek, at the confluence with the drainage swale west of the landfill mound, has been replaced with SW13A, since the station is on private property and the owner refused access permission in 2013.

The locations of the surface water sampling stations are shown on Figure 2. The following is a brief description of each of the active surface water stations.

- SW7 - located on the Saugeen River approximately 400 m upstream from the Site in Hanover Park. At this station the river is relatively broad (approximately 20 m wide), with a typical depth of 0.5 to 1.5 m.
- SW8 - located on the Saugeen River immediately downstream of the Site at the bridge where the river passes beneath Bruce County Road 4. At this station, the river is broad (approximately 50 m in width) and relatively slow moving with a typical depth of 0.5 to 1.5 m.
- SW9 - located on Marl Creek at the culvert immediately west of the landfill access road. This is a downstream sampling point for Marl Creek. At this station the creek is typically moderately flowing with a depth of approximately 0.5 m.
- SW10 - located on a large, shallow pond north of the landfill mound. This pond is referred to as the North Pond in this report. It is bordered by marshland and bulrushes.
- SW11 - located on a small shallow pond east of the landfill mound in the floodplain of the Saugeen River. This pond is referred to as the East Pond in this report. This pond is surrounded by marshy areas.
- SW12 - the upstream sampling point on Marl Creek, located at the Bruce Road 22 culvert west of the Site. The creek at this location is typically shallow (approximately 0.1 to 0.4 m in depth) with riffles over a creek bed of stones, sand and gravel. The creek width typically ranges from 2 to 3 m.
- SW13 - the mid-stream sampling point on Marl Creek, located on Lot 67 at the confluence of Marl Creek and a drainage swale originating from a tile drain on Lot 68 flowing from the east. SW13 has not been sampled since 2013 as the former property owner would not provide permission to access his property.
- SW13A – Replacement surface water station for SW13. In 2013, during the construction of Cell 1, the tile drain on Lot 68 was removed and monitoring initiated at the SW13A location

immediately downstream of the stormwater pond ditch. MECP was notified of the recommendation on February 25, 2014.

- SW14 - the mid-stream sampling point on the Saugeen River, located east of the landfill mound. This station is located at a bend in the river where the flow is typically moderate, with a depth of approximately 1.0 to 3.0 m.
- SW15 - located on a pond in the southeast area of the Site (South Pond). This pond is surrounded by bulrushes and marsh and is in the floodplain zone of the Saugeen River.
- SW16 - located on a small watercourse in a gully northeast of the landfill mound.
- SW17 - located in a gully near the bottom of a drainage swale that extended upward on the landfill slope. The location was sited due to the continued presence of seepage within the gully and there was an associated ponded area at the bottom of the slope which was connected to a cattail swamp located south of the landfill.

As noted above, sampling at several surface water locations has been discontinued as a result of dry or changing conditions. Specifically, monitoring at SW1 to SW6 has been discontinued. Historical water quality monitoring data for SW1 to SW6 are included in **Appendix J**. The locations are noted on **Figure 2**.

4.3 SAMPLING PROTOCOL

Monitoring wells that were sampled during the 2025 sampling events are identified in **Table E-1, Appendix E**. Sampling protocols that were followed for each groundwater and surface water monitoring event are documented in **Appendix E**. The groundwater and surface water samples were analyzed for the parameters listed in **Table 16** (**Appendix G**) of the Hydrogeologic Assessment Update Report (Stantec, January 2012) as required by ECA Condition 13. The parameters are as listed below:

- pH
- Conductivity
- Hardness
- Alkalinity
- Chloride
- Sodium (Leachate/GW only)
- Calcium (Leachate/GW only)
- Magnesium (Leachate/GW only)
- Sulphate
- Total Phosphorus
- Total Dissolved Solids (TDS)
- Ammonia
- Unionized Ammonia (SW)
- Organic Nitrogen (calculated)
- Nitrate
- Total Kjeldahl Nitrogen (TKN)
- Dissolved Organic Carbon (DOC)
- Barium (Leachate/GW only)
- Boron
- Iron
- Chemical Oxygen Demand (COD)
- Phenols

Notes: SW = Surface water, GW = Groundwater

In addition to the above-noted parameters:

- leachate samples were analyzed for 5-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS).

- surface water samples were analyzed for the above-noted parameters as well as for nitrite, BOD_5, and TSS.

Groundwater from selected monitoring wells were also analyzed for targeted volatile organic compounds (VOCs), consisting of benzene, dichloromethane, and toluene in the fall only. Leachate VOC's are to be sampled quarterly.

The laboratory certificates of analysis for the 2025 sampling events are included in **Appendix H**. The monitoring well results are provided in **Appendix I** with relevant Ontario Drinking Water Quality Standards (ODWQS). The surface water data and relevant PWQO are attached in **Appendix J**. Historical results from past surface water monitoring are also provided in **Appendix J.**

The condition of all monitoring wells was inspected to ensure that the protective casings are secure and the wells locked according to Conditions 13.3 of the ECA.

Condition 13.4 of the ECA pertains to samples not collected for more than one event. The following groundwater monitors and surface water stations were not sampled in 2025:

1) OW8-5 was a partial sample in October due to insufficient sample.
2) OW12-12 is blocked with obstruction.
3) OW26-11 sampled in April and was dry in October.
4) SW16 was dry in October.
5) SW17 was dry in October.

OW8-5 commonly provides a partial sample or is dry. OW26-11, SW16 and SW17 are commonly dry in the fall sampling event. There was no need to extend monitoring wells within the area of landfilling in 2025 (Condition 13.2) and no need for well abandonments (Condition 13.5). All duplicate samples were collected in 2025.

4.4 QA/QC PROGRAM

A quality assurance and quality control (QA/QC) program including the quality of the contracted environmental laboratory analyses is routinely carried out to identify and quantify potential biases introduced during sample collection, handling, shipping and analysis. The field QA/QC procedures included measurement of field parameters (pH, conductivity and temperature) and the collection and analysis of blind field duplicate samples and the inclusion of organic-free water travel blanks for analysis of VOC's at a frequency of approximately 1 in 10 per sample matrix. Laboratory QA/QC procedures included the analysis of laboratory duplicates, method blanks and spike samples.

The following duplicate samples were collected during the spring and fall monitoring events in 2025:

APRIL/MAY 2025		OCTOBER 2025	
OW28-14	Dup #1	OW20-7	Dup #1
OW19-3	Dup #2	OW13-8	Dup #2
OW32-s	Dup #3	OW1-9	Dup #3
OW49-d	Dup #4	OW24-5	Dup #4
OW36-s	Dup #5	OW54-s	Dup #5

OW43	Dup #6	OW21-8	Dup #6
SW15	Dup #7	SW12	Dup #7

Relative per cent difference (RPD) values were calculated for detectable parameters in each duplicate sample. Where these RPD values exceeded 20 per cent, the results were considered to be qualified (Ministry of the Environment, Laboratory Services Branch, July 2011). Relative Percent Differences between duplicate sample results were calculated as follows:

$$RPD(\%) = \frac{[x_1 - x_2]}{x_m} x\ 100\%$$

Where: X1 = initial sample result

X2 = duplicate sample result

Xm = arithmetic mean of initial and duplicate sample results

If a sample result was reported below a method detection limit (MDL), the value of the MDL was used in the calculation. The results of this assessment resulted in RPD exceedances of 31 samples with 28 groundwater parameters and 3 surface water parameters. Exceedances for the past six years are documented below for comparison:

- 31 samples in 2025
- 26 samples in 2024
- 36 samples in 2023
- 36 samples in 2022
- 17 samples in 2021
- 45 samples in 2020.

The summary table below details the number of exceedances by parameter. Many groundwater RPD exceedances occur at low concentrations that do not affect the interpretation of data at the monitors.

The following are additional observations regarding the integrity of the data from this evaluation of duplicate samples:

a) Many of the groundwater RPD exceedances, 14 out of 31 (45%) occurred at three monitors, OW1-9, OW28-14 and OW43.

b) Organic nitrogen, un-ionized ammonia and Total Kjeldahl Nitrogen comprised 9 of the 31 exceedances.

c) About one third (11 of 31) of the RPD exceedances occurred at low concentrations.

The RPD results show the chemical analysis are reliable and useful in interpreting trends and do not affect the overall conclusions regarding water quality.

SUMMARY OF EXCEEDANCES IN RPD

PARAMETER	GROUNDWATER	SURFACE WATER
Alkalinity	0	0
Barium	0	0
Boron	0	0
Calcium	0	0
Chloride	3	0
Conductivity	0	0
COD	3	1
DOC	3	0
Hardness	0	0
Iron	2	1
Mg	0	0
Na	0	0
NH3-N	1	1
NO3	0	0
Phenols	4	0
Sulphate	2	0
TKN	3	0
Organic Nitrogen	4	0
Total Phosphorus	3	0
Un-ionized Ammonia	0	0
TDS	0	0

Note: Number in bracket indicates the number of RPD exceedances of that particular parameter.

Based on our assessment and in consideration of the above exceedances, it was considered that the data provided by the analytical laboratory for the 2025 sampling events were valid and suitable for evaluating the environmental quality of water at the Site. The project team will continue to review sampling protocols in 2025 to address the potential bias observed in duplicate test results.

4.5 LANDFILL GAS MONITORING

Landfill gas monitoring was completed in five (5) events in 2025 including January, February, May, October and December (see Table 5-7). Per the ECA and Table 21 of the Hydrogeologic Assessment Update Report (Stantec, January 2012), landfill gas monitoring is to be carried out at least five (5) times annually - three (3) times in the winter, once in the spring and once in the fall.

There are currently forty-five gas probes at twenty-eight locations that are included in the landfill gas monitoring program including three additional gas probes installed by WSP Canada Inc. in 2019. Gas probes are as identified in Table 21 of the Hydrogeologic Assessment Update Report (Stantec, January 2012), a copy of which is included in **Appendix E**. The locations of the gas probes are shown on **Figure 3**. Borehole logs of gas probes are presented in previous landfill reports. The borehole logs for gas probes GP46 to GP48 were issued as a separate letter report by WSP to the Ministry in 2020.

Combustible vapour concentrations were measured in the gas probes with a Landtec GEM5000 LFG Monitor, calibrated to a methane standard. The measurements were obtained by inserting flexible tubing connected to the instrument into the monitor, typically to a depth below the adjacent ground surface. Concentrations were recorded as a percentage of the lower explosive limit (% LEL) relative to methane, or as a percentage methane by volume. The lower explosive limit for methane is 5% by volume. At the time of the combustible vapour monitoring, the groundwater level in each monitor was measured with an electronic water level meter.

The results from landfill gas monitoring are discussed in Section 5.5. The results from historical monitoring for combustible vapours are summarized in **Appendix K**.

4.6 BIOMONITORING PROGRAM

The biomonitoring program at the landfill site consists of sampling emergent invertebrates in the three adjacent floodplain ponds (North Pond, East and South Ponds) every two years and examining the benthic invertebrate communities at two (2) monitoring stations located upstream and downstream of the landfill site on the Saugeen River every year.

The benthic invertebrate sampling in the Saugeen River was completed by Azimuth Environmental Consulting, Inc. in 2025. Azimuth's final report summarizing the sampling results is attached as **Appendix M**.

5 MONITORING RESULTS

The former Provisional C of A (**Appendix A**) requires semi-annual water level monitoring and collection of one leachate sample, one private well sample, and samples from specified surface water and groundwater locations as described previously in the report.

5.1 WATER LEVEL MONITORING AND GROUNDWATER FLOW CONDITIONS

The direction of groundwater movement is generally a subtle reflection of topography and drainage. At the site scale, groundwater movement is influenced by changes in local topography and drainage patterns from the Saugeen River.

Groundwater level data for the monitoring wells from the May and October monitoring events in 2025 are provided in **Appendix F**, together with the historical results of water level monitoring dating back to 1996.

The groundwater flow conditions for shallow groundwater illustrated in **Figure 4** reflect groundwater levels measured in the fall of 2025. The interpreted direction of lateral groundwater movement in the shallow zone (Unit B) has not changed significantly over the years. The lateral movement of shallow groundwater is from the northwest to the southeast beneath the landfill and towards the Saugeen River. Using the fall 2025 groundwater contour intervals, the average hydraulic gradient across the site ranges is estimated at 0.021 m/m; this is similar to previous years. The inferred groundwater contours show the horizontal hydraulic gradient is steeper in the vicinity of the scarp in the central portion of the site, and milder in the northwest portion of the site and in the Saugeen River floodplain due to changes in topography.

The vertical movement of groundwater is influenced by the direction of vertical hydraulic gradients. Many of the monitoring wells on site were installed as shallow and deep paired installations, which allows for calculating the vertical hydraulic gradient at each well nest. The vertical hydraulic gradients for selected well nests are presented in **Table 5-1**. The vertical gradient was calculated using the two formulas below depending upon whether or not the groundwater level (WL1) in the shallow monitor was above the top of the screen or within the screen interval.

$$Iv = -\frac{(WL1-WL2)}{(WL1-Scr2)}$$ If WL1 is above top of screen for upper well

$$Iv = -\frac{(WL1-WL2)}{(Scr1-Scr2)}$$ If WL1 is below top of screen for upper well

Where:

Iv = vertical groundwater gradient (m/m)
WL1 – water level elevation in the upper screen (masl)
WL2 – water level elevation in the lower screen (masl)
Scr1 = midpoint elevation of upper screen (masl)
Scr2 = midpoint elevation of lower screen (masl)

Table 5-1 was expanded in the monitoring report to show the minimum, maximum and average vertical gradients that were calculated over time. Seasonal changes in the vertical gradients are evident from these results and the long-term average gradients provide an understanding of the potential long-term direction of vertical groundwater movement.
The grouping identified for each well pair (upgradient, east, southeast, south) shown in **Table 5-1** is

consistent with the grouping of wells for discussion of the analytical results in Section 5.2 of this report. Consistent with previous results, the current results indicate the presence of groundwater discharge conditions near the Saugeen River with the presence of upward hydraulic heads. Further review of these gradients shows the transition area where the potential for downward movement of groundwater (OW9-5/OW9-8) to the potential upward movement of groundwater at (OW25-9/OW25-9 and OW23-5/OW23/12) projects to the topographic contour just below 262 masl. If the potential for the upward movement of groundwater occurs in this area of the site, it follows that most groundwater contaminants should be impeded from migrating down to deeper hydrostratigraphic units beyond this transition area. This natural hydraulic barrier assists in confining the contaminant plume to the shallow groundwater system and towards the floodplain of the Saugeen River. Discussions of water quality results are presented in other sections of this report.

TABLE 5-1
VERTICAL HYDRAULIC GRADIENTS

Well Pairs & Location	Spring 2025	Fall 2025	Number of Data	Min	Max	Avg.	Direction of Avg. Gradient
OW28-14 / OW27-69 (Upgradient)	0.022	0.024	57	0.004	0.130	0.027	Positive is Downward
OW28-8 / OW28-14 (Upgradient)	0.373	0.353	57	0.198	0.453	0.354	Positive is Downward
OW5-5 / OW5-11 (Southeast)	0.006	0.007	58	-0.856	0.278	0.002	Positive is Downward
OW7-5 / OW7-8 (Southeast)	-0.352	-0.034	54	-1.117	0.141	-0.453	Negative is Upward
OW8-5 / OW8-8 (South)	0.034	-0.671	57	-0.803	0.369	-0.121	Negative is Upward
OW9-5 / OW9-8 (South)	0.056	0.066	57	-0.034	0.384	0.112	Positive is Downward
OW19-3 / OW19-10 (South)	0.463	0.493	58	0.394	0.542	0.477	Positive is Downward
OW20-7 / OW20-14 (Southeast)	-0.175	-0.086	57	-0.176	0.121	-0.051	Negative is Upward
OW21-8 / OW21-14 (East)	0.302	0.206	58	0.178	0.359	0.244	Positive is Downward
OW23-5 / OW23-12 (Southeast	-0.087	-0.075	57	-0.231	0.101	-0.052	Negative is Upward
OW25-5 / OW25-9 (South)	-0.083	-0.088	48	-0.132	0.154	-0.029	Negative is Upward
OW36 s / OW36 d	-0.152	-0.180	38	-0.180	0.128	-0.086	Negative is Upward

The vertical groundwater gradients are within the historical range of the minimum and maximum values with the exception of nested monitor OW36. The hydraulic gradients are upwards and slightly higher than historical values.

5.2 Groundwater Quality Monitoring

Groundwater quality data are tabulated in **Appendix I**. The monitoring wells have previously been grouped by area based on their location relative to the existing landfill for the purpose of assessing and discussing the monitoring data. For the current report, the wells were grouped as follows:

	SHALLOW	DEEP
Upgradient Wells	OW28-8	OW27-69
	OW53-S	OW28-14
		OW53-D
Cross-gradient Wells, Northeast of Landfill	OW44S	OW44D
	OW45S	OW45D
	OW57	
	OW58	
Downgradient Wells, East of Landfill	OW21-8	OW1-9
		OW21-14
Downgradient Wells, Southeast of Landfill	OW5-5	OW5-11
	OW20-7	OW7-8
	OW23-5	OW20-14
	OW29-4	OW23-12
	OW39S	OW39D
Downgradient Wells, South of Landfill and West of Access Road	OW8-5	OW8-8
	OW9-5	OW9-8
	OW19-3	OW19-10
	OW24-5	OW25-9
	OW25-5	
Other Wells:	Private Well (Dillon (formerly Moore) Well (DW1) – south area) Leachate Wells (OW30L-4, OW38-S)	

For each of these groupings of wells, except for the cross-gradient wells northeast of the landfill, variations in measured chloride concentrations over time are shown graphically on the following figures:

Figure 5-1 Chloride Concentrations (1999 - 2020) – Upgradient Wells
Figure 5-2 Chloride Concentrations (2005 - 2020) – Cross-Gradient Wells
Figure 5-3 Chloride Concentrations (1999 - 2020) – East Wells
Figure 5-4 Chloride Concentrations (1999 - 2020) – Shallow Southeast Wells
Figure 5-5 Chloride Concentrations (1999 - 2020) – Deep Southeast Wells
Figure 5-6 Chloride Concentrations (1999 - 2020) – South Wells
Figure 5-7a Chloride Concentration (2010 - 2020) – Southern Boundary Reasonable Use
Figure 5-7b Boron Concentration (2010 - 2020) – Southern Boundary Reasonable Use
Figure 5-8a Chloride Concentration (1999 - 2020) – Site Boundary Saugeen River Floodplain
Figure 5-8b Boron Concentration (2010 - 2020) – Site Boundary Saugeen River Floodplain
Figure 5-9 Sulphate Concentration (1999 - 2020) – South Wells

Figures 5, 6, 7 and 8 are visual aids to illustrate the distribution of Chlorides, Boron, Sulphates and Organic Nitrogen respectively across the site for the fall monitoring event. Chloride was selected as a representative indicator parameter to assess the potential for leachate impacts on groundwater and trends in groundwater quality at various monitoring locations due to its conservative movement in groundwater. Boron was selected to illustrate the distribution of concentrations because it is a health-related parameter. Sulphates and Organic Nitrogen were added to illustrate other parameters of interest.

5.2.1 Leachate Quality

Leachate quality at the site has been characterized in the past using three sources:

- OW30-L was installed in 1991 and is located on the eastern side of the site.
- OW38S was installed in 2007 and is located in the centre of the landfill.
- Leachate grab samples from the collector tank beginning in 2014.

OW30L-4 was installed in 1991 which is located near the limit of landfill on the eastern side of the landfill mound for Area E was installed in 1991 in what is now a closed and capped portion of the landfill. OW38-S is dry and has seldom provided a result over the years. As a result, current water quality data for that monitor are potentially indicative of older leachate, with reduced organic strength. Leachate grab samples are now considered to be indicative of landfill water quality as per guidance by the MECP for the 2018 AMR.

The ECA requires the quarterly sampling of leachate from the leachate tank for this purpose and the leachate samples, albeit possibly diluted, would be suitable to assess leachate quality.

The 2025 leachate grab samples show the fresh leachate from the leachate collector tank to be stronger than in OW30L-4. Forty-two (42) grab samples have been obtained between 2014 and 2025 and provide for a broader database to assess leachate quality. The results of the 2025 leachate grab samples are summarized in **Table 5-2b** and are attached as **Appendix H**. The 2025 chemical concentrations are consistent with historical results except for a lower than usual chloride concentration of 397 mg/L, Alkalinity of 939 mg/L and a low concentration of 274 mg/L for COD in December 2025.

The following are minimum, maximum and average concentrations in leachate quality are updated annually for select parameters:

Chloride: 272 - 1,260 mg/L & average of 734 mg/L

Alkalinity: 939 - 3,340 mg/L & average of 1809 mg/L

Sulphates: 55 - 692 mg/L & average of 331 mg/L

DOC: 21.2 - 611 mg/L & average of 165 mg/L

Boron: 2.2 - 16.4 mg/L & average of 8 mg/L

BOD_5: <3 - 595 mg/L & average of 85 mg/L

COD: 274 - 1,410 mg/L & average of 616 mg/L

Nitrates: 0.07 - 74.9 mg/L & average of 15 mg/L

VOC were collected in February, April, June, October and December. Benzene, Toluene and Dichloromethane were reported at concentrations below laboratory detection limits in 2025.

5.2.2 Upgradient (Background) Wells

Background water quality at the Hanover Landfill Site has been assessed using five (5) monitoring wells designated: OW28-8, OW28-14, OW53-S, OW53-D and OW27-69. These wells are located north of the landfill (upgradient), near the west boundary of the site.

The wells are screened from:

- OW27-69: about 65.5 to 68.5 mbgl (silt till).
- OW28-8: about 7.3 to 8.7 mbgl within the Upper Aquifer Unit B (strata of silt immediately below a coarser stratum of sand and gravelly sand.
- OW28-14: about 13.0 to 14.5 mbgl (stratum of sand beneath overlying silt).
- OW53-S: about 9.8 to 11.3 mbgl with the (sand layer beneath overlying silty clay)
- OW53-D: from 13.0 to 14.5 mbgl (silt to silty-fine sand layer)

Monitoring wells situated in the Lower Aquitard (OW27-69) tend to be silty and require well development to remove fine grained sediments from time to time. Table 5-3a summarizes background water quality for select parameters.

Groundwater quality at OW27-69 has shown the following characteristics:

- Low chloride concentrations (<38 mg/L) except for an anomaly (284 mg/L) in October 2022.
- Moderate concentrations of Boron (0.238 – 0.447 mg/L), with 2025 results of 0.42-0.43 mg/L.
- High sulphate concentrations (900-1880 mg/L) with 2025 results of 1400-1490 mg/L.
- High hardness (320 to 1510 mg/L) with 2025 results of 1220-1320 mg/L

As shown on **Figure 5-1**, up until 2015 measured chloride concentrations for samples from OW28-8, OW28-14 and OW27-69 were consistent. Chloride concentrations were typically less than 10 mg/L in the shallower wells and approximately 30 to 35 mg/L at OW27-69 if the October result is ignored.

Between 2016 and 2019, chloride concentrations at OW28-8 showed possible impacts from de-icing salts as this monitor is close to the access road; the levels are higher in the spring than in the fall. We now understand that spikes in chlorides may be related to the application of dust suppression using calcium chloride. During 2021, 2023 and 2024, chlorides at OW28-8 were similar to historical background levels. The casing was inspected in previous years and there was no obvious movement that would suggest runoff could impact chlorides at this location from time to time. We are of the opinion that background concentrations at OW28-8 are commonly less than 10 mg/L and there are local anthropogenic impacts that are not characteristic of background groundwater quality.

Groundwater quality at OW27-69 is not impacted by leachate. The groundwater chemistry at OW27-69 has been considered indicative of the natural water quality of the silt till unit (Unit E – Lower Aquitard). The anomalously high concentration of 284 mg/L in October 2022 remains inconsistent with past and present monitoring results.

OW28-14 is used as a background monitor based on its upgradient location and low concentrations of leachate indicator parameters (e.g., chloride, alkalinity, etc.). Water quality at OW28-8 should also be characteristic of background for data prior to 2016 and higher concentrations ignored as discussed above. The groundwater quality at OW28-8, OW28-14, OW53-S and OW53-D have the following characteristics that reflect typical concentrations within the upper sand and silty sand strata (Unit B – Upper Aquifer).

- Low chloride concentrations (<4 mg/L) in 2025, except for OW28-8 (44.4-248 mg/L).
- Low Boron concentrations (0.01-0.17 mg/L) in 2025.
- Low Sulphate concentrations (1-36 mg/L) in 2025.

- Hard to very hard, Hardness (281-775 mg/L) in 2025.

Higher background sulphate concentrations at OW28-14 occurred twice in 2007 and once in 2010, ranging from about 140 to 370 mg/L. The reason for these higher levels is unknown. The past decade has shown consistently lower sulphate concentrations.

Analytical results for these background wells during 2025 are generally consistent with historical results as shown in **Table 5-3a** except for chlorides at OW28-8. Additional discussion of background groundwater quality, including for monitoring wells installed in 2007 and later, is provided as part of the property boundary assessment in Section 6.0.

5.2.3 Cross-Gradient Northeast Wells

Monitors OW44S, OW44D, OW45S, OW45D, OW57, and OW58 are located cross-gradient, northeast of landfill. These monitors were added to the monitoring program in 2010. **Table 5-3b** provides a summary of the ranges in concentration for select parameters and chemical concentration graphs for chlorides are presented in **Figure 5-2**.

The groundwater flow system presented in previous reports consistently shows the cross-gradient wells to be located outside of the downgradient flow path from the landfill footprint. Similarly, groundwater quality within the shallow and deep groundwater monitors has been consistent for years. Previous conclusions of water quality in this area of the site consistently report water quality was not affected by landfill leachate. This conclusion seems reasonable given the interpreted direction of groundwater movement from the landfill and observed chemical concentrations. The tabulated results show chlorides to be low (<20 mg/L) and essentially unchanged in the shallow monitoring wells cross-gradient from the landfill.

Chloride concentrations in the deeper monitors extending into Upper Aquitard (Unit C) show higher levels of chloride that are all stable over time except for OW26-11. This monitor occasionally provides enough water to sample and showed a rising trend ranging from about 94 mg/L to 430 from 2019 to 2025. The monitor may be impacted by the use of calcium chloride for dust suppression and/or de-icing salts applied to the access road. Groundwater quality in deeper monitoring wells such as OW44D and OW45D are high in sulphates and hardness, like deep background monitor well OW27-69. Elevated sulphate concentrations over time range from 920 to 1620 mg/L at monitors OW44D and OW45D; the concentrations are much higher than those in the shallow monitor OW45S and OW45S, and from 42 leachate grab samples (avg 331 mg/L).

Monitoring wells OW22-5, OW22-9, OW26-11 and OW26-14 were added to the monitoring program in 2013. The graph of chloride concentrations for these wells is included as **Figure 5-2**. Groundwater quality remains at background levels at these monitoring locations except past results at OW26-11. While chlorides and hardness at OW26-11 could be influenced by the use of dust suppressants, alkalinity and DOC show some influence from landfill leachate.

OW57 and OW58 are drive-point piezometers that were installed in 2011 in the northeast corner of the site. OW58 is located on the west side of the North Pond. OW57 is located approximately 150 m south of OW58. Groundwater quality is not impacted by landfill leachate.

In summary, groundwater quality cross-gradient from the land shows little to no impact from landfill leachate.

5.2.4 East Wells

Monitors OW1-9, OW21-8 and OW21-14, OW1-5 and nested monitor OW51 are located east of the landfill. There are more than 25 years of water quality results dating back to 1999.

Table 5-3c provides a summary of the ranges in concentration for select parameters to illustrate the present concentrations with historical minimum and maximum values. **Figure 5-3** illustrates chloride concentrations versus time graphs.

The groundwater flow system presented in previous monitoring reports and this report consistently shows the monitors are within the downgradient flow path from the landfill. The chemical concentrations related to the leachate plume rose from about 1999 to 2013. Most parameters remain range bound for years. Declining chemical concentrations should be expected in this area of the landfill because landfill monitor OW30L-4 reflects an older leachate.

From 1999 to 2019, chloride concentrations at OW21-8 showed a rising trend with a high concentration of 333 mg/L documented in June 2019. Chloride concentrations declined below the aesthetic criterion after 2019 and spiked to concentrations above the aesthetic criterion of 250 mg/L in 2025. It is becoming likelier this spike in chlorides is related is related to a “slug” of chloride plume or something persistent in groundwater but there is evidence of resumption in rising chlorides at this location that fits with the northern edge of a chloride plume seen in the southeast monitors. Previous monitoring reports have referred to the 2000 Annual Monitoring Report (Conestoga-Rovers & Associates), which reported that 162 tonnes of water conditioning salt disposed at the site during 2000 that was related to the Walkerton water crisis.

Landfill leachate had little impact at nearby monitor OW21-14 with respect to chlorides (less than 6 mg/L). This well is screened within the aquitard about 3 metres deeper than the well screen at OW21-8. The Town uses de-icing salts throughout the winter and calcium chloride for dust control in the dry months in and around the scale house. While the proximity to landfilling is noted, impacts from other sources (de-icing salts, dust suppressant etc.) may be occurring at one or more of these wells.

The strongest part of the chloride plume associated with landfill leachate appears to have passed through this East Area. Though spikes in chloride concentrations may occur there is evidence of ongoing attenuation of chemical concentrations towards the property boundary in this area of the site. This is supported by similar trends for DOC, sulphates, hardness and alkalinity though we observe some parameters exceed their respective ODWQS criteria (alkalinity, organic nitrogen, hardness, iron, DOC and TDS). As the chemical concentrations for these contaminants continue to decline with time, the data continues to show that chlorides remain in the shallow groundwater system based on the low concentrations at OW21-14 (2.2 mg/L) and higher concentration at upper monitor OW21-8 (284 mg/L). Hardness and alkalinity concentrations are lower than their peak levels but remain above the ODWQS.

Monitoring at OW51 began in 2010 and chemical concentrations show impacts related to landfill leachate at concentrations similar to other monitors east of the landfill. OW51S is screened in the upper sands at 3.0 to 4.5 mbgl where chlorides ranged from 121-170 mg/L in 2025. Monitoring well OW51D is screened from 7.8 to 9.1 mbgl in clayey silt and sandy silt aquitard (Unit C) underlying the upper sands and chlorides were at or below 7.1 mg/L in 2025. Ground water quality in the aquitard is similar to OW21-14.

In summary, there has been little to no change in groundwater quality east of the landfill in recent years other than the potential “slug” of chloride at OW21-8 for the past 3 years. As the waste in the existing landfill continues to age and decompose, the effects to groundwater quality to the east appear to attenuate and diminish with time.

5.2.5 Southeast Wells

Groundwater quality in the southeast area downgradient of the landfill area shows higher levels of contamination than the Cross-Gradient Wells and East Wells. This is consistent with the general direction of groundwater movement from the closed portion of the landfill. **Table 5-3d** summarizes the minimum and maximum concentrations with the 2025 results for select parameters and Figure 5-4 illustrates a graph of chloride concentrations over time for shallow wells. Monitoring wells OW5-5, OW29-4 and OW23-5 are located within about 150 metres of the landfill. Chloride concentrations in 2025 (211-665 mg/L) appear to be range bound with historical results at these monitors. Further downgradient at OW20-7, chloride concentrations are lower than the historical high concentration of 256 mg/L but also appear to be range bound between 60-256 mg/L in recent years. The 2025 chloride concentration ranged from 126-209 mg/L. Groundwater quality in this downgradient area from the landfill shows Alkalinity, Hardness, DOC and Boron are related to landfill leachate.

Groundwater with the lower part of the Upper Aquifer (Unit B) and the underlying Aquitard (Unit C) for chlorides are generally less than 20 mg/L and have shown little variation over the years as shown in **Figure 5-5**. Nested monitors such as OW5-5/OW5-11 and OW39-S/OW39-D illustrate the changes in groundwater quality with depth. The deeper monitors are lower in Chlorides, Alkalinity and DOC than the shallow monitors. Higher Sulphates and Hardness concentrations in these deeper monitors appear to be indicative of groundwater quality from the underlying aquitard. The upward movement of groundwater from deeper groundwater units was previously discussed in this report. The absence of leachate impacts in these deeper monitors and observed high Sulphate levels documented in the aquitard provide two lines of evidence showing how the natural system keeps landfill related leachate within the shallow groundwater system downgradient from the landfill in this area of the site.

5.2.6 South Wells

Table 5-3E summarizes the minimum and maximum concentrations with the 2025 results for select parameters and **Figure 5-6** illustrates a graph of chloride concentrations versus time for shallow wells OW8-5, OW9-5, OW19-3, OW24-5 and OW25-5.

Figure 5-6 illustrates the natural attention of Chlorides from monitors at or near the landfill (OW19-3 and OW24-5), downgradient through OW25-5 and OW9-5, and then to OW8-5. Landfill leachate emanating from this area of the site has decreased in chemical concentration with time and remained range bound between 100 and 180 mg/L since 2015 at OW19-3. As the chloride plume migrates southeast through OW24-5 and OW25-5, the concentrations continue to attenuate to around 40 to 76 mg/L in the past six years. Chlorides at monitor OW9-5 remain at low background concentrations and provide a southwest boundary to the chloride plume from this area of the landfill.

Further downgradient, monitor OW8-5 provides the leading edge of the chloride plume with chemical concentrations that are now showing evidence of rising concentrations from 33.8 mg/L in 2020 to 156 mg/L in 2025. Chlorides at OW8-5 may define the southwestern edge of the main chloride contaminant plume described in Section 5.2.5. Chlorides at the property boundary nest OW55 remain at background concentrations. Wells OW55S and OW55D are trigger locations and are further discussed in Section 6.

Concentrations of Alkalinity, Organic Nitrogen, Hardness and DOC at OW19-3 are related to historic seepage events along the south toe of the landfill as documented in previous monitoring reports. Sulphates of 10-20 mg/L are low and consistent with past results at this monitor.

Groundwater quality for other parameters generally mimics the pattern of the chloride plume discussed above within the shallow aquifer. Monitoring well OW24-5 is located near the toe of the landfill mound and chemical concentrations for select parameters in Table 5-3e are within the lower to mid-range of

concentrations that are related to landfill leachate.

Borehole OW8-8 is adjacent to OW8-5 and is completed partially in the upper silty fine sand and partially in the underlying sandy silt. The analytical data for samples from OW8-8 continues to show low Chloride and Alkalinity concentrations. The hydraulic head between these monitors is generally upwards (see **Table 5-1**) and perhaps explains why sulphate and hardness concentrations are commonly higher than those at OW8-5. The upward hydraulic heads provide two lines of evidence to infer that OW8-8 is influenced by naturally deeper groundwater quality and not landfill leachate.

The concentrations of Boron within these South Wells remain below the ODWQS and site boundary criteria concentrations discussed later in Section 6 of this report.

5.2.7 West of Expansion Area

Table 5-3F summarizes water quality for select parameters west of the expansion area. Groundwater quality west of the expansion area is at background concentrations except for OW32-S and OW54-S. These two shallow monitors show evidence of impacts from chlorides. OW32S and OW32D are adjacent to the Cell 2 Expansion Area and have much lower chloride concentrations.

A field inspection during 2023, 2024 and 2025 identified pooling of surface water west of the access road and it was unclear if this water influences shallow groundwater quality. OW52-S and OW54-S are used to calculate background water quality for Reasonable Use Assessment at the Southern Property Boundary. Background water quality for chlorides relied on data up to April 2019 at OW52-S and OW54-S. All the data at OW53-S was used to evaluate average background water quality.

Monitor wells OW32S and OW54S exhibited slightly higher boron concentrations in recent years compared with historical results; however, the concentrations remain low.

In summary, there is evidence of chloride related effects to OW54-S and some at OW32-S that may be due to local surface water ponding in the area.

5.2.8 Private Well Monitoring

The commercial property and residential dwelling are on lots abutting the south boundary of the landfill. MECP well record #1404632 has been used to identify the well servicing the commercial property. The well is 48.6 m (160 feet) in depth and cased to the bedrock, which was encountered at a depth of 48 m (158 feet).

No water well record was available for the domestic well servicing the residential property that is sampled for this monitoring program. Information provided by the property owner confirms the dug well is about 3.7 m deep. Previous site visits indicated that a sediment filter had been added to the water treatment system in 2011. The filter treats and affects all household plumbing and water supply. As a result, the outside tap that has been used for sampling was being filtered. The samples collected since the discovery of the filter, in 2016, have been of the raw well water, after removal of the filter cartridge and after the filter housing and pipe to the outside tap had been purged with raw well water.

In 2025, samples from the residential dug well were collected in May and October. A tabular summary of analytical data for the Dillon (formerly Moore) domestic well (DW1), dating back to May 1999, is included in **Appendix I**. The analytical results for samples from the Dillon well (formerly Moore) were compared to the corresponding ODWQS. The following is a summary of groundwater quality:

- The water samples from the Moore well appear to be affected by the water softener based on the low hardness, higher sodium and higher chlorides in some samples.
- Groundwater quality is normally characterized as very hard (425 mg/L in May), with acceptable levels of total dissolved solids.
- Chloride concentrations are elevated in the past two years (34-88 mg/L) compared with low background concentrations usually below 13 mg/L.
- Sodium is consistently below the MECP objective of 20 mg/L for a small portion of the population that are on sodium reduced diets. The higher values in 2024 and 2025 probably reflect water softening and this is consistent with lower calcium hardness concentrations.
- Dissolved Organic Carbon (DOC) concentrations are mostly below the objective of 5 mg/L; the October 2025 concentration was 6.5 mg/L and above the ODWQS. Levels above the aesthetic objective of 5 mg/L is an indicator of potential water quality deterioration in the storage of distribution of water that would be more applicable to larger drinking water systems. DOC concentrations are within background levels observed in background monitor OW27-69.
- The nitrate concentrations exceeded the ODWQS maximum acceptable concentration of 10 mg/L occasionally over the past 20 years. During the past 3 years, nitrate concentrations are in the range of 4 to 6 mg/L. Landfill leachate grab samples show an average nitrate concentration of 15 mg/L for forty-two samples. Monitors like OW36 (S&D), OW9-5, OW9-8 and OW55 (S&D) that are between the residential well and the landfill show nitrates at background levels. Nitrates are not considered to be a result of landfill-related impacts.

5.2.9 VOC Monitoring

The proposed monitoring and contingency plan prepared in conjunction with the Hanover/Walkerton Landfill Expansion EA recommended that VOC monitoring be carried out annually at selected monitoring wells, as shown in **Table 5-4**, for three targeted compounds: benzene, dichloromethane and toluene.

For the fall 2024 sampling event, VOC monitoring was carried out in accordance with the proposed monitoring plan as detailed on **Table 17 (Appendix G)**. VOC results were commonly reported at concentrations below method detection limits (MDL). Dichloromethane and Toluene were not detected at the monitors in 2024. Benzene was detected in leachate monitor OW19-3 at 2.0 ug/L and monitor OW5-5 at 0.8 ug/L. OW5-5 is located on the east side of the access road. The results were not considered indicative of a VOC groundwater issue at the Site and are similar to past results. Additional discussions are presented in Section 6.3.

Monitor OW38-S is damaged.

5.3 Surface Water Quality

The locations of the surface water monitoring stations are as follows:

SW7	Saugeen River Upstream
SW8	Saugeen River Downstream
SW9	Marl Creek Downstream
SW10	North Pond
SW11	Saugeen Floodplain (East Pond)
SW12	Marl Creek Upstream
SW13A	Marl Creek (at confluence with drainage swale west of landfill mound)
SW14	Saugeen River Midstream

SW15	South Pond east of the access road
SW16	Ravine northeast of landfill
SW17	Wetland south of landfill

Appendix J provides a comparison of the water quality results from surface water monitoring stations dating back to 2007.

5.3.1 Saugeen River

There are three (3) surface water stations for the Saugeen River:

1. upstream – SW7;
2. midstream – SW14; and
3. downstream – SW8

SW7 represents background water quality and is located approximately 400 m upstream (northeast) of the Site, in Hanover Park. The results for 2025 are with the range of concentrations of past results and reflect good water quality. Chlorides, Boron and Iron remain at background levels. Total Phosphorous concentrations occasionally rise above the PWQO of 0.03 mg/L and were as high as 0.04 mg/L in May 2024, other concentrations are below the PWQO. The levels of unionized ammonia and phenol are at or below method detection limits. The detection limits for phenol were improved to 0.001 mg/L in 2020 and the concentrations remain low in 2025.

The analytical results for SW14 (midstream) and SW8 (downstream) in 2025 were consistent with background concentrations at upstream station SW7. Total Phosphorous returned to concentrations at these two locations are both below and above the 0.03 mg/L criteria for prevention of excessive plant growth. The phosphorus results at SW8 are consistent with historical results.

The analytical results for samples collected from the Saugeen River in 2025 were not considered to be indicative of degradation of surface water quality because of landfill-related effects.

5.3.2 Marl Creek

There are three (3) surface water stations for Marl Creek:

1. upstream – SW12;
2. at the confluence with the Stormwater Pond drainage swale – SW13A (replaces SW13); and
3. downstream – SW9.

The upstream location (SW12) is located at the culvert under Bruce Road 22, approximately 700 m west of the landfill mound. The analytical results for samples collected at SW12 in 2025 were consistent with recent results. Total Phosphorous at SW12 ranged from 0.01 to 0.02 mg/L.

SW13A replaces the midstream location on Marl Creek relative to the landfill mound and is collected where the Stormwater Pond drainage swale converges with Marl Creek. This drainage swale typically conveys water only during periods of wet conditions. The analytical results for samples collected at SW13A in 2025 were consistent with previous results and mostly below the corresponding PWQO.

SW9 is located at the north end of the culvert where Marl Creek passes under Bruce Road 4, immediately west of the landfill entrance road. This location is monitored semi-annually under the landfill monitoring program. The analytical results for samples collected at SW9 in 2025 were below the PWQO. The chemical results are generally consistent with past results.

In summary, the surface water quality results for Marl Creek in 2025 were not indicative of degradation related to landfill leachate.

5.3.3 On-Site Ponds

There are three (3) on-site ponds where the surface water quality is monitored. The corresponding surface water stations are identified as:

- North Pond – SW10;
- East Pond – SW11; and
- South Pond – SW15.

The ponds were subject to an emergent invertebrate study in the spring of 2024. The next study is scheduled for the spring of 2026.

SW10 on the North Pond is located approximately 350 m east of the landfill mound. A berm of unknown material and source, remnant of an old railway track that was installed to haul marl from nearby Marl Lake and Lake Rosalind to a brick manufacturing plant located in Hanover (behind New Life Mills property) in the early 1900's, forms the southern limit of the pond. The track formerly crossed the Saugeen River just east of the North Pond. An old rail trestle that remains in the river near the Hanover Park parking lot is visible on aerial photos. Although shallow groundwater flow from the landfill may not be directly towards the pond based on the 2025 contours, a component of local drainage in this area of the site may be easterly towards SW10. The analytical results for 2025 from SW10 were very similar to previous results. Measured chloride concentrations were within the historical range of 5.2 - 22 mg/L although the fall (November) result was above the high end of the range (i.e. 24.8 mg/L). Alkalinity concentrations were also within the historic range of 92 to 248 mg/L. No other parameters were higher than the PWQOs in the 2025 samples. To date, the analytical results at this location have been slightly variable but they are not considered indicative of degrading water quality.

The East Pond is shallow and located in the Saugeen River floodplain, downgradient of the landfill. Surface water monitor SW11 is located approximately 300 m southeast of the landfill mound. Monitoring at SW11 was initiated in 2007 and the analytical. The results for 2025 are generally similar to past results except for the October 2025 results showing higher than expected concentrations for TSS, boron and iron.

The South Pond is a shallow pond located in the floodplain of the Saugeen River between the access road and the Saugeen River. The pond is monitored by SW15 for which sampling was initiated in the fall of 2007. The analytical results for 2025 are generally higher for parameters of interest. The concentration of iron continues to exceed the PWQO for both the spring (0.78 mg/L) and fall (2.7 mg/L) sampling events. Total Phosphorus continues to exceed the PWQO. Unionized ammonia was above the PWQO of 0.02 mg/L with a high concentration of 0.147 mg/L for the fall event. Measured chloride concentration in the fall (167 mg/L) is above the historical range of 10.7 - 151 mg/L. The analytical results for SW15 appear to show evidence of degrading water quality.

Monitoring at SW16 commenced in June 2011. Conditions at SW16 consist of a small watercourse in a gully with a silty sand bottom. A water sample was obtained from this station in the spring as the water course was dry in the fall. The analytical results for the spring sample were all generally within the range of past test results. The concentrations of Iron and Total Phosphorus were above the PWQOs. The measured chloride concentration (13.1 mg/L) was within a reasonable range of historical range of 4.1 - 11 mg/L. The analytical results for SW16 are not considered indicative of a declining trend in water quality.

SW17, near the foot of the landfill slope, was first sampled in June 2011. Conditions in the vicinity of SW17 have indicated impacts from leachate in the past and are assessed annually to evaluate the

potential for a leachate seep in that area and the quality of the standing water in the nearby wetland. In 2025, a spring sample was obtained from SW17 as this location was dry in the fall. The analytical results for the spring sample were generally consistent with the previous results. The concentration of Boron (0.197 mg/L) was lower than the PWQO this year. Total Phosphorus (0.03 mg/L) was at the PWQO of 0.03 mg/L. Unionized ammonia (<0.005 mg/L) was also below the PWQO of 0.02 mg/L. The measured chloride concentration (56.5 mg/L) was at the lower end of the historical range of 43.5 - 597 mg/L. The analytical results for SW17 are not considered indicative of a declining trend in water quality in the nearby wetland.

The 2012 Hydrogeologic Assessment Update Report prepared by Stantec identified proposed trigger levels for surface water (SW) that were based on five key leachate indicator parameters at the downstream stations located on the Saugeen River (SW8) and Marl Creek (SW9). The five key leachate indicator parameters were chloride, boron, unionized ammonia, phenols and iron. As part of the routine monitoring, one of the following two scenarios would trigger implementation of Stage 2 – Confirmatory Sampling:

- **SW Trigger 1** - One of the key leachate indicator parameters (chloride, boron, unionized ammonia, phenols or iron) is reported above its respective trigger level in three consecutive sampling events at a single monitoring location; or
- **SW Trigger 2** – Three of the key leachate indicator parameters are reported above their respective trigger level during the same sampling event at a single monitoring location.

A review of the 2025 surface water sampling results identified one exceedance for Total Phosphorous at SW8 in April 2025 for the five key leachate indicator parameters. As three (3) consecutive sampling events at SW8 or SW9 are required for a trigger exceedance, a ‘SW Trigger 1’ was not present in 2025. Neither was there a ‘SW Trigger 2’ event in 2025.

5.4 Stormwater Monitoring

A summary and interpretation of the stormwater monitoring, comparison to PWQO and overview of the success and adequacy of the pond and quarterly grab sampling is required by Condition 13.7 of the ECA.

Stormwater monitoring is required to be completed quarterly when there is water in the pond, unless there are exceedances of the ECA Table 3 that trigger monthly sampling.

Since phosphorus was above the trigger criteria in 2019, monthly sampling was required to be completed throughout 2020, 2021, 2022, 2023, 2024 and 2025. Three (3) consecutive samples at less than the Table 3 trigger criteria have not been obtained. Therefore, the storm water pond continued to operate in “normally closed position” for all of 2025.

Please note that water samples were not able to be obtained in 2025 as the pond has remained dry throughout the year.

Table 5-6 shows the status of the stormwater pond sampling.

5.5 Landfill Gas Monitoring

Landfill gas is the natural by-product of the decomposition of organic material at landfills. According to the EPA, landfill gas is comprised of about 50% methane, 50% carbon dioxide and small amounts of other organic methane compounds. The potential for subsurface gas migration is influenced by soil, topography and groundwater/surface water boundaries. Methane is lighter than oxygen so the gas will rise. Soil permeability affects the lateral and upward movement of gas. Unsaturated sandy soils provide

an easier pathway for methane gas migration than clay, silt or heavily compacted waste for sample. Towards the east, the land slopes down to the floodplain of the Saugeen River. The floodplain area is marshy and saturated. There is limited unsaturated, permeable overburden available to allow for significant subsurface migration of landfill gas below the scarp to the east. The Saugeen River forms a natural barrier to off-site landfill gas migration to the east. Towards the south the topography similarly slopes down to a somewhat marshy area, effectively limiting subsurface landfill gas migration. The land to the west and north of the 'existing landfill' mound is at higher elevations and lower permeability soils that allow for greater potential of subsurface landfill gas migration.

The Town owns and has designated the lands on Part of Lot 69 specifically for 'landfill gas control' (see Figure 2 and 3) per Figure II-13-1 of the Development & Operation Plan (Stantec, 2012) (**Appendix N**).

In 2025, combustible vapour monitoring occurred five (5) times: January, February, May, October, and December. Historic results of landfill methane gas monitoring from 1987 to present are provided in **Appendix K** and **Table 5-7** documents the results for 2025.

Gas monitors detected methane vapour concentrations ranging from 0% to 68.7% methane by volume. Historically, varying site conditions (i.e.: thawed ground conditions) affect gas concentrations causing high concentrations during the winter and lower concentrations during other seasons. Figure 9 illustrates methane concentrations for December 2025.

5.5.1 North of the Landfill Mound

GP27 and GP28 are located north of the 'existing landfill', near the north site boundary. Methane was not detected in 2025 and the results at these trigger probes are similar to past results.

Gas monitor GP26 is located approximately 80 m north-northwest of the 'existing landfill' near the north boundary of the adjacent Town-owned lands. GP26-S consistently detects combustible vapours at concentrations above 50% methane by volume. These high concentrations are like past results at this location near the landfill. GP26-D provides high concentrations during the winter months and lower levels in the spring and/or fall. The highest concentration of 56.4% was measured at GP26-S in January 2025.

Gas probe monitors GP40, GP43 and GP44 are located by the north site access road. Combustible methane gas concentrations up to 61.5% (GP44) volume of gas in air were reported in 2025.

Gas probes GP46 to GP48 were installed in 2019 because of high concentrations at Trigger Probe GP28. The GP46 nest detected low levels of methane and GP47 and GP48 detected none. Gas monitoring at the pumphouse was initiated in November 2020 and methane was not detected.

5.5.2 South of the Landfill Mound

GP29, GP30, GP31 were installed at locations south of the 'existing landfill' in 2007. The monitoring results showed mostly no detectable methane. Probe GP14s consistently detects methane between 27% and 32%. The readings at these probes are highlighted in Table 5-7.

5.5.3 East of the Landfill Mound

The monitoring results for GP32 and GP33, located east of the 'existing landfill', showed no detectable methane.

5.5.4 West of the Landfill Mound

The remaining gas probes are located to the west of the closed 'existing landfill' and 'expansion landfill' mounds, on the adjacent Town-owned property. The access road around the north and west area of the site tends to be a boundary for elevated concentrations of methane greater than 2% gas (i.e.: 40% LEL).

West of the access road at the property boundary, gas probes GP West and GP38 showed no detectable methane.

Gas probe GP37 at the west boundary showed methane ranging from 0% to 1.3%. The shallow and deep gas probes at GP37 were installed down to elevations of about 274 and 272 masl respectively. The land slopes down to elevations below 270 masl to the west of this gas probe by Marl Creek. The nearest dwelling is located west of Marl Creek at the intersection of Airport Road and County Road 22, about 350 west of the property boundary.

5.5.5 Methane Assessment - Trigger Monitors

The Hydrogeologic Assessment report (Stantec, 2009) indicated that the buried refuse in the landfill is in direct contact with a thick, extensive unsaturated sand layer on the western side, which allows subsurface movement of landfill gas to the west. As the unsaturated sand is overlain by low permeability silty clay, Stantec noted that the landfill gas can migrate a significant distance to the west without being vented to the atmosphere. The report went on to note that it was anticipated that westward migration of landfill gas could potentially continue beyond the west boundary of the Town-owned property before venting to the surface along the side slopes of the valley associated with Marl Creek.

The Hydrogeologic Assessment Update Report (Stantec, 2012) recommended and ECA Condition 15.6 requires that the following gas probes be used as trigger monitors:

- To the west: GP West S and D, GP37-S and D, GP38-S and D;
- To the north: GP26-S and D, GP27-S and D, GP28-S;
- To the south: GP29, GP30; and
- To the east: GP32, GP33.

The trigger monitor probes are highlighted on Table 5-7. Arising from the Hydrogeologic Assessment Update Report, in the ECA an exceedance of a trigger is defined as:

- *a single measurement above 2.5% methane by volume in any location; or*
- *three (3) consecutive measurements above 2% methane by volume in the same location.*

In the Hydrogeologic Assessment Update Report, Stantec acknowledged that methane concentrations at GP26-S and GP26-D were detected at concentrations higher than the trigger levels and that contingency measures are required to address this situation. Details on the proposed contingency measures were provided in the Stantec report.

Based on the 2025 monitoring results, the trigger levels were not exceeded at the trigger location gas probes, except at GP26-S. Gas concentrations at GP26-S exceed 2.5% methane by volume trigger (50% LEL) in January, February, October and December. No exceedance was documented for GP26-D. The property boundary at GP26 is close to the access road for the site where gas vapours are high. The high concentrations at GP26 have occurred for some time.

The proposed Contingency Plan identified in the January 2010 Stantec/PSMI memo recommended several steps go into effect if the methane triggers were activated. These steps included inspecting the vicinity of the trigger monitors to ensure there are no buildings or structures in the vicinity that would allow

gas accumulation, increased methane sampling, installation of additional gas probes, sampling of potential methane receptors (i.e. nearby buildings and homes), assessment of methane impacts, and/or construction of methane venting systems if triggers continue to be exceeded.

As noted above, westward migration of landfill gas could potentially continue beyond the west boundary of the Town-owned property before venting to the surface along the side slopes of the valley associated with Marl Creek. The Town owned property (Part of Lot 68) has been specifically designated for 'landfill gas control' (Figure 2 and 3) per Figure II-13-1 (**Appendix N**) of the Development & Operation Plan (Stantec, 2012).

The MECP provided a comment in August 2017 regarding the high gas concentrations in gas probe GP26 and whether mitigation measures are required to ensure that the landfill gas does not migrate or pose a risk. In 2019, nested gas probes GP46, GP47 and GP48 were installed north of the landfill to document the migration of methane gas. The results show methane was not detected at GP47 located less than 120 metres from the north property boundary and less than 70 metres from GP26.

Previous inspections determined there are no buildings or structures in the vicinity of GP26 that would be susceptible to an accumulation of methane gas. A methane alarm system is installed in the Site office located 440 m southeast of GP26. The single on-site storage shed is not equipped with a methane alarm. Elevated concentrations do not pose a risk on site and additional controls are not needed unless gas collects in enclosed spaces.

Due to the nature of the local stratigraphy in the area of GP26 (unsaturated sand layer overlain by low permeability silty clay), there is the possibility that the landfill gas could migrate north without being vented to the atmosphere. There are currently no structures or buildings reported on the property immediately adjacent to the northern property boundary of the Town owned property surrounding the landfill expansion area. In November 2021, monitoring was expanded to include the Pumphouse north of County Road 22, methane was not detected.

Future development on the property immediately north of the Town of Hanover owned property surrounding the landfill expansion area designated as CON 2 NDR PT LOTS 66 TO 69 (Assessment Roll # 410434001007100), with no civic address, would be subject to a Guideline D-4 Assessment if it is within 500 m of the waste disposal site. As part of the D-4 Assessment, the potential for landfill-generated gas migration should be evaluated.

ECA Condition 15.9 requires that as part of the closure activities for the existing landfill footprint, passive vertical landfill gas vents be retrofitted in the unsaturated portion of the existing landfill pile. Additional landfill gas controls may also be required if gas concentrations at GP26 do not decrease below trigger levels within one year of installation of passive vertical landfill gas vents. The owner is then required to make an application within 18 months for a gas collection trench with passive venting system excavated in the area of GP26 (per Section 5.9.4 of the Hydrogeologic Assessment Update Report).

5.6 BIOMONITORING RESULTS

Azimuth Environmental Consulting Inc. (Azimuth) completed the biomonitoring program in the Saugeen River in 2025. The following provides a summary of the sampling results.

5.6.1 Saugeen River Sampling

Benthic invertebrate sampling in the Saugeen River was conducted on October 29, 2025, as part of the ongoing compliance monitoring program for the Hanover-Walkerton Landfill. Triplicate Surber samples were collected at two stations: Station 1 (upstream reference) and Station 2 (downstream exposure area within the landfill leachate zone). A total of 1,271 benthic invertebrates were collected and identified, representing 37 and 30 taxonomic groups at Stations 1 and 2, respectively. Emergent invertebrate sampling was not conducted in 2025 in accordance with the established biennial schedule; floodplain pond sampling is planned for 2026.

Invertebrate density at both stations was below the 4,000–16,000 organisms/m² benchmark for healthy Southern Ontario gravel-bottom rivers, a pattern consistent with prior monitoring years and likely reflecting the influence of upstream impoundments. Both stations were classified as "Unimpaired" based on the BioMap Water Quality Index, and Hilsenhoff Biotic Index scores at both stations fell within the "Excellent–Good" range with respect to organic nutrient pollution. EPT taxa (Ephemeroptera, Plecoptera, and Trichoptera), which are sensitive indicators of habitat quality, were present at both locations. Statistically, the only significant difference between stations was a lower HBI at Station 2; however, both stations remained within the same qualitative classification. Ephemeroptera were significantly more abundant at Station 2, while "Other Benthic Invertebrates" were more abundant at Station 1.

Overall, the 2025 results indicate that benthic invertebrate communities in the Saugeen River remain generally healthy and broadly comparable to conditions observed in prior monitoring years. No consistent evidence of landfill leachate impacts on the downstream benthic community was identified. Continued annual monitoring of the Saugeen River is recommended in accordance with the March 23, 2011 Notice of Approval.

5.6.2 Multi-Year Biomonitoring Summary (2020–2025)

Azimuth prepared a Multi-Year Invertebrate Biomonitoring Report compiling and statistically analyzing the full 2020–2025 dataset for both the Saugeen River benthic program and the biennial floodplain pond emergent program. This multi-year analysis complements the annual program by providing additional insight into longer-term spatial and temporal patterns in invertebrate community composition.

Saugeen River – Benthic Invertebrates

Community health metrics at both upstream and downstream stations showed natural interannual variability across the six-year monitoring period. Univariate statistical analyses (one-sample t-tests and Wilcoxon signed-rank tests on annual downstream–upstream delta values) found no statistically significant directional differences between stations for any community health measure (abundance, density, richness, EPT Index, WQI, or HBI; all $p \geq 0.074$). Spearman rank correlation analyses within each station similarly found no significant temporal trends over the monitoring period (all $p > 0.05$).

Multivariate analysis (PERMANOVA) identified statistically significant but modest differences in overall community composition between upstream and downstream stations ($p = 0.001$, $R^2 = 0.175$) and among years ($p = 0.001$, $R^2 = 0.156$). Environmental vector fitting (envfit) associated these compositional patterns with natural environmental gradients — conductivity, water temperature, dissolved oxygen, water velocity, and pH — rather than with landfill-related impairment. WQI scores remained within the "Unimpaired" category and HBI values within the "Excellent" to "Good" range throughout the full monitoring period.

Floodplain Ponds – Emergent Invertebrates

Emergent invertebrate communities were monitored biennially at the North (up-gradient reference), Middle, and South Ponds in 2020, 2022, and 2024. Communities were dominated by Chironomidae across all ponds and years, with secondary contributions from Ephemeroptera, Trichoptera, and other groups varying by pond and year. The North Pond generally maintained higher mean abundance relative to the down-gradient ponds. The South Pond showed lower values for density, EPT, HBI, and WQI in 2022 and 2024 relative to 2020 baseline conditions; continued biennial monitoring is recommended to determine whether this pattern represents a persistent declining trend. No single taxonomic group exhibited a sustained increase or decrease at any pond across the monitoring period.

Multi-year Summary of Key Invertebrate Community Health Metrics (2020–2025)

Metric	Both Stations	Classification	2020–2025 Trend	Assessment
WQI	Both	Unimpaired	Stable	No concern
HBI	Both	Excellent–Good	Stable	No concern
Density (ind./m²)	Both	Within range	Variable, no trend	No concern
EPT Richness	Both	Present all years	Variable, no trend	No concern
Up/Dn composition (PERMANOVA)	Differs	Modest difference	Stable	Attributed to natural gradients
South Pond metrics (emergent)	South Pond	Below 2020 values	Declining	Monitor biennially

WQI = Water Quality Index; HBI = Hilsenhoff Biotic Index; EPT = Ephemeroptera, Plecoptera, Trichoptera; PERMANOVA = Permutational Multivariate Analysis of Variance.

Overall Conclusions

Based on the integrated 2020–2025 analysis, the following conclusions are drawn:

- Benthic invertebrate communities in the Saugeen River remain in generally good condition. No measurable adverse effects attributable to landfill leachate were identified over the six-year monitoring period.
- Individual community health metrics fluctuate from year to year but have not exhibited strong or persistent directional change. The 2025 results are consistent with this long-term pattern.
- Observed differences in community composition between the upstream and downstream stations are modest and attributable to natural environmental gradients within the river system.
- Annual benthic monitoring of the Saugeen River should continue through 2027 in accordance with the EA Notice of Approval. Biennial emergent monitoring of the floodplain ponds should continue (next event: 2026), with particular attention to South Pond metrics.

6 Property Boundary Assessment

6.1 ESTABLISHING SITE BOUNDARY CRITERIA AND SITE - SPECIFIC BOUNDARY CRITERIA

The reasonable use concept (RUC) was outlined in MECP *Guideline B-7*, *The Incorporation of the Reasonable Use Concept into MOEE Groundwater Management Activities,* (1994). The document establishes procedures for determining what constitutes the reasonable use of groundwater on property adjacent to sources of contaminants and establishes limits on the discharge of contaminants from facilities, approved by MECP, that are used for the disposal of waste into the shallow subsurface. RUC applies only to groundwater quality management. According to *MOEE Procedure B-7-1*, where the designated reasonable use of groundwater is drinking water, a lowering of the water quality on an adjacent property will be accepted only as follows:

> *Quality cannot be degraded by an amount in excess of 50% of the difference between background and the Ontario Drinking Water Objectives for non-health related parameters and in excess of 25% of the difference between background and the Ontario Drinking Water Objectives for health-related parameters. Background is considered to be the quality of the groundwater prior to any man-made contamination.*

The property boundaries of the Site (including Lot 68 for 'Landfill Gas Control' and Lot 73 for 'Groundwater Attenuation Zone') are shown on Figure 2 and SP1 (back pocket). RUC is applied at the downgradient property boundaries, where a contaminant would potentially leave the Site. The Hydrogeologic Assessment report for the proposed landfill expansion (Stantec, 2009), investigations and monitoring at the Site have shown that groundwater downgradient of the landfill discharges to the Saugeen River. As noted in the Hydrogeologic Assessment report (Stantec, 2009), the Town of Hanover owns all the land positioned between the landfill and the Saugeen River, except for the Dillon residential property and the Moore commercial property. Except for those properties, there is no potential use of groundwater between the landfill and the Saugeen River. Based on consultation with the MECP at that time, the Hydrogeologic Assessment report indicated that it was agreed that the RUC does not apply where the Saugeen River directly abuts the Town-owned property. Reasonable Use does apply for the Dillon residential property and the commercial property. This is consistent with the application of the RUC in previous Annual Monitoring Reports.

Groundwater monitoring has shown the movement of groundwater originating from the closed portion of landfill towards the northern and western boundaries of the Site does not occur. Information contained in the Hydrogeologic Assessment report (Stantec, 2009) indicated that there were no pathways for leachate-impacted groundwater to reach either the northern or western property boundaries for any of three potential landfill expansion scenarios that were evaluated. Therefore, RUC is currently met along the northern and western property boundaries. To the south, evaluation of RUC for the boundaries with the commercial property and the Dillon residential property is warranted and is discussed below.

To address the potential for impacts to surface water quality in the Saugeen River resulting from the discharge of groundwater from the Site, the Hydrogeologic Assessment report (Stantec, 2009) outlined the development of site-specific compliance criteria for groundwater discharging to the Saugeen River. The criteria were based on comparing groundwater quality data to the Provincial Water Quality Objectives (PWQO's). Risk-based, site-specific groundwater compliance criteria were developed for un-ionized ammonia, boron, and iron, as follows:

- ***Un-ionized ammonia*** ***0.069 mg/L***
- ***Boron*** ***1.7 mg/L***
- ***Iron*** ***4.38 mg/L (interim value, subsequently revised to 53.6 mg/L, Stantec, 2012)***

The Hydrogeologic Assessment report (Stantec, 2009) indicated that while the interim iron criterion of 4.38 mg/L was protective of aquatic receptors, there was a high degree of uncertainty associated with the iron benchmark and reliance on this value for environmental management decisions was not recommended. Stantec suggested that a site-specific toxicity analysis be conducted to derive a Site-specific compliance criterion for iron based on the buffering capacity of the Saugeen River. In the Hydrogeologic Assessment Update Report (Stantec, 2012), a site-specific compliance criterion of 53.6 mg/L was identified for iron.

In addition to the risk-based criteria, the Hydrogeologic Assessment report (Stantec, 2009) indicated that a site-specific compliance criterion of 350 mg/L was identified for chloride, based on consultation with the MECP. The report also indicated that a compliance criterion for phenols of 0.2 mg/L was appropriate for the Site, based on protection of aquatic life. The report noted phenols were not detected in groundwater at any of the monitoring wells at concentrations higher than the compliance criterion and that the presence of phenols was not anticipated to represent a compliance issue for the Site.

The ECA trigger levels and parameters are specific to the location at the site.

6.1.1 Saugeen River Floodplain

ECA Condition 15.1 requires that the wells used for groundwater trigger locations along the Saugeen River floodplain should be: OW43, OW56 (replacement for OW42 installed 2012), OW40, OW61 (replacement for OW41 installed 2012), OW39S, OW39D, and OW7-8.

For the Saugeen River floodplain groundwater trigger locations, the triggers levels for chloride, boron, unionized ammonia, phenols, and iron are:

- ***Trigger Level = Background + 0.75X (Site Specific Compliance Criterion – Background)***

6.1.2 Southern Property Boundary

ECA Condition 15.2 requires that the wells used for groundwater trigger locations along the southern property boundary should be: OW36S, OW36D, OW55S, and OW55D.

For the southern property boundary groundwater trigger locations, the trigger levels for chloride and boron are:

- ***Trigger Level = Background + 0.75X (RUC Cm – Background)***

6.1.3 Site Specific Compliance Criterion

Accordingly, these site-specific criteria have been included within ECA Condition 15.0 wherein Schedule ‘B’ lists the following as Site Specific Criterion at the groundwater trigger locations:

- ***Boron*** ***1.7 mg/L***
- ***Chloride*** ***350 mg/L***

- ***Iron*** ***53.6 mg/L***
- ***Phenols*** ***0.2 mg/L***
- ***Un-ionized ammonia*** ***0.069 mg/L***
- ***Benzene*** ***NA***
- ***Toluene*** ***NA***
- ***Dichloromethane*** ***NA***

  Where NA = not applicable

ECA Condition 15.3 defines exceedance of a trigger as:

i. Two or more trigger levels exceeded in the same monitoring well, or

ii. During three consecutive monitoring events, the trigger level is exceeded for the same parameter at the same trigger well during each monitoring event, or

iii. Detectable concentrations of benzene, toluene, and dichloromethane in a sample at any trigger well.

6.2 Southern Property Boundary - Groundwater Flow to Adjacent Private Properties

The concept of reasonable use (RUC) was applied at the boundaries of the two private properties located within the Site. The maximum allowable concentration for an individual contaminant in groundwater beneath an adjacent property was calculated in accordance with the following relationship:

Where:	Cm	=	Cb + x (Cr-Cb)
	Cm	=	maximum concentration accepted
	Cb	=	background concentration
	Cr	=	maximum concentration permitted in accordance with the Ontario Drinking Water Quality Standards Objectives and Guidelines (ODWQSOG)
	x	=	a constant that reduces the contamination to a level that is considered by the MECP to have a negligible effect on water use (i.e. 0.5 for non-health parameters & 0.25 for health parameters)

The Hydrogeologic Assessment report (Stantec, 2009) contained an assessment of the potential for reasonable use concerns at the boundaries with the two private properties for five parameters: chloride, boron, benzene, toluene, and dichloromethane. Maximum acceptable concentrations were identified for these parameters in accordance with the relationship identified in the *Reasonable Use Guideline B-7*, as follows:

PARAMETER	ASSUMED BACKGROUND CONCENTRATION (CB)	ONTARIO DRINKING WATER STANDARD	MAXIMUM ACCEPTABLE CONCENTRATION (MAC)
Chloride	1 mg/L	250 mg/L	125.5 mg/L
Boron	0 mg/L	5 mg/L	1.25 mg/L
Benzene	0 mg/L	0.005 mg/L	0.00125 mg/L
Toluene	0 mg/L	0.024 mg/L	0.012 mg/L
Dichloromethane	0 mg/L	0.05 mg/L	0.0125 mg/L

The same maximum acceptable concentrations were identified in **Table 8** of the Hydrogeologic Assessment Update Report (Stantec, January 2012). That report indicated the compliance monitors should be OW36S, OW36D, OW55S, and OW55D. The OW36 monitors are located near the south boundary of the Town-owned lands, slightly west of the Site. The OW55 monitors are located immediately north of the commercial property.

The results of a reasonable use assessment carried out using these five parameters together with the analytical data for samples collected in 2025 at groundwater trigger locations OW36 and OW55 are provided in **Table 6.1. Figures 5-7 (a & b)** provides chemical concentration versus time graphs for chlorides and boron for the property boundary monitoring wells. The results indicated the maximum acceptable concentrations identified in accordance with the RUC were not exceeded in groundwater samples collected from OW36 and OW55. The graphs also illustrate groundwater quality trends with respect to these site boundary parameters remain stable with time except for chloride spikes in OW55D in 2022 and 2025.

The 2018 AMR prepared by WSP documented additional reasonable use criteria for other parameters including alkalinity, DOC hardness, iron, organic nitrogen sulphate, and TDS. *Guideline B-7 Criteria* was exceeded for DOC, hardness, organic nitrogen, sulphate, and TDS. The report went on to recommend that additional monitoring occur. Boundary monitor OW55S shows concentrations of hardness, organic nitrogen, sulphate, and TDS above Guideline B-7 criteria.

The proposal to add these parameters conflicts with the recommendation in the January 2012 Stantec Executive Summary for the Hydrogeological Update Report. The landfill leachate impact assessment recommended the use of chloride, boron, and ammonia as parameters to distinguish landfill leachate impacted groundwater because elevated concentrations were observed in background monitors like OW27-69. To further illustrate this rationale, **Figure 5-9** shows sulphate concentrations from background monitor OW27-69, leachate quality, downgradient monitors, and trigger monitor OW55D. Upward hydraulic heads are present below the scarp, providing the potential for deep groundwater to mix with shallow groundwater. Sulphates at OW55D reflect groundwater quality at OW27-69. Groundwater monitors between the landfill and OW55 commonly show low sulphate concentrations with one or two anomalies dating back to 1999. While the current data continues to show a potential for exceeding Reasonable Use Criteria, historical sulphate data does not show a sulphate plume emanating from the landfill and only background water quality at a deep monitor shows similar water quality to OW55.

The Hydrogeologic Assessment Update Report recommended that trigger levels be developed for boron, chloride, toluene, benzene, and dichloromethane in groundwater leaving the Site and the adjacent Town-owned property to the west and migrating onto private property. It was recommended, and the ECA now requires, that trigger levels be set at 75% of the difference between the background concentration and the RUC Maximum Acceptable Concentration for boron and chloride. Based on the relatively low assumed background concentrations shown above, the ECA trigger levels are effectively equivalent to 75% of the

maximum acceptable concentration for each parameter. For benzene, toluene, and dichloromethane, ECA Condition 15.3 requires that concentrations of each be less than detectable limits at each trigger well. Monitoring wells to be used as groundwater trigger locations for the south property boundary were as follows:

- ***Existing monitors OW36S, OW36D, OW55S, OW55D***

Table 6-1 and **Figures 5-7 (a & b)** show the measured concentrations of chloride and boron in the samples collected from the above-noted trigger monitors in 2025 were less than the ECA trigger levels. The concentrations of benzene, toluene and dichloromethane in the samples collected from the trigger monitors in 2025 were less than detectable and thus less than the ECA trigger.

6.3 Saugeen River Floodplain - Groundwater Discharge to Saugeen River

The Hydrogeologic Assessment Update Report (Stantec, 2012) recommended that trigger levels be developed for chloride, boron, un-ionized ammonia, and phenols in groundwater within the Saugeen River floodplain with eventual discharge to the Saugeen River. Though iron is a potential parameter of concern, it was recognized that it should not be used in isolation for assessing potential leachate-derived impacts at the Site. Similar to the reasonable use assessment, it was recommended that trigger levels be set at 75% of the difference between the background concentration and the specific compliance criteria for each of these parameters. The Hydrogeologic Assessment Update Report indicated the monitoring wells to be used as trigger monitors within the Saugeen River floodplain were, from north to south, as follows:

- ***OW43, OW56 (replacement for OW42 installed in 2012), OW40, OW61 (replacement for OW41 installed in 2012), OW39S, OW39D, and OW7-8***

The January 2012 Hydrogeologic Assessment Update Report recommended review of background groundwater quality be undertaken and presented in the 2011 AMR and the trigger values calculated, in order that 2011 groundwater quality data for the upgradient monitoring wells installed in 2007 could be utilized. In the 2011 AMR report, analytical data for the upgradient monitoring wells OW28-8, OW28-14, OW50, OW52S, OW52D, OW54S, and OW54D were used to identify background concentrations. Data were used for the period from 1999 to 2011 for OW28-8 and OW28-14. Data were used from 2010 and 2011 for the remaining parameters. For each of the trigger parameters, a median concentration was calculated for each monitoring well using all available data. These median values were then used to calculate a second median concentration that was considered representative of the background groundwater quality for each parameter based on the data for all background monitors in **Table 6-2** up to 2025.

As shown by the results in **Table 6-2**, for all of the trigger parameters, except iron, there did not appear to be a significant difference in background groundwater quality between the shallow and deeper monitors. Therefore, it was considered appropriate to use a common background concentration for those parameters. For iron, there appeared to be substantial variation in concentrations between the shallow and deeper monitors, primarily because of the elevated median iron concentration of 24.8 mg/L in samples from the shallow monitor OW50. Therefore, separate background concentrations were identified for the shallow and deeper monitors for iron.

The assumed background concentrations and site-specific compliance criteria were used to identify trigger levels using the method described in the Hydrogeologic Assessment Update Report (Stantec, January 2012), as shown below:

PARAMETER	CALC BACKGROUND CONCENTRATION	SITE-SPECIFIC COMPLIANCE CRITERIA	TRIGGER LEVEL
Chloride	4.1 mg/L	350 mg/L	263.3 mg/L
Boron	0.032 mg/L	1.7 mg/L	1.28 mg/L
Un-ionized Ammonia	0.0001 mg/L	0.069 mg/L	0.052 mg/L
Iron	7.6 mg/L Shallow 0.48 mg/L Deep	53.6 mg/L	42.2 mg/L Shallow 40.3 mg/L Deep
Phenols	0 mg/L	0.2 mg/L	0.15 mg/L

Analytical data from the 2024 sampling events were compared to the site-specific compliance criteria trigger levels for the existing trigger monitors identified in the Hydrogeologic Assessment Update Report. The results are summarized in **Table 6-3** and presented graphically for Boron and Chloride in **Figures 5-8 (a & b).** Groundwater quality with respect to Boron and Chlorides is stable at most wells. Chlorides at OW40 and OW56 show rising chloride concentrations that approaching the trigger level of 263.4 mg/L but do not satisfy the definition of trigger as described in ECA Condition 15.3 (Section 6.1.3).

OW7-8 and OW39-d had unionized ammonia concentrations above the ECA trigger on one occasion (October 2025) and require further monitoring. Chloride at OW56 in October 2025 exceeded the ECA trigger on one occasion and requires further monitoring.

ECA Condition 15.3 (iii) defines exceedance of a trigger to include detectable concentrations of benzene, toluene, and dichloromethane in a sample at any trigger well. Benzene, Toluene and Dichloromethane were not detected and ECA Condition 15.3 (iii) was not met.

In summary, water quality within the Saugeen River Flood Plain continues to be compliant with both the Site-Specific Compliance Criteria and Trigger Levels. Rising chloride concentrations are evident at trigger monitors OW40 and OW56 will continue to be monitored to confirm compliance with the ECA Trigger.

7 CONCLUSIONS

Based on an assessment of the 2025 operations and monitoring results, the following conclusions are provided:

1. Cell 2 was receiving waste in 2025.

2. An estimated volume of **7,044 m^3** was landfilled in Cells 1 and 2 in 2025. When added to the 117,519 m^3 that was previously landfilled at the end of 2024, the total landfilled volume in Cells 1 and 2 was **124,563 m^3** leaving a total of **8,999 m^3** of air space within the two cells.

3. The **7,044 m^3** volume represents an **35% decrease** compared to the previous 3-year average landfilled volume of **10,840 m^3** (2022-2024).

4. The total combined volume of Cells 1 and 2 is **133,562 m^3** (Development & Operation Plan, Stantec, 2012). There is currently **8,999 m^3** of remaining volume in Cells 1 and 2 which equates to **1.33 years (early-mid 2027)** of remaining site life based on the current three-year average volume of **9,382 m^3**.

5. Once Cell 2 is at a point that it cannot be practically landfilled, landfilling operation will move to Cell 3. This is expected to occur sometime in 2026.

6. Based on the total approved site capacity of **411,000 m^3** for the expansion landfill area, there is **286,347 m^3** of remaining volume, which equates to approximately **37 years (2057)** of remaining site life based on the current three-year average volume of **9,382 m^3**.

7. A total of **7,445 tonnes** of waste was received at the site for landfilling in 2025, which was higher than the tonnage reported in 2024. Approximately **595.8 tonnes** of materials were diverted through segregation and recycling (including electronics and plastic and film) in 2025.

8. Approximately **3.6 tonnes** of electronics were collected by Greentec Recycling Solutions in 2025 which is an decrease of **9.5 tonnes**. This practice should continue to provide diversion and proper disposal management of electronics.

9. In 2025, a total of **7,465,500 litres** of leachate was hauled off-site by Schaus Sanitation which is an increase of **60.3%** from the volume collected and hauled off-site in 2024. The main reason for the increase is attributed to the construction of Cell 3. The collected leachate was hauled to the Hanover and the Walkerton Water Pollution Control Plants.

10. Seagull populations present at the site ranged daily between **0** and **42 birds**, averaging **25 birds** per day in 2025. The total number of seagulls counted in 2025 increased to **1,319** from 2024's reported total of **769**.

11. Sampling events for groundwater and surface water was carried out in the spring (April/May) and fall (October) of 2025. Methane gas monitoring was completed five times in 2025.

12. Shallow groundwater movement at the site is predominantly southeasterly towards the Saugeen River. An evaluation of groundwater level data reveals that there is a downward hydraulic head over much of the Site with upward hydraulic heads for low areas in the floodplain adjacent to the Saugeen River and marshy areas in the south-central area of the Site.

13. Natural upward hydraulic heads in the floodplain and the low permeability aquitard provide two barriers that retard the downward migration of contaminants. The upward hydraulic heads may also provide an opportunity for poor water quality in deeper zones to flow upwards and mix with shallow groundwater.

14. An evaluation of the duplicate samples reveals the data provided by the analytical laboratory for the 2025 sampling events were valid and suitable for evaluating the environmental quality of groundwater and surface water at the site.

15. The chemical composition of leachate grab samples required by ECA Condition 13.6, indicates the leachate to have a higher strength than that analyzed in OW30L-4. Water quality at OW30L-4 is characteristic of older leachate.

16. Leachate-impacted groundwater migrates in a southeast direction from the landfill towards the Saugeen River as shown in Figures 5 through 8. There is evidence of chloride migration towards the south property boundary as chloride concentrations continue to rise at trigger monitors OW40 and OW56.

17. Groundwater quality in the northeast area of the site where monitoring occurs at Cross-Gradient wells continue to show water quality is not impacted by landfill leachate.

18. Groundwater quality in the east area of the site is influenced by landfill leachate from the closed portion of the landfill site. Groundwater quality has improved over the years as old landfill leachate diminishes in strength except for a recent rise in chlorides at OW21-8. This monitor reflects the northern extent of landfill leachate observed in the Southeast Area monitors.

19. Groundwater quality in the Southeast Area shows higher concentrations of landfill related leachate, such as chlorides compared with the East area. Groundwater quality in deeper monitors downgradient from the landfill show sulphates and hardness are at concentrations that may resemble deeper, naturally occurring groundwater quality more so than landfill leachate.

20. There is some evidence of higher chlorides towards the west property boundary at OW54-S that may be related to surface water ponding in the area.

21. Groundwater quality at the Dillon (formerly Moore) domestic well (DW1), is not affected by landfill leachate. The water samples collected in 2025 may reflect softened water.

22. Application of the reasonable use concept at the southern property boundary for two private properties indicate that ECA trigger levels were not exceeded in groundwater samples for chloride and boron collected from OW36S, OW36D, OW55S and OW55D.

23. Application of the Reasonable Use Concept (RUC) with the additional set of parameters presented in 2018 for the southern property boundary indicates that RUC is exceeded at OW55S and OW55D for organic nitrogen, hardness, sulphates, DOC and TDS. Groundwater quality in background monitors also exceed RUC criteria for these parameters.

24. The observed chemical concentrations that exceed RUC appear to be influenced by naturally occurring groundwater upgradient from the property boundary and deep groundwater quality more so than landfill related leachate. Reliance on these additional criteria may not be useful for evaluating the migration of landfill leachate as per the recommendation of Stantec and this ongoing evaluation of groundwater quality.

25. The 2025 water quality results were compared to the Site-specific compliance criteria developed for chloride, un-ionized ammonia, boron, iron, and phenols, based on groundwater discharge to the Saugeen River floodplain. None of the ECA trigger levels were exceeded in 2025 and thus the definition of trigger exceedance was not met. However, rising chloride concentrations are evident at two trigger monitors, OW40 and OW56.

26. Surface water quality results for the Saugeen River and Marl Creek, a tributary stream to the Saugeen River did not identify leachate-related impacts.

27. Phenols were reported at a method detection limit of 0.001 for 2025 as per the 2021 report recommendation to ensure phenol detection limits were maintained at <0.002 mg/L.

28. The shallow, marshy ponds, referred to as the North Pond, South Pond and East Pond, are located on the site downhill from the landfill and within the floodplain of the Saugeen River. The water quality in the North and East Ponds remained consistent to previous years; however, the South Pond shows evidence of water quality degradation.

29. Sampling at the stormwater management pond was not completed in 2025 due to dry conditions throughout the year.

30. The stormwater management pond operated in the “normally closed position” throughout the entire year since three (3) consecutive samples showing the trigger level for total phosphorus could not be obtained from the pond.

31. Benthic invertebrate sampling was completed at two (2) monitoring stations in the Saugeen River in the fall of 2025. Based on a comparison of the 2025 versus 2024 results, the current data suggests that the benthic invertebrate communities in the Saugeen River remain generally healthy.

32. The potential effects of landfill leachate on the invertebrate communities sampled appear to be being mitigated by landfill operations or are attenuated along the mitigation pathway, as assessed by the generally positive community health indices for 2025.

33. Based on a statistical analysis of the full 2020–2025 dataset for both the Saugeen River benthic program and the biennial floodplain pond emergent program, the following conclusions are made:

    - Benthic invertebrate communities in the Saugeen River remain in generally good condition. No measurable adverse effects attributable to landfill leachate were identified over the six-year monitoring period.
    - Individual community health metrics fluctuate from year to year but have not exhibited strong or persistent directional change. The 2025 results are consistent with this long-term pattern.
    - Observed differences in community composition between the upstream and downstream stations are modest and attributable to natural environmental gradients within the river system.
    - Annual benthic monitoring of the Saugeen River should continue through 2027 in accordance with the EA Notice of Approval. Biennial emergent monitoring of the floodplain ponds should continue (next event spring of 2026), with particular attention to South Pond metrics.

34. Significant methane vapour concentrations were measured at several methane monitors at the site at concentrations up to 68.7% methane by volume at GP5-s and GP5-d. Most of the high concentrations occur in the vicinity of the site access road on the north and west sides of the landfill.

35. Gas concentrations west of the landfill and below the scarp on the southeast and south side of the landfill are below the ECA trigger criteria for the site.

36. Gas concentrations at the north boundary at GP26, continue to exceed trigger levels for the site. There are no structures or buildings near GP26 which would be considered at risk from the presence of methane. The on-site office, located 440 m southeast of GP26, is equipped with a methane alarm. Elevated concentrations do not pose a risk on site and additional controls are not needed unless gas is allowed to collect in enclosed spaces.

37. Gas probes GP46 to GP48 were installed in 2019 north of the landfill because of high concentrations at Trigger Probe GP28. GP46 detected methane gas and GP47 and GP48 detected none.

8 RECOMMENDATIONS

Based on the 2025 monitoring program results, it is recommended that:

1. The Town should continue to stockpile clean fill for use as cover and for capping material.
2. Since Cells 1 and 2 are nearing capacity, landfilling operation should move to Cell 3 in 2026.
3. A topographical survey be carried out at the end of 2026, to provide up to date information on the landfilled volume and remaining capacity.
4. The Landfill Supervisor continue to maintain the landfill in an efficient and orderly manner. Effective and efficient compaction and covering operations will ensure site capacity is maximized.
5. Record keeping using the prepared checklist forms for the eleven inspection items included in Condition 11 of the ECA shall continue in 2026. The inspections items shall include the following:
    i. Collection and recording of weekly and maximum daily tonnage statistics;
    ii. Changes in operations, equipment or procedures used at the Site, any operating problems encountered and corrective actions taken;
    iii. Summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming the works be reported;
    iv. Summary report of the total volume of leachate removed (daily and annually) from the Site and the name of the approved sewage works receiving the leachate;
    v. Summary of inspections undertaken at the site;
    vi. Summary of inspections of the stormwater management pond;
    vii. Any public complaints received and the response made;
    viii. Any cover stockpile activities (i.e. use, timing, locations and erosion protections);
    ix. Status of final cover placement and seeding activities undertaken in closed sections of the landfill;
6. Staff training should be carried out in 2026 as required by Condition 4.12 of the ECA.
7. Discussions with the MECP regarding the results of the multivariate statistical analysis should be completed in order to obtain a better understanding of the Saugeen River and floodplain pond invertebrate communities. Inclusion of the bi-annual water chemistry data in the multivariate analysis of patterns of benthic community health in both the Saugeen River and floodplain ponds would be important before drawing conclusions regarding landfill impacts on the benthics. Further analysis of the sensitive members of the benthic communities in relation to water chemistry data

could help reveal a possible “contamination threshold” after which impacts on benthics may be measurable.

8. Field observations show that surface water ponds in west area of the site. Efforts to improve drainage are needed to understand why chlorides are rising at OW52-S and OW54-S.

9. Calculations of background water quality up to April 2021 at monitor OW54-S were used for calculating background water quality for the Reasonable Use Assessment at the South Property Boundary because of chloride related impacts. Data at OW52-S and OW53-S provides reliable water quality for this purpose.

10. The monitoring program for groundwater, surface water and landfill gas described in this report should be continued in 2026.

11. Benthic invertebrate sampling be completed in the Saugeen River in the fall of 2026.

12. Emergent invertebrate sampling be completed in the three on-site ponds in the spring of 2026.

13. This report should be submitted to the MECP for review and comment by April 30, 2026 in accordance with Condition 16 of the ECA.

Prepared by:

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Tables

TABLE 5-2a
PARAMETERS OF INTEREST - GROUNDWATER QUALITY
HANOVER LANDFILL - 2025 ANNUAL MONITORING REPORT

LOCATION		SAMPLING EVENT	PARAMETER & ODWQS								
			ALKALINITY	HARDNESS	TDS	ORGANIC NITROGEN	DOC	CHLORIDE	SODIUM	SULPHATE	IRON
			OG (30-500 mg/L)	OG (80-100 mg/L)	AO (500 mg/L)	OG (0.15 mg/L)	OG (5 mg/L)	AO (250 mg/L)	AO (200 mg/L)	AO (500 mg/L)	AO (0.3 mg/L)
BACKGROUND / UPGRADIENT	OW27-69	Spring	84	1220	1280	0.26	3.1	33.1	73.2	1400	0.456
		Fall	62	1320	1270	0.80	4.5	38	77.1	1490	0.768
	OW28-8	Spring	272	281	338	0	2.1	44.4	10.6	16	<0.005
		Fall	384	452	395	0.1	1.9	17.6	10.2	7	0.006
	OW28-14	Spring	307	305	305	0.04	2.1	1.5	2.6	14	0.068
		Fall	319	353	315	4.24	1.6	1.9	2.5	16	0.159
	OW50	Spring	768	815	1330	4.33	3.7	315	178	115	4.47
		Fall	530	587	656	0.66	3.4	81.1	34.8	30	0.4
	OW52S	Spring	812	851	871	2.42	8.3	17.9	12.3	34	0.179
		Fall	894	902	844	3.95	16.9	19	18.8	5	1.72
	OW52D	Spring	818	821	798	2.5	2.5	6.7	12.5	12.5	<0.005
		Fall	887	968	838	3.7	3.7	3.4	11.9	11.9	0.173
	OW53S	Spring	343	319	356	0	2.9	2.7	5.5	29	0.854
		Fall	516	535	518	3.85	5.9	3.9	8.6	27	5.94
	OW53D	Spring	280	333	320	7.3	2.2	3.3	3.2	35	0.888
		Fall	303	342	323	6.73	3.1	3.2	3.2	36	0.867
	OW54S	Spring	310	283	313	<1.0	3.4	8.5	5.7	10	3.46
		Fall	351	411	728	1.85	11.1	237	110	<1	10.4
	OW54D	Spring	500	483	497	<0.1	3.6	13.4	7	11	0.189
		Fall	480	564	480	15.79	5.5	13.2	7.5	11	2.02
Cross Gradient Wells	OW22-5	Spring	232	248	245	0.25	1.8	4	3	29	0.024
		Fall	230	287	250	0.3	3	2.2	3.2	32	0.202
	OW22-9	Spring	205	220	226	7.84	1	3.9	3.6	32	0.075
		Fall	203	251	228	3.44	2.6	1.9	3.9	35	0.477
	OW26-11	Spring	746	663	1380	<1.0	6.8	430	32.3	25	23.8
		Fall					Dry				
	OW26-14	Spring	309	326	358	<0.1	2.4	30.5	7	18	0.831
		Fall	310	357	356	1.07	4	26.7	6.8	18	0.012
	OW44S	Spring	399	394	386	0.51	7.7	8.60	3.90	9	4.21
		Fall	359	362	338	0.6	14.8	3.10	3.90	<1	3.69
	OW44D	Spring	142	1380	1260	61	1.6	50.4	19	1290	0.409
		Fall	141	1510	1260	63.03	2.5	36.5	19.9	1370	2.52
	OW45S	Spring	399	394	386	0.51	7.7	8.6	3.9	9	4.21
		Fall	359	362	338	0.6	14.8	3.1	3.9	<1	3.69
	OW45D	Spring	149	1620	1430	21.98	1.8	55.5	21.7	1490	0.356
		Fall	143	1730	1420	53.48	2.8	44.1	21.8	1610	0.005

TABLE 5-2a
PARAMETERS OF INTEREST - GROUNDWATER QUALITY
HANOVER LANDFILL - 2025 ANNUAL MONITORING REPORT

LOCATION		SAMPLING EVENT	PARAMETER & ODWQS								
			ALKALINITY	HARDNESS	TDS	ORGANIC NITROGEN	DOC	CHLORIDE	SODIUM	SULPHATE	IRON
			OG (30-500 mg/L)	OG (80-100 mg/L)	AO (500 mg/L)	OG (0.15 mg/L)	OG (5 mg/L)	AO (250 mg/L)	AO (200 mg/L)	AO (500 mg/L)	AO (0.3 mg/L)
East Wells	OW1-9	Spring	580	621	885	5.3	6.8	134	67.7	96	0.188
		Fall	543	903	827	4.4	10.8	127	112	108	0.112
	OW21-8	Spring	677	728	1140	1.56	4.9	284	126	12	4.81
		Fall	694	733	1210	2.14	9.8	248	180	<1	5.49
	OW21-14	Spring	203	220	230	0.32	2.4	2.2	4.2	30	<0.005
		Fall	204	242	230	0.78	2.4	2.4	4.5	31	0.19
	OW51S	Spring	423	375	618	0.48	2.5	121	61.3	9	<0.005
		Fall	455	475	730	3.63	5	170	79.4	10	0.005
	OW51D	Spring	180	238	267	1.09	2.9	7.1	12.7	86	0.012
		Fall	176	251	264	4.63	2.5	5.4	12.5	91	0.013
Southeast Wells	OW5-5	Spring	916	801	1220	15.9	7.5	211	97	<2	16.4
		Fall	988	770	1380	19.1	15.4	234	106	1	1.35
	OW5-11	Spring	56	903	956	0.33	2	13.2	49.4	981	2.11
		Fall	47	928	954	0.2	1.7	11.5	52.5	135	0.019
	OW20-7	Spring	738	634	1050	29.15	4.4	209	91.1	91.1	15.8
		Fall	545	489	754	6.2	9	126	66.7	66.7	11.5
	OW20-14	Spring	41	1320	1290	5.83	2.6	8.2	49.2	1530	0.077
		Fall	37	1500	1280	9.35	2	8.6	49.6	1490	0.375
	OW23-5	Spring	376	376	732	0.46	2.6	211	110	11	0.006
		Fall	529	685	1510	1.13	5.3	628	283	28	0.464
	OW23-12	Spring	53	1220	1220	22.98	1.8	12	52	1410	0.324
		Fall	43	1380	1210	40.41	0.489	13.4	52.8	1430	0.489
	OW29-4	Spring	754	674	1310	5.6	3.1	373	197	18	14.4
		Fall	448	562	1530	4.8	5.5	665	302	38	9.32
	OW39S	Spring	396	350	489	4.58	3.4	62.3	27.3	5	1.52
		Fall	459	548	625	6.23	7.5	1070	61.4	147	1.27
	OW39D	Spring	43	1230	1230	9.25	1.9	11.7	50.3	1420	0.053
		Fall	41	1380	1220	22.12	1.9	12.5	50.1	1440	0.203
South Wells	OW19-3	Spring	894	874	1160	2.7	4.6	179	84.3	20	8.47
		Fall	847	942	1090	10.9	5.2	164	92.4	10	11.7
	OW19-10	Spring	503	483	585	3.16	4.5	44.5	20.7	23	2.14
		Fall	485	532	549	6.09	3	43	19	24	3.15
	OW24-5	Spring	335	343	392	0.25	3.4	42.8	14.7	5	0.025
		Fall	356	391	417	0.66	2.6	50.3	18.2	2	0.088
	OW8-5	Spring Fall	Monitor Is Dry								
	OW8-8	Spring	54	824	1060	0.16	2.4	12.4	54.1	1150	0.006
		Fall	43	1020	1060	1.21	2.1	9.5	64.6	1050	0.56
	OW9-5	April	314	201	343	0.27	4	22.1	8	6	0.052

TABLE 5-2a
PARAMETERS OF INTEREST - GROUNDWATER QUALITY
HANOVER LANDFILL - 2025 ANNUAL MONITORING REPORT

LOCATION		SAMPLING EVENT	PARAMETER & ODWQS								
			ALKALINITY	HARDNESS	TDS	ORGANIC NITROGEN	DOC	CHLORIDE	SODIUM	SULPHATE	IRON
			OG (30-500 mg/L)	OG (80-100 mg/L)	AO (500 mg/L)	OG (0.15 mg/L)	OG (5 mg/L)	AO (250 mg/L)	AO (200 mg/L)	AO (500 mg/L)	AO (0.3 mg/L)
South Wells		October	301	227	329	0.35	6.1	22.8	9.1	4	9.98
	OW25-5	Spring	286	333	404	0.26	5.1	41.2	22.8	59	0.56
		Fall	286	339	392	0.94	7.1	37	23.4	65	0.806
	OW25-9	Spring	78	599	699	33.96	2.1	9.9	48.2	614	0.293
		Fall	82	627	706	50.7	2.2	9.7	51.3	615	0.383
	OW55S	Spring	92	617	837	11.36	2.5	11.5	35.3	797	0.261
		Fall	105	597	785	5.53	4.2	12.7	34	783	0.554
	OW55D	Spring	52	1210	1170	11.14	1.8	32	42.6	1300	0.608
		Fall	51	1320	1180	22.76	1.8	11.9	43.7	1530	0.826
LEACHATE WELL	OW30L-4	Spring	1180	891	1270	52.8	16.8	39.6	27.6	57	63.6
		Fall	1090	863	1160	264.9	18.5	45.4	27.8	16	1.33
	OW38S	Spring	Monitor Is Dry								
		Fall									
EXPANSION AREA WEST AND SWM POND	OW32S	Spring	553	564	666	0.42	4.1	69.1	31	20	37.6
		Fall	571	639	729	639	5.2	102	41.6	27	81.8
	OW32D	Spring	239	255	265	0.05	2.1	2.5	3.6	33	0.273
		Fall	251	285	267	1.13	1.8	3.3	3.8	36	0.033
	OW59S	Spring	344	335	585	1.29	6.4	122	75.9	36	5.27
		Fall	439	521	555	1.24	6.5	59.2	19.6	39	0.023
	OW59D	Spring	401	397	394	0.21	3.5	3.4	5.6	20	1.46
		Fall	483	434	469	0.24	7.1	4	6.6	20	1.04
	OW60S	Spring	635	537	710	0.86	3.7	47.7	40.1	33	0.188
		Fall	601	642	697	1.15	9.1	58.2	35.9	31	12.6
	OW60D	Spring	304	293	302	0.2	2	1.6	2.6	16	0.281
		Fall	461	480	720	0.72	7.1	113	31.9	93	0.006

TABLE 5-2a
PARAMETERS OF INTEREST - GROUNDWATER QUALITY
HANOVER LANDFILL - 2025 ANNUAL MONITORING REPORT

LOCATION		SAMPLING EVENT	PARAMETER & ODWQS								
			ALKALINITY	HARDNESS	TDS	ORGANIC NITROGEN	DOC	CHLORIDE	SODIUM	SULPHATE	IRON
			OG (30-500 mg/L)	OG (80-100 mg/L)	AO (500 mg/L)	OG (0.15 mg/L)	OG (5 mg/L)	AO (250 mg/L)	AO (200 mg/L)	AO (500 mg/L)	AO (0.3 mg/L)
OTHER BOUNDARY / DOWNGRADIENT	OW12-12		Monitor is blocked								
	OW13-8	Spring	256	263	259	0.35	1.9	3.7	2.4	3.7	0.006
		Fall	256	287	263	0.4	3.2	3.1	2.4	3.1	0.071
	OW49S	Spring	152	149	148	0.25	4.4	3.3	0.5	2	0.009
		Fall	159	165	159	0.2	2.7	1.1	0.6	1	0.008
	OW49D	Spring	263	285	295	3.35	1.6	6.7	4.9	42	0.021
		Fall	270	331	313	5.9	3	6.4	3	50	0.623
	OW57	Spring	167	275	298	11.09	1.2	7.5	11.9	11.9	0.134
		Fall	169	276	299	1.04	2.7	7	12.7	12.7	0.006
	OW58	Spring	194	327	338	4.28	1.3	11.4	8	140	0.022
		Fall	189	348	342	0.73	2.2	12.5	7.7	152	<0.005
	OW7-8	Spring	53	1220	1230	0.54	1.9	7.4	48.6	1430	0.932
		Fall	44	1360	1220	0.39	2.8	9	48.5	1450	0.789
	OW9-8	Spring	116	319	400	0.18	2	8.6	31.7	271	0.108
		Fall	94	317	392	0.2	2	8	32.8	264	0.228
	OW36S	Spring	275	284	297	0.6	5.6	7.2	6.3	24	0.61
		Fall	287	326	321	0.19	7.9	12.5	8.9	30	0.912
	OW36D	Spring	114	362	428	36.51	1.8	7.1	26.3	295	0.324
		Fall	108	385	451	34.43	2.4	7.4	29.2	326	0.491
	OW40	Spring	877	461	1160	1.18	8.9	219	42.3	<1	3.53
		Fall	734	911	1070	2.1	25.2	250	91.9	<2	12.9
	OW43	Spring	488	545	517	0.98	10.9	7	6.7	61	10.7
		Fall	423	482	474	1.84	13.5	7.4	7.8	75	6.82
	OW56	Spring	689	730	1080	3.82	7.7	250	151	42	14
		Fall	652	810	1210	5.38	15	387	118	41	0.029
	OW61	Spring	409	402	530	0.43	4.4	74.4	42.2	19	2.50
		Fall	383	393	499	0.28	6.1	72.7	24.8	22	0.67
PRIVATE WELL	MOORE WELL (DW1)	Spring	337	425	501	0.4	2.5	88.40	25.7	9	<0.005
		Fall	383	0.18	489	0.4	6.5	43.20	230	16	<0.005

Notes: 1) ODWQS - Ontario Drinking Water Quality Standard, Objectives, and Guidelines (2006)
AO - Aesthetic Objective
OG - Operational Guideline
MAC - Maximum Allowable Concentration
2) DRY indicates no sample was obtained due to dry monitor
3) N/A indicates that the parameter was not reported

Table 5-2b
Leachate Grab Quality
Hanover/Walkerton Waste Disposal Site

Date Sampled	Alkalinity	Total Ammonia (as N)	BOD5	COD	Chloride	Conductivity (µmho/cm)		DOC	TDS	Nitrate (as N)	pH (pH units)	
						Lab	Field				Lab	Field
30-Sep-14	955	29	194	285	272	2830		159	1670	0.3	7.71	
22-Dec-14	1510	67.4	266	660	527	4260	3653	220	3200	<0.5	7.83	7.35
29-May-15	1850	80.1	279	693	617	5390		60.5	2830	<0.1	7.94	
03-Nov-15	2140	113	14	363	860	6570		78.3	5260	0.9	8.21	
27-Jan-16	2280	146	357	918	752	6570	6040	313	4930	0.1	8.03	8.75
03-May-16	2900	211	250	1170	827	7710	6260	363	4480	<3	8.12	8.22
11-Jul-16	3340	184	28	571	1050	8540	9910	142	7240	<3	7.96	8.4
18-Oct-16	2540	166	18	423	776	6580	6650	21.2	4130	<1	8.16	7.92
24-Jan-17	1450	58.8	23	311	371	3570	4750	80.1	2570	<1	7.97	7.49
26-Apr-17	2060	93	371	902	544	5290	5750	443	3080	<1	8.01	7.77
26-Jul-17	1530	37.5	11	395	424	4420	4750	113	2330	14	8.07	7.64
12-Oct-17	1500	52.8	7	327	410	4430	5060	130	2770	5.1	8.12	7.86
22-Mar-18	1710	90.6	<3	345	527	5330	6070	95	3106	16.9	8.17	7.47
22-Jun-18	1550	38	14	367	1100	5680	6545	28.5	3853	74.9	8.04	6.99
11-Oct-18	2260	142	9	540	824	6580	6320	107	3811	1.01	7.98	7.55
05-Dec-18	1520	85.1	420	1410	514	4930	4440	611	3216	<0.5	7.92	7.76
15-Apr-19	1320	73.6	595	1400	425	4380	3658	546	2462	<0.5	7.82	
29-Aug-19	2340	203	16	645	1030	7380	5838	112	4378	0.52	8.13	6.8
17-Dec-19	1590	139	19	458	533	5020	4306	135	2896	0.55	7.98	8.3
31-Mar-20	1620	151	34	499	542	4940	4680	51.8	2867	0.91	7.97	8.0
30-Sep-20	1370	141	12	510	746	5420	6000	158	3147	46	8.2	8.0
22-Dec-20	1030	79.6	33	375	505	4180	4070	92.9	2467	28.6	8.03	9.0
23-Mar-21	1860	145	34	612	826	5458	4820	150	4029	0.07	8.04	7.6
04-Oct-21	1670	242	14	696	742	5381	4680	105	3543	< 0.5	8	7.7
01-Nov-21	1290	159	11	476	614	4371	4220	93.7	2805	7.31	8.38	8.0
14-Dec-21	1220	153	18	560	617	4220	3100	119	2785	< 0.5	8.15	8.2
10-May-22	1440	43.8	17	554	773	5780	593	60.5	3270	0.5	8.0	7.7
23-Aug-22	2310	3.78	39	843	1030	7440	5220	185	4176	<0.5	8.1	7.8
24-Nov-22	1390	84.3	13	420	705	5190	5080	58.2	2891	35.8	8.2	8.2
22-Dec-22	1130	60.4	11	334	590	4730	3470	51	2699	52.4	8.2	6.5
23-Mar-23	1400	111	6	430	509	4001	4490	82.1	2708	2.14	7.8	7.5
30-Aug-23	2290	260	58	802	1130	7800	-	115	4460	11.8	8.0	-
26-Oct-23	2580	309	67	792	1190	8080	6250	217	4630	9.45	8.1	8.4
05-Dec-23	1580	156	11	380	539	4750	4900	112	2680	5.32	8.1	7.9
05-Feb-24	1690	195	8	442	634	5180	4180	180	2930	7.67	8.0	7.9
01-May-24	1890	216	7	577	783	6120	6250	153	3480	8.97	8.1	7.2
10-Sep-24	2810	448	79	877	1260	8900	8760	189	5110	2.61	8.3	8.0
09-Dec-24	1840	1.66	14	599	985	7410	7300	188	4230	14.1	8.1	7.8
15-Apr-25	1940	0.24	8	820	1000	7350	7070	191	4200	7.39	7.9	7.9
20-Jun-25	2580	258	12	842	1160	8290	4920	257	4750	6.32	8.0	8.9
01-Oct-25	1750	216	78	986	1180	8910	6110	299	4640	65.8	8.38	8.9
16-Dec-25	939	73.1	9	274	397	3260	2300	66.5	1820	15.7	8.03	7.8

Date Sampled	Alkalinity	Total Ammonia	BOD5	COD	Chloride	Conductivity		DOC	TDS	Nitrate (as N)	pH (pH units)	
						Lab	Field				Lab	Field
Minimum	939	0.24	<3	274	272	2830	593	21.2	1670	0.07	7.71	6.5
Maximum	3340	448	595	1410	1260	8910	9910	611	7240	74.9	8.38	9
Average	1809	131	85	616	734	5777	5223	165	3536	15	8	8

Notes: All results expressed as mg/L except where noted. * (NA) Method Detection Limits vary and sometimes exceed detected values

Table 5-2b
Leachate Grab Quality
Hanover/Walkerton Waste Disposal Site

Date Sampled	Total Phosphorus	Sulphate	TSS	Barium	Boron	Calcium	Iron	Magnesium	Sodium	Benzene (µg/L)	Dichloromethane (µg/L)	Toluene (µg/L)
30-Sep-14	0.05	172	14	0.14	3.43	249	1.23	104	245	<5	<3	<5
22-Dec-14	0.39	304	70	0.108	3.76	202	1.61	149	410	<0.5	<0.3	<0.5
29-May-15	0.46	55	60	0.081	5.44	129	0.744	213	486	<0.5	2.4	<0.5
03-Nov-15	0.35	692	11	0.075	7.97	127	1.11	311	727	<0.5	1.2	<0.5
27-Jan-16	0.46	334	68	0.096	9.25	187	1.02	434	834	<0.5	<0.3	<0.5
03-May-16	0.64	98	50	0.057	9.07	96.7	0.703	435	783	<0.5	<0.3	<0.5
11-Jul-16	0.76	664	4	0.032	10.8	49.6	1.5	547	952	<0.5	0.8	0.9
18-Oct-16	0.69	242	12	0.063	8.69	102	1.39	339	727	<0.5	<0.3	<0.5
24-Jan-17	0.18	428	11	0.127	4.43	309	2.89	171	342	<0.5	<0.3	<0.5
26-Apr-17	0.14	146	12	0.07	6.05	169	0.374	257	494	<0.8	<1.2	<0.8
26-Jul-17	0.17	406	<10	0.049	6.34	173	0.648	210	419	<2.0	<3.0	<2.0
12-Oct-17	0.13	495	<10	0.064	5.94	248	0.991	224	430	<2.0		<2.0
22-Mar-18	0.18	292	4	0.052	7.56	167	0.706	235	599	<0.5	<0.3	<0.5
22-Jun-18	0.2	395	5	0.092	8.6	169	0.67	271	759	<0.6	<0.3	<0.5
11-Oct-18	0.47	108	20	0.126	9.82	135	4.36	269	734	<0.7	0.9	<0.5
05-Dec-18	0.74	519	25	0.29	3.98	416	11.3	160	435	<0.8	<5	<0.5
15-Apr-19	0.46	239	25	0.174	2.2	318	2.69	141	336	<0.5	<5	2
29-Aug-19	0.77	222	16	0.074	7.89	79.9	0.688	330	1010			
17-Dec-19	0.59	262	36	0.141	4.91	215	3.47	162	432			
31-Mar-20	0.9	263	28	0.147	3.97	236	2.58	120	382			
30-Sep-20	0.47	304	10	0.09	6.78	167	1.61	141	561			
22-Dec-20	1.29	368	94	0.16	5.05	206	12.6	111	414			
23-Mar-21	1.2	462	20	0.161	8.17	223	3.02	232	770			
04-Oct-21	1.86	273	16	0.16	9.04	205	4.58	144	654	< 0.5	< 5	< 0.5
01-Nov-21	0.6	237	8	0.111	7.65	195	2.36	124	491			
14-Dec-21	1	363	17	0.12	6.75	208	2.24	113	421	< 0.5	< 5	< 0.5
10-May-22	0.71	287	6	0.137	9.38	227	2.54	161	704	< 0.5	<5	< 0.5
23-Aug-22	1.01	223	17	0.148	11.9	185	1.93	184	888	<0.5	<5	<0.5
24-Nov-22	0.34	298	12	0.069	7.6	156	0.851	123	507	<0.5	<5	<0.5
22-Dec-22	0.44	279	40	0.096	8.19	229	1.01	137	544	<0.5	<5	<0.5
23-Mar-23	0.24	314	15	0.111	8.93	220	3.23	111	432	<0.5	<5	<0.5
30-Aug-23	1.53	368	19	0.13	16.4	206	4.53	168	906	<0.5	<5	<0.5
26-Oct-23	1.04	321	12	0.118	16.1	204	3.84	177	952	<0.5	<5	<0.5
05-Dec-23	0.46	247	100	0.122	7.31	240	2.07	122	462	<0.5	<5	<.05
05-Feb-24	1.05	322	11	0.151	7.21	244	3.22	120	494	<0.5	<5	<0.5
01-May-24	1.2	350	36	0.169	8.33	250	4.16	137	550	<0.5	<5	<0.5
10-Sep-24	2.34	190	12	0.134	13.8	172	3.54	211	1180	<0.5	<5	<0.5
09-Dec-24	1.6	668	12	0.176	10.8	270	3.43	201	877	<0.7	<7	<2.2
15-Apr-25	1.33	644	46	0.15	9.65	282	4.44	154	710	<0.5	<5	<0.5
20-Jun-25	1.47	454	<3	0.121	12.1	257	3.75	169	844	<0.5	<5	<0.5
01-Oct-25	21.7	341	40	0.18	11.6	161	4.38	166	972	<0.5	<5	<0.5
16-Dec-25	0.62	236	7	0.102	3.89	167	0.544	85.9	302	<0.5	<5	<0.5

Date Sampled	Total Phosphorus	Sulphate	TSS	Barium	Boron	Calcium	Iron	Magnesium	Sodium	Benzene (µg/L)	Dichloromethane (µg/L)*	Toluene (µg/L)*
Minimum	0.05	55	4	0.032	2.2	49.6	0.374	85.9	245	ND	ND	ND
Maximum	21.7	692	100	0.29	16.4	416	12.6	547	1180	ND	2.4	2
Average	1	331	26	0	8	201	3	199	623	ND	NA	NA

Notes: All results expressed as mg/L except where noted. * (NA) Method Detection Limits vary and sometimes exceed detected values

TABLE 5.4
ONTARIO DRINKING WATER QUALITY COMPARISON - ANNUAL VOCS
HANOVER LANDFILL - 2025 ANNUAL MONITORING REPORT

LOCATION			SAMPLING EVENT	PARAMETER & ODWQS		
				BENZENE	DICHLOROMETHANE (METHYLENE CHLORIDE)	TOLUENE
				MAC (1 µg/L)	MAC (50 µg/L)	MAC (1 µg/L)
	BACKGROUND / UPGRADIENT	OW52S	October	< 0.5	< 5	< 0.5
		OW52D	October	< 0.5	< 5	< 0.5
		OW53S	October	< 0.5	< 5	< 0.5
		OW53D	October	< 0.5	< 5	< 0.5
	LEACHATE	OW19-3	October	2	< 5	< 0.5
		OW38S	October	damaged monitor		
	EXPANSION AREA	OW59S	October	< 0.5	< 5	< 0.5
		OW59D	October	< 0.5	< 5	< 0.5
	CROSS-GRADIENT (NORTHEAST)	OW44S	October	< 0.5	< 5	< 0.5
		OW44D	October	< 0.5	< 5	< 0.5
		OW49S	October	< 0.5	< 5	< 0.5
		OW49D	October	< 0.5	< 5	< 0.5
	BOUNDARY / DOWNGRADIENT	OW5-5	October	0.8	< 5	< 0.5
		OW5-11	October	< 0.5	< 5	< 0.5
		OW7-8	October	< 0.5	< 5	< 0.5
		OW8-5	October	DRY		
		OW8-8	October	< 0.5	< 5	< 0.5
		OW9-5	October	< 0.5	< 5	< 0.5
		OW9-8	October	< 0.5	< 5	< 0.5
		OW23-5	October	< 0.5	< 5	< 0.5
		OW23-12	October	< 0.5	< 5	< 0.5
		OW36S	October	< 0.5	< 5	< 0.5
		OW36D	October	< 0.5	< 5	< 0.5
		OW39S	October	< 0.5	< 5	< 0.5
		OW39D	October	< 0.5	< 5	< 0.5
		OW40	October	< 0.5	< 5	< 0.5
		OW43	October	< 0.5	< 5	< 0.5
		OW55S	October	< 0.5	< 5	< 0.5
		OW55D	October	< 0.5	< 5	< 0.5
		OW56	October	< 0.5	< 5	< 0.5
		OW61	October	< 0.5	< 5	< 0.5
	PRIVATE WELL	MOORE WELL (DW1)	October	< 0.5	< 5	< 0.5

Notes: 1) ODWQS - Ontario Drinking Water Quality Standard, Objectives, and Guidelines (2006)
AO - Aesthetic Objective
OG - Operational Guideline
MAC - Maximum Allowable Concentration
2) "-" indicates parameter concentration was within the ODWQS
3) DRY indicates no sample was obtained due to dry monitor
4) N/A indicates that the parameter was not reported

TABLE 5.5
SURFACE WATER PWQO EXCEEDANCES
HANOVER LANDFILL - 2025 ANNUAL MONITORING REPORT

LOCATION	SURFACE WATER STATION	SAMPLING EVENT	PARAMETER and PWQO				
			PHENOLS (0.001 mg/L)	TOTAL PHOSPHORUS (0.030 mg/L)	UN-IONIZED AMMONIA (0.020 mg/L)	BORON (200 ug/L)	IRON (300 ug/L)
UPSTREAM	SW7 - Saugeen River	April	<0.001	0.02	<0.005	7	69
		October	0.001	<0.01	<0.005	8	27
	SW12 - Marl Creek	April	0.001	0.02	<0.005	16	97
		October	0.002	0.01	<0.005	20	19
ON-SITE / MIDSTREAM	SW14 - Saugeen River	April	<0.001	0.02	<0.005	6	66
		October	0.002	0.04	<0.005	9	31
	SW13A - Marl Creak	April	<0.001	0.03	<0.005	14	195
		October	0.002	0.01	<0.005	18	112
	SW10 - North Pond	April	0.005	0.05	<0.005	29	114
		October	<0.001	0.04	<0.005	24	47
	SW11 - East Pond	April	<0.001	0.06	<0.005	87	504
		October	<0.001	0.17	<0.005	291	806
	SW15 - South Pond	April	0.003	0.06	0.047	211	778
		October	<0.001	0.14	0.147	239	2720
	SW16 - Ravine	April	0.005	0.05	<0.005	34	378
		October					
	SW17 - Wetland	April	0.004	0.05	<0.005	227	256
		October					
SITE BOUNDARY / DOWNSTREAM	SW8 - Saugeen River	April	<0.001	0.04	<0.005	9	69
		October	<0.001	0.02	<0.005	11	62
	SW9 - Marl Creek	April	<0.001	0.02	<0.005	16	188
		October	0.001	0.01	0.005	18	58

Notes: 1) PWQO - Provincial Water Quality Objectives (1999)
2) Reported concentration are only those that are above PWQOs

Table 5-6
Summary of Stormwater Quality
Hanover/Walkerton Waste Disposal Site

Parameter	Units	PWQO	Table 3 Trigger Levels (mg/L)	NO SAMPLE January 2024 - December 2024
Alkalinity (CaCO3)	mg/L			**NO**
Conductivity @25°C	µmho/cm			**SAMPLE**
TDS (ion sum calc.)	mg/L			**POND**
Total Suspended Solids	mg/L			**DRY OR FROZEN**
pH @25°C	pH Units	6.5-8.5	6.5-8.5	
Chloride	mg/L		200	
Nitrite (N)	mg/L			
Nitrate (N)	mg/L			
Sulphate	mg/L			
Boron	mg/L	0.2	0.2	
Iron (Total)	mg/L	0.3		
Ammonia (N) - Total	mg/L			
Total Kjeldahl Nitrogen	mg/L			
Phosphorus - Total	mg/L	0.03	0.03	
Phenols	mg/L	0.001	0.001	
CBOD5	mg/L			
COD	mg/L			
Field pH	pH Units			
Field Conductivity	µS/cm			
Field Temperature (°C)	°C			
Unionized Ammonia	mg/L	0.02	0.02	

Value exceeds trigger level
Bolded Value exceeds Provincial Water Quality C

Table 5-7
SUMMARY OF LANDFILL METHANE GAS MONITORING (2025)
HANOVER/WALKERTON WASTE DISPOSAL SITE

Monitoring Location	08-Jan-25		24-Feb-25		06-May-25		29-Oct-25		16-Dec-25	
	% Gas	W.L. (mbtop)	% Gas	W.L. (mbtop)	% Gas	W.L. (mbtop)	% Gas	W.L. (mbtop)	% Gas	W.L. (mbtop)
GP1-S	0.0%	Dry	4.5%	Dry	0.0%	Dry	0.0%	Dry	0.0%	Dry
GP1-D	0.0%	6.32	4.1%	6.28	0.0%	6.35	0.0%	Dry	0.0%	Dry
GP5-S	60.9%	0.00	63.1%	Broken	68.7%	Dry	65.4%	Broken	20.5%	Broken
GP5-D	60.6%	6.39	64.6%	6.39	68.7%	6.4	0.0%		22.0%	6.42
GP8-S	41.5%	5.95	55.4%	3.99	34.2%	3.99	0.0%	Dry	0.0%	Dry
GP8-D	42.7%	5.93	0.0%	5.86	26.7%	Dry	0.0%	Dry	0.0%	Dry
GP14-S	32.0%	Dry	32.0%	Dry	34.6%	Dry	27.4%	Dry	27.5%	4.51
GP14-D	29.7%	6.22	29.2%	6.20	0.0%	5.7	20.6%	6.45	2.4%	6.26
GP22-S	16.5%	0.00	24.8%	Dry	13.7%	4.61	27.0%	4.47	6.0%	Dry
GP22-D	0.4%	-	15.0%	1.05	0.0%	-	1.0%	1.07	0.8%	Dry
GP26-S	56.6%	5.21	54.0%	Dry	0.0%	Dry	51.2%	Dry	54.5%	Dry
GP26-D	14.5%	7.1	16.1%	7.13	0.0%	7.14	7.8%	Dry	1.9%	7.17
GP27-S	0.0%	Dry	0.0%	Dry	0.0%	Dry	0.0%	Dry	0.0%	Dry
GP27-D	0.0%	Dry	0.0%	Dry	0.0%	6.85	0.0%	7.45	0.0%	Dry
GP28-S	0.0%	3.31	0.0%	3.38	0.0%	3.34	0.0%	Dry	0.0%	Dry
GP West-S	0.0%	Dry	0.0%	Dry	0.0%	Dry	0.0%	Dry	0.0%	Dry
GP West-D	0.0%	Dry	0.0%	Dry	0.0%	6.04	0.0%	Dry	0.0%	Dry
GP29	0.0%	1.51	0.1%	1.57	0.0%	1.57	0.0%	1.84	0.0%	1.62
GP30	0.0%	2.49	0.0%	2.56	0.0%	2.54	0.0%	2.89	0.0%	2.61
GP31	0.0%	2.59	0.0%	2.43	0.0%	2.34	0.0%	2.99	0.0%	2.58
GP32	0.0%	Dry	0.0%	2.96	0.0%	2.48	0.0%	2.98	0.0%	2.99
GP33	-	Dry	0.0%	Dry	0.0%	3.28	0.0%	Dry	0.0%	3.49
GP36	-	Broken	-	Broken	-	Broken	0.0%	Broken	0.0%	Broken
GP37-S	1.3%	Dry	0.4%	4.83	0.0%	Dry	0.0%	Dry	0.0%	Dry
GP37-D	0.9%	Dry	0.6%	Dry	0.0%	Dry	0.1%	6.55	0.0%	Dry
GP38-S	0.0%	Dry	0.0%	Dry	0.0%	Dry	0.0%	3.76	0.0%	3.75
GP38-D	0.0%	Dry	0.0%	5.54	0.0%	5.53	0.0%	5.54	0.0%	Dry
GP39	61.7%	Dry	58.9%	Dry	35.9%	3.69	48.5%	3.77	57.0%	Dry
GP40-S	-	Broken	-	Broken	-	Broken	0.0%	Broken	0.0%	Broken
GP40-D	40.0%	Dry	48.8%	Dry	35.3%	6.13	42.4%	6.44	33.0%	Dry
GP41-S	0.0%	-	37.0%	Dry	19.0%	Dry	41.2%	Dry	28.0%	Dry
GP41-D	0.0%	-	35.2%	Dry	35.3%	Dry	40.9%	6.11	24.5%	Dry
GP42-S	27.1%	Dry	27.3%	Dry	0.0%	Dry	26.8%	Dry	19.5%	Dry
GP42-D	19.6%	Dry	22.9%	Dry	0.0%	Dry	23.9%	Dry	10.5%	Dry
GP43-S	3.4%	Dry	5.1%	Dry	0.0%	Dry	11.4%	5.36	0.0%	Dry
GP43-D	1.8%	Dry	3.8%	Dry	3.0%	7.52	9.0%	Dry	0.0%	Dry
GP44	60.6%	Dry	49.3%	Dry	45.5%	Dry	58.8%	Dry	61.5%	Dry
GP45	1.6%	5.02	4.7%	Dry	0.0%	5.09	4.8%	5.4	0.0%	Dry
GP46-S*	7.2%	Dry	9.8%	4.28	0.0%	Dry	1.7%	Dry	3.6%	Dry
GP46-D*	8.7%	Dry	10.8%	Dry	3.9%	7.41	3.7%	7.45	4.4%	7.47
GP47-S*	0.0%	Dry	0.2%	Dry	0.0%	Dry	0.0%	Dry	0.0%	Dry
GP47-D*	0.0%	Dry	0.2%	6.53	0.0%	6.4	0.0%	6.42	0.0%	6.4
GP48-S*	0.0%	Dry	0.0%	Dry	0.0%	Dry	0.0%	Dry	0.0%	Dry
GP48-D*	0.0%	Dry	0.0%	6.51	0.0%	6.53	0.0%	6.53	0.0%	6.51
PUMP HOUSE*	0.0%	0.00	0.0%	-	0.0%	-	0.0%	-	0.0%	-

* PROBE IS OFF SITE

Trigger Monitor

Concentration exceeds trigger for single event of 50%

Requires 3 consecutive events greater than 40%

Other off-site concentrations

Table 6-1a
2025 Reasonable Use Assessment at Southern Property Boundary - Shallow Wells
Hanover/Walkerton Waste Disposal Site

PARAMETER	UNITS	ODWQS	BACKGROUND CONC.	GUIDELINE B-7 CRITERIA	BACKGROUND						BOUNDARY			
					OW52S		OW53S		OW54S		OW36S		OW55S	
					08-Oct-25	28-Apr-25	14-Oct-25	29-Apr-25	14-Oct-25	29-Apr-25	14-Oct-25	30-Apr-25	06-Oct-25	29-Apr-25
Health Related		**MAC**												
Boron	mg/L	5	0.038	1.28	0.025	0.03	0.029	0.021	0.243	0.022	0.032	0.028	0.31	0.346
Aesthetic		**AO/OG**												
Alkalinity	mg/L	30-500	540	*541	894	812	516	343	351	310	287	275	105	92
Chloride	mg/L	250	8	129	19	17.9	3.9	2.7	237	8.5	12.5	7.2	12.7	11.5
DOC	mg/L	5	9.3	*9.3	16.9	8.3	5.9	2.9	11.1	3.4	7.9	5.6	4.2	2.5
Hardness	mg/L	80-100	572	*575	902	851	535	319	411	283	326	284	597	617
Iron	mg/L	0.3	7.4	*7.7	1.72	0.179	5.94	0.854	10.4	3.46	0.912	0.61	0.554	0.261
Organic Nitrogen	mg/L	0.15	3.2	*3.2	3.95	2.42	3.85	0	1.85	<1.0	0.19	0.6	5.53	11.36
Sulphate	mg/L	500	21	260	5	34	27	29	<1	10	30	24	783	797
TDS	mg/L	500	579	*574	844	871	518	356	728	313	321	297	785	837

NOTES:

1 ODWQS - Ontario Drinking Water Quality Standards (2006)
2 MAC - Maximum Acceptable Concentration
3 AO - Aesthetic Objective
4 OG - Operational Guideline
5 Shaded results exceed Guideline B-7 Criteria at Perperty Boundary
6 Background concentrations calculated using long-term averages at OW52-S, OW53-S and for data up to April 2021 at OW54-S
7 * Indicates that Guideline B-7 is set to average background concentration because reference concentration is higher than ODWQS
8 Background levels are above long-term average B-7 Guideline

Table 6-1b
2025 Reasonable Use Assessment at Southern Property Boundary - Deep Wells
Hanover/Walkerton Waste Disposal Site

PARAMETER	UNITS	ODWQS	BACKGROUND CONC.	GUIDELINE B-7 CRITERIA	BACKGROUND						BOUNDARY			
					OW52D		OW53D		OW54D		OW36D		OW55D	
					08-Oct-25	28-Apr-25	29-Apr-25	14-Oct-25	14-Oct-25	29-Apr-25	14-Oct-25	30-Apr-25	06-Oct-25	29-Apr-25
Health Related		**MAC**												
Boron	mg/L	5	0.021	1.27	0.035	0.039	0.014	0.01	0.023	0.024	0.244	0.244	0.514	0.536
Aesthetic		**AO/OG**												
Alkalinity	mg/L	30-500	459	479	887	818	280	303	480	500	108	114	51	52
Chloride	mg/L	250	5.8	128	9.1	6.7	3.3	3.2	13.2	13.4	7.4	7.1	11.9	32
DOC	mg/L	5	4.1	4.6	3.7	2.5	2.2	3.1	5.5	3.6	2.4	1.8	1.8	1.8
Hardness	mg/L	80-100	496	*489	968	821	333	342	564	483	385	362	1320	1210
Iron	mg/L	0.3	0.63	*0.62	0.173	<0.005	0.888	0.867	2.02	0.189	0.491	0.324	0.826	0.608
Organic Nitrogen	mg/L	0.15	4.12	*3.94	3.35	0.6	7.3	6.73	15.79	<0.1	34.43	36.5	22.76	11.14
Sulphate	mg/L	500	30	265	22	25	35	36	11	11	326	295	1530	1300
TDS	mg/L	500	460	480	838	798	320	323	480	497	451	428	1180	1170

NOTES:

1. ODWQS - Ontario Drinking Water Quality Standards (2006)
2. MAC - Maximum Acceptable Concentration
3. AO - Aesthetic Objective
4. OG - Operational Guideline
5. Shaded results exceed Guideline B-7 Criteria
6. Background concentrations calculated using long-term averages at OW52-D, OW53-D and OW54-D
7. * Indicates that Guideline B-7 is set to background concentration because reference concentration is higher than ODWQS
8. Background levels are above long-term average B-7 Guideline

Table 6-1c
2025 Trigger Levels at Southern Property Boundary - Shallow Wells
Hanover/Walkerton Waste Disposal Site

PARAMETER	UNITS	ODWQS	BACKGROUND CONC.	GUIDELINE B-7 CRITERIA	ECA Trigger Level	BOUNDARY			
						OW36S		OW55S	
						14-Oct-25	30-Apr-25	06-Oct-25	29-Apr-25
Boron	mg/L	5	0.038	1.28	0.97	0.032	0.028	0.41	0.334
Chloride	mg/L	250	8	129	99	12.5	7.2	9.4	14.6
Benzene		1	-	-	not detectable	<0.5	-	<0.5	-
Toluene		60	-	-	not detectable	<5	-	<5	-
Dichloromethane		50	-	-	not detectable	<0.5	-	<0.5	-

NOTES:
1 ODWQS - Ontario Drinking Water Quality Standards (2006)
2 Background concentrations calculated using long-term averages at OW52-S, OW53-S and OW54-S
3 Shaded results exceed ECA Trigger Concentration
4 Guideline B-7 Criteria not calculated for Benzene, Toluene, and Dichloromethane since ECA Trigger Level is set at "Undetectable"

Table 6-1d
2024 Trigger Levels at Southern Property Boundary - Deep Wells
Hanover/Walkerton Waste Disposal Site

PARAMETER	UNITS	ODWQS	BACKGROUND CONC.	GUIDELINE B-7 CRITERIA	ECA Trigger Level	BOUNDARY			
						OW36D		OW55D	
						14-Oct-25	30-Apr-25	06-Oct-25	29-Apr-25
Boron	mg/L	5	0.021	1.27	0.95	0.244	0.244	0.514	0.536
Chloride	mg/L	250	5.8	128	97	7.4	7.1	11.9	32
Benzene		1	-	-	not detectable	< 0.5	-	< 0.5	-
Toluene		60	-	-	not detectable	< 5	-	< 5	-
Dichloromethane		50	-	-	not detectable	< 0.5	-	< 0.5	-

NOTES:
1 ODWQS - Ontario Drinking Water Quality Standards (2006)
2 Background concentrations calculated using long-term averages at OW52-D, OW53-D and OW54-D
3 Shaded results exceed ECA Trigger Concentration
4 Guideline B-7 Criteria not calculated for Benzene, Toluene, and Dichloromethane since ECA Trigger Level is set at "Undetectable"

Table 6-2
Summary of Background Groundwater Quality Data for Discharge to Saugeen River (2025)
Hanover/Walkerton Waste Disposal Site

	Chloride		Boron		Un-ionized Ammonia		Phenols		Iron	
	No. of Results	Median	No. of Results	Median	No. of Results	Median	No. of Results	Median	No. of Results	Median
OW28-8	61	2.2	39	0.03	30	ND	38	ND	45	ND
OW28-14	54	2.3	32	0.011	30	ND	31	ND	37	ND
OW50	41	118.0	40	0.059	32	ND	40	ND	40	24.7
OW52-S	31	4.1	30	0.0325	25	ND	29	ND	30	3.81
OW52-D	29	3.4	28	0.034	31	ND	31	ND	31	0.22
OW54-S	32	20.7	32	0.0425	31	ND	32	ND	32	10.35
OW54-D	30	4.95	30	0.021	30	ND	30	ND	30	0.74
Median		4.1		0.0325		ND		ND		7.6 (shallow) 0.48 (deep)

Notes: Median calculated by converting MDL to 0 value and then determining median (middle) value. An "ND" result reflects a median value at the method detection limits which varied over the years.

Table 6-3
Comparison of 2025 Groundwater Data to Site-Specific Compliance Criteria - Saugeen River Floodplain
Hanover/Walkerton Waste Disposal Site

Parameter	ECA Trigger Level (mg/L)	OW7-8		OW39-S		OW39-D		OW40		OW43		OW56		OW61	
		Apr-25	Oct-25	Apr-25	Oct-25	Apr-25	Oct-25	Apr-25	Oct-25	May-25	Oct-25	Apr-25	Oct-25	28-Apr-25	6-Oct-25
		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L	
Chloride	263.5	7.4	9	62.3	1070	11.7	12.5	219	250	7	7.4	250	387	74.4	72.7
Boron	1.28	0.924	0.88	0.073	0.24	0.85	0.814	0.011	0.023	0.047	0.057	0.09	0.179	0.069	0.040
Un-ionized Ammonia	0.052	<0.005	0.144	0.057	<0.005	0.014	0.212	0.033	0.015	0.030	<0.005	0.009	0.006	<0.005	0.006
Iron	42.1 (shallow) 40.3 (deep)	0.932	0.789	1.52	1.27	0.053	0.203	3.53	12.9	10.7	6.82	14	0.029	2.50	0.67
Phenols	0.15	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

NOTES:
OW43 & OW56 were repaired in summer/fall 2021
"-": Not available due to insufficient field data

TABLE 5-3A BACKGROUND GROUNDWATER QUALITY
Hanover/Walkerton Waste Disposal Site 2025 Monitoring Report

Parameter	Observation Wells											
	OW27-69				OW28-8				OW28-14			
	Depth = 68.6 mbgl				Depth = 8.5 mbgl				Depth = 14.5 mbgl			
	min	max	8-Oct-25	28-Apr-25	min	max	8-Oct-25	28-Apr-25	min	max	8-Oct-25	28-Apr-25
Chlorides	24	284	37.6	33.1	0.8	93.8	17.6	44.4	0.5	12.0	1.9	1.5
Alkalinity	57	162	62	84	196	581	384	272	231	430	319	307
Sulphates	900	1880	1490	1400	3	71	7	16	14	370	16	14
Hardness	320	1510	1320	1220	167	590	452	281	0	775	353	305
DOC	0.9	27.7	4.5	3.1	0.9	11.4	1.9	2.1	0.50	7.10	1.6	2.1
Boron	0.238	0.447	0.419	0.430	0.015	0.358	0.021	0.022	0.01	0.02	0.01	0.013

Parameter	Observation Wells							
	OW53S				OW53D			
	Depth = 12.04 mbgl				Depth = 15.09 mbgl			
	min	max	14-Oct-25	29-Apr-25	min	max	14-Oct-25	29-Apr-25
Chlorides	1.8	3.97	3.9	2.7	2.6	4.6	3.2	3.3
Alkalinity	206	823	516	343	223	303	303	280
Sulphates	17	41	27	29	35	45	36	35
Hardness	225	807	535	319	263	347	342	333
DOC	1	8.1	5.9	2.9	0.6	7	3.1	2.2
Boron	0.005	0.038	0.029	0.021	0.005	0.015	0.01	0.014

Notes:
Reported concentrations in mg/L

TABLE 5-3B CROSS GRADIENT WELLS GROUNDWATER QUALITY
Hanover/Walkerton Waste Disposal Site 2025 Monitoring Report

Parameter	Observation Wells															
	OW44S				OW44D				OW45S				OW45D			
	Depth = 2.74 mbgl				Depth = 8.53 mbgl				Depth = 3.66 mbgl				Depth = 8.44 mbgl			
	min	max	6-Oct-25	29-Apr-25	min	max	6-Oct-25	29-Apr-25	min	max	6-Oct-25	29-Apr-25	min	max	6-Oct-25	29-Apr-25
Chlorides	2.43	8.9	3.1	8.6	<0.5	50.4	36.5	50.4	10.60	20.70	20.7	18.3	<5	55.5	44.1	55.5
Alkalinity	137	399	359	399	133	163	141	142	331	426	417	426	127	158	143	149
Sulphates	1	228	<1	9	920	1370	1370	1290	1	36	6	5	1370	1620	1610	1490
Hardness	187	653	362	394	1130	1510	1510	1380	314	442	442	406	1510	1930	1730	1620
DOC	3.8	15.6	14.8	7.7	0.5	5.2	2.5	1.6	8	24	15.9	10.7	0.50	4.60	2.8	1.8
Boron	0.011	0.03	0.02	0.02	0.104	0.176	0.169	0.176	0.01	0.05	0.045	0.039	0.14	0.22	0.203	0.218

Parameter	Observation Wells															
	OW26-11				OW26-14				OW22-5				OW22-9			
	Depth = 10.70 mbgl				Depth = 13.70 mbgl				Depth = 4.60 mbgl				Depth = 8.80 mbgl			
	min	max	14-Oct-25	29-Apr-25	min	max	14-Oct-25	29-Apr-25	min	max	6-Oct-25	29-Apr-25	min	max	6-Oct-25	6-Oct-25
Chlorides	24.4	430	Dry	430	5.5	44.1	26.7	30.5	<0.5	5	2.2	4	<0.5	9.9	1.9	3.9
Alkalinity	620	936	Dry	746	280	350	310	309	196	245	230	232	180	219	203	205
Sulphates	7	94	Dry	25	17	24	18	18	23	40	32	29	27	56	35	32
Hardness	663	850	Dry	663	277	399	357	326	191	370	287	248	192	270	251	220
DOC	4.9	16.6	Dry	6.8	1	6.1	4	2.4	0.7	4.6	3	1.8	0.7	5.6	2.6	1
Boron	0.016	0.169	Dry	0.016	0.010	0.017	0.014	0.015	0.007	0.014	0.008	0.01	0.008	0.028	0.014	0.016

Parameter	Observation Wells							
	OW57 (drive point)				OW58 (drive point)			
	Depth = 3.14 mbgl				Depth = 4.27 mbgl			
	min	max	6-Oct-25	29-Apr-25	min	max	6-Oct-25	29-Apr-25
Chlorides	3.4	15.8	7	7.5	6.3	13.1	12.5	11.4
Alkalinity	152	211	169	167	170	209	189	194
Sulphates	16	158	129	127	116	218	152	140
Hardness	226	375	276	275	276	431	348	327
DOC	1.1	6.7	2.7	1.2	0.8	4.5	2.2	1.3
Boron	0.066	0.117	0.097	0.098	0.016	0.049	0.038	0.046

NOTES: Reported concentrations in mg/L.
"-" insufficient sample resulting in partial Lab tests

TABLE 5-3C EAST WELLS GROUNDWATER QUALITY
Hanover/Walkerton Waste Disposal Site 2025 Monitoring Report

Parameter	Observation Wells											
	OW1-9				OW21-8				OW21-14			
	Depth = 9.10 mbgl				Depth = 7.60 mbgl				Depth = 13.60 mbgl			
	min	max	6-Oct-25	30-Apr-25	min	max	14-Oct-25	30-Apr-25	min	max	14-Oct-25	30-Apr-25
Chlorides	28.8	220	127	134	15.5	374	248	284	0.80	6.00	2.4	2.2
Alkalinity	258	1100	543	580	348	817	677	694	184	240	204	203
Sulphates	14	220	108	96	5	73	<1	12	25.9	65.0	31	30
Hardness	368	1310	903	621	375	890	733	728	187	1570	242	220
DOC	2.7	19.8	11	7	2.3	10.5	9.8	4.9	0.60	7.60	2.4	2.4
Boron	0.085	0.802	0.786	0.540	0.13	0.29	0.174	0.181	0.01	0.04	0.018	0.022

Parameter	Observation Wells							
	OW51S				OW51D			
	Depth = 4.57 mbgl				Depth = 9.14 mbgl			
	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25
Chlorides	60.3	199	170	121	3.5	7.1	5.4	7.1
Alkalinity	322	695	455	423	153	195	176	180
Sulphates	7	13.5	10	9	71	123	91	86
Hardness	323	705	475	375	192	264	251	238
DOC	1	8.5	5	2.5	0.6	6.4	2.5	2.9
Boron	0.045	0.185	0.084	0.072	0.083	0.156	0.114	0.123

Notes:
Reported concentrations in mg/L

TABLE 5-3D SOUTHEAST WELLS GROUNDWATER QUALITY

Hanover/Walkerton Waste Disposal Site 2025 Monitoring Report

Parameter	Observation Wells															
	OW5-5				OW29-4				OW23-5				OW20-7			
	Depth = 5.20 mbgl				Depth = 4.00 mbgl				Depth = 5.20 mbgl				Depth = 7.00 mbgl			
	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25
Chlorides	172	470	234	211	190	1200	665	373	66	628	628	211	60	256	126	209
Alkalinity	425	1310	988	916	425	1300	448	754	276	970	529	376	433	918	545	738
Sulphates	<1	53	1.0	<2	1	198	38	18	9	54	28	11	1	18	6	7
Hardness	159	1370	770	801	435	1270	562	674	292	1080	685	376	343	807	489	634
DOC	5.3	37.9	15	8	0.8	19.8	5.5	3.1	1	17	5.3	2.6	3	16	9	4.4
Boron	0.742	1.36	1.060	1.030	0.426	1.1	0.464	0.659	0.212	0.800	0.357	0.222	0.013	0.813	0.544	0.675

Parameter	Observation Wells															
	OW5-11				OW23-12				OW39-S				OW39-D			
	Depth = 10.70 mbgl				Depth = 12.20 mbgl				Depth = 4.57 mbgl				Depth = 9.14 mbgl			
	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25
Chlorides	9.7	17	11.5	13.2	5.7	17	13.4	12	27.2	1070	1070	62.3	5.4	22.8	12.5	11.7
Alkalinity	40	225	47	56	20	92	43	53	314	524	459	396	35	60	41	43
Sulphates	54	1180	135	981	11.4	2170	1430	1410	5	147	147	5	1170	1520	1440	1420
Hardness	593	1150	928	903	772	1630	1380	1220	350	548	548	350	1130	1460	1380	1230
DOC	0.7	9.1	1.7	2	0.8	2210	2.2	1.8	2	9.2	7.5	3.4	0.6	4.5	1.9	1.9
Boron	0.399	0.543	0.495	0.523	0.704	0.938	0.889	0.917	0.031	0.27	0.240	0.073	0.615	0.887	0.814	0.85

Parameter	Observation Wells			
	OW20-14			
	Depth = 13.40 mbgl			
	min	max	Oct-25	Apr-25
Chlorides	1.9	22.1	8.6	8.2
Alkalinity	29	175	37	41
Sulphates	1170	2540	1490	1530
Hardness	252	1710	1500	1320
DOC	0.50	9.40	2	2.6
Boron	0.634	0.926	0.875	0.894

NOTES: Reported concentrations in mg/L.

Max DOC of 2,210 mg/L at OW23-12 appears to be a duplicate entry of conductivity in Nov 2007 & is an anomaly.

TABLE 5-3E SOUTH WELLS GROUNDWATER QUALITY

Hanover/Walkerton Waste Disposal Site 2025 Monitoring Report

Parameter	Observation Wells															
	OW8-5				OW9-5				OW19-3				OW24-5			
	Depth = 4.60 mbgl				Depth = 4.80 mbgl				Depth = 3.00 mbgl				Depth = 4.90 mbgl			
	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25
Chlorides	5.4	153	dry	153	4	25.6	22.8	22.1	19.3	246	164	179	8	118	50.3	42.8
Alkalinity	49	471	dry	240	127	324	301	314	247	1120	847	894	252	658	356	335
Sulphates	0.63	1160	dry	3	1.72	289	4	6	6	38.3	10	20	1	43	2	5
Hardness	135	1280	dry	318	201	430	227	201	321	1300	942	874	220	570	391	343
DOC	2.3	16.1	dry	2.3	2.9	13	6.1	4	3.6	19.6	5.2	4.6	2	10	2.6	3.4
Boron	0.019	0.065	dry	0.046	0.007	0.035	0.027	0.023	0.220	0.442	0.346	0.279	0.016	0.101	0.033	0.032

Parameter	Observation Wells															
	OW25-5				OW25-9				OW19-10				OW8-8			
	Depth = 5.20 mbgl				Depth = 9.10 mbgl				Depth = 9.40 mbgl				Depth = 8.10 mbgl			
	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25
Chlorides	10.6	87.7	37	41.2	7.1	83.4	9.7	9.9	12.3	55	43	44.5	0.50	31.00	9.5	12.4
Alkalinity	81	480	286	286	74	406	82	78	240	603	485	503	35	101	43	54
Sulphates	21.6	575	65	59	35	689	615	614	14.3	32	24	23	102	1380	1050	1150
Hardness	112	607	339	333	129	695	627	599	225	667	532	483	568	1340	1020	824
DOC	3.3	12.7	7.1	5.1	0.80	9.40	2.2	2.1	0.8	15.8	3	4.5	0.80	7.00	2.1	2.4
Boron	0.108	0.339	0.146	0.152	0.154	0.373	0.354	0.368	0.019	0.1	0.06	0.072	0.12	0.53	0.486	0.425

Parameter	Observation Wells							
	OW55-S				OW55-D			
	Depth = 7.32 mbgl				Depth = 10.06 mbgl			
	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25
Chlorides	6.2	15.2	13	12	3.5	65.4	11.9	32
Alkalinity	60.0	128	105	92	45	58	51	52
Sulphates	489.0	1130	783	797	1160	1530	1530	1300
Hardness	585.0	1110	597	617	1130	1460	1320	1210
DOC	0.8	15.8	4.2	2.5	0.6	6.8	1.8	1.8
Boron	0.287	0.484	0.310	0.346	0.354	0.536	0.514	0.536

NOTES: Reported concentrations in mg/L.

TABLE 5-3F WEST WELLS GROUNDWATER QUALITY

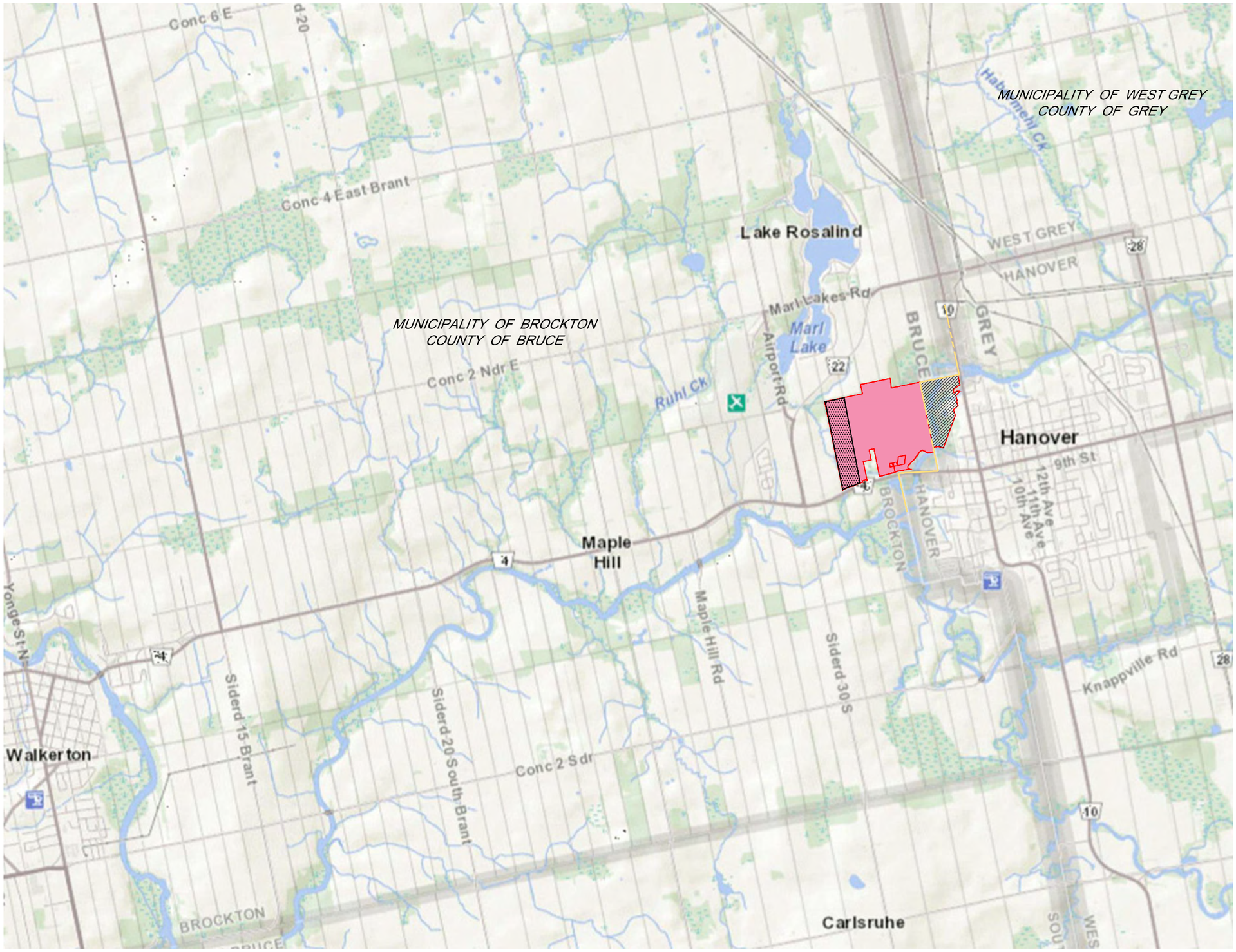
Hanover/Walkerton Waste Disposal Site 2025 Monitoring Report

Parameter	Observation Wells															
	OW32-S				OW32-D				OW52-S				OW52-D			
	Depth = 8.53 mbgl				Depth = 13.11 mbgl				Depth = 7.62 mbgl				Depth = 12.04 mbgl			
	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25
Chlorides	3.5	102	102	69.1	1.3	4.7	3.3	2.5	0.5	19	19	17.9	2	9	9.1	6.7
Alkalinity	536	1160	571	553	230	289	251	239	538	1000	894	812	446	887	887	818
Sulphates	8	47	27	20	29	40	36	33	1	65	5	34	21	42	22	25
Hardness	543	1310	639	564	231	323	285	255	660	993	902	851	470	968	968	821
DOC	2.1	24.6	5.2	4.1	0.6	11.1	1.8	2.1	3.7	58.6	16.9	8.3	1	14	3.7	2.5
Boron	0.016	0.244	0.134	0.118	0.007	0.022	0.012	0.016	0.02	0.09	0.025	0.03	0.006	0.044	0.035	0.039

Parameter	Observation Wells							
	OW54-S				OW54-D			
	Depth = 7.32 mbgl				Depth = 10.57 mbgl			
	min	max	Oct-25	Apr-25	min	max	Oct-25	Apr-25
Chlorides	3.1	374	237	9	3	130	13.2	13.4
Alkalinity	274	777	351	310	291	518	480	500
Sulphates	2	65	<1	10	11	34	11	11
Hardness	283	778	411	283	321	577	564	483
DOC	1.3	13.7	11.1	3.4	2.8	11.6	5.5	3.6
Boron	0.005	0.243	0.243	0.022	0.005	0.088	0.023	0.024

NOTES: Reported concentrations in mg/L.

Figures



LEGEND

- HANOVER / WALKERTON WASTE DISPOSAL SITE
- GROUNDWATER ATTENUATION ZONE
- LANDFILL GAS CONTROL
- MUNICIPAL BOUNDARY
- WATERBODY
- STREAM

SCALE 1:40,000 (11x17)

500 0 250 500 1000 1500 METRES

2000 1000 0 2000 5000 FEET

No.	DATE	DESCRIPTION	BY	APPD
7	APR 14/26	UPDATED TOPOGRAPHY	TLB	SJC
6	FEB 24/25	UPDATED TOPOGRAPHY	TLB	SJC
5	FEB 27/24	UPDATED TOPOGRAPHY	TLB	SJC
4	FEB 14/23	UPDATED TOPOGRAPHY	TLB	SJC
3	APR 18/22	UPDATED TOPOGRAPHY	TLB	SJC
2	APR 27/21	UPDATED TOPOGRAPHY	TLB	SJC

REVISION / ISSUE

Title: HANOVER / WALKERTON WASTE DISPOSAL SITE MUNICIPALITY OF BROCKTON LOCAL SURFACE WATER FEATURES

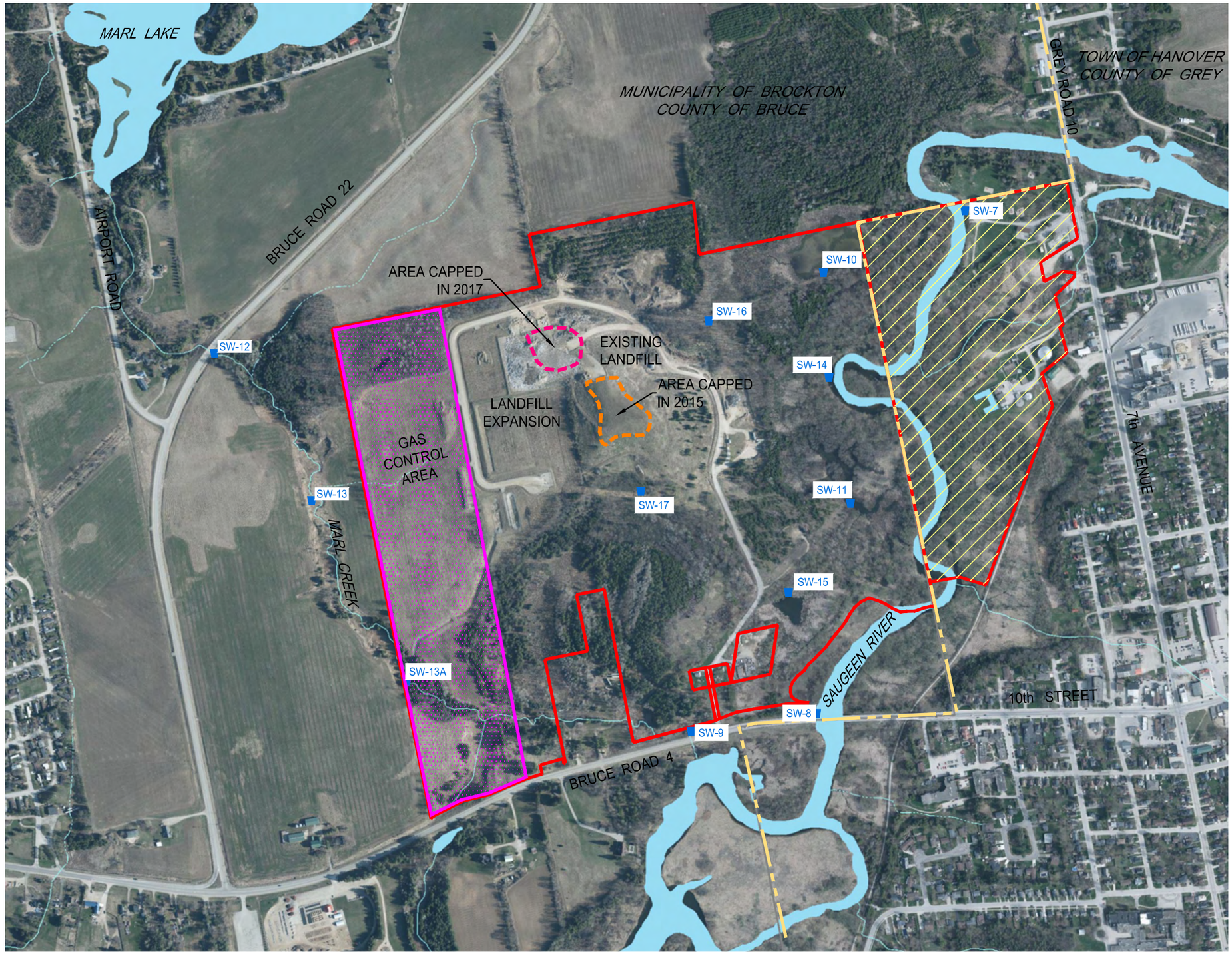
Client: TOWN OF HANOVER

COBIDE ENGINEERING INC
517 10th St, Hanover, ON N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Design:	TLB	Scale:	1:40,000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2020		Design Engineer

DRAWING No. 10020-FIG1

H:\Hanover\10020 Hanover Walkerton Landfill Site Monitoring Program\Drawings\Submissions\2025 AMR\10020 Fig 1.dwg Apr 14, 2026 - 10:43am



LEGEND

- PROPERTY BOUNDARY
- GROUNDWATER ATTENUATION ZONE
- AREA CAPPED IN 2017
- AREA CAPPED IN 2015
- LANDFILL GAS CONTROL
- MUNICIPAL BOUNDARY
- SW-8 CURRENT SURFACE WATER SAMPLING LOCATION
- WATERBODY
- STREAM PERMANENT

SCALE 1:7500 (11 x 17)

0 100 200 500 METRES

0 100 250 500 1000 1500 FEET

No.	DATE	DESCRIPTION	BY	APPD
7	APR 14/26	UPDATED TOPOGRAPHY	TLB	SJC
6	FEB 24/25	UPDATED TOPOGRAPHY	TLB	SJC
5	FEB 27/24	UPDATED TOPOGRAPHY	TLB	SJC
4	FEB 14/23	UPDATED TOPOGRAPHY	TLB	SJC
3	APR 18/22	UPDATED TOPOGRAPHY	TLB	SJC
2	APR 27/21	UPDATED TOPOGRAPHY	TLB	SJC

REVISION / ISSUE

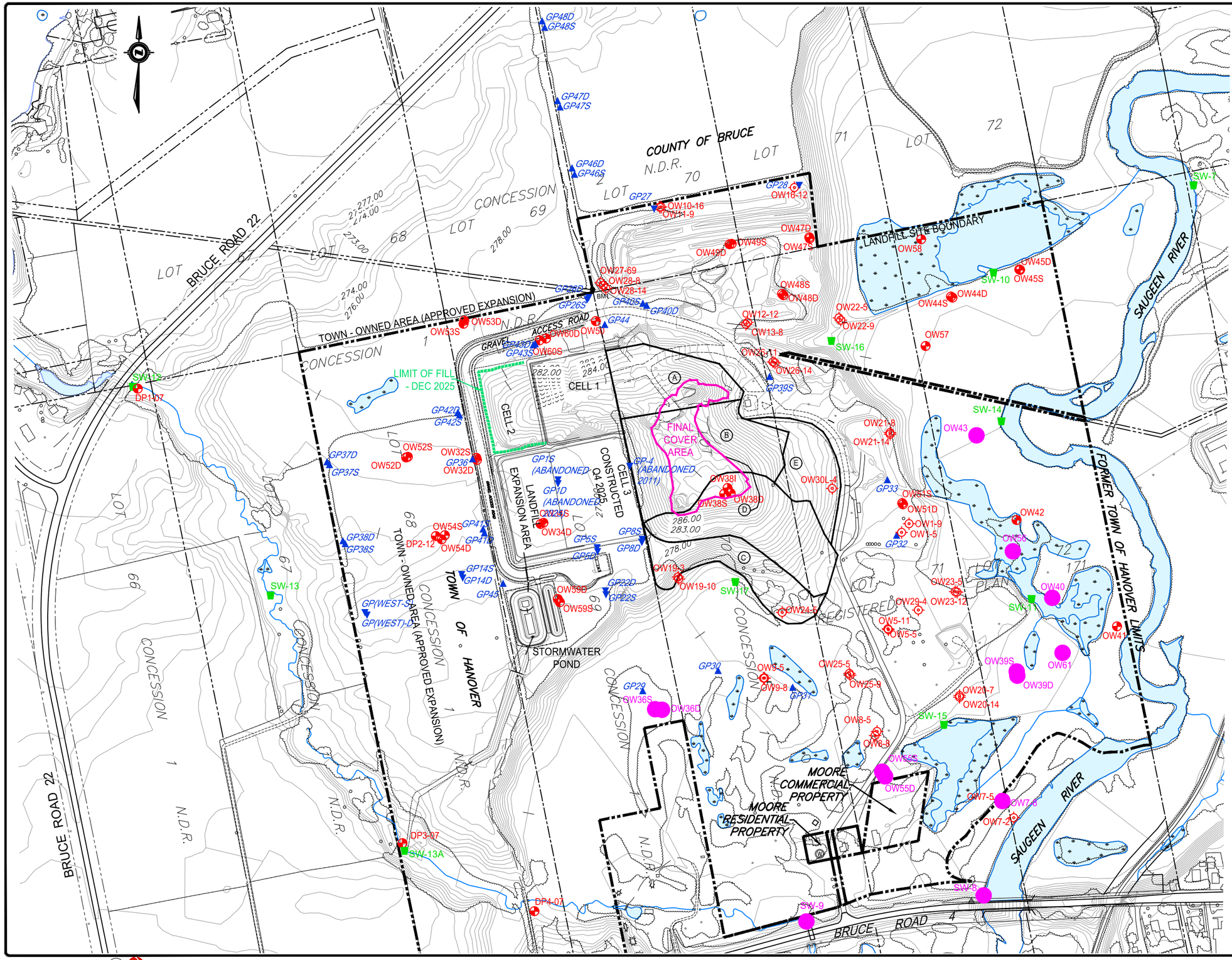
Title: HANOVER / WALKERTON WASTE DISPOSAL SITE
MUNICIPALITY OF BROCKTON
LOCAL SURFACE WATER FEATURES

Client: TOWN OF HANOVER

COBIDE ENGINEERING INC
517 10th St, Hanover, ON N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Design:	TLB	Scale:	1:7500
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2020		Design Engineer

DRAWING No. 10020-FIG2



NOTES:

1. LANDFILL BOUNDARY DERIVED FROM PLAN 3R-2496. POSITION OF ADDITIONAL PROPERTY LINES DERIVED FROM COUNTY OF BRUCE ASSESSMENT MAPPING.
2. TOPOGRAPHICAL INFORMATION DERIVED FROM MAPPING PROVIDED BY NORTHWAY-PHOTOMAP INC. BASE ON AERIAL PHOTO DATED APRIL 25, 2001.
3. ADDITIONAL TOPOGRAPHICAL INFORMATION WITHIN THE LANDFILL AREA DERIVED FROM SITE SURVEYS BY D.J. PEACH & ASSOCIATES, CONESTOGA-ROVERS & ASSOCIATES LTD. AND PRYDE SCHROPP McCOMB INC. NOVEMBER 1998, JANUARY 2006, FEBRUARY 2007, JANUARY 2008, JANUARY 2009 AND JANUARY 2010.
4. GROUND CONTOURS AND TOPOGRAPHY IN ACTIVE LANDFILL AREA DERIVED FROM FIELD SURVEY BY COBIDE ENGINEERING INC. COMPLETED ON DECEMBER 22, 2025.
5. ELEVATIONS ARE GEODETIC.

LEGEND

- PROPERTY BOUNDARY
- GP44 — EXISTING GAS PROBE AND ID NUMBER (2007 AND LATER)
- GP-28 — EXISTING GAS PROBE AND ID NUMBER (PRE 2007)
- OW45D — EXISTING OBSERVATION WELL AND ID NUMBER (2007 AND LATER)
- OW1-9 — EXISTING OBSERVATION WELL AND ID NUMBER (PRE 2007)
- SW-8 — CURRENT SURFACE WATER SAMPLING LOCATION (SW7 TO SW17)
- LOCATIONS - TRIGGER
- EXISTING GRAVEL ROAD
- EXISTING PAVED ROAD
- EXISTING CONTOUR
- EXISTING LANDFILL LIMIT & PHASES
- EXPANSION LIMIT
- LOT / CONCESSION FABRIC
- LIMIT OF FINAL COVER AREA
- LIMIT OF FILL DECEMBER 2025

SCALE 1:5000 (11x17)

50 0 25 50 100 150 250 METRES

200 100 0 200 500 750 FEET

No.	DATE	DESCRIPTION	BY	APPD
7	APR 14/26	UPDATED TOPOGRAPHY	TLB	SJC
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3	APR 18/22	UPDATED TOPOGRAPHY	TLB	SJC
2	APR 27/21	UPDATED TOPOGRAPHY	TLB	SJC
1	APR 21/20	UPDATED TOPOGRAPHY	TLB	SJC

REVISION / ISSUE

Title:

HANOVER / WALKERTON WASTE DISPOSAL SITE MUNICIPALITY OF BROCKTON MONITORING LOCATIONS

Client:

TOWN OF HANOVER

COBIDE ENGINEERING INC

517 10th St, Hanover, ON N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Design:	TLB	Scale:	1:5000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2020		Design Engineer

DRAWING No. 10020-FIG3

C:\Users\Jacobus\AppData\Local\Temp\AcPublish_10296\10020 Fig 3-4-5-6-7-8-9.dwg Apr 28, 2026 - 4:20pm

NOTES:

1. LANDFILL BOUNDARY DERIVED FROM PLAN 3R-2496. POSITION OF ADDITIONAL PROPERTY LINES DERIVED FROM COUNTY OF BRUCE ASSESSMENT MAPPING.
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4. GROUND CONTOURS AND TOPOGRAPHY IN ACTIVE LANDFILL AREA DERIVED FROM FIELD SURVEY BY COBIDE ENGINEERING INC. COMPLETED ON DECEMBER 22, 2025.
5. ELEVATIONS ARE GEODETIC.

LEGEND

- PROPERTY BOUNDARY
- OW45D — EXISTING OBSERVATION WELL AND ID NUMBER (2007 AND LATER)
- OW1-9 — EXISTING OBSERVATION WELL AND ID NUMBER (PRE 2007)
- SW-8 — CURRENT SURFACE WATER SAMPLING LOCATION (SW7 TO SW17)
- LOCATIONS - TRIGGER
- EXISTING GRAVEL ROAD
- EXISTING PAVED ROAD
- EXISTING CONTOUR
- EXISTING LANDFILL LIMIT & PHASES
- EXPANSION LIMIT
- LOT / CONCESSION FABRIC
- LIMIT OF FINAL COVER AREA
- LIMIT OF FILL DECEMBER 2025
- INTERPRETED WATER TABLE CONTOURS
- INTERPRETED DIRECTION OF GROUNDWATER FLOW
- 270.3 — OBSERVATION WELL READINGS USED FOR INTERPRETED WATER TABLE CONTOUR GENERATION (READINGS OBTAINED OCT., 2025.)

SCALE 1:5000 (11x17)

50 0 25 50 100 150 250 METRES

200 100 0 200 500 750 FEET

No.	DATE	DESCRIPTION	BY	APPD
7	APR 14/26	UPDATED TOPOGRAPHY	TLB	SJC
6	FEB 24/25	UPDATED TOPOGRAPHY	TLB	SJC
5	FEB 27/24	UPDATED TOPOGRAPHY	TLB	SJC
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3	APR 18/22	UPDATED TOPOGRAPHY	TLB	SJC
2	APR 27/21	UPDATED TOPOGRAPHY	TLB	SJC
1	APR 21/20	UPDATED TOPOGRAPHY	TLB	SJC

REVISION / ISSUE

Title: HANOVER / WALKERTON WASTE DISPOSAL SITE MUNICIPALITY OF BROCKTON INTERPRETED GROUNDWATER FLOW FALL 2025

Client: TOWN OF HANOVER

COBIDE ENGINEERING INC
517 10th St, Hanover, ON N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Design:	TLB	Scale:	1:5000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2020		Design Engineer

DRAWING No. 10020-FIG4

NOTES:

1. LANDFILL BOUNDARY DERIVED FROM PLAN 3R-2496. POSITION OF ADDITIONAL PROPERTY LINES DERIVED FROM COUNTY OF BRUCE ASSESSMENT MAPPING.
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4. GROUND CONTOURS AND TOPOGRAPHY IN ACTIVE LANDFILL AREA DERIVED FROM FIELD SURVEY BY COBIDE ENGINEERING INC. COMPLETED ON DECEMBER 22, 2025.
5. ELEVATIONS ARE GEODETIC.

LEGEND

- PROPERTY BOUNDARY
- OW45D — EXISTING OBSERVATION WELL AND ID NUMBER (2007 AND LATER)
- OW1-9 — EXISTING OBSERVATION WELL AND ID NUMBER (PRE 2007)
- SW-8 — CURRENT SURFACE WATER SAMPLING LOCATION (SW7 TO SW17)
- LOCATIONS - TRIGGER
- 16.3 — CHLORIDE CONCENTRATION (mg/L)
- EXISTING GRAVEL ROAD
- EXISTING PAVED ROAD
- EXISTING CONTOUR
- EXISTING LANDFILL LIMIT & PHASES
- EXPANSION LIMIT
- LOT / CONCESSION FABRIC
- LIMIT OF FINAL COVER AREA
- LIMIT OF FILL DECEMBER 2025

SCALE 1:5000 (11x17)

50 0 25 50 100 150 250 METRES

200 100 0 200 500 750 FEET

No.	DATE	DESCRIPTION	BY	APPD
7	APR 14/26	UPDATED TOPOGRAPHY	TLB	SJC
6	FEB 24/25	UPDATED TOPOGRAPHY	TLB	SJC
5	FEB 27/24	UPDATED TOPOGRAPHY	TLB	SJC
4	FEB 14/23	UPDATED TOPOGRAPHY	TLB	SJC
3	APR 18/22	UPDATED TOPOGRAPHY	TLB	SJC
2	APR 27/21	UPDATED TOPOGRAPHY	TLB	SJC
1	APR 21/20	UPDATED TOPOGRAPHY	TLB	SJC

REVISION / ISSUE

Title: HANOVER / WALKERTON WASTE DISPOSAL SITE MUNICIPALITY OF BROCKTON CHLORIDE CONCENTRATIONS FALL 2025

Client: TOWN OF HANOVER

COBIDE ENGINEERING INC
517 10th St, Hanover, ON N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Design:	TLB	Scale:	1:5000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2020		Design Engineer

DRAWING No. 10020-FIG5

Figure 5-1
Chloride Concentrations Upgradient Wells
Hanover-Walkerton Waste Disposal Site

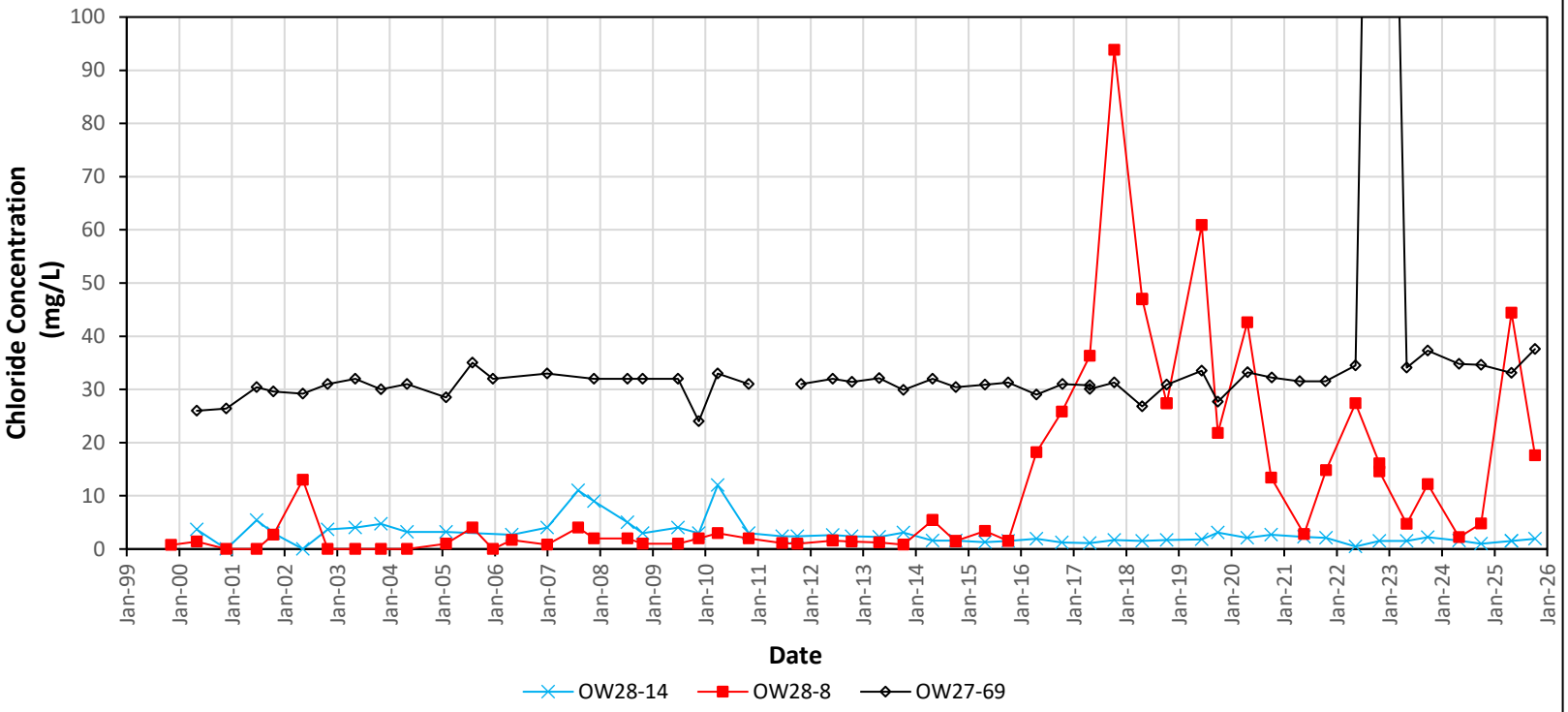


Figure 5-2
Chloride Concentrations Cross-Gradient Wells
Hanover-Walkerton Waste Disposal Site

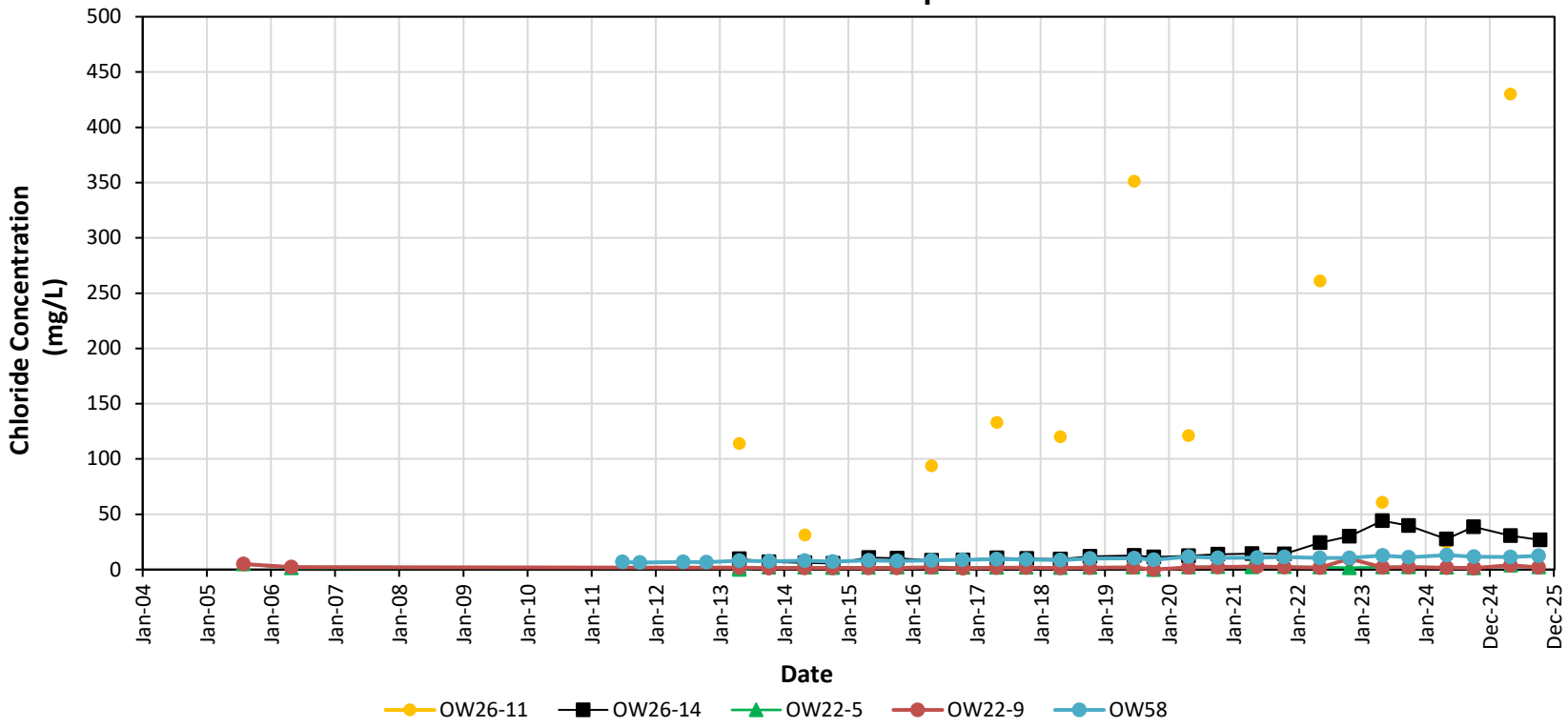


Figure 5-3
Chloride Concentrations East Wells
Hanover-Walkerton Waste Disposal Site

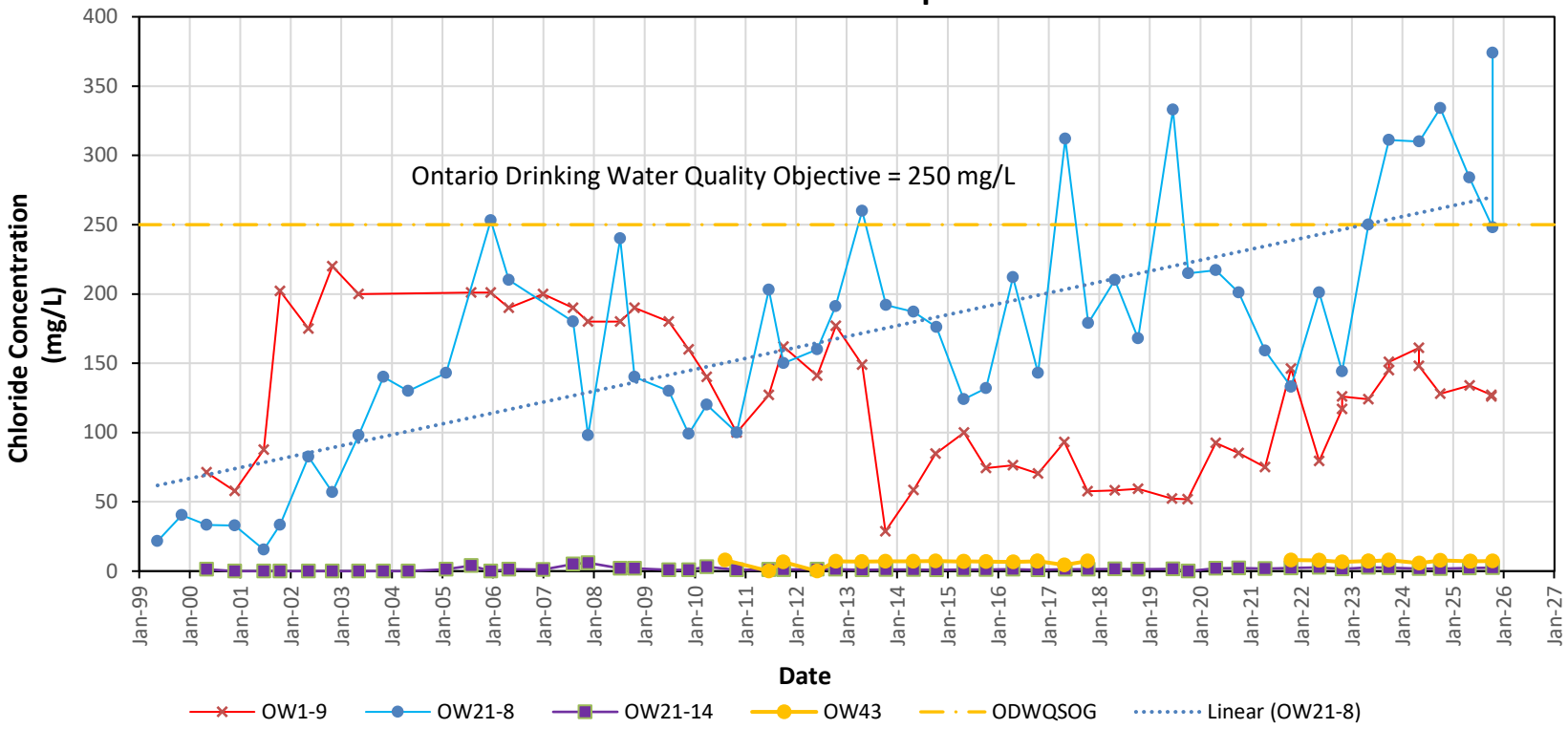


Figure 5-4
Chloride Concentrations Shallow Southeast Wells
Hanover-Walkerton Waste Disposal Site

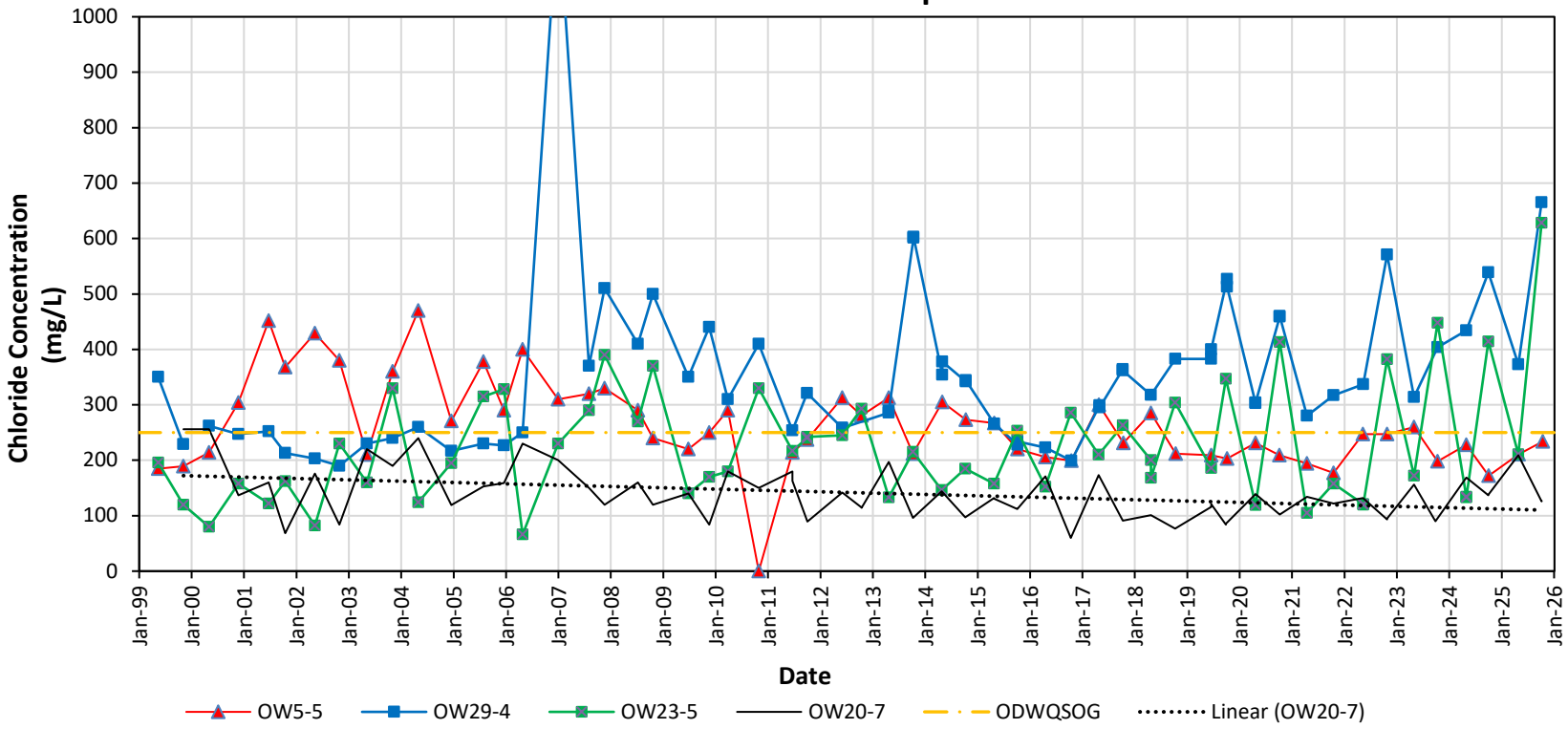


Figure 5-5
Chloride Concentrations Deep Southeast Wells
Hanover-Walkerton Waste Disposal Site

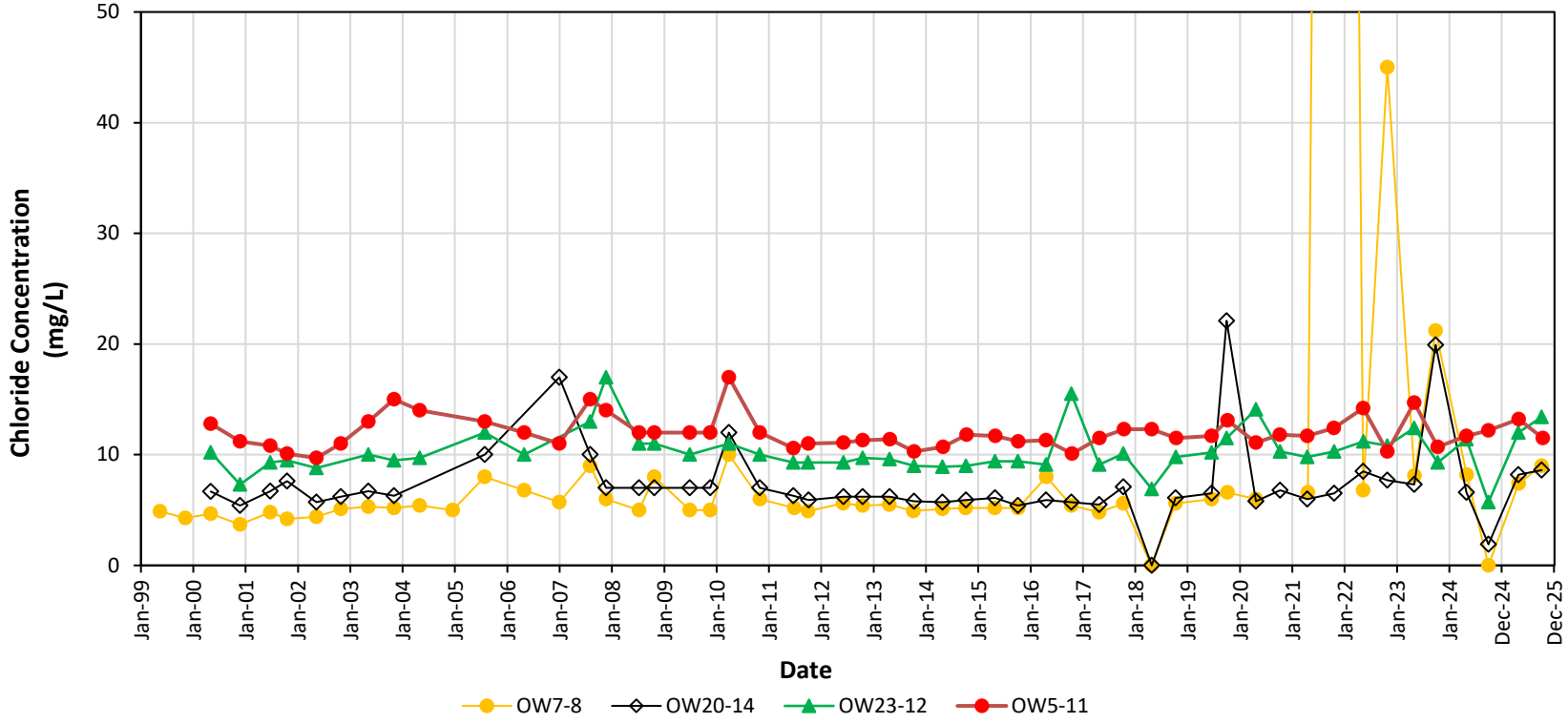


Figure 5-6
Chloride Concentrations South Wells
Hanover-Walkerton Waste Disposal Site

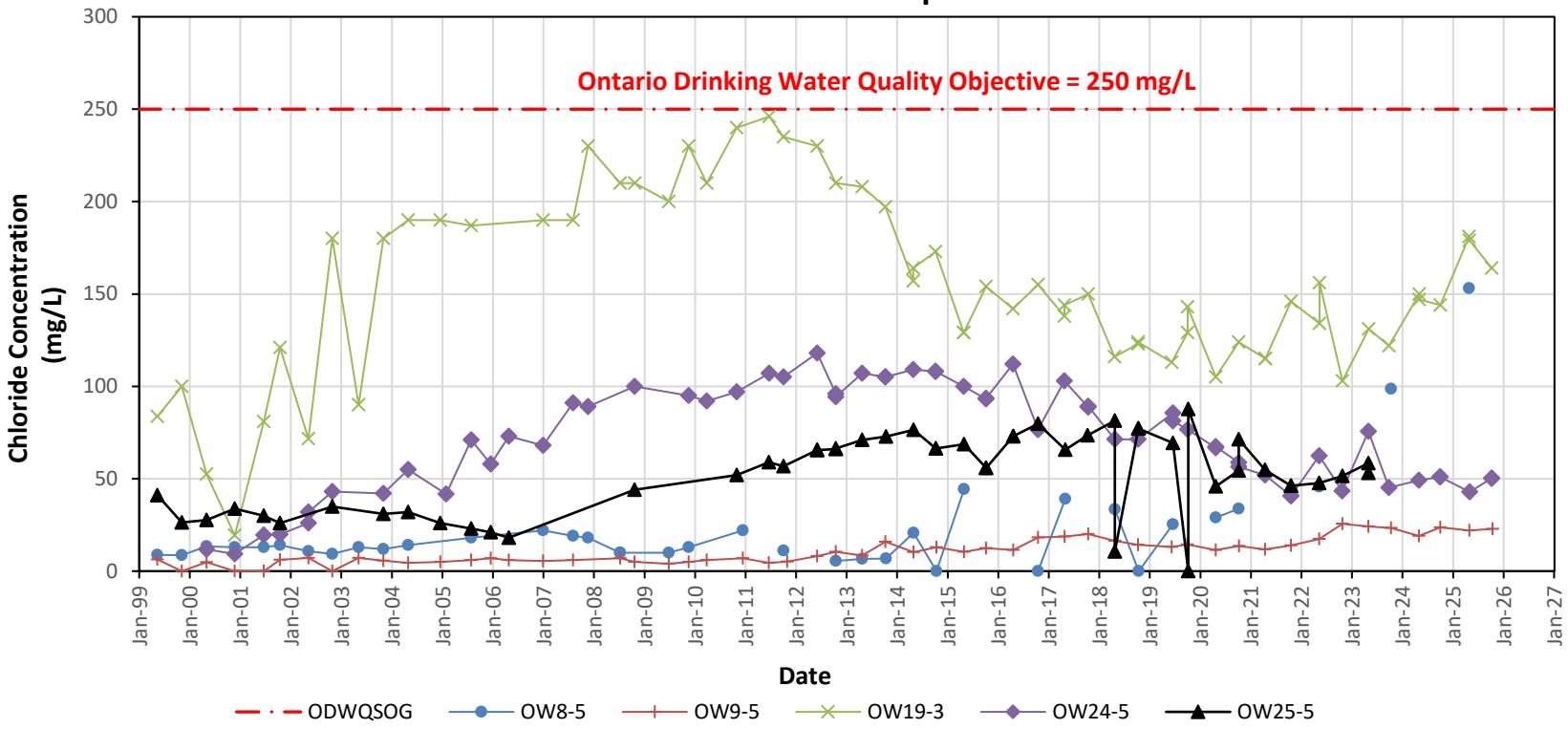


Figure 5-7a
Chlorides Southern Boundary - Reasonable Use
Hanover-Walkerton Waste Disposal Site

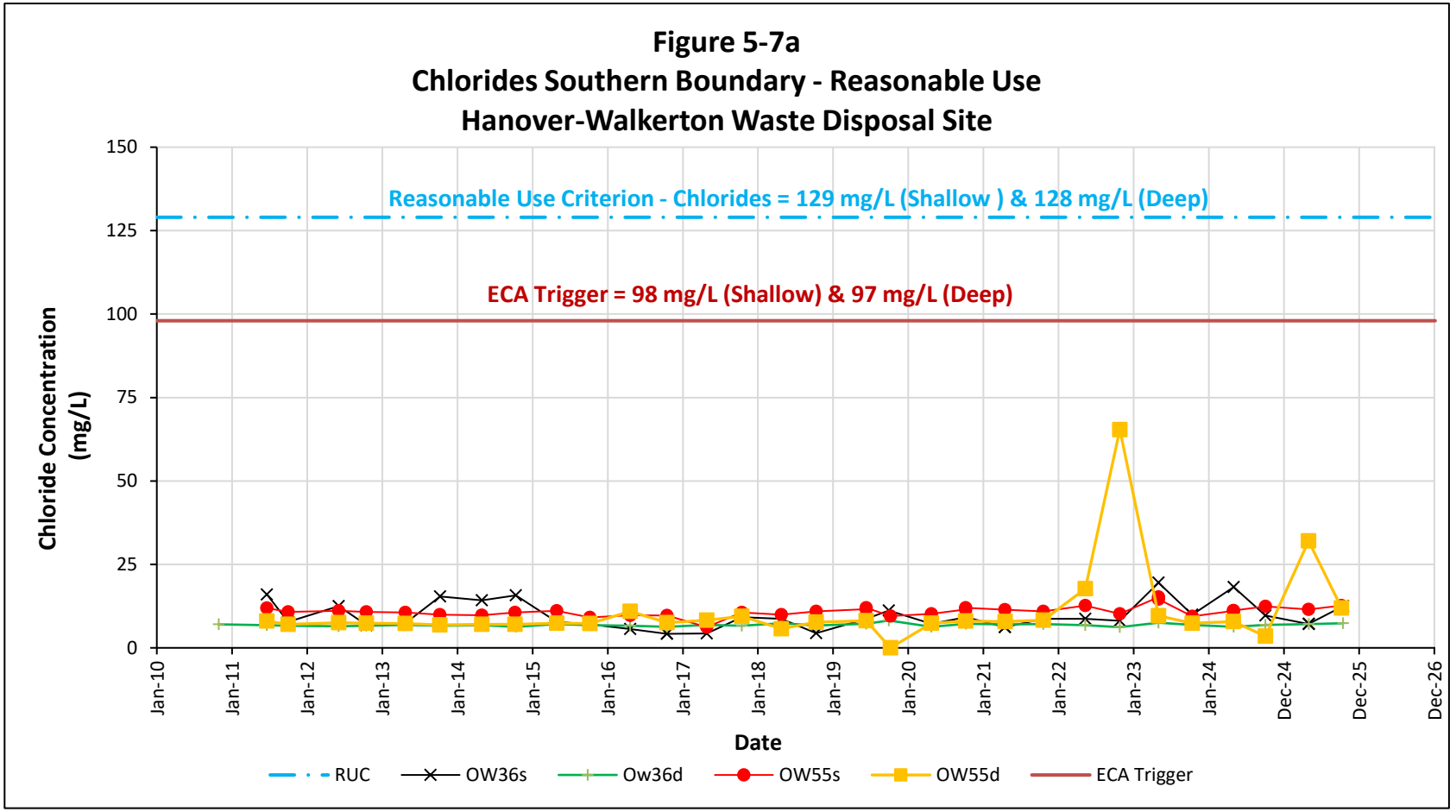


Figure 5-7b
Boron Southern Boundary - Reasonable Use
Hanover-Walkerton Waste Disposal Site

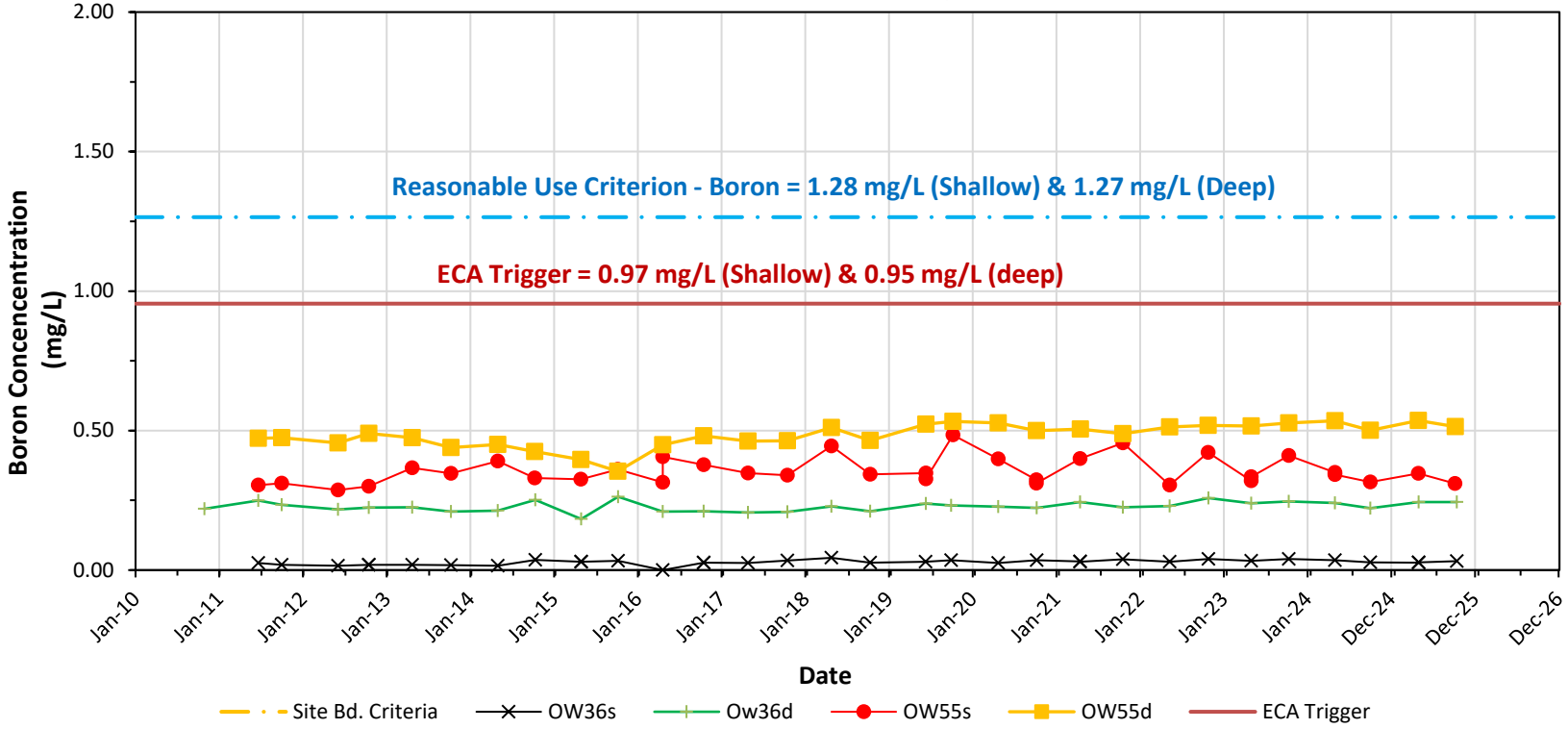


Figure 5-8a
Chloride Concentrations Site Boundary Saugeen River Floodplain
Hanover-Walkerton Waste Disposal Site

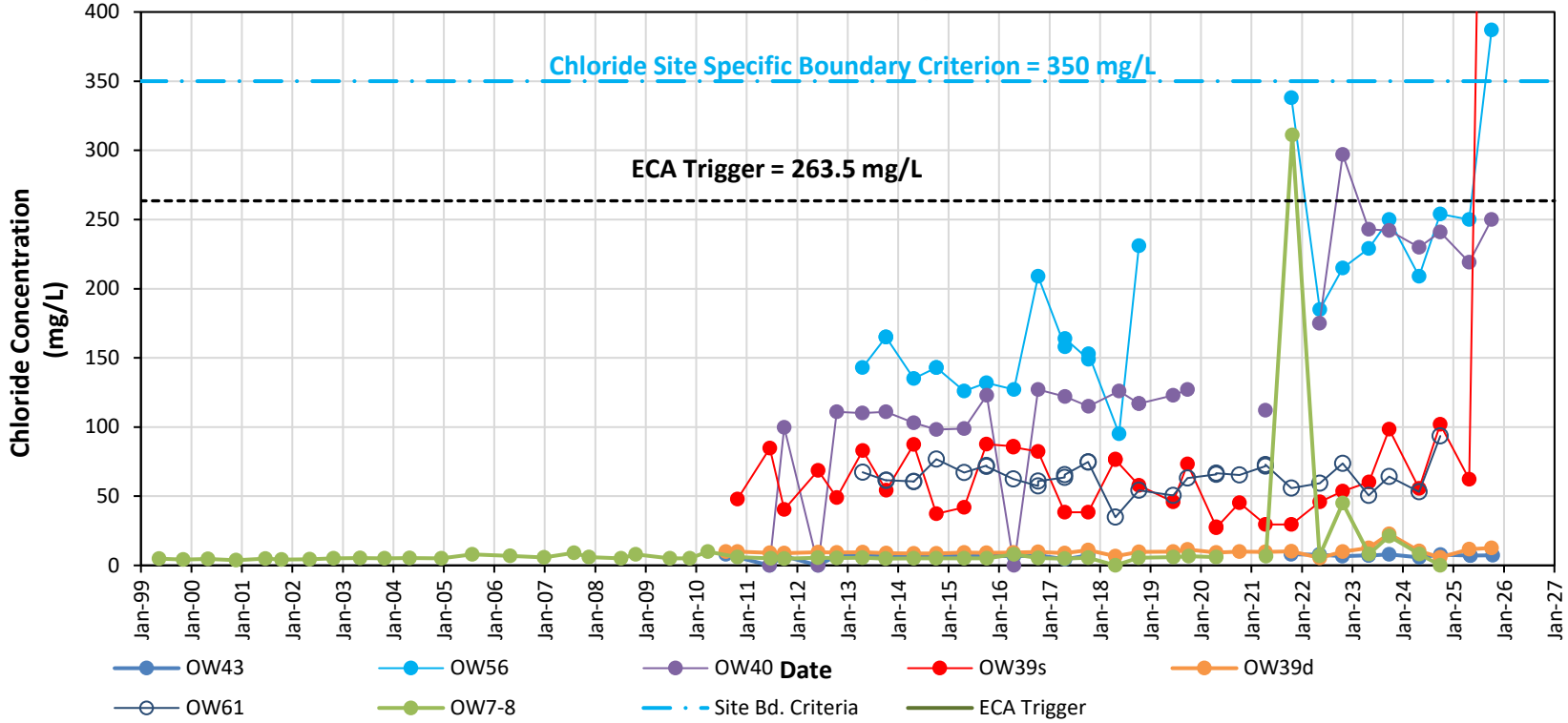


Figure 5-8b
Boron Concentrations Site Boundary Saugeen River Floodplain
Hanover-Walkerton Waste Disposal Site

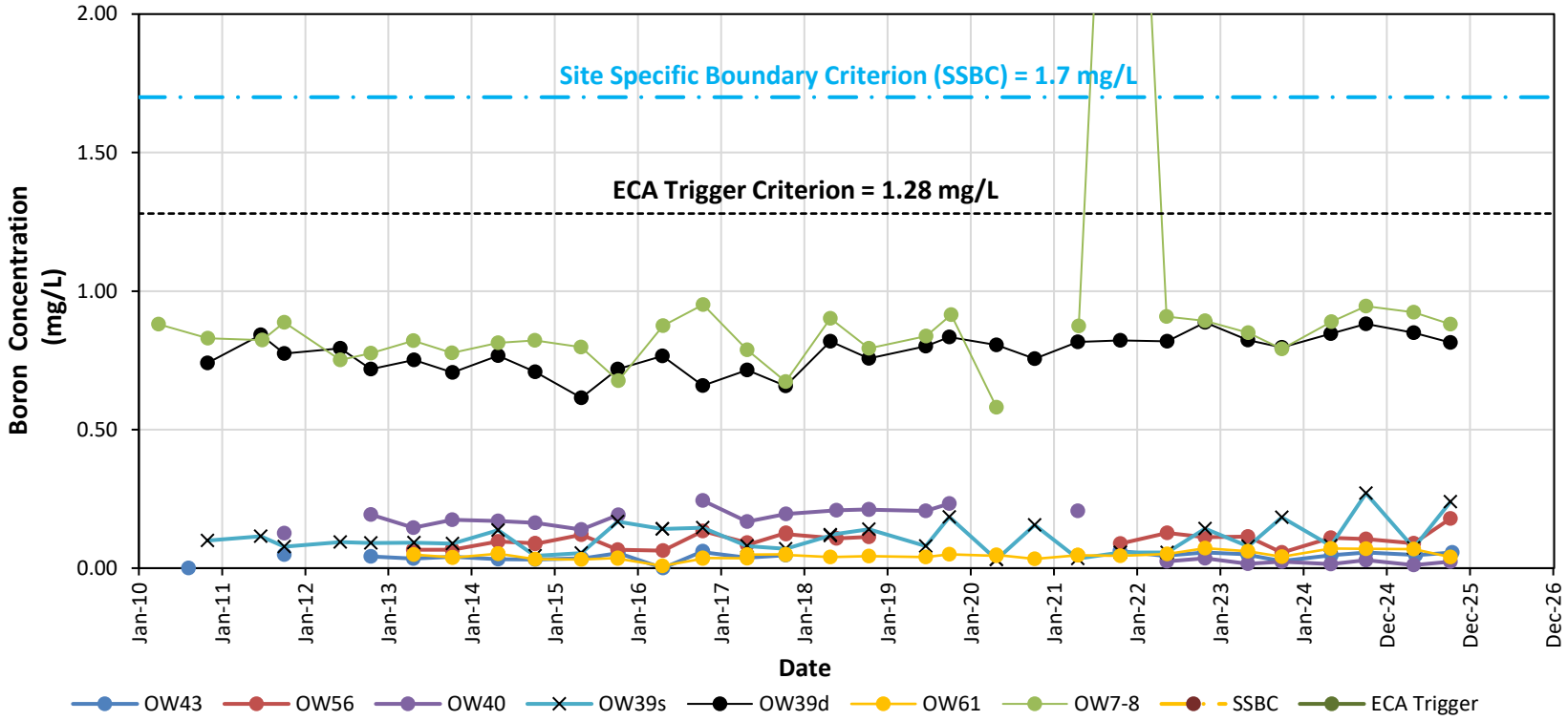
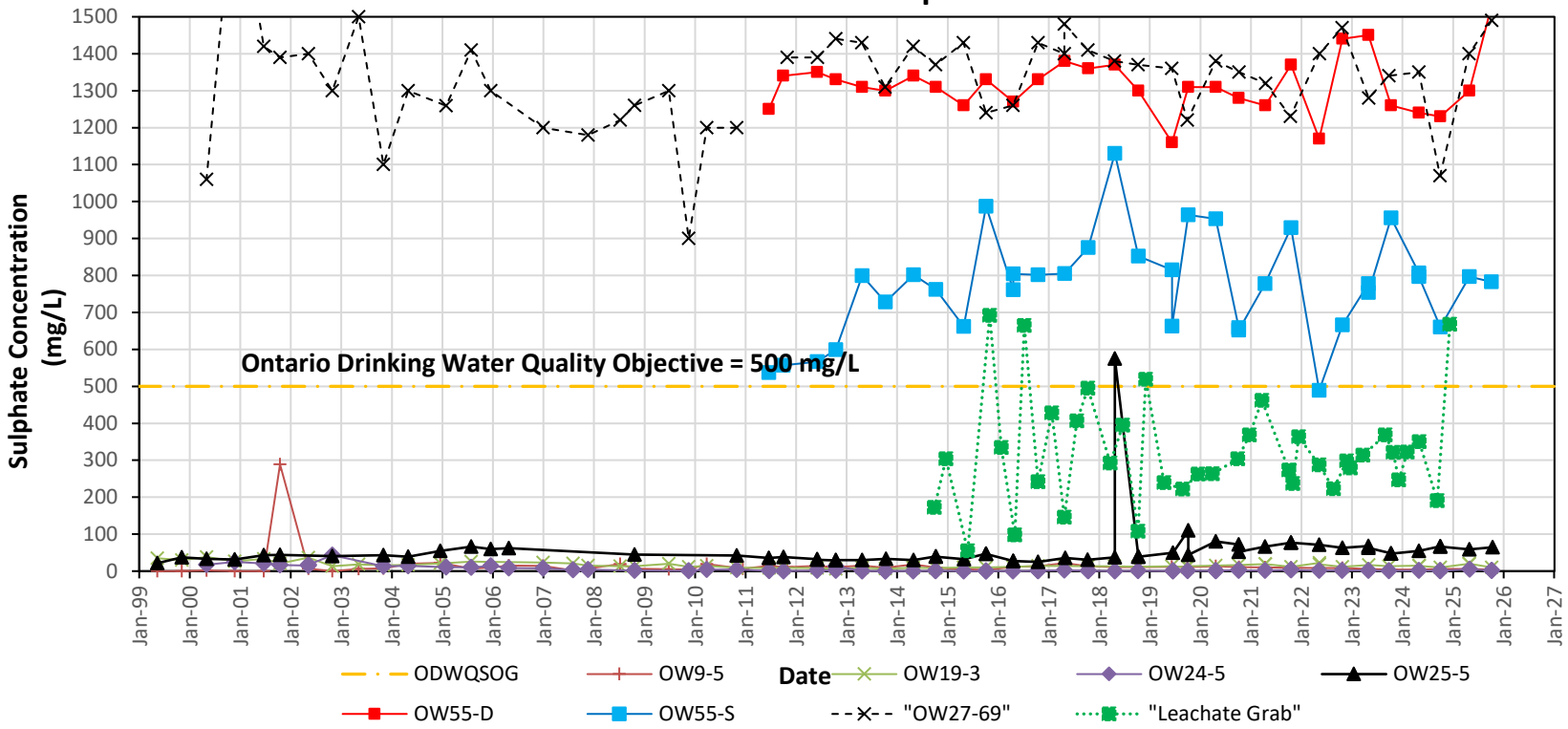
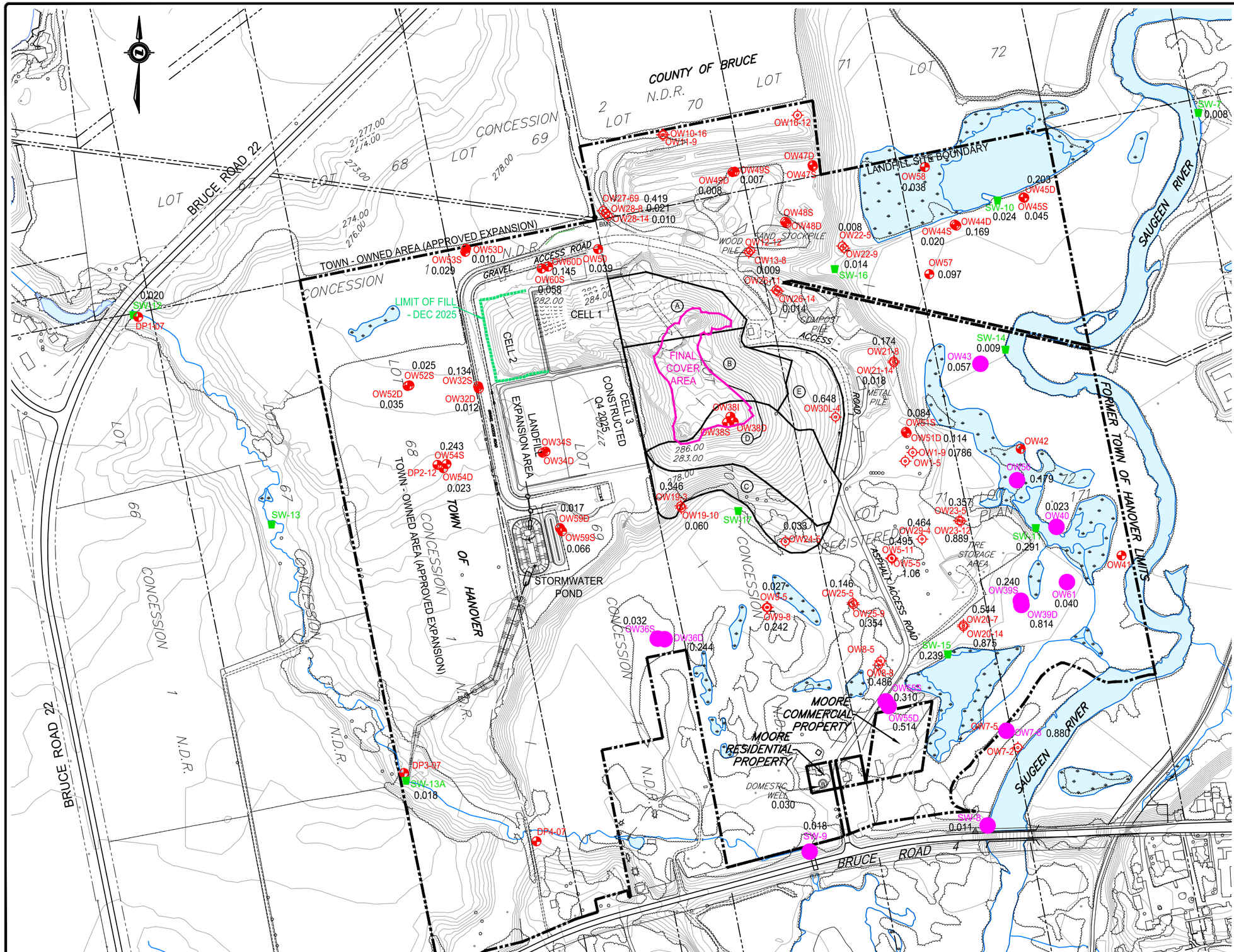


Figure 5-9
Sulphate Concentrations South Wells
Hanover-Walkerton Waste Disposal Site





NOTES:

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5. ELEVATIONS ARE GEODETIC.

LEGEND

- PROPERTY BOUNDARY
- OW45D — EXISTING OBSERVATION WELL AND ID NUMBER (2007 AND LATER)
- OW1-9 — EXISTING OBSERVATION WELL AND ID NUMBER (PRE 2007)
- SW-8 — CURRENT SURFACE WATER SAMPLING LOCATION (SW7 TO SW17)
- LOCATIONS - TRIGGER
- 0.215 — BORON CONCENTRATION (mg/L)
- EXISTING GRAVEL ROAD
- EXISTING PAVED ROAD
- EXISTING CONTOUR
- EXISTING LANDFILL LIMIT & PHASES
- EXPANSION LIMIT
- LOT / CONCESSION FABRIC
- LIMIT OF FINAL COVER AREA
- LIMIT OF FILL DECEMBER 2025

SCALE 1:5000 (11x17)

50 0 25 50 100 150 250 METRES

200 100 0 200 500 750 FEET

No.	DATE	DESCRIPTION	BY	APPD
7	APR 14/26	UPDATED TOPOGRAPHY	TLB	SJC
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2	APR 27/21	UPDATED TOPOGRAPHY	TLB	SJC
1	APR 21/20	UPDATED TOPOGRAPHY	TLB	SJC

REVISION / ISSUE

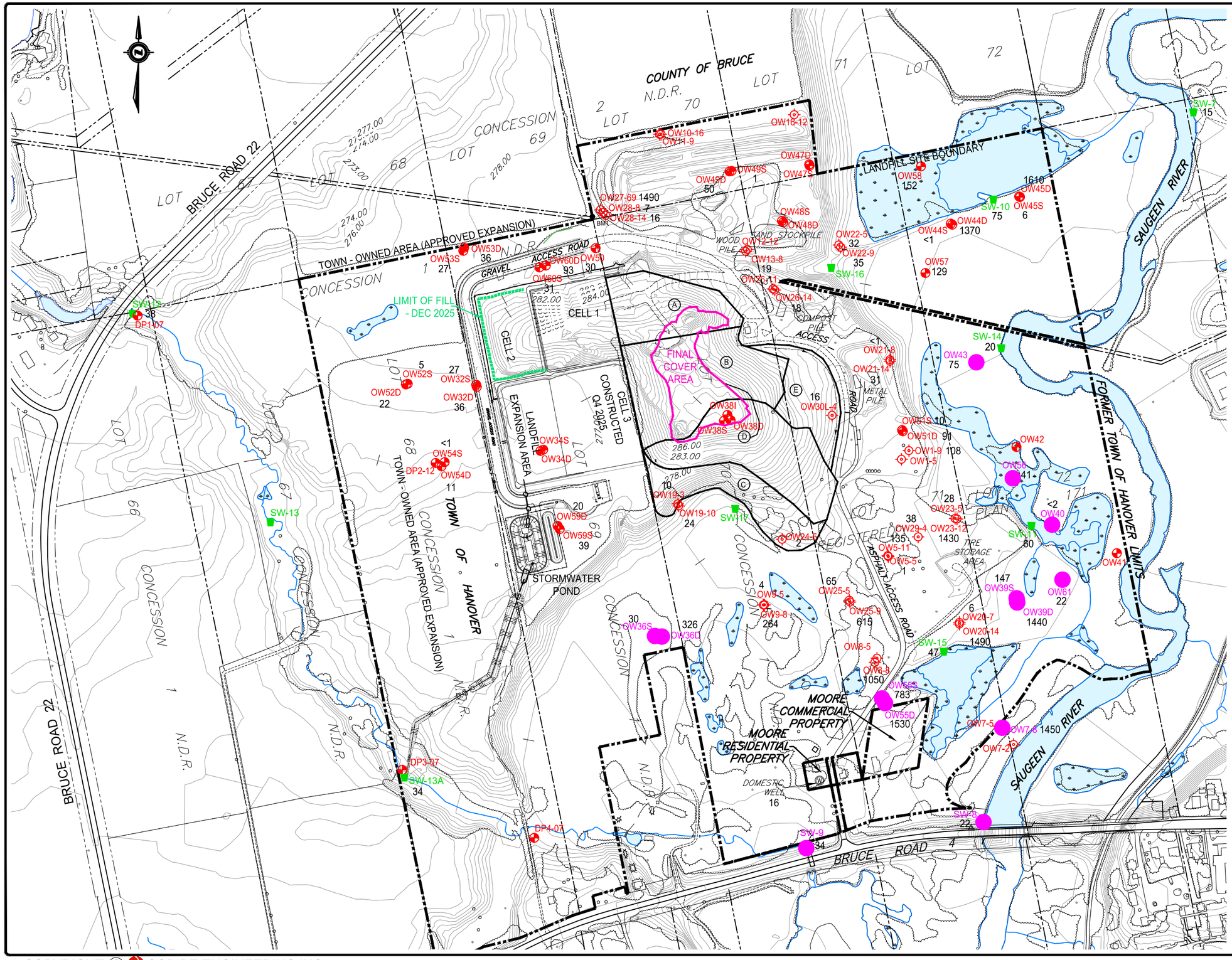
Title: HANOVER / WALKERTON WASTE DISPOSAL SITE MUNICIPALITY OF BROCKTON BORON CONCENTRATIONS FALL 2025

Client: TOWN OF HANOVER

COBIDE ENGINEERING INC
517 10th St, Hanover, ON N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Design:	TLB	Scale:	1:5000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2020		Design Engineer

DRAWING No. 10020-FIG6



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5. ELEVATIONS ARE GEODETIC.

LEGEND

- PROPERTY BOUNDARY
- OW45D — EXISTING OBSERVATION WELL AND ID NUMBER (2007 AND LATER)
- OW1-9 — EXISTING OBSERVATION WELL AND ID NUMBER (PRE 2007)
- SW-8 — CURRENT SURFACE WATER SAMPLING LOCATION (SW7 TO SW17)
- LOCATIONS - TRIGGER
- 18 — SULPHATE CONCENTRATION (mg/L)
- EXISTING GRAVEL ROAD
- EXISTING PAVED ROAD
- EXISTING CONTOUR
- EXISTING LANDFILL LIMIT & PHASES
- EXPANSION LIMIT
- LOT / CONCESSION FABRIC
- LIMIT OF FINAL COVER AREA
- LIMIT OF FILL DECEMBER 2025

SCALE 1:5000 (11x17)

50 0 25 50 100 150 250 METRES

200 100 0 200 500 750 FEET

No.	DATE	DESCRIPTION	BY	APPD
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3	APR 18/22	UPDATED TOPOGRAPHY	TLB	SJC
2	APR 27/21	UPDATED TOPOGRAPHY	TLB	SJC
1	APR 21/20	UPDATED TOPOGRAPHY	TLB	SJC

REVISION / ISSUE

Title: HANOVER / WALKERTON WASTE DISPOSAL SITE MUNICIPALITY OF BROCKTON SULPHATE CONCENTRATIONS FALL 2025

Client: TOWN OF HANOVER

COBIDE ENGINEERING INC
517 10th St, Hanover, ON N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Design:	TLB	Scale:	1:5000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2020		Design Engineer

DRAWING No. 10020-FIG7

C:\Users\jacobus\AppData\Local\Temp\AcPublish_10296\10020 Fig 3-4-5-6-7-8-9.dwg Apr 28, 2026 - 4:21pm

NOTES:

1. LANDFILL BOUNDARY DERIVED FROM PLAN 3R-2496. POSITION OF ADDITIONAL PROPERTY LINES DERIVED FROM COUNTY OF BRUCE ASSESSMENT MAPPING.
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5. ELEVATIONS ARE GEODETIC.

LEGEND

- PROPERTY BOUNDARY
- OW45D — EXISTING OBSERVATION WELL AND ID NUMBER (2007 AND LATER)
- OW1-9 — EXISTING OBSERVATION WELL AND ID NUMBER (PRE 2007)
- SW-8 — CURRENT SURFACE WATER SAMPLING LOCATION (SW7 TO SW17)
- LOCATIONS - TRIGGER
- 4.71 — ORGANIC NITROGEN CONCENTRATION (mg/L)
- EXISTING GRAVEL ROAD
- EXISTING PAVED ROAD
- EXISTING CONTOUR
- EXISTING LANDFILL LIMIT & PHASES
- EXPANSION LIMIT
- LOT / CONCESSION FABRIC
- LIMIT OF FINAL COVER AREA
- LIMIT OF FILL DECEMBER 2025

SCALE 1:5000 (11x17)

50 0 25 50 100 150 250 METRES

200 100 0 200 500 750 FEET

No.	DATE	DESCRIPTION	BY	APPD
7	APR 14/26	UPDATED TOPOGRAPHY	TLB	SJC
6	FEB 24/25	UPDATED TOPOGRAPHY	TLB	SJC
5	FEB 27/24	UPDATED TOPOGRAPHY	TLB	SJC
4	FEB 14/23	UPDATED TOPOGRAPHY	TLB	SJC
3	APR 18/22	UPDATED TOPOGRAPHY	TLB	SJC
2	APR 27/21	UPDATED TOPOGRAPHY	TLB	SJC
1	APR 21/20	UPDATED TOPOGRAPHY	TLB	SJC

REVISION / ISSUE

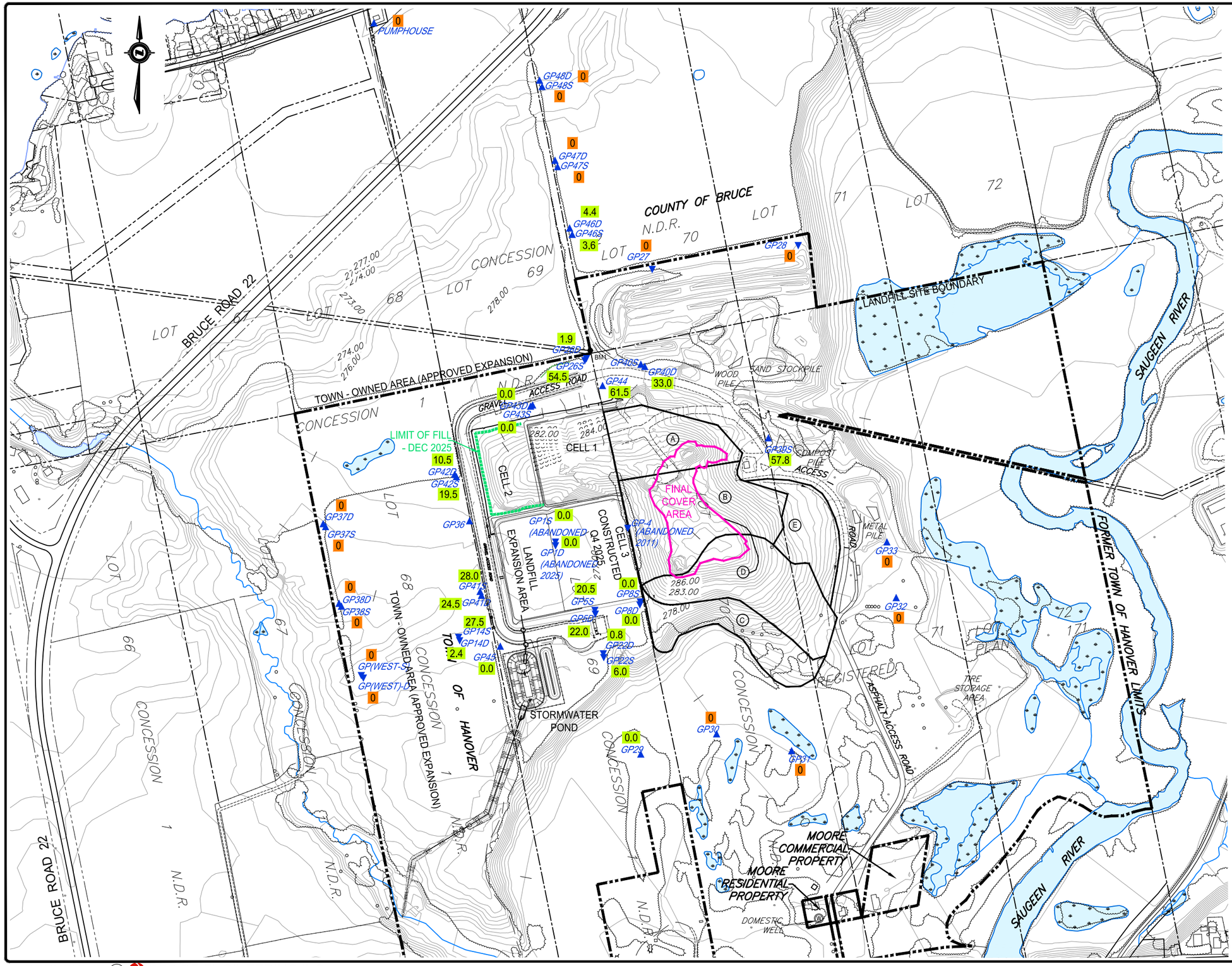
Title: HANOVER / WALKERTON WASTE DISPOSAL SITE MUNICIPALITY OF BROCKTON ORGANIC NITROGEN CONCENTRATIONS FALL 2025

Client: TOWN OF HANOVER

COBIDE ENGINEERING INC
517 10th St, Hanover, ON N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Design:	TLB	Scale:	1:5000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2020		Design Engineer

DRAWING No. 10020-FIG8



NOTES:

1. LANDFILL BOUNDARY DERIVED FROM PLAN 3R-2496. POSITION OF ADDITIONAL PROPERTY LINES DERIVED FROM COUNTY OF BRUCE ASSESSMENT MAPPING.
2. TOPOGRAPHICAL INFORMATION DERIVED FROM MAPPING PROVIDED BY NORTHWAY-PHOTOMAP INC. BASED ON AERIAL PHOTO DATED APRIL 25, 2001.
3. ADDITIONAL TOPOGRAPHICAL INFORMATION WITHIN THE LANDFILL AREA DERIVED FROM SITE SURVEYS BY D.J. PEACH & ASSOCIATES, CONESTOGA-ROVERS & ASSOCIATES LTD. AND PRYDE SCHROPP McCOMB INC. NOVEMBER 1998, JANUARY 2006, FEBRUARY 2007, JANUARY 2008, JANUARY 2009 AND JANUARY 2010.
4. GROUND CONTOURS AND TOPOGRAPHY IN ACTIVE LANDFILL AREA DERIVED FROM FIELD SURVEY BY COBIDE ENGINEERING INC. COMPLETED ON DECEMBER 22, 2025.
5. ELEVATIONS ARE GEODETIC.

LEGEND

- PROPERTY BOUNDARY
- ▲ GP44 — EXISTING GAS PROBE AND ID NUMBER (2007 AND LATER)
- ▼ GP-28 — EXISTING GAS PROBE AND ID NUMBER (PRE 2007)
- 4.71 — METHANE CONCENTRATION (%)
- EXISTING GRAVEL ROAD
- EXISTING PAVED ROAD
- EXISTING CONTOUR
- EXISTING LANDFILL LIMIT & PHASES
- EXPANSION LIMIT
- LOT / CONCESSION FABRIC
- LIMIT OF FINAL COVER AREA
- LIMIT OF FILL DECEMBER 2025

SCALE 1:5000 (11x17)

50 0 25 50 100 150 250 METRES

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No.	DATE	DESCRIPTION	BY	APPD
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5	FEB 27/24	UPDATED TOPOGRAPHY	TLB	SJC
4	FEB 14/23	UPDATED TOPOGRAPHY	TLB	SJC
3	APR 18/22	UPDATED TOPOGRAPHY	TLB	SJC
2	APR 27/21	UPDATED TOPOGRAPHY	TLB	SJC
1	APR 21/20	UPDATED TOPOGRAPHY	TLB	SJC

REVISION / ISSUE

Title: HANOVER / WALKERTON WASTE DISPOSAL SITE MUNICIPALITY OF BROCKTON METHANE CONCENTRATIONS DECEMBER 2025

Client: TOWN OF HANOVER

COBIDE ENGINEERING INC
517 10th St, Hanover, ON N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Design:	TLB	Scale:	1:5000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2020		Design Engineer

DRAWING No. 10020-FIG9

General Ledger

Annual Department Budget vs. Actual Comparison Report

Fiscal Year Ending: DEC 31,2026 - From Period 1 To Period 5 Ending MAY 31,2026

Account	Description	Previous Year Total Actual	Previous Year Total Budget	Current Year To Date Actual	Current Year To Date Budget	Budget Remaining
Fund: 31 Landfill						
Category: 1???						
1220 Future Benefits						
Expense						
31-1220-1540	POST EMPLOYMENT BENEFITS	596.00	0.00	0.00	0.00	0.00
31-1220-5220	CHANGE IN AMOUNTS TO BE REC	(596.00)	0.00	0.00	0.00	0.00
Total Expense		0.00	0.00	0.00	0.00	0.00
Dept Excess Revenue Over (Under) Expenditures		0.00	0.00	0.00	0.00	0.00
Category Excess Revenue Over (Under) Expenditures		0.00	0.00	0.00	0.00	0.00
Category: 4???						
4500 Hanover Walkerton Landfill Site						
Revenue						
31-4500-0521	GRANTS & SUBSIDIES	5,257.14	4,500.00	355.75	1,875.00	4,144.25
31-4500-0536	FEES-TIRES	0.00	0.00	0.00	0.00	0.00
31-4500-0560	FEES-APPLIANCES	162.50	500.00	0.00	208.31	500.00
31-4500-0561	FEES-RESIDENTS(CASH CUST.)	327,606.52	250,000.00	89,759.64	108,333.31	170,240.36
31-4500-0562	FEES-COMMERCIAL ACCOUNTS	560,944.91	460,000.00	211,177.41	197,916.69	263,822.59
31-4500-0579	MISC. FEES	78,164.30	61,000.00	12,757.57	16,041.69	25,742.43
31-4500-0747	FARMLAND LEASE	6,440.00	6,400.00	0.00	2,666.69	6,400.00
31-4500-0921	SHORT TERM DEPOSIT INTEREST	0.00	0.00	0.00	0.00	0.00
31-4500-0922	MONTHLY BANK INTEREST	58,639.57	50,000.00	4,992.11	16,666.69	35,007.89
31-4500-0934	TRANSFER FROM RESERVES	1,905,349.64	1,797,900.00	0.00	0.00	0.00
31-4500-0945	TRANSFER FROM TOWN OF HAN(	210,000.00	469,500.00	0.00	91,875.00	220,500.00
31-4500-0946	TRANSFER FROM MUN. OF BROC	210,000.00	469,500.00	55,125.00	91,875.00	165,375.00
31-4500-0999	PROCEEDS ON DISPOSAL	0.00	0.00	0.00	0.00	0.00
Total Revenue		3,362,564.58	3,569,300.00	374,167.48	527,458.38	891,732.52
Expense						
31-4500-1110	REGULAR SALARIES	126,194.51	107,600.00	42,854.57	46,916.69	69,745.43
31-4500-1111	PART-TIME SALARIES	48,483.32	44,000.00	18,031.63	20,958.31	32,268.37
31-4500-1112	OVERTIME (TIME & HALF)	1,727.58	400.00	506.79	166.69	(106.79)
31-4500-1113	OVERTIME (DOUBLE TIME)	0.00	0.00	110.48	0.00	(110.48)
31-4500-1122	STIPENDS-BOARDS,COMMISS,CC	0.00	0.00	0.00	0.00	0.00
31-4500-1152	WAGE ACCRUAL(ANN.ADJ./AUDIT	(904.60)	0.00	(8,596.94)	0.00	8,596.94
31-4500-1510	EMPLOYEE BENEFITS	48,362.38	49,700.00	18,300.12	20,833.31	31,699.88
31-4500-1516	WSIB	4,954.21	4,600.00	1,770.20	1,916.69	2,829.80
31-4500-1517	EXCESS INDEMNITY INSURANCE	0.00	0.00	0.00	0.00	0.00
31-4500-1519	EMPLOYEE ASSISTANCE PROGR/	80.60	0.00	20.15	0.00	(20.15)
31-4500-2214	UNIFORMS & CLOTHING	1,308.54	1,000.00	256.43	416.69	743.57
31-4500-3110	PROF.DEV./TRAINING/TRAVEL	1,394.88	700.00	0.00	316.69	760.00
31-4500-3128	SUBSCRIPTIONS & MEMBERSHIP:	0.00	0.00	0.00	0.00	0.00
31-4500-3210	POSTAGE & FAX	908.48	700.00	230.01	291.69	469.99
31-4500-3212	TELEPHONE	534.24	1,200.00	259.98	500.00	940.02
31-4500-3214	OFFICE SUPPLIES & STATIONERY	183.18	0.00	96.74	16.69	(56.74)

General Ledger

Annual Department Budget vs. Actual Comparison Report

Fiscal Year Ending: DEC 31,2026 - From Period 1 To Period 5 Ending MAY 31,2026

Account	Description	Previous Year Total Actual	Previous Year Total Budget	Current Year To Date Actual	Current Year To Date Budget	Budget Remaining
31-4500-3215	PRINTING & ADVERTISING	510.36	500.00	0.00	208.31	500.00
31-4500-3217	SECURITY MONITORING	0.00	0.00	0.00	0.00	0.00
31-4500-3310	AUDIT SERVICE	8,141.28	5,600.00	0.00	3,500.00	8,400.00
31-4500-3311	LEGAL SERVICE/CONSULTANTS	12,680.02	40,000.00	53.94	16,666.69	39,946.06
31-4500-3325	COMPUTER SERVICES/SUPPLIES	875.05	300.00	331.35	125.00	(31.35)
31-4500-3410	PROPERTY MAINTENANCE/PURC	17,502.24	18,000.00	5,957.90	7,708.31	12,542.10
31-4500-3415	ROAD MAINTENANCE/REPAIRS	2,757.56	5,500.00	1,438.00	2,083.31	3,562.00
31-4500-3507	WEIGH SCALE MTC CONTRACT	15,263.65	7,000.00	0.00	3,333.31	8,000.00
31-4500-3526	ANN.MONITORING(ENGINEER)	86,045.50	71,000.00	8,697.03	31,666.69	67,302.97
31-4500-3527	LEACHATE HAULING	263,485.10	198,000.00	92,931.88	89,583.31	122,068.12
31-4500-3543	SITE OR CELL CLOSURE	0.00	0.00	0.00	0.00	0.00
31-4500-3546	HOUSEHOLD HAZARDOUS WASTI	400.00	16,400.00	16,633.20	7,125.00	466.80
31-4500-3555	RECYCLING/WASTE DIVERSION	12,002.35	16,900.00	3,301.60	7,208.31	13,998.40
31-4500-3614	LABORATORY SERVICES	25,406.28	19,500.00	0.00	8,125.00	19,500.00
31-4500-3623	MACHINERY RENTAL-"TOWN EQU	52,185.25	48,200.00	14,377.00	20,166.69	34,023.00
31-4500-3624	MACHINERY RENTAL-"OUTSIDE"	16,917.60	19,000.00	0.00	8,333.31	20,000.00
31-4500-3710	INSURANCE (GENERAL)	13,898.52	14,800.00	13,925.52	6,375.00	1,374.48
31-4500-3714	HEATING FUEL	0.00	0.00	0.00	0.00	0.00
31-4500-3716	HYDRO (GENERAL SERVICE) #1	3,238.12	3,100.00	1,103.46	1,291.69	1,996.54
31-4500-3719	TAXES-BROCKTON-(BRANT)	10,115.78	10,500.00	2,529.00	4,375.00	7,971.00
31-4500-4121	MERCHANT FEES	1,687.41	1,600.00	494.76	666.69	1,105.24
31-4500-4126	ADMINISTRATION FEE (INTERNAL	77,300.00	77,300.00	0.00	32,875.00	78,900.00
31-4500-4340	MISC. UNCOLLECTABLES	0.00	0.00	0.00	0.00	0.00
31-4500-4410	CASHIER OVER/SHORT	376.16	0.00	(85.79)	0.00	85.79
31-4500-5210	TCA PURCHASES	1,905,349.64	2,720,000.00	33,547.73	0.00	(33,547.73)
31-4500-5212	TRANSFERS TO RESERVE FUND	0.00	0.00	0.00	0.00	0.00
31-4500-5213	TRANSFER TO RESERVES	544,533.93	0.00	0.00	157,250.00	377,400.00
31-4500-5220	CHANGES IN AMOUNTS TO BE RE	0.00	0.00	0.00	0.00	0.00
31-4500-5240	POST CLOSURE LIABILITY	0.00	0.00	0.00	0.00	0.00
31-4500-6000	AMORTIZATION EXPENSE - TCA	304,498.08	220,600.00	0.00	92,125.00	221,100.00
31-4500-6100	CHANGE IN INVESTMENT IN CAPI	(304,498.08)	(220,600.00)	0.00	(92,125.00)	(221,100.00)
31-4500-7000	ACCRETION EXPENSE - ARO	172,212.31	0.00	0.00	71,750.00	172,200.00
31-4500-7100	CHANGE IN ARO LIABILITY	(151,219.40)	0.00	0.00	(63,000.00)	(151,200.00)
31-4500-7200	FUNDED ARO PORTION-Reduces /	(20,992.91)	0.00	0.00	(8,750.00)	(21,000.00)
Total Expense		3,303,899.12	3,503,100.00	269,076.74	501,000.07	933,323.26
Dept Excess Revenue Over (Under) Expenditures		58,665.46	66,200.00	105,090.74	26,458.31	(41,590.74)
4550 2015 Cat 816F Compactor						
Expense						
31-4550-2410	FUEL/OPERATIONS	45,080.50	52,100.00	76,568.76	22,291.69	(23,068.76)
Total Expense		45,080.50	52,100.00	76,568.76	22,291.69	(23,068.76)
Dept Excess Revenue Over (Under) Expenditures		(45,080.50)	(52,100.00)	(76,568.76)	(22,291.69)	23,068.76
4560 Densifier						
Revenue						
31-4560-0521	ONTARIO GRANTS	0.00	0.00	0.00	0.00	0.00
31-4560-0551	OTHER GRANTS	0.00	0.00	0.00	0.00	0.00
31-4560-0579	MISC. FEES	0.00	0.00	0.00	0.00	0.00

General Ledger

Annual Department Budget vs. Actual Comparison Report

Fiscal Year Ending: DEC 31,2026 - From Period 1 To Period 5 Ending MAY 31,2026

Account	Description	Previous Year Total Actual	Previous Year Total Budget	Current Year To Date Actual	Current Year To Date Budget	Budget Remaining
Total Revenue		0.00	0.00	0.00	0.00	0.00
Expense						
31-4560-1110	REGULAR SALARIES	0.00	0.00	0.00	0.00	0.00
31-4560-1111	PART-TIME SALARIES	0.00	0.00	0.00	0.00	0.00
31-4560-1510	EMPLOYEE BENEFITS	0.00	0.00	0.00	0.00	0.00
31-4560-1516	WSIB	0.00	0.00	0.00	0.00	0.00
31-4560-3413	EQUIPMENT MAINTENANCE	0.00	0.00	0.00	0.00	0.00
31-4560-3525	CONTRACTED STAFF	13,584.96	14,100.00	0.00	4,166.69	10,000.00
31-4560-3623	MACHINERY RENTAL-"TOWN EQU	0.00	0.00	0.00	0.00	0.00
31-4560-3710	INSURANCE	0.00	0.00	0.00	0.00	0.00
Total Expense		13,584.96	14,100.00	0.00	4,166.69	10,000.00
Dept Excess Revenue Over (Under) Expenditures		(13,584.96)	(14,100.00)	0.00	(4,166.69)	(10,000.00)
Category Excess Revenue Over (Under) Expenditures		0.00	0.00	28,521.98	(0.07)	(28,521.98)

General Ledger

Annual Department Budget vs. Actual Comparison Report

Fiscal Year Ending: DEC 31,2026 - From Period 1 To Period 5 Ending MAY 31,2026

Account	Description	Previous Year Total Actual	Previous Year Total Budget	Current Year To Date Actual	Current Year To Date Budget	Budget Remaining
REPORT SUMMARY						
31-4500	Hanover Walkerton Landfill Site	3,362,564.58	3,569,300.00	374,167.48	527,458.38	891,732.52
31-4560	Densifier	0.00	0.00	0.00	0.00	0.00
Fund 31 Total Revenue		3,362,564.58	3,569,300.00	374,167.48	527,458.38	891,732.52
31-1220	Future Benefits	0.00	0.00	0.00	0.00	0.00
31-4500	Hanover Walkerton Landfill Site	3,303,899.12	3,503,100.00	269,076.74	501,000.07	933,323.26
31-4550	2015 Cat 816F Compactor	45,080.50	52,100.00	76,568.76	22,291.69	(23,068.76)
31-4560	Densifier	13,584.96	14,100.00	0.00	4,166.69	10,000.00
Fund 31 Total Expenditure		3,362,564.58	3,569,300.00	345,645.50	527,458.45	920,254.50
Fund 31 Excess Revenue Over (Under) Expenditures		0.00	0.00	28,521.98	(0.07)	(28,521.98)
Report Total Revenue		3,362,564.58	3,569,300.00	374,167.48	527,458.38	891,732.52
Report Total Expenditure		3,362,564.58	3,569,300.00	345,645.50	527,458.45	920,254.50
Report Excess Revenue Over (Under) Expenditures		0.00	0.00	28,521.98	(0.07)	(28,521.98)

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL YTD	LAST Y-T-D	%
RECEIVABLES (TONNES)															
HANOVER RESIDENTIAL CURBSIDE PICKUP(Hanover Town Pickup	92.93	70.26	54.52										217.71	150.99	44.19%
WALKERTON RESIDENTIAL CURBSIDE PICKUP	63.48	37.38	37.67										138.53	100.04	38.47%
HANOVER PUBLIC WORKS & PARKS (ARENA INCLUDED) Tonne comm. No charge	0.03	0.00	0.33										0.36	4.70	-92.34%
WALKERTON PUBLIC WORKS & PARKS	1.63	10.76	6.07										18.46	8.84	108.82%
RESIDENTIAL (HANOVER/WALKERTON COMBINED)	134.14	104.45	156.75										395.34	151.81	160.42%
RESIDENTIAL - HANOVER ONLY	92.52	72.04	110.69										275.25	97.28	182.95%
RESIDENTIAL - WALKERTON ONLY	41.62	32.41	46.06										120.09	54.53	120.23%
COMMERCIAL (HANOVER/WALKERTON COMBINED)	307.64	251.71	305.97										865.32	434.00	99.38%
COMMERCIAL - HANOVER ONLY	297.41	240.81	299.21										837.43	401.90	108.37%
COMMERICAL - WALKERTON ONLY	10.23	10.90	6.76										27.89	32.10	-13.12%
COMMERCIAL - NON-SORTED WASTE	0.72	0.00	0.00										0.72	2.83	-74.56%
DEMOLITION MATERIALS	0.00	0.00	0.00										0.00	0.00	
TIRES	4	10	0										14	20.00	-30.00%
APPLIANCES	0	0	0										0	2.00	-100.00%
MATTRESS	18	10	25										53	14.00	278.57%
ASBESTOS INSULATION	0.16	0.72	0.19										1.07	1.68	-36.31%
TOTAL RECEIVABLES	600.73	475.28	561.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1637.51	854.89	91.55%
GRANULAR 'A'	0.00	0.00	0.00										0.00	0.00	
GRANULAR 'B'	0.00	0.00	0.00										0.00	0.00	
SEALER CLAY	0.00	0.00	0.00										0.00	0.00	
SAND - CATCHBASINS	0.00	0.00	0.00										0.00	0.00	
NON-HAZARDOUS SOIL	0.00	0.00	0.00										0.00	0.00	
ASPHALT - HANOVER PUBLIC WORKS	0.00	0.00	0.00										0.00	0.00	
ASHPALT - HANOVER CONSTRUCTION PROJECTS	0.00	0.00	0.00										0.00	0.00	
ASPHALT - OTHER SOURCES	0.00	0.00	0.00										0.00	0.00	
CLEAN FILL - HANOVER PUBLIC WORKS	0.00	0.00	0.00										0.00	0.00	
CLEAN FILL - WALKERTON PUBLIC WORKS	0.00	0.00	0.00										0.00	0.00	
CLEAN FILL - HANOVER CONSTRUCTION PROJECTS	0.00	0.00	0.00										0.00	0.00	
CLEAN FILL - WALKERTON CONSTRUCTION PROJECTS	0.00	0.00	0.00										0.00	0.00	
CLEAN FILL - HOUSE DEMO	0.00	0.00	0.00										0.00	0.00	
CLEAN FILL - OTHER SOURCES	0.00	0.00	0.00										0.00	4.98	-100.00%
TOPSOIL - HANOVER PUBLIC WORKS	0.00	0.00	0.00										0.00	0.00	
TOPSOIL - OTHER SOURCES	0.00	0.01	0.00										0.01	0.00	100.00%
CONCRETE - HANOVER PUBLIC WORKS	0.00	0.00	0.00										0.00	0.00	
CONCRETE-HANOVER CONSTRUCTION PROJECTS	0.00	0.00	0.00										0.00	0.00	
CONCRETE - OTHER SOURCES	0.00	0.00	4.87										4.87	6.26	-22.20%
DIVERSIONS (TONNES)															
RECYCLABLES	0.00	0.00	0.00										0.00	14.05	-100.00%
CARDBOARD	0.00	0.00	0.00										0.00	11.59	-100.00%
DRYWALL	0.00	0.00	0.00										0.00	0.00	
SHINGLES	0.00	0.00	0.00										0.00	0.00	
METAL (out)	0.00	0.00	0.00										0.00	0.00	
STYROFOAM	0.00	0.00	0.00										0.00	0.00	
BRUSH	0.00	0.00	0.00										0.00	1.22	-100.00%
COMPOST (includes Wood Chips)	1.70	0.70	2.76										5.16	3.72	38.71%
FILM PLASTICS	0.00	0.00	0.00										0.00	0.91	-100.00%
TOTAL DIVERSIONS	1.70	0.70	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.16	31.49	-83.61%
TIRES												Total			