RLC-HydroG

October 1, 2025
Project Number: 25033

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Re: Technical Review - Memorandum
Environmental Impacts and Contaminant Hydrogeology
Smiths Falls Compost Site
3514 Highway 43, Smiths Falls, Ontario

1 Introduction

RLC-HydroG was retained by Town of Smiths Falls to prepare a technical review memorandum addressing environmental impacts, contaminant hydrogeology, and impact delineation at the Smiths Falls Compost Site, located at 3514 Highway 43, Smiths Falls, Ontario.

The Smiths Falls Compost Site has been in operations since 1993. The site is operated under an amended Certificate of Approval (A-500-4331235233, September 11, 2025).

2 Review Documents

- RLC-HydroG, 2025. Hydrogeological Assessment, Smiths Falls Compost Site, 3514 Highway 43, Smiths Falls, Ontario (July 8, 2025).
- St. Lawrence Testing & Inspection Co. Ltd. (SLT), 2024. Proposed Snow Dump Site, Smiths Falls, ON, Environmental Soil Assessment, Report No.24C049 (March 19, 2024).
- St. Lawrence Testing & Inspection Co. Ltd. (SLT), 2024. Smiths Fall Compost Site, Smiths Falls, ON, Environmental Soil Assessment, Report No.24C265 (December 30, 2024).
- St. Lawrence Testing & Inspection Co. Ltd. (SLT), 2025. Smiths Fall Compost Site, Smiths Falls, ON, Creek Water Assessment, Report No.25C050 (April 4, 2025).
- St. Lawrence Testing & Inspection Co. Ltd. (SLT), 2025. Property Located at the Smiths Falls Compost Site, 3514 Lanark County Road 43, Smiths Falls, ON, Environmental Assessment, Report 25C163 (July 4, 2025).

3 Terms of Reference

The technical review was conducted with reference to the following documents:

- Ontario Regulation 153/04, Records of Site Condition. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, 2004 (as amended).

- Ontario Regulation 347: General – Waste Management, 1990 (as amended).
- Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG) as amended/revised under Ontario Regulation 169/03, 2021, 2003, Revised 2006 (as amended).
- Provincial Water Quality Objectives (PWQO), Water Management, Policies, Guidelines, Provincial Water Quality Objectives, 1994.
- Ontario Safe Drinking Water Act,. S.O. 2002, c. 32, 2002 (as amended).

4 Reviewer Qualifications & Experience

Russell Chown (P.Geo.) has worked in the Canadian environmental, resource and land development sectors for 25 years. He has worked as a professional geoscientist for 33 years. He is a registered Professional Geoscientist in Ontario (since 2002), and has a comprehensive knowledge of resource hydrogeology, contaminant hydrogeology, environmental site assessment, site remediation, and solid waste management. He is an MECP registered 'Qualified Person' (QP) with an environmental site assessment (ESA) designation. He has extensive experience with hydrogeological assessments, contaminant hydrogeology, phased environmental site assessments (ESAs), and contaminated site remediation. He has successfully completed hundreds of environmental assessment and contaminant hydrogeology projects across Ontario at residential, commercial, and industrial sites; and for Provincial government departments, Federal government departments, and Municipalities.

Provincial and Federal government clients with projects that involved contaminant hydrogeology have included:

- Ontario Ministry of Environment, Conservation and Parks (MECP)
- Ontario Ministry of Transportation (MTO)
- Public Services and Procurement Canada (PSPC)
- Correctional Service Canada (CSC)
- Transport Canada
- Canadian Coast Guard (CCG)

Municipal clients with projects that involved contaminant hydrogeology have included:

- Lanark County
- The United Counties of Prescott and Russell (UCPR)
- Tay Valley Township
- Township of South Stormont
- Municipality of South Dundas
- City of Ottawa
- National Capital Commission
- City of Cornwall
- Township of Augusta
- Kahnawake Mohawk Nation
- City of Kingston
- Township of Faraday

5 Review Comments

RLC-HydroG's technical review of the above listed documents (see Section 1 of this memorandum) identified the following critical information:

5.1 Contaminant Hydrogeology and Delineation

When land is being studied for potential development or redevelopment, one of the key steps is environmental assessment. These studies often include a component called contaminant hydrogeology, which looks at how contaminants (if present) occur at a site and how they might be moving through soil and groundwater.

Contaminant hydrogeology is a central part of most phased Environmental Site Assessments (ESAs). An ESA is a step-by-step process used to investigate if a property has been adversely affected by contamination and, if so, how serious the issue is.

A goal of these assessments is delineation, which is the identification and mapping of the extent of contamination at a site. Delineation is an iterative process. Information gained from each stage of testing is used to guide the next round of investigation.

The level of detail required for delineation depends on the site and its intended use. Full delineation is usually required when a property owner seeks a Record of Site Condition (RSC), which is a legal document under Ontario Regulation 153/04 (as amended). An RSC certifies that a property meets environmental standards for its intended use. Achieving full delineation often requires multiple phases of intrusive investigations (e.g., each stage may include the drilling of boreholes, installing of monitoring wells, and collection of soil and groundwater samples). This can be a very costly undertaking.

Partial delineation may be acceptable at other sites where a Record of Site Condition is not required. For example, if the risks to human health and the environment are low, or if the contaminants are not highly mobile, investigations may stop once the contamination is reasonably understood.

Several site-specific factors determine how much delineation is necessary, including:

- The type of contamination.
- The mobility of the contaminants in soil and groundwater.
- The proximity and sensitivity of receptors (such as drinking water wells, rivers, or wetlands),
- The intended future land use (residential, commercial, or industrial).
- The regulatory requirements that apply to the site.

In summary, contaminant hydrogeology is about understanding where contamination is, how it moves, and what it could impact. The scope of work can range from limited testing to extensive, multi-phase investigations depending on the site-specific circumstances.

5.2 Environmental Assessment at Smiths Falls Compost Site

RLC-HydroG reviewed environmental assessment studies conducted at the subject site by SLT from March 2024 to 2025 and provided a limited summary of finding in a hydrogeological assessment report dated July 8, 2025 (RLC-HydroG, 2025). The following is a brief summary of the information that was reviewed:

- Five (5) shallow test pits (TP1-1 to TP1-5) were excavated to the southeast of the Compost Site boundary on March 7, 2024 (SLT, 2024). Representative soil samples were submitted for laboratory for analysis of BTEX, PHCs, metals, and inorganics.
- Ten (10) deeper test pits (TP2-1 to TP2-10) were excavated at locations across the site (from the compost site to the access road east of the onsite clearings) on December 12, 2024 (SLT, 2024). Representative soil samples were submitted for laboratory for analysis of BTEX, PHCs, PAHs, metals, and inorganics.
- Four (4) surface water samples (S1 to S4) were collected in locations to the southeast of the Compost Site by Town of Smiths Falls staff on March 25, 2025 (SLT, 2025). Representative surface water samples were submitted for laboratory for analysis of BTEX, PHCs, PAHs, and metals.
- Seven (7) boreholes were drilled at locations across the site by SLT on June 24 and 25, 2025 (SLT, 2025). Representative soil samples were submitted for laboratory for analysis of BTEX, PHCs, PAHs, and metals. Monitoring wells were installed at all seven (7) borehole locations (MW1 to MW7). Representative groundwater samples were submitted for laboratory for analysis of BTEX, PHCs, PAHs, and metals.

Test pit, borehole and monitoring well locations are indicated in Figure 1. Surface water locations are indicated in Figure 2

Figure 1: Test Pit, Borehole, and Monitoring Well Locations

Figure 2: Surface Water Sampling Locations

5.3 Environmental Sampling Results

5.3.1 Soils

The analytical results from test pit soil samples were compared to the applicable O.Reg. 153, *Table 2* site condition standards (commercial land use, coarse textured soil, potable groundwater condition).

Soil exceedances were identified at five (5) of the 14 test pit locations. The exceedances occur in areas to the southeast of the Compost Site (SLT, 2024b). Exceedances are noted for metals and PAH parameters. A summary of the March 2024 test pit soil exceedances is provided in Table 1. A summary of the December 2024 test pit soil exceedances is provided in Table 2.

Table 1: Summary of Test Pit Soil Exceedances (SLT, March, 2024)

TP1-S1	(0.05 -0.25 m bgs)
Cadmium	2.3
Lead	290
Zinc	500
TP2-S2	(0.05 -0.30 m bgs)
Lead	230
TP3-S3	(0.05 -0.30 m bgs)
Lead	330
TP4-S4	(0.05 -0.25 m bgs)
Lead	210
TP5-S5	(0.05 -0.25 m bgs)
No exceedances	

Table 2: Summary of Test Pit Soil Exceedances (SLT, December, 2024)

TP-1 - S1	(1.0 m bgs)
Benzo[a]pyrene	0.36

TP-2 - S2	(1.0 m bgs)
No exceedances	

TP-3 - S3	(1.0 m bgs)
Benzo[a]pyrene	0.64
Dibenz[a,h]anthracene	0.11

TP-4 - S4	(1.2 m bgs)
Lead	290
Benzo[a]pyrene	0.85
Benzo[b,j]fluoranthene	1.1
Dibenz[a,h]anthracene	0.14

TP-5 - S5	(1.2 m bgs)
No exceedances	

TP-6 - S6	(1.0 m bgs)
Benzo[a]pyrene	0.42

TP-7 - S7	(1.2 m bgs)
Benzo[a]pyrene	0.3

TP-8 - S8	(1.4 m bgs)
No exceedances	

TP-9 - S9	(1.2 m bgs)
No exceedances	

TP-10 - S10	(1.1 m bgs)
No exceedances	

The analytical results for the 2025 borehole soil samples were all below the applicable criteria.

5.3.2 Surface Water

The analytical results from surface water samples were compared to the applicable Provincial Water Quality Objectives (PWQO - MOE, 1994). The analytical results for surface water samples were all below the applicable criteria.

5.3.3 Groundwater

The analytical results from groundwater samples were compared to the applicable O.Reg. 153, *Table 2* site condition standards (commercial land use, coarse textured soil, potable groundwater condition). The analytical results for groundwater samples were all below the applicable criteria.

The groundwater results were also compared to the Ontario Drinking Water Standards (MECP – ODWS, 2003, as amended). There were no exceedances of the ODWS health limits. The concentration of sodium at MW2 exceeded the ODWSOG (MECP, 2003, as amended) aesthetic objective (AO) limit.

The closest water supply well to the site (at 3618 Highway 43) was sampled by RLC-HydroG on July 25, 2025. The well was inspected and was purged of more than one well bore volume prior to sampling. One raw groundwater sample was collected according to industry standard methodologies. The sample was submitted for laboratory analysis if the full list of MECP Procedure D-5-5 water quality parameters. The laboratory results were compared to the Ontario drinking water standards (ODWSOG - MOE, 2003/2006 as amended). The only exceedances were for iron and manganese which exceeded the aesthetic objective (AO) limits. These exceedances are treatable and are not health related. It should be noted that the result for manganese also exceeded the Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ) limit for manganese (which may not be specifically applicable for non-federal sites). The results show that there are no impacts at the nearest water supply well that can be associated with shallow soil contamination at the Smiths Falls Compost Site.

5.4 Hydrogeology

As discussed in the recent hydrogeological assessment (RLC-HydroG, 2025), an unconfined water table occurs in the overburden unit. Drainage and infiltration are influenced by topography. Overburden groundwater flow directions at the site are indicated in Figure 3.

The overburden water table is not used as a water supply aquifer in the area. The water supply aquifer in the area occurs within the bedrock unit. The direction of groundwater flow in the bedrock unit is assumed to be to the to the south.

The Mississippi Rideau Source Protection Plan does not prohibit waste disposal site activities within the Smiths Falls IPZ unless there is a threat associated with transfer processing of hazardous waste and/or liquid industrial waste (these activities do not occur at the Smiths Falls Compost Site). There is no significant threat to drinking water in the area as impacts to soil and overburden groundwater are limited and localised, and the source of potable groundwater in the area (the bedrock aquifer) is unlikely to be adversely impacted.

Figure 3: Overburden Groundwater Flow Directions

5.5 Delineation

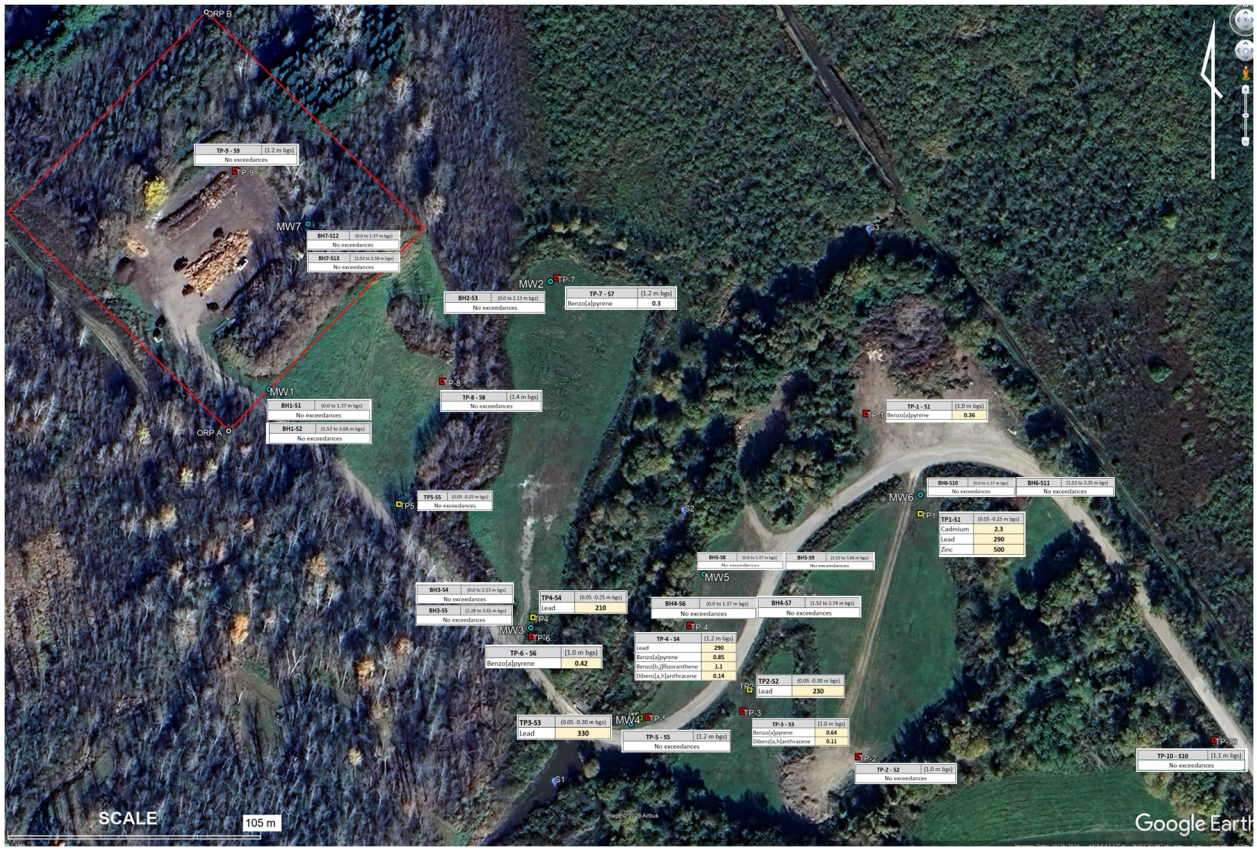
A summary of impacts at the site is provided in Figure 4. Contaminated soil occurs in three zones including: an area to the north of the access road bridge; an area to the east of the access road bridge; and an area to the immediate south of the brush pile.

The zone to the north of the access road bridge (Zone A) has elevated lead and benzo(a)pyrene, exceeding the applicable criteria. This zone is reasonably delineated as there are 'clean' (i.e. results below applicable criteria) samples to the north (TP5, and TP-8) and at depth (at BH3). The onsite creek is considered to be a boundary and provides reasonable delineation to the south. Contaminant mobility is considered to be low (lead tends to remain concentrated in shallow soil, and PAHs are largely retained in the soil matrix and do not readily leach to groundwater).

The zone to the east of the access road bridge (Zone B) has elevated lead, and PAHs (benzo(a)pyrene, benzo[b,j]fluoranthene, dibenz[a,h]anthracene), exceeding the applicable criteria. This zone is reasonably delineated as there are 'clean' samples to the east (TP-2) and to the north (BH5), and at depth (BH4). The

onsite creek provides reasonable delineation to the west. Contaminant mobility is considered to be low for lead and PAHs.

Figure 4: Soil Exceedances and Non-Exceedance Locations



The zone to the south of the brush pile (Zone C) has elevated lead, cadmium, zinc and benzo(a)pyrene. This zone is reasonably delineated as there are 'clean' to the west (BH5), south (TP-2), southeast (TP-10), and at depth (BH6). The onsite creek provides reasonable delineation to the north. Contaminant mobility is considered to be low for lead and PAHs. The mobility of cadmium and zinc is considered to be moderate, but basic (high pH) soil conditions may reduce the level of mobility.

Overall, <u>delineation at the site is considered to be adequate</u> given the following site-specific factors:

- Shallow soil metals and PAHs mostly have low mobility. Some metals at Zone C may have moderate mobility.
- The closest water supply well is not impacted, and the next closest water supply wells are more than 400 m away.
- Regarding receptors, the onsite creek is close to Zones A, B, and C but is not significantly impacted. A wetland is close to Zone C but there are no indications of impacts.
- The intended future use of the site is commercial (i.e. commercial land use).

- Regulatory requirements are addressed under the site ECA, which references ongoing monitoring & sampling, and a contingency plan.

6 Conclusions

- The site is suitable for use as a compost facility and is compliant with the local source water protection plan, zoning by-law requirements, and has Provincial regulatory approval.
- There is no significant threat to drinking water as existing impacts to soil and overburden groundwater at the site are limited and localised.
- The closest water supply well is not impacted and other water supply wells in the area are unlikely to be adversely impacted.
- Environmental investigations at the site (test pitting, drilling, soil sampling, installation of monitoring wells, groundwater sampling, and surface water sampling) are generally sufficient to characterise impacts.
- Delineation at the site is considered to be adequate given the site-specific factors listed in Section 5.5 of this memorandum.
- Adverse effects are unlikely to occur in the future if the site continues to be carefully managed in accordance with best practices.

RLC-HydroG – Hydrogeological Services

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Senior Hydrogeologist

Filename: TOSF - MEMORANDUM re Smiths Falls Compost Site Impacts and Delineation - FINAL- 1oct25

7 Limiting Conditions

This memorandum has been prepared by RLC-HydroG exclusively for the Town of Smiths Falls (TOSF) for the purpose of providing a technical review of the referenced hydrogeological and environmental assessment studies. It is based on information provided by TOSF and third-party sources, as well as publicly available data.

The opinions and conclusions expressed in this memorandum are based on RLC-HydroG's professional judgment and interpretation of the materials made available for review. RLC-HydroG has relied, in good faith, on the accuracy and completeness of information provided by others and has not independently verified the source data unless specifically stated. As such, the findings and conclusions are subject to the limitations of that information.

This memorandum has been prepared solely for the intended purpose and use specified herein. It does not constitute a legal opinion and should not be relied upon as such. RLC-HydroG does not provide legal advice and makes no representations concerning regulatory compliance with environmental laws, policies, or permit requirements.

RLC-HydroG accepts no responsibility for errors, omissions, misrepresentations, or inaccuracies that may arise from deficiencies in the materials provided for review. Any unauthorized use of this memorandum, including reliance by third parties or use for purposes not expressly intended by RLC-HydroG, is strictly prohibited. RLC-HydroG disclaims all liability for any loss, damages, or consequences arising from such unauthorized use.

8 References

- Government of Ontario, 2004, as amended. Ontario Regulation 153/04, Records of Site Condition. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act.
- Government of Ontario, 1990. R.R.O. 1990, as amended, Ontario Regulation 347: General – Waste Management.
- Rideau Valley Conservation Authority (RVCA), 2025. Online Geographic Information System (GIS).
- Mississippi Valley Conservation Authority and Rideau Valley Conservation Authority (MVCA and RVCA), 2014 as revised. Mississippi Rideau Source Protection Plan.
- Ontario Ministry of Environment Conservation and Parks (MECP) (MOE, 2003, Revised 2006 as amended). Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG) as amended/revised under Ontario Regulation 169/03, 2021.
- Ontario Ministry of Environment and Energy (MOEE), 1994. Provincial Water Quality Objectives (PWQO), Water Management, Policies, Guidelines, Provincial Water Quality Objectives (July, 1994).
- Ontario Safe Drinking Water Act, 2002 as amended. S.O. 2002, c. 32.
- RLC-HydroG, 2025. Hydrogeological Assessment, Smiths Falls Compost Site, 3514 Highway 43, Smiths Falls, Ontario (July 8, 2025).
- St. Lawrence Testing & Inspection Co. Ltd. (SLT), 2024. Proposed Snow Dump Site, Smiths Falls, ON, Environmental Soil Assessment, Report No.24C049 (March 19, 2024).
- St. Lawrence Testing & Inspection Co. Ltd. (SLT), 2024. Smiths Fall Compost Site, Smiths Falls, ON, Environmental Soil Assessment, Report No.24C265 (December 30, 2024).
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- St. Lawrence Testing & Inspection Co. Ltd. (SLT), 2025. Property Located at the Smiths Falls Compost Site, 3514 Lanark County Road 43, Smiths Falls, ON, Environmental Assessment, Report 25C163 (July 4, 2025).