



MEMORANDUM

DATE: 14 June 2023
TO: Cathy Chisholm, District Manager, Ministry of the Environment, Conservation and Parks (MECP)
CC: Craig Dobiech (MECP)
Chris Prucha, Noah Wayt and Chad Moose (WMCC)
FROM: François Richard and Matthew DeGeer (BluMetric)
PROJECT NO: 230130-00
SUBJECT: Sampling Results Following On-Site Leachate Release, WM Richmond Landfill, Town of Greater Napanee
Ref: MECP Spill Action Centre Reference Number: 1-33QFL

This memorandum is provided on behalf of Waste Management of Canada Corporation (WMCC) in relation to a recent leachate release to surface that occurred on site.

BACKGROUND

Leachate at the WM Richmond Landfill is directed to an on-site 3,000 m³ holding tank and subsequently transported off-site for treatment at the Napanee Wastewater Treatment Plant (WWTP). On occasions when the WWTP is at capacity and cannot accept leachate from the site in sufficient volumes, leachate is hauled to the Cobourg WWTP, which has imposed limits in terms of daily leachate volumes available to WM. Until recently, leachate was also hauled to the Kingston Utilities Ravensview WWTP for treatment; however, the facility informed WMCC that they are no longer able to accept leachate from the Richmond landfill because of operational concerns.

Despite several unsuccessful attempts by WMCC to secure additional disposal options, two 80 m³ emergency holding tanks (“frac tanks”) were rented and mobilized to site on Friday March 24, 2023, to temporarily provide additional storage capacity.

On Monday March 27, 2023, BluMetric field personnel observed moisture originating from under the in-use temporary frac tank. Closer examination revealed a small drip leak on the under belly of the tank. The location of the release is shown on **Figure 1** while photographs of the soil staining observed are attached (see **Photos 1 and 2**). Upon discovery, WMCC reported the spill to the MECP Spill Action Centre and BluMetric personnel immediately implemented initial corrective actions to stop the release by coordinating with the leachate hauler to transfer leachate from the damaged frac tank to the second frac tank already on-site.

Once the leachate transfer was complete and the leakage stopped, BluMetric personnel investigated and were able to confirm that the release was limited to the asphalt surface and gravel/soil area immediately adjacent to the temporary frac tanks. The release did not leave the site or enter any stormwater feature. The impacted area was determined based on visual inspection of the rust-colored stains to be relatively limited in lateral extent (approximately 20 m²). Based upon the volume in the tank at the time of discovery, it is estimated that approximately 8.9 m³ of leachate leaked onto the ground. An MECP Environmental Officer visited the site on March 27, 2023 to verify that the release was localized and did not enter surface water or leave the site.

Although there is no evidence that the released leachate entered into the storm water drainage system, a sample was collected on March 29, 2023, from Stormwater Pond 3 (“SW Pond”), located south of the location of the release. Additionally, groundwater samples were collected on March 31, 2023, from monitoring wells M109-2 and M9-3 (**Figure 1**). Surface water and groundwater analytical results are presented in **Tables 1 and 2**, respectively. The results are consistent with historical data at each of these locations. The analytical results indicate that there is no impact resulting from the leachate release from the temporary frac tank.

On March 30, 2023, the soil and gravel identified as impacted (total volume approximately 80 m³) was excavated and stockpiled onto, and covered with, tarps (see attached **Photo 3**). The area of the excavation was covered with fresh gravel and graded to original condition (see attached **Photo 4**). On March 30, 2023, a soil sample was collected from the stockpiled material for pre-disposal analysis. The soil was removed from site on May 8, 2023, and disposed of at an authorized accepting facility.

CLOSING

We trust the above information is satisfactory. If you have any questions or need further information regarding the completed work, please do not hesitate to contact the undersigned.

Respectfully submitted,
BluMetric Environmental Inc.



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Senior Hydrogeologist



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Geoscientist in Training

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Table 1: Surface Water Results

Parameter	Units	SW Pond 2022-09-21	SW Pond 2022-10-13	SW Pond 2022-11-22	SW Pond 2023-03-29
General/Inorganic					Post Release
Alkalinity	mg/L	210	170	210	170
Ammonia	mg/L	< 0.00061	< 0.00061	0.0023	< 0.00061
Ammonia (unionized)	mg/L	< 2	6	2	< 2
Carbonaceous BOD	mg/L	34	41	33	12
Chemical Oxygen Demand	mg/L	3.12	1.14	2.97	3.98
Chloride	mg/L	29	23	30	13
Dissolved Oxygen	mg/L	3.12	1.14	2.97	3.98
Hardness	mg/L	220	210	220	180
Nitrate	mg/L	0.24	< 0.1	< 0.1	0.13
pH (Field)	unitless	6.51	6.31	6.89	7.19
pH (Lab)	unitless	7.6	7.87	7.46	7.68
Field Conductivity	µS/cm	363	573	552.5	354
Field Temperature	Celsius	14.07	11.1	1	4.8
Phenols	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus (total)	mg/L	0.035	0.044	< 0.03	< 0.03
Total Dissolved Solids	mg/L	1820	255	260	230
Total Kjeldahl Nitrogen	mg/L	4.4	1.4	4.7	< 0.7
Total Organic Carbon	mg/L	11	11	10	4.4
Total Suspended Solids	mg/L	17	13	< 10	< 10
Metals					
Aluminum	mg/L	0.055	< 0.02	< 0.02	0.037
Arsenic	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Barium	mg/L	0.044	0.035	0.045	0.032
Beryllium	mg/L	< 0.0006	< 0.0006	< 0.0006	< 0.0006
Boron	mg/L	0.04	0.027	0.035	0.027
Cadmium	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (III)	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chromium (Total)	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chromium (VI)	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cobalt	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
Iron	mg/L	0.72	< 0.1	< 0.1	< 0.1
Mercury	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Nickel	mg/L	0.002	0.001	< 0.001	< 0.001
Potassium	mg/L	1	2.5	4.5	2.1
Selenium	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Silver	mg/L	< 0.0004	< 0.0004	< 0.0004	< 0.0004
Sodium	mg/L	24	15	22	13
Zinc	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Volatile Organic Compounds (VOCs)					
Naphthalene	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
1,4-Dioxane	mg/L				< 0.001
Benzene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Ethylbenzene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
m+p-Xylene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
o-Xylene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Toluene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Xylenes	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002

Table 2: Groundwater Results

Parameter	Units	M109-2 2020-01-27	M109-2 2023-03-31	M9-3 2022-04-26	M9-3 2022-11-03	M9-3 2023-03-31
General/Inorganic			Post Release		Post Release	
Alkalinity	mg/L	260	250	380	330	330
Conductivity	µS/cm	880	860	810	910	900
Total Dissolved Solids	mg/L	460	440	445	395	470
Ammonia	mg/L	1.57	1.5	0.63	0.93	1.08
Chloride	mg/L	110	120	47	99	96
Dissolved Organic Carbon	mg/L	1.5	1.2	4.1	2.6	2.4
Nitrate	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sulphate	mg/L	9	8.4	11	2.6	3.3
Metals						
Boron	mg/L	0.99	0.93	0.14	0.55	0.43
Calcium	mg/L	35	35	97	63	68
Iron	mg/L	< 0.1	< 0.1	5.8	1.5	0.87
Magnesium	mg/L	25	25	25	31	34
Manganese	mg/L	0.002	< 0.002	0.33	0.075	0.056
Potassium	mg/L	14	14	5.6	14	15
Sodium	mg/L	95	96	53	81	67
Volatile Organic Compounds (VOCs)						
1,1,1,2-Tetrachloroethane	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0005	0.00038	< 0.0001	0.0001
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
1,2-Dichloroethane	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
1,4-Dioxane	mg/L	< 0.001	< 0.001	0.0081	0.0041	0.004
Benzene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
Chlorobenzene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
Chloroethane	mg/L	< 0.0002	< 0.001	0.011	0.0031	0.0062
Chloromethane	mg/L	< 0.0005	< 0.0025	< 0.0005	< 0.0005	< 0.0005
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
Dichloromethane	mg/L	< 0.0005	< 0.0025	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
m+p-Xylene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
o-Xylene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
Styrene	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
Tetrachloroethylene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
Toluene	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002
Total Xylenes	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
Trichloroethylene	mg/L	< 0.0001	< 0.0005	< 0.0001	< 0.0001	< 0.0001
Vinyl Chloride	mg/L	< 0.0002	< 0.001	< 0.0002	< 0.0002	< 0.0002

FIGURE



LEGEND

- ✖ Leachate Pumping Station
- ◆ Release Point
- Groundwater Monitoring Well
- Property Boundary
- Waterbody
- Building
- Hydro Tower
- Road
- Watercourse
- Overhead Power Line
- Waterbody

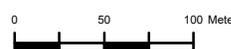
Topographic Contours (1 masl)

- Major Contour
- Minor Contour

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REV.	DESCRIPTION	YY/MM/DD	BY	CHK

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CLIENT

WASTE MANAGEMENT

PROJECT

WASTE MANAGEMENT RICHMOND LANDFILL LEACHATE RELEASE INVESTIGATION

TITLE

SITE PLAN AND MARCH 2023 RELEASE LOCATION


 The Tower - The Woolen Mill,
 4 Catarauqui St.,
 Kingston, Ontario, K7K 1Z7
 Tel: 613-531-2725
 Fax: 613-531-1852
 Email: info@blumetric.ca
 Web: http://www.blumetric.ca

PROJECT # 230130-06		DATE April 21, 2023	
DRAWN GM	CHECKED FR	FIG NO. 01	REV 0

PHOTOGRAPHIC RECORD OF LEACHATE RELEASE AND CLEANUP



Photo 1: Soil staining resulting from leachate released from leaking frac tank (March 27, 2023)



Photo 2: Soil staining resulting from leachate released from leaking frac tank (March 27, 2023)



Photo 3: Stockpiled impacted soil (March 30, 2023)



Photo 4: Site conditions following removal of impacted soil and final grading with clean gravel (May 8, 2023)