

TO: Richard Conforti
FROM: Clifford Yantz
RE: Vapor Intrusion Sampling Event
FILE: 15388/68545/5
DATE: August 31, 2018

cc: Mr. Joseph Rogers - MDEQ
Mr. John McCabe – MDEQ
Mr. David Favero – RACER Trust
Mr. Kevin Schneider – O'Brien & Gere

This technical memorandum has been prepared on behalf of the Revitalizing Auto Communities Environmental Response Trust (RACER Trust) to document the 2018 additional vapor probe installation and sampling event conducted in June 2018 at Coldwater Road Landfill facility located in Flint, Michigan (Site) ([Figure 1](#)).

The additional vapor probe installation and sampling event was conducted to confirm the analytical results from the December 2017 vapor probe installation / sampling event and to further evaluate the vapor intrusion (VI) pathway between the potential sources of contamination (former wastewater treatment plant (WWTP) and closed lagoons) and off-site residences.

SITE DESCRIPTION

The RACER Trust Coldwater Road Landfill facility consists of the wastewater treatment sludge monofill landfill, Remaining Materials Area (RMA, where nickel impacted soils were closed in place), former WWTP (decommissioned and demolished in 1999), restored wetlands, and leachate accumulation facility.

The Site is bordered on the south and east by the RACER Trust Coldwater Road Industrial Land, which formerly contained several manufacturing buildings and support facilities. The buildings on the Coldwater Road Industrial Land were decommissioned and demolished between 1999 and 2001.

VAPOR INTRUSION PROBE INSTALLATION

Three soil vapor points (at one location) were installed along the western property line on June 26, 2018. The new VI probe (VP-3) was installed approximately 200 feet north of VP-1. See [Figure 2](#) for VI boring locations.

The vapor probes were installed according to the requirements set forth in the MDEQ's May 2013 *Guidance Document for the Vapor Intrusion Pathway* and the methods specified in Appendix F.1 Installation of a Soil Gas Probe/Vapor Monitoring Point to Support Vapor.

The three soil vapor points (at one location) were installed by Fibertec, Inc. of Brighton, Michigan utilizing direct push drilling techniques (Geoprobe® 7822 track-mounted drilling rig). At the soil vapor sampling location, a shallow (S) (approximately 5' feet below ground surface [ft bgs]), middle (M) (approximately 10' ft bgs) and a deep (D) (approximately 15' ft bgs) sample point were installed.

Five-foot-long, 1.25-inch Macro-Core® samplers were used to collect soil cores continuously from grade to the terminal depth. The soil boring was advanced to a depth of 15 ft bgs.

Once the soil core depth was reached for each run, the sampler was removed from the borehole, detached from the drill rods, and the acetate sleeve was cut length-wise and opened to allow for observation of the subsurface soil. The soil cores were visually inspected and logged by an OBG soil scientist in accordance with the Unified Soil Classification System (USCS). [Attachment A](#) provides the soil boring log for VP-3 and the vapor probe construction logs for all three vapor probes installed at the Site. North-south and east-west geologic cross-sections were constructed through the area of concern utilizing historical information and the soil boring information collected in December 2017 and June 2018 ([Figure 3](#)).

The vapor points consisted of a 6-inch length of double woven stainless steel wire screen attached to an appropriate length of high density polyethylene tubing.

Once the target depth was reached, the drive rods were withdrawn as the annular space around the sampling point was packed with glass beads approximately 6 inches above the screened interval on the shallow probes. The remainder of the boring's annular space was sealed to prevent ambient air infiltration between screened zones and above the shallow sampling zone to the ground surface with dry fine granular bentonite that was hydrated at 1 ft intervals.

A roadbox cover was installed just below the ground surface to secure the extra tubing.

SAMPLING & ANALYSIS

Sample collection activities were completed on June 29, 2018 in accordance with the previously mentioned guidance documents. A more detailed description of the procedures used during the sampling event can be found in OBG's response letter, dated November 16, 2017, to MDEQ's Comments on Per- and Polyfluorinated Substances Sampling Event – Letter Dated October 12, 2017.

Soil gas grab samples were attempted from vapor probes VP-3S, VP-3M, and VP-3D approximately 48 hours after installation. In addition, soil gas samples were also attempted from VP-1S, VP-1D, VP-2S, and VP-2D.

Due to interference from groundwater, samples were not able to be collected from vapor probes VP-1D, VP-2D, and VP-3M.

SAMPLE PROCEDURE

Prior to the collection of the soil vapor samples, the sample tubing was purged of ambient air. A minimum of three volumes of air within the sample probe and tubing were purged prior to sample collection. In addition, helium tracer gas screening was used during sampling of the soil vapor probes to evaluate the adequacy of the sampling technique and identify potential short-circuiting from the ground surface during sample collection.

A MGD 2002 gas leak detector was used to screen the extracted vapor stream for helium prior to and after sample collection. No olfactory observations were recognized during probe installation and sampling. Short-circuiting was not observed during initial or final screening. See [Attachment B](#) for Soil Vapor (Bottle Vac®) Sample Collection Field Forms.

The soil gas samples were collected in Bottle Vacs® and transported to the laboratory under appropriate chain-of-custody (COC) protocols. The soil gas samples were submitted to Merit Laboratories in East Lansing, Michigan a National Environmental Laboratory Accreditation Conference (NELAC)-certified laboratory for analysis by USEPA Method TO-15. For quality control purposes, a field duplicate sample (Dup-1) was collected from VP-1S vapor probe location.

ANALYTICAL RESULTS

The analytical results for the samples collected at the Coldwater Road Landfill facility are presented in [Table 1](#) and discussed below. The complete analytical laboratory report is contained in [Attachment C](#).

From the five samples collected (VP-1S, VP-2S, VP-3S, VP-3D, and DUP-1 [VP-1S]) only trichloroethene was detected above the MDEQ August 2017 proposed screening criteria.

Trichloroethene was detected above the MDEQ August 2017 proposed screening criteria of 67 µg/m³ at VP-1S duplicate (91 µg/m³); however, the original sample result was below the screening criteria at VP-1S (43 µg/m³).

SUMMARY

The analytical result from VP-1S duplicate of (91 µg/m³) was above the MDEQ August 2017 proposed screening criteria of 67 µg/m³ for trichloroethene; however, in December 2017 trichloroethene was not detected at VP-1S. During the December 2017 VI sampling event, 1,2-Dichloroethane was detected above its August 2017 proposed

screening criteria of 33 $\mu\text{g}/\text{m}^3$ at vapor probes VP-1S (85 $\mu\text{g}/\text{m}^3$) and VP-1D (130 $\mu\text{g}/\text{m}^3$); however, it was not detected at VP-1S during this sampling event, and VP-1D was flooded with groundwater and could not be sampled during this sampling event. Therefore, the VI results from VP-1S do not show consistent exceedances of the screening criteria.

However, in the spirit of providing greater certainty and comfort with the results, we propose the installation of three new nested vapor probes, one approximately 45 feet due west of VP-1 at the eastern edge of Temple Street within the road right of way, and the other two approximately half way between VP-1 and VP-2, and VP-1 and VP-3, as trees and other obstructions allow.

After the MDEQ has reviewed this report RACER would like to have a conference call to discuss the results and our proposal.

If you have any questions regarding this technical memorandum, please contact Cliff at (313) 333-0211.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.



Clifford S. Yantz, PG
Senior Hydrogeologist

ENCLOSURES:

- Table 1 – Vapor Intrusion Analytical Results – December 2017 and June 2018
- Figure 1 – Site Location Map
- Figure 2 – Sample Location Map
- Figure 3 – Cross Sections
- Attachment A – Soil Boring and Vapor Probe Construction Logs
- Attachment B – Soil Vapor (Bottle Vac®) Sample Collection Field Forms
- Attachment C – Analytical Laboratory Results