

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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MEMORANDUM

TO: Stanley Radon, P.G., Regional Geologist

FROM: Steven Moeller, P.G., Professional Geologist 1

DATE: November 7, 2022

SUBJECT: RCRA GROUNDWATER OPERATION & MONITORING INSPECTION REPORT

Facility: Vanchlor Company Inc. (formerly VanDeMark) Landfill
600 Mill Street, City of Lockport, Niagara County, NY 14094
DEC Site # 932039
EPA ID - NYD991290529

Background: The Vanchlor Landfill site consists of a 2.5-acre landfill portion of a 5-acre parcel located along the top of the Niagara Escarpment at 600 Mill Street in the City of Lockport, New York (see Figure 1) that was used to dispose of process wastes from the nearby VanDeMark Chemical Inc. (VDM) manufacturing facility. The site is bounded by Mill Street to north, a Somerset Railroad Corp rail corridor to the south and east, and Plank Road and the City of Lockport Waste Water Treatment facility to the west (Figure 2). Eighteen Mile Creek is located south and west and ~100 feet vertically below the landfill at the base of the Escarpment. Wooded areas surround the capped, grassy landfill. The VDM Chemical plant facility is approximately located ¼-mile to the east-southeast and the Vanchlor Company plant facility is just to the southeast of the landfill.

From 1957 until 1982, VDM landfilled drums of silicon tetrachloride and chlorodisiloxane at the site in trenches with powdered limestone. The limestone was used to react with the decomposing products from the drums in an effort to neutralize the acidic waste material. VDM installed new monitoring wells in 1983 as part of a closure investigation and submitted a closure plan in the spring of 1984. Groundwater was impacted by chlorinated VOCs and metals. In 1988, the landfill was closed in accordance with a NYSDEC approved Closure Plan that included the installation of a final cover system consisting of two feet of compacted clay overlain by a drainage layer of sand and loam soil and planted with a vegetative cover. In 1999, VDM sold the property to Vanchlor Company, Inc.

Following the expiration of the Post-Closure RCRA Permit #9-2909-00049/0003 in September 2013, the NYSDEC requested that Vanchlor Company, Inc. enter into an Order on Consent, executed July 10, 2014. The Order on Consent required development of a Site Management Plan (SMP; 2015). The SMP requires annual inspection of the landfill, groundwater and surface water quality monitoring, and submittal of a Periodic

Review Report (PRR) with an Institutional and Engineering Control (IC/EC) certification. The PRR must include discussions of site activities, inspections, groundwater and surface water quality monitoring results and trend analyses, recommendations, and the IC/EC certification.

The principal overburden material observed during the installation of groundwater monitoring wells at the site was a matrix of red brown clayey silt fill intermixed with red rock fragments ranging from 5 to 15 feet in thickness. The bedrock in the vicinity of the Vanchlor Landfill has been reported to include the lower three formations of the Medina Group: the Grimsby, Power Glen, and Whirlpool in descending order. The primary bedrock formation encountered during the installation of the monitoring wells was the Power Glen Formation. Previous rock quarrying operations in the footprint of the landfill resulted in substantial removal of the near surface Grimsby Formation bedrock unit followed by replacement with a layer of fill.

Overburden and bedrock groundwater are inferred to be connected and are therefore considered to be the same aquifer. Historical groundwater elevation data collected from the monitoring well network indicate that the general groundwater flow is in a south-southwesterly direction toward the escarpment bank leading to Eighteen Mile Creek (Figure 2).

I. Office Evaluation

Prior to the field inspection, relevant documents were compiled, reviewed, and evaluated including:

- Closure Plan for Solid Waste Management Facility VanDeMark Chemical Co. Inc. Lockport, NY & Somerset Railroad Hydrogeologic Study (1982)
- Former Landfill Investigation and Closure Plan (1984)
- Closure Plan Former Landfill Site (1987)
- Former Landfill Corrective Measures Study and Landfill Cap Evaluation (1995)
- Vanchlor Landfill Property Deed (1999/2013)
- The Order on Consent and Administrative Settlement, Index # B9-0834-14-07 (2014)
- Site Management Plan (2015)
- Annual Periodic Review Reports and IC/EC Certifications (2014-2021)
- Correspondence File
- Previous Groundwater Inspection Reports (2005, 2008, 2013, 2019)

Assessment activities for the landfill were performed in the 1980s and 1990s with extensive investigation of hydrogeology and contaminant nature and extent. The landfill was closed (capped) in 1988 in accordance with a NYSDEC (the Department) approved Closure Plan and subsequent post-closure monitoring has been performed under a Part 373 RCRA Permit (until 2013) and Order on Consent (since 2014). Groundwater and surface water samples are currently collected annually and analyzed for a site-specific list of chlorinated volatile organic compounds, metals, chloride, and pH. Tetrachloroethene, trichloroethene, trans-1,2-dichloroethene, vinyl chloride, 1,1,2-

trichloroethane, 1,2-dichloroethane, chloroform, methylene chloride, chromium, copper, iron, and chloride are detected at concentrations above groundwater standards, primarily in well VDM-14R which has historically demonstrated the highest groundwater contaminant concentrations. Any landfill leachate or underflow may be directed to a ditch running along the northeast edge of the landfill which flows toward well VDM-14R.

Emerging contaminant sampling performed in 2018 also identified perfluorooctanoic acid (PFOA) and 1,4-dioxane in site groundwater at concentrations above proposed groundwater standards. There have also been approved modifications to the post-closure monitoring program since the SMP was issued in 2015. Once groundwater standards are promulgated for perfluorinated compounds (PFAS) and 1,4-dioxane, the SMP should be updated adding PFAS, 1,4-dioxane, carbon tetrachloride, and cis-1,2-dichloroethene to the site-specific analyte list and incorporating approved changes to the monitoring program.

II. Field Evaluation

On August 29 and 30, 2022, Steven Moeller, PG, conducted a field Inspection at the Vanchlor Landfill during the Annual Groundwater and Surface Water Sampling and Landfill Inspection Event. This inspection included observation of groundwater and surface water sample collection activities and inspection of monitoring wells, the landfill cap, perimeter fence line, and surrounding areas.

Onsite Personnel:

- **August 29, 2022:** Steven Moeller (NYSDEC – PM/Inspector); Brian Law (Vanchlor Company Inc. – Operations Manager); Patrick Martin (WSP - PM); Tom Webster and Amber Fleischman (Alpha Analytical Inc. - Vanchlor's sampling and analytical laboratory contractor)
- **August 30, 2022:** Steven Moeller (NYSDEC – PM/Inspector); Tom Webster and Eric Swartzmeyer (Alpha Analytical Inc. - Vanchlor's sampling and analytical laboratory contractor)

Weather: August 29, 2022 – Mostly sunny, humid, 77° F, breezy; **August 30, 2022** - Overcast, light rain, 73° F, humid, slight breeze

The annual groundwater samples were collected on August 29 (well purging) and 30 (well sampling), 2022 by Vanchlor's sampling contractor personnel from four onsite, downgradient well locations (VDM-9R, VDM-10, VDM-11, and VDM-14R) and one offsite, upgradient location (D-55) in accordance with the Vanchlor Landfill *Groundwater Monitoring Plan* (Appendix E of the SMP); well VDM-12 was dry and could not be sampled (Figure 2). The dry conditions found in well VDM-12 are a good indication that the cap is preventing infiltration, because prior to capping VDM-12 had sufficient water to allow for sample collection. The groundwater monitoring network appeared to be in generally good condition with all wells locked and functional (see photos in Attachment B). Depth to water and bottom measurements were recorded in each well with an electronic water level indicator prior to initiating well purging activities; depth to water measurements were also

recorded in each well prior to sample collection (Table 1). The wells were purged on August 29 with dedicated HDPE bailers for 3 well volumes (VDM-14R and D-55) or until dryness (VDM-9R, VDM-10, and VDM-11). The well purge water was containerized and taken to the nearby Vanchlor manufacturing plant for future characterization and disposal. The well purging/sampling logs are included in Attachment C.

The wells were allowed to recover overnight and sampled with the same dedicated HDPE bailers on August 30 for the analytical parameters noted above. A surface water sample was also collected, using a long handled sample dipper, on August 30 from Eighteen Mile Creek at a location downstream from the Site, but upstream of the City of Lockport Wastewater treatment plant SPDES discharge point, for analysis of the same analytical parameters (Figure 2). Volatile organic sample containers were filled first followed by the metals and chloride containers. Field QC samples included trip blanks and a duplicate sample collected at well D-55; no MS/MSD samples were collected during this sampling event. Field parameter measurements included sample pH and temperature (wells and surface water) with an Oakton pH/temperature meter.

Table 1

Monitoring Point	Date	Measured Depth to Water*	Measured Depth to Bottom*	As-built Depth to Bottom*	pH	Temperature (°C)
D-55	8/29/2022	36.43	47.22 (hard)	47.0	-----	-----
	8/30/2022	36.49	-----		7.21	14.1
VDM-9R	8/29/2022	34.22	39.15 (hard)	37.35	-----	-----
	8/30/2022	36.83	-----		6.05	14.5
VDM-10	8/29/2022	34.50	46.60 (hard)	45.97	-----	-----
	8/30/2022	44.90	-----		6.11	14.5
VDM-11	8/29/2022	20.08	22.80 (hard)	22.72	-----	-----
	8/30/2022	21.08	-----		6.42	15.4
VDM-12	8/29/2022	Dry	13.15 (muddy)	15.42	-----	-----
VDM-14R	8/29/2022	10.29	11.60 (hard)	12.0	-----	-----
	8/30/2022	10.32	-----		5.47	17.1
Eighteen Mile Creek	8/30/2022	-----	-----	-----	6.86	23.6

*Feet below top of riser

----- = Not recorded or measured

A site-wide inspection of the landfill was also performed. Site access is controlled by a road gate at the bottom of the Mill Street access road and by a locked gate in the perimeter fence that surrounds the landfill; both gates were locked and the perimeter fence was generally in good condition with adequate warning signage. A small breach in the perimeter fence noted during the September 3, 2020 landfill inspection on the south side of the landfill near well VDM-10 had been repaired. However, the plastic brackets that connect the chain-link fence to a corner fence post had broken creating a small gap in the fence southeast of well VDM-14R; Brian Law said Vanchlor would also repair this gap in

the fence. The landfill cap appeared to be well grassed and in good condition; it had reportedly been mowed within the last 2 weeks. No standing water, staining, or distressed vegetation was noted, especially in the ditch running along the eastern side of the landfill, which potentially flows toward well VDM-14R.

III. Summary

Based upon a review of site-related documents (including the *Groundwater Monitoring Plan*), oversight of groundwater and surface water sample collection, and inspection of the landfill facility, the Department has determined that the facility is in compliance with their post-closure monitoring program as required by the SMP and Order on Consent.

Action Item: Vanchlor should repair the gap in the perimeter fenceline near well VDM-14R by the end of November 2022.

ATTACHMENTS

Attachment A - Figures

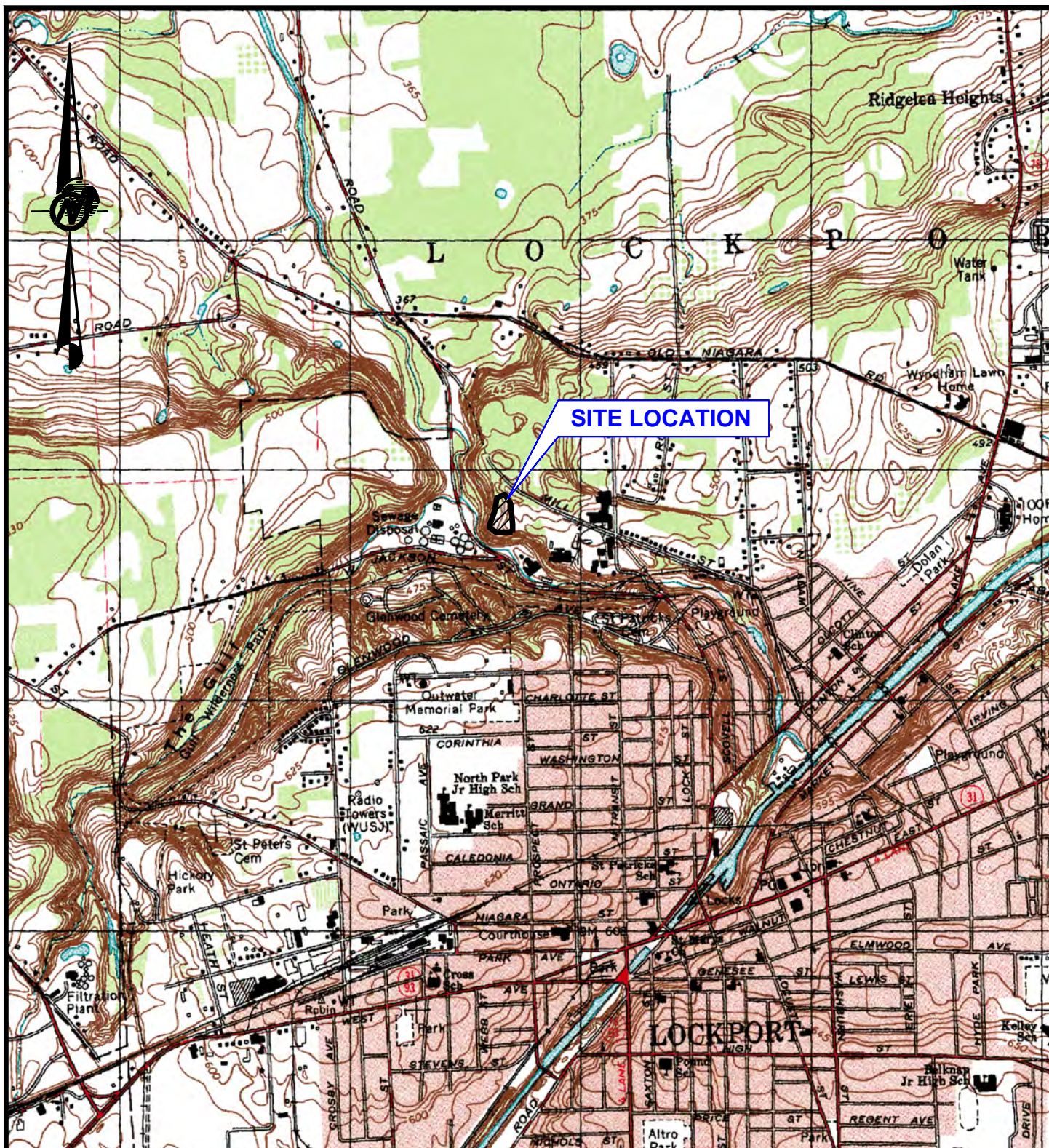
Attachment B - Photographs

Attachment C - Well Purging/Sampling Logs

ATTACHMENT A

FIGURES

Drawing file: 19116159_001.dwg Feb 27, 2019 - 2:44pm



REFERENCES

1.) BASE MAP TAKEN FROM U.S.G.S. 7.5 MINUTE QUADRANGLE OF LOCKPORT, NEW YORK DATED 1980.

2000 0 2000
SCALE FEET



SCALE	AS SHOWN
DATE	02/27/19
DESIGN	JGT
CADD	RWC
CHECK	JMV
REVIEW	PTM

TITLE

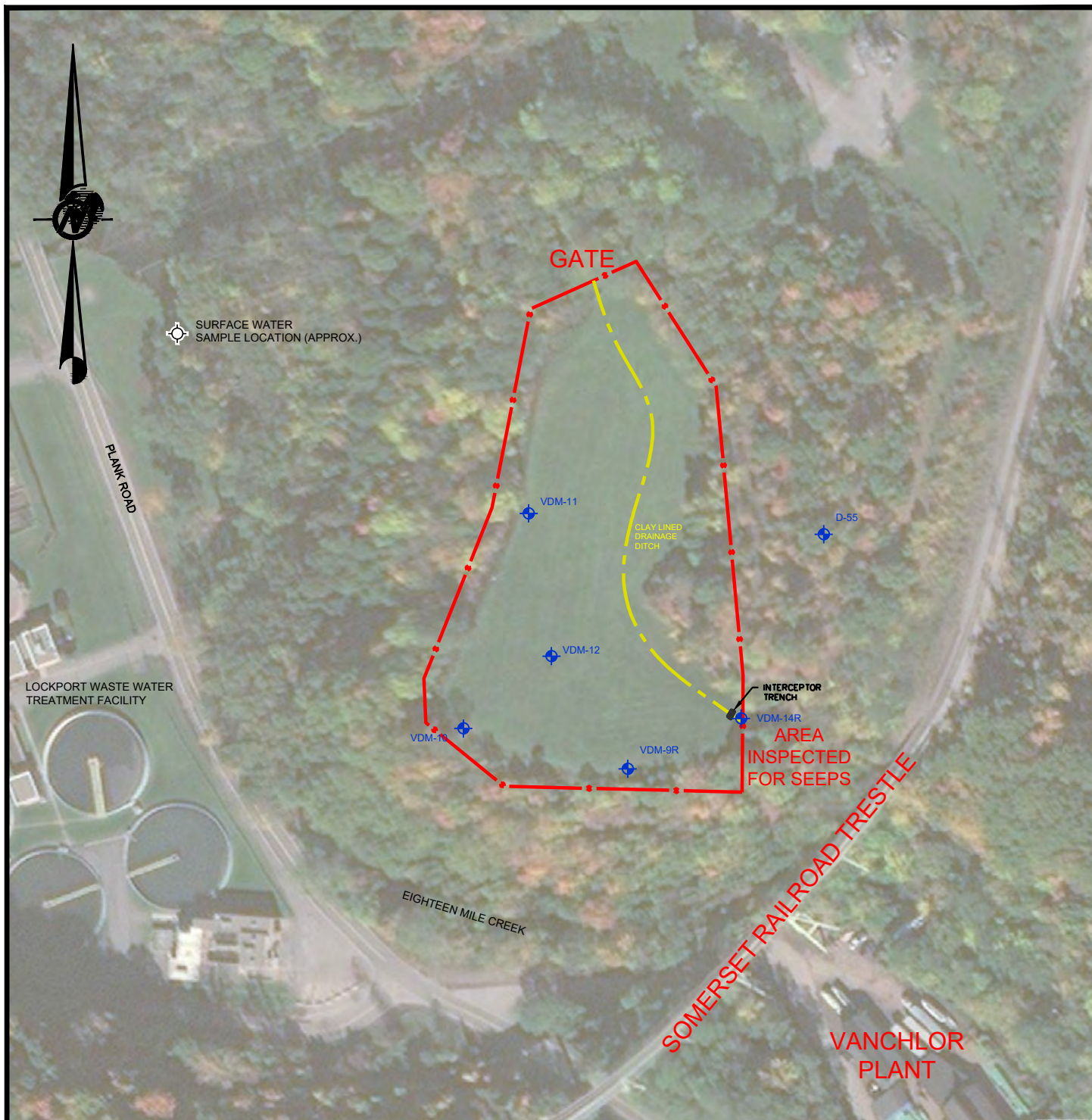
SITE LOCATION MAP

FILE No.	19116159_001
PROJECT No.	21490139
REV.	0

VANCHLOR COMPANY INC.

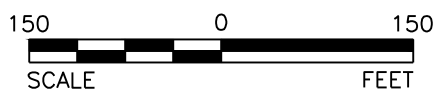
FIGURE 1

Drawing file: 20376057_001.dwg Apr 28, 2021 - 10:45am



LEGEND

- FENCE / APPROXIMATE SITE PROPERTY LINE
- + MONITORING WELL APPROXIMATE LOCATION
- + APPROXIMATE SURFACE WATER SAMPLE LOCATION



REFERENCES

- 1.) BASE MAP GENERATED FROM BING AERIAL IMAGERY.



GOLDER

SCALE	AS SHOWN
DATE	01/20/21
DESIGN	KWJ
CADD	AAZ

TITLE

**VANCHLOR LANDFILL
GROUNDWATER MONITORING WELL &
SURFACE WATER SAMPLE
LOCATION MAP**

FILE No. 20376057_001

CHECK PTM

PROJECT No. 20376057 REV. 0

REVIEW PTM

VANCHLOR CO. INC.

FIGURE

2

ATTACHMENT B

PHOTOGRAPHS

(all photos were taken on August 29 & 30, 2022)



Southeastward view of gate to Mill Street access road.



South-southeastward view of the landfill access gate located in the northern portion of the perimeter fenceline. Note warning signage on fence.



Northward view of the recently mowed landfill surface taken near well VDM-12.



Southeastward view of east side of landfill looking towards well VDM-14R.



Repaired former gap in fenceline southwest of well VDM-10.



Gap in fenceline southeast of well VDM-14R that needs repair.



Wells VDM-9R (left) and VDM-10 (right).



Wells VDM-11 (left) and VDM-12 (right).



Wells VDM-14R (left) and D-55 (right).



Using a dedicated HDPE bailer to purge groundwater at well D-55 on August 29, 2022.



Groundwater sample collection at well VDM-11 on August 30, 2022.



Collecting the surface water sample from Eighteen Mile Creek with a sample dipper on August 30, 2022.

ATTACHMENT C

WELL PURGING/SAMPLING LOGS

APPENDIX E

Attachment 1-A

Well Purging / Sampling Data

WELL D-55:

WELL PURGING DATA:

DATE: 8-29-22START TIME: 9:55FINISH TIME: 10:05

A: MP ELEVATION: 468.76 FEET

B: DEPTH TO WATER:

36.43 FEET

C: DEPTH OF WELL INSTALLED: 46.40 ft.

D: STATIC WATER LEVEL: C-D =

9.97 FEETE: WELL VOLUME: $E * 0.1636 =$ 1.62 GALLONS

F: DEPTH OF WELL AS MEASURED:

47.22 FEET

WELL SAMPLING DATA:

DATE: 8-30-22START TIME: 9:58FINISH TIME: 10:05

A: MP ELEVATION: 468.76 FEET

B: DEPTH TO WATER:

36.49 FEET

C: DEPTH OF WELL INSTALLED: 46.40 ft.

D: STATIC WATER LEVEL: C-D =

9.91 FEETE: WELL VOLUME: $E * 0.1636 =$ 1.61 GALLONS

F: DEPTH OF WELL AS MEASURED:

~~7.21~~ 47.22 FEET Temp: 14.1

G: pH OF SAMPLE:

7.21 pHH: pH METER CALIBRATED?: YES ☒NO ☐

I: SAMPLES OBTAINED:

1- TOTAL METALS, 1 TOTAL CHLORIDES, 2 VOAs

J: WEATHER CONDITIONS: Rain ~ 70K: SAMPLER(S): Tom Webster & Eric SwartzmeyerL: COMMENTS: Solid bottom purged ~ 5 gals, st. test ~ clear
Sample: clear, no odor
Dup taken

Well Purging / Sampling Data

WELL VDM-9R:

WELL PURGING DATA:

START TIME: 922

DATE: 8-29-22

FINISH TIME: 930

A: MP ELEVATION: 448.58 FEET

B: DEPTH TO WATER:

34.22 FEET

C: DEPTH OF WELL INSTALLED: 37.35 ft.

D: STATIC WATER LEVEL: C-D =

3.13 FEET

E: WELL VOLUME: $E * 0.1636 =$

0.51 GALLONS

F: DEPTH OF WELL AS MEASURED:

39.15 FEET

WELL SAMPLING DATA:

DATE: 8-30-22

START TIME: 922

FINISH TIME: 927

A: MP ELEVATION: 448.58 FEET

B: DEPTH TO WATER:

3⁶8.83 FEET

C: DEPTH OF WELL INSTALLED: 37.35 ft.

D: STATIC WATER LEVEL: C-D =

0.52 FEET

E: WELL VOLUME: $E * 0.1636 =$

0.08 GALLONS

F: DEPTH OF WELL AS MEASURED:

39.15 FEET

G: pH OF SAMPLE:

6.05 pH Temp: 14.5

H: pH METER CALIBRATED?: YES ☒

NO ☐

I: SAMPLES OBTAINED:

1- TOTAL METALS, 1 TOTAL CHLORIDES, 2 VOAs

J: WEATHER CONDITIONS: Rain ~ 70

K: SAMPLER(S): Tom Webster & Eric Swartzmeyer

L: COMMENTS: Solid bottom, purged: clear → sl. turbid, 0.5 gals to dry
Sample: turbid, No odor

Well Purging / Sampling Data

WELL VDM-10:

WELL PURGING DATA:

DATE: 8-29-22

START TIME: 918

FINISH TIME: 935

A: MP ELEVATION: 444.46 FEET

B: DEPTH TO WATER:

34.50 FEET

C: DEPTH OF WELL INSTALLED: 45.76 ft.

D: STATIC WATER LEVEL:

C-D =

11.26 FEET

E: WELL VOLUME: $E * 0.1636 =$

1.83 GALLONS

F: DEPTH OF WELL AS MEASURED:

46.60 FEET

WELL SAMPLING DATA:

DATE: 8-30-22

START TIME: 910

FINISH TIME: 915

A: MP ELEVATION: 444.46 FEET

B: DEPTH TO WATER:

44.90 FEET

C: DEPTH OF WELL INSTALLED: 45.76 ft.

D: STATIC WATER LEVEL:

C-D =

0.86 FEET

E: WELL VOLUME: $E * 0.1636 =$

0.14 GALLONS

F: DEPTH OF WELL AS MEASURED:

46.60 FEET

G: pH OF SAMPLE:

6.11 pH Temp: 14.5°C

H: pH METER CALIBRATED?: YES ☒

NO []

I: SAMPLES OBTAINED:

1- TOTAL METALS, 1 TOTAL CHLORIDES, 2 VOAs

J: WEATHER CONDITIONS: Rain ~ 70

K: SAMPLER(S): Tom Webster & Eric Swartzmeyer

L: COMMENTS: purged ~ 5 gal today, sl. tint → turbid, solid bottom
Sample: sl. tint → turbid, No odor

Well Purging / Sampling Data

WELL VDM-11:

WELL PURGING DATA:

START TIME: 900

DATE: 8-29-22

FINISH TIME: 904

A: MP ELEVATION: 450.33 FEET

B: DEPTH TO WATER:

20.08 FEET

C: DEPTH OF WELL INSTALLED: 22.63 ft.

D: STATIC WATER LEVEL: C-D =

2.55 FEET

E: WELL VOLUME: $E * 0.1636 =$

0.41 GALLONS

F: DEPTH OF WELL AS MEASURED:

22.80 FEET

WELL SAMPLING DATA:

DATE: 8-30-22

START TIME: 903

FINISH TIME: 906

A: MP ELEVATION: 450.33 FEET

B: DEPTH TO WATER:

21.08 FEET

C: DEPTH OF WELL INSTALLED: 22.63 ft.

D: STATIC WATER LEVEL: C-D =

1.55 FEET

E: WELL VOLUME: $E * 0.1636 =$

0.25 GALLONS

F: DEPTH OF WELL AS MEASURED:

22.80 FEET

G: pH OF SAMPLE:

6.42 pH Temp: 15.4

H: pH METER CALIBRATED?: YES ☒

NO ☐

I: SAMPLES OBTAINED:

1- TOTAL METALS, 1 TOTAL CHLORIDES, 2 VOAs

J: WEATHER CONDITIONS: cloudy ~ 70

K: SAMPLER(S): Tom Webster & Eric Swartzmeyer

L: COMMENTS: purged ~ 1 gal to dry, sl. tint ~ gray, spongy bottom
Sample: No odor, slight tint

Well Purging / Sampling Data

WELL VDM-12:

WELL PURGING DATA:

START TIME: 0910

DATE: 8-29-22

FINISH TIME: _____

A: MP ELEVATION: 451.01 FEET

B: DEPTH TO WATER:

Dry FEET

C: DEPTH OF WELL INSTALLED: 14.91

D: STATIC WATER LEVEL: C-D = _____

FEET

E: WELL VOLUME: $E * 0.1636 =$ _____

GALLONS

F: DEPTH OF WELL AS MEASURED:

13.15 FEET

WELL SAMPLING DATA:

DATE: _____

START TIME: 907

FINISH TIME: _____

A: MP ELEVATION: 451.01 FEET

B: DEPTH TO WATER:

_____ FEET

C: DEPTH OF WELL INSTALLED: 14.91

D: STATIC WATER LEVEL: C-D = _____

FEET

E: WELL VOLUME: $E * 0.1636 =$ _____

GALLONS

F: DEPTH OF WELL AS MEASURED:

_____ FEET

G: pH OF SAMPLE:

_____ pH

H: pH METER CALIBRATED?: YES []

NO []

I: SAMPLES OBTAINED:

1- TOTAL METALS, 1 TOTAL CHLORIDES, 2 VOAs

J: WEATHER CONDITIONS: _____

K: SAMPLER(S): _____

L: COMMENTS: well was dry, No Samples collected
muddy bottom

Well Purging / Sampling Data

WELL VDM-14R:

WELL PURGING DATA:

START TIME: 940

DATE: 8-29-22

FINISH TIME: 945

A: MP ELEVATION: 444.74 FEET

B: DEPTH TO WATER:

10.29 FEET

C: DEPTH OF WELL INSTALLED: 11.5

D: STATIC WATER LEVEL: C-D =

1.31 FEET

E: WELL VOLUME: $E * 0.1636 =$

0.22 GALLONS

F: DEPTH OF WELL AS MEASURED:

11.60 FEET

WELL SAMPLING DATA:

DATE: 8-30-22

START TIME: 938

FINISH TIME: 942

A: MP ELEVATION: 444.74 FEET

B: DEPTH TO WATER:

10.32 FEET

C: DEPTH OF WELL INSTALLED: 11.5

D: STATIC WATER LEVEL: C-D =

1.18 FEET

E: WELL VOLUME: $E * 0.1636 =$

0.19 GALLONS

F: DEPTH OF WELL AS MEASURED:

11.60 FEET

G: pH OF SAMPLE:

5.47 pH Temp: 17.1

H: pH METER CALIBRATED?: YES ☒

NO ☐

I: SAMPLES OBTAINED:

1- TOTAL METALS, 1 TOTAL CHLORIDES, 2 VOAs

J: WEATHER CONDITIONS: Rain ~70

K: SAMPLER(S): Tom Webster & Eric Swartzmeyer

L: COMMENTS: Solid bottom, purged ~ 1 gal, dark orange → sl. tint
Sample! sl. tint no odor

