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February 9, 2015

Vivek Nattanmai
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York, 12233-7013

Re: Monitoring Well Sampling Data Summary Report
Carroll Landfill, Chautauqua County, New York
Site No. 9-07-017
Work Assignment No. D007617

Dear Mr. Nattanmai:

Ecology and Environment Engineering, P.C. (EEEPC) is pleased to provide the New York State Department of Environmental Conservation (NYSDEC) with this Data Summary Report for Monitoring Well Sampling at Carroll Landfill (Site Number 9-07-017) in the Town of Frewsburg, Chautauqua County, New York conducted in September 2014.

If you have any questions or comments on this submittal, please contact me at 716-684-8060.

Sincerely,

James C Taravella

Jim Taravella, P.E.
Project Manager

cc: Tom Heins, EEEPC

enclosures

Monitoring Well Sampling Data Summary Report
Carroll Landfill
Town of Carroll, Chautauqua County, New York
Site No. 9-07-017

List of Tables

List of Figures

List of Appendices

1 Introduction

Groundwater sampling to monitor existing site groundwater conditions was conducted by Ecology and Environment Engineering, P.C. (EEEPC) on behalf of the New York State Department of Environmental Conservation (NYSDEC) at Carroll Landfill in Frewsburg, New York. The objective of this sampling was to measure the concentration of chemicals present in the groundwater prior to construction of a landfill cover.

1.1 Site Location and Description

The Carroll Town Landfill is a former municipal construction and demolition debris landfill and solid waste transfer station. The landfill is located at the end of an unnamed gravel road approximately 1,400 feet north of NYS Route 62 (also known as Ivory Road) just east of the village of Frewsburg, New York. The landfill occupies approximately 28 acres of a 305-acre lot, owned by the Town of Carroll. The landfill is in a rural area surrounded by inactive farmland, wooded areas, wetlands, and private homes. Conewango Creek, a Class C stream, lies to the north and west of the site and at its closest point is approximately 1,400 feet north of the landfill.

The site is located on a northwest-facing, gently sloping hillside and is composed of two roughly rectangular disposal areas, each surrounded by drainage ditches and swales. The two disposal

areas are each approximately 750 feet (north to south) by 300 feet (east to west). The ground surface of the easternmost cell is estimated to range 1 to 4 feet above the surrounding ditch on the east, north, and west. The topography of the western cell is more uneven, ranging from approximately 1 to10 feet above the surrounding ditch with several flat areas. A drainage area separates the two disposal areas and eventually drains to the northwest into a wetland area before reaching Conewango Creek. An area west of the site is reported to have been used as a borrow area for cover soil.

The Town of Carroll Public Works Garage and the Frewsburg Water District Department facility are located approximately 700 feet west of the site. The water district facility comprises a water supply well and pump station. The Public Works Garage and Water District facility are accessed via Wahlgren Road from NYS Route 62. The nearest residential properties are approximately 1,200 feet to the west and southwest, uphill from the site.

1.2 Site History

The Town of Carroll operated the site as a municipal solid waste landfill from the early 1960s to 1979. Records indicate that industrial wastes were disposed of in the landfill during the period of operation. In 1979, the landfill began operation as a waste transfer station and was limited to accepting only construction and demolition debris for disposal at the landfill (NYSDEC2009). The western landfill cell was closed in May 1980 but it is unclear when the eastern cell closed. The town reported that the site closed as a waste transfer station in 1986. In 1992, as part of the remedial investigation of the Vac Air Alloys site (Site Number 907016) in Frewsburg, it was alleged that industrial waste from Vac Air Alloys was disposed of at the landfill. Allegations included citizens' reports of having witnessed drums of waste labeled as "trichloroethene" being disposed at the landfill. Vac Air Alloys allegedly disposed of drums containing metal debris and metal turnings (NYSDEC 2009). In April 1992 NYSDEC inspected the site and found 55-gallon drums, partially buried. Subsequent sampling results indicated volatile organic compounds (VOCs) in leachate migrating from the site. This led to a listing on June 9, 1992 as a probable hazardous waste disposal site. A preliminary site assessment was completed in February 1997, which led to a Class 2 site listing in 1998 (NYSDEC 2009).

In accordance with the Record of Decision (NYSDEC 2009) for the Carroll Landfill site, contaminated groundwater will be extracted and treated for removal of contamination associated with the landfill, and an engineered soil cover will be constructed on the landfill.

2 Scope of Work

Groundwater at existing monitoring wells at the landfill was sampled by EEEPC in September 2014. Previous sampling had occurred in October 2004, March 2005, August 2008, August 2010, and November 2012 (EEEPC 2012).

In September 2014, groundwater samples were collected from 17 of 19 existing monitoring wells (see Figure 1). Two of the 19 wells could not be sampled due to previous damage to the wells. Because of the proximity of a drinking water supply well to the landfill, drinking water analytical methods were used for VOC and Target Analyte List (TAL) metals analysis. Analytical parameters and methods are listed below.

All monitoring well sampling was performed in accordance with the approved procedures in EEEPC's August 2010 Work Plan (EEEPC 2010). A summary of the work is provided below.

3 Sampling and Analysis

3.1 Groundwater Sampling Procedures and Analyses

A total of 17 of 19 existing groundwater monitoring wells were sampled between September 9 and September 11, 2014:

- Ten shallow wells (MW-102, MW-103, MW-104, MW-105S, MW-106S, MW-107S, MW-108S, MW-109S, MW-110S, and MW-111S);
- Five intermediate wells (MW-102I, MW-107I, MW-108I, MW-110I, and MW-111I); and
- Two deep wells (MW-109D and MW-13 [Sentinel Well]).

Two wells (MW-101 and MW109I) could not be sampled because prior damage of the well casings precluded sampling these wells. Other well maintenance needs that did not affect the ability to sample the wells were recorded at the time of sampling and are summarized in Table 1. Public supply well #5 was not sampled due to ongoing remedial construction activities.

All 17 groundwater monitoring well samples were analyzed by TestAmerica Laboratories of Amherst, New York, for the following parameters:

- VOCs in drinking water: analyzed by United States Environmental Protection Agency (EPA) Method 524.2 (gas chromatography and mass spectrometry [MS]);
- Target Analyte List metals: analyzed by EPA Methods 200.7 Rev 4.4 (inductively coupled plasma [ICP] – Atomic Emission Spectroscopy) and 200.8 (ICP-MS); and
- Mercury by EPA Method 245.1 (cold vapor atomic absorption).

Prior to sampling, the static water level and depth of each well were measured (see Table 2). Each monitoring well was purged prior to sampling. The wells were purged with a centrifugal pump and low-flow controller at rates of approximately 0.9 to 2.0 liters per minute. Pumping continued until the well went dry or a minimum of three well volumes was purged and water quality parameters stabilized. During purging, water quality parameters including pH, temperature, conductivity, oxidation-reduction potential, and turbidity were measured using a Myron 6P multi-parameter water quality meter and LaMotte 2020 turbidity meter (see Table 3). Nine of the wells were purged dry in less than three well volumes and were sampled with a bailer within an hour of the completion of purging after sufficient recharge of the well occurred. The remaining eight wells were purged of three well volumes and water quality parameters stabilized during purging. Well sampling logs are provided in Appendix A.

3.2 Quality Assurance/Quality Control (QA/QC) Samples

QA/QC samples, including field duplicates, trip blanks, field blanks, and additional volume for matrix spike/ matrix spike duplicate (MS/MSD) analysis were collected for groundwater samples in accordance with the standard EEEPC Quality Assurance Project Plan (QAPP) for NYSDEC projects (EEEPC 2011). Based on quality control review of the data, appropriate data qualifiers were applied and are included with the analytical results summary (see Table 4).

Duplicate samples provide insight into the homogeneity of a sample matrix and establish a degree of confidence that the sample represents site conditions. A groundwater duplicate sample was collected from monitoring well MW-107I. A review of the duplicate sample results is provided in the Data Usability Summary Report (DUSR) provided in Appendix B. Where the relative percent difference between the original and duplicate sample results exceeded data review guidelines, "J" flags were added to indicate that the results are estimated. This was true only for lead and there were no significant impacts on data usability associated with the field duplicate sample results.

Trip blanks were collected to establish that the transport of sample vials to and from the field did not result in the contamination of the samples from external sources. Trip blanks consisted of laboratory vials containing deionized water for groundwater. One trip blank was transported to and from the field with each sample delivery (two total). Trip blank results are discussed in the DUSR in Appendix B. No analytes were detected in the trip blanks and no data qualification was necessary.

An equipment rinseate blank (FieldBlank-Sep14) was collected to identify possible sources of cross-contamination associated with the reuse of decontaminated equipment. The rinseate blank was collected in the field and therefore may also be used to assess ambient conditions that may potentially affect the sample quality. Several metals (calcium, magnesium, manganese, and lead) were detected at low levels in the field blank and the results for these metals that were detected at similar concentrations in groundwater samples were flagged "U" as not detected. This included lead in MW-103 and MW-108I as well as manganese in MW-13 (see the DUSR in Appendix B).

3.3 Data Review

All laboratory deliverables were reviewed in accordance with appropriate method and general reporting requirements from the NYSDEC Analytical Services Protocol (ASP). The data were qualified following guidelines in EPA Region 2's data validation standard operating procedures (EPA 2012a, 2012b, 2012c, 2014). The data review included an evaluation of the following:

- Holding times;
- Initial and continuing calibration;
- Reporting limits;
- Laboratory blanks;
- Matrix spike/matrix spike duplicate samples;
- Laboratory control samples;

- Field duplicates;
- Sample result verification; and
- Method-specific QC samples.

A DUSR was prepared for the entire sample delivery group by EEEPC's project chemist and was reviewed by EEEPC's project geologist (see Appendix B). Deviations from acceptable QC specifications are discussed in the DUSR. Original laboratory reports are provided in Appendix C (electronic submittal only). Qualifiers were added to the data to indicate potential concerns with data usability and these qualifiers were transferred to the data summary tables. There were no major concerns resulting in significant impacts on data usability. There were minor concerns resulting in qualification of sample results in addition to those related to field QC samples discussed in Section 3.2. Some VOC and metals positive results were qualified as estimated and flagged with a "J" based on laboratory QC results, including laboratory control sample, method blank, and MS/MSD analyses. Non-detect results associated with these issues were flagged "UJ" as non-detect with an estimated reporting limit. Reporting limits were elevated in two samples (twofold in MW-103-SEP14 and fivefold in MW-107S-SEP14) due to sample dilutions required to bring the concentrations of vinyl chloride into the calibrated range of the instrument.

3.4 Decontamination and Investigation-derived Waste

Pumps and equipment were decontaminated using a laboratory-grade detergent wash, potable water rinse, 5% nitric acid solution rinse, and DI water rinse before sampling at each location. Investigation-derived waste (IDW) generated during this investigation included decontamination wastes, groundwater from monitoring well purging, disposable polyethylene tubing and bailers, and spent personal protective equipment (nitrile gloves). Decontamination water and groundwater generated from monitoring well purging and sampling was field-screened for organic vapors with a photoionization detector and visually inspected to determine whether the water was potentially contaminated. No organic vapors or unusual odors/colors were detected and no obvious signs of significant contamination were observed, so these waste waters were discharged to the ground surface at the landfill. All personal protective equipment and disposable polyethylene tubing and bailers were disposed of as non-regulated solid waste by the Frewsburg Water Department at its facility.

4 Results

4.1 Groundwater Flow Direction

Groundwater elevation contour maps were created for the shallow and intermediate zones using water levels measured from 17 monitoring wells at the site between September 9 and 11, 2014 (see Table 2 and Figures 2 and 3). Water levels could not be measured in two damaged wells (MW-101 and MW-109I). Figures 2 and 3 represent groundwater flow conditions at the time of sampling when water supply well #5 was not pumping.

The direction of shallow groundwater flow is generally to the north toward Conewango Creek (see Figure 2). There is possibly some variation in the local direction and magnitude of the shallow groundwater gradient at the east and west sides of the site, which is likely due to

variation in the overburden material at the site. Shallow overburden material at the site consists of lacustrine sandy silt and silty clay to a depth of approximately 20 feet (NYSDEC 2009). Variation in silt and clay content and horizontal layering of overburden can cause localized variation in groundwater flow. However, because the groundwater elevation in well MW-101 could not be measured, the interpretation of the gradient in the southeast corner of the site is made with less certainty. Near the north end of the site, the groundwater flow direction appears to be towards the northwest.

The direction of groundwater flow in the intermediate zone is also generally to the north toward Conewango Creek (see Figure 3). Groundwater in this zone is expected to be flowing at a depth coincident with the glacial outwash sand and gravel unit in the area (NYSDEC 2009). Near the north end of the site, the groundwater flow direction appears to be to somewhat towards the northwest; however, a lack of data points at the north end of the site within the intermediate zone makes interpretation of the groundwater gradient less certain in this area.

Groundwater elevation contours were not drawn for deep groundwater because there are too few wells to depict the gradient. However, a comparison of the groundwater elevations at deep wells MW-109D (1256.40 feet) and MW-13 (1255.01 feet), indicates that there is at least a component of flow to the southwest in this zone, from MW-109D toward MW-13.

4.2 Analytical Results

Groundwater analytical results are summarized in Table 4. For ease of review, these tables include only analytes that were detected in at least one sample. Analytes that were not detected in any sample are included in the laboratory report in Appendix C. Analytical results for the groundwater samples were compared with NYSDEC Class GA groundwater standards and guidance values (NYSDEC 1998). Compounds exceeding NYSDEC criteria during at least one of the sampling rounds between October 2004 and September 2014 are presented on Table 5 and in Figure 4.

Consistent with previous sampling events, six of the nine wells that were purged dry during the sampling event exhibited elevated turbidity values (i.e., above 50 NTU) that may have resulted in higher total (unfiltered) metals concentrations than low-turbidity samples.

Twenty-one metals for which samples were analyzed were detected in at least one well. Iron concentrations exceeded screening criteria in a total of 11 monitoring wells, including 8 shallow wells (MW-104, MW-105S, MW-106S, MW-107S, MW-108S, MW-109S, MW-110S, and MW-111S),2 intermediate wells (MW-107I and MW-110I), and 1 deep well (MW-13). Manganese concentrations exceeded screening criteria in a total of 7 monitoring wells, including 6 shallow wells (MW-104, MW-106S, MW-107S, MW-108S, MW-109S, and MW-111S), and 1 intermediate well (MW-110I). Iron and manganese concentrations exceeding screening criteria were also detected during previous sampling rounds (see Table 5 and Figure 4). Iron concentrations were found to exceed criteria in all wells during at least one previous sampling round, and manganese concentrations were found to exceed screening criteria during previous sampling rounds in 7 wells (see Table 5 and Figure 4).

Lead concentrations exceeding screening criteria were detected in one intermediate monitoring well (MW-111I). Lead concentrations exceeding screening criteria were also detected during previous sampling rounds in four wells (see Table 5 and Figure 4).

Barium was detected at a concentration above the screening level criteria in one shallow well (MW-108S). Barium concentrations exceeding screening criteria were also detected during previous sampling rounds in at least one well (see Table 5 and Figure 4).

Eight of the 58 VOCs analyzed were detected in at least one well. Only one VOC, vinyl chloride, was present at concentrations that exceeded the screening criteria in two wells (24 micrograms per liter [µg/L] in MW-103 and 21 µg/L in MW-107S). Vinyl chloride concentrations exceeding screening criteria were also detected during previous sampling investigations in at least one well (see Table 5 and Figure 4).

A decreasing trend in VOC concentrations is suggested in one shallow well (MW-102) when comparing current VOC concentrations with concentrations during the previous three sampling rounds (2008, 2010 and 2012). A similar decreasing trend is suggested in one intermediate well (MW-102I) when comparing current VOC concentrations with concentrations during all five previous sampling rounds. Over the previous three sampling rounds (2008, 2010, and 2012), the VOC concentration of vinyl chloride in MW-103 and MW-107 has varied (see Table 5 and Figure 4).

No other spatial patterns concerning VOC or metals concentrations were apparent.

5 References

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TABLES

Table 1 Monitoring Well Maintenance Needs, September 2014
Carroll Landfill, Frewsburg, New York

Well ID	Heaved/ Broken Pad	Bent Casing	Sediment Buildup In Well	Unable To Sample	Replaced Lock	Notes
MW-13	--	--	--	--	--	
MW-101	Yes	Yes	Unknown	Yes	--	
MW-102	--	--	--	--	Yes	
MW-102I	--	--	Yes	--	--	
MW-103	--	--	Yes	--	--	
MW-104	--	--	Yes	--	--	
MW-105S	--	--	Yes	--	--	
MW-106S	--	--	--	--	--	
MW-107I	--	--	Yes	--	--	
MW-107S	--	--	Yes	--	--	
MW-108I	--	--	Yes	--	--	
MW-108S	--	--	--	--	--	
MW-109D	--	--	--	--	--	
MW-109I	Yes	Yes	Unknown	Yes	--	
MW-109S	--	--	Yes	--	--	
MW-110I	--	--	Yes	--	--	
MW-110S	--	--	Yes	--	--	
MW-111I	--	--	Yes	--	--	Bullet holes in well casing. The PVC casing is shattered in two sections
MW-111S	--	--	Yes	--	--	

Key

-- Condition not observed

Items for all wells:

New weather tight locks, keyed alike, should be installed on all wells.

Outer well casings should be cleaned and painted.

Grading with soil should be done around well pads to minimize potential infiltration.

Table 2 Monitoring Well Specifications and Groundwater Elevations
Carroll Landfill, Frewsburg, New York

Monitoring Well ID	Ground Elevation (feet AMSL)	Top of PVC Casing Elevation (feet AMSL)	Reported Well Depth (feet BTOC)	Well Depth Measured 2010 (feet BTOC)	Well Depth Measured 2012 (feet BTOC)	Well Depth Measured 2014 (feet BTOC)	Screen Interval (feet AMSL)	Ground Water Elevation (feet AMSL)				
								Oct-2004	Mar-2005	Aug-2010	Nov-2012	Sep-2014
Shallow												
MW-101	1259.1	1261.24	17.8	NM	NM	NM	1243.44 - 1253.44	1254.72	1257.26	NM	NM	NM
MW-102	1254.6	1256.58	32.0	32.2	NM	32.2	1224.56 - 1234.56	1245.82	1249.63	1254.78	NM	1256.16
MW-103	1250.8	1253.21	34.2	36.3	30.8	30.8	1219.01 - 1229.01	1246.93	1250.33	1253.11	1251.71	1252.17
MW-104	1252.4	1254.61	21.6	21.8	21.6	21.5	1233.01 - 1243.01	1249.15	1249.97	1247.46	1249.04	1249.03
MW-105S	1252.6	1254.97	20.0	19.9	19.8	19.3	1234.97 - 1244.97	1250.41	1251.17	1249.46	1249.53	1249.53
MW-106S	1252.7	1255.14	22.5	22.7	24.6	22.6	1232.64 - 1242.64	1249.54	1251.12	1249.48	1249.73	1249.90
MW-107S	1252.4	1254.56	22.4	22.6	22.5	22.5	1232.16 - 1242.16	1249.75	1249.05	1249.84	1249.58	1249.57
MW-108S	1255.1	1257.68	22.6	22.7	22.7	22.7	1235.08 - 1245.08	1251.28	1252.45	1252.30	1252.36	1253.17
MW-109S	1255.2	1257.52	22.9	23.1	23.0	23.1	1234.62 - 1244.62	1245.84	1249.80	1254.17	1253.17	1256.10
MW-110S	1249.7	1253.16	22.5	22.5	22.7	22.7	1230.66 - 1240.66	1247.85	1249.98	1248.02	1249.21	1247.42
MW-111S	1251.4	1253.66	21.9	19.8	18.9	18.1	1231.76 - 1241.76	1248.86	1249.53	1248.52	1249.06	1249.02
Intermediate												
MW-102I	1254.9	1257.47	41.1	43.8	45.5	45.5	1216.37 - 1226.37	1245.74	1249.56	1254.99	1253.64	1256.4
MW-107I	1252.5	1254.87	45.2	44.6	44.6	44.6	1209.67 - 1219.67	1249.17	1251.37	1249.76	1250.02	1249.22
MW-108I	1255.1	1257.59	47.2	47.3	47.3	47.3	1210.39 - 1220.39	1248.79	1251.31	1251.55	1252.23	1253.60
MW-109I	1254.9	1257.25	43.8	NM	NM	NM	1213.45 - 1223.45	1245.91	1249.56	1254.98	NM	NM
MW-110I	1249.8	1252.03	44.0	44.0	42.9	44.5	1208.03 - 1218.03	1246.59	1249.14	1248.09	1249.16	1248.25
MW-111I	1251.3	1253.71	48.1	46.3	43.0	43.0	1205.61 - 1215.61	1248.11	1250.31	1248.89	1248.96	1249.28
Deep												
MW-109D	1255.0	1257.31	71.1	73.2	73.6	73.2	1186.21 - 1196.21	1246.03	1249.56	1254.98	1253.61	1256.40
Other												
MW-13	1260.0	1262.50		71.0	70.9	70.8				1253.66	1252.18	1255.01
Test well #12	1260.0	1262.00		NM	NM	NM				1249.46	NM	1262.00

Key:
AMSL - above mean sea level
BTOC - below top of casing
NM - not measured

Table 3 **Groundwater Sample Water Quality Measurements, September 2014**
Carroll Landfill, Frewsburg, New York

Sample ID	Sample Date	Well Depth (feet BTOC)	Initial Water Depth (feet BTOC)	pH (s.u.)	Temperature (°C)	ORP (millivolts)	Conductivity (µS/cm)	Turbidity (NTU)	PID Reading (ppm)	Comments
MW-102I	9/9/2014	45.49	1.09	7.69	11.9	110	406.3	4.98	0	
MW-102S	9/9/2014	32.19	0.42	7.61	11.2	125	456.6	0.50	0	
MW-103	9/11/2014	30.80	1.04	7.81	11.1	-101	445.2	0.33	0	
MW-104	9/11/2014	21.52	5.58	7.87	11.1	-140	336.2	75.7	0	Purged dry with pump, sampled with bailer after recharge.
MW-105S	9/10/2014	19.33	5.44	7.21	14.5	249	352.3	74.0	0	Purged dry with pump, sampled with bailer after recharge.
MW-106S	9/11/2014	22.61	5.24	8.17	15.6	90	353.9	17.8	0	Purged dry with pump, sampled with bailer after recharge.
MW-107I	9/10/2014	44.60	5.65	7.97	10.2	-117	314.4	8.55	0	Duplicate sample collected.
MW-107S	9/10/2014	22.50	4.99	7.78	10.5	-108	377.7	>1000	0	Purged dry with pump, sampled with bailer after recharge.
MW-108I	9/11/2014	47.33	3.99	7.80	11.1	-141	455.2	2.46	0	
MW-108S	9/11/2014	22.71	4.51	7.22	13.1	-136	1054.8	38.0	0	Purged dry with pump, sampled with bailer after recharge.
MW-109D	9/9/2014	73.19	0.91	7.80	10.1	96	391.8	3.59	0	MS/MSD
MW-109S	9/9/2014	23.07	1.42	7.81	10.8	105	388.2	78.3	0	Purged dry with pump, sampled with bailer after recharge.
MW-110I	9/10/2014	44.52	3.78	7.70	15.6	119	275.8	42.1	0	Purged dry with pump, sampled with bailer after recharge.
MW-110S	9/10/2014	22.69	5.74	7.91	15.9	184	319.9	>1000	0	Purged dry with pump, sampled with bailer after recharge.
MW-111I	9/10/2014	43.01	4.43	7.91	11.7	-122	369.5	2.35	0	
MW-111S	9/10/2014	18.05	4.64	7.67	16.2	154	478.5	>1000	0	Purged dry with pump, sampled with bailer after recharge.
MW-13 (Sentinel well)	9/11/2014	70.78	7.49	7.82	10.9	119	352.8	5.74	0	

Key:
°C = degrees Celsius
BTOC = below top of casing
MS/MSD = matrix spike/matrix spike duplicate
µS/cm = microSiemens per centimeter
NM = not measured
NTU = nephelometric turbidity units
PID = photo-ionization detector
ppm = parts per million
s.u. = standard units

Table 4 Summary of Positive Analytical Results for Groundwater Samples, September 2014
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Notes	Location ID:	MW-102	MW-102I	MW-103	MW-104	MW-105S
			Sample Name:	MW-102-SEP14	MW-102I-SEP14	MW-103-SEP14	MW-104-SEP14	MW-105S-SEP14
			Screen Interval:	20 - 30 ft	28.6 - 38.6 ft	21.8 - 31.8 ft	9.4 - 19.4 ft	7.7 - 17.7 ft
			Date:	09/09/14	09/09/14	09/11/14	09/11/14	09/10/14
Metals by Method E200.7 Rev 4.4 (µg/L)								
ALUMINUM	NA			< 60 U	**60 J**	< 60 U	**5000**	**7300**
BARIUM	1000			**71**	**77**	**250**	**260**	**250**
BERYLLIUM	3	G		< 0.30 U	< 0.30 U	< 0.30 U	< 0.30 U	**0.30 J**
CADMIUM	5			< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
CALCIUM	NA			**63400**	**56700**	**62300**	**39700**	**42500**
CHROMIUM, TOTAL	50			< 1.0 U	**1.1 J**	< 1.0 U	**6.8**	**8.5**
COBALT	NA			< 0.63 U	< 0.63 U	< 0.63 U	**3.4 J**	**5.0**
COPPER	200			**1.6 J**	< 1.6 U	< 1.6 U	**6.2 J**	**8.9 J**
IRON	300			< 19 U	**77**	**200**	**11100**	**11400**
MAGNESIUM	35000	G		**14300**	**14100**	**14800**	**12300**	**12100**
MANGANESE	300			**42**	**65**	**280**	**320**	**300**
NICKEL	100			< 1.3 U	< 1.3 U	< 1.3 U	**8.3 J**	**12**
POTASSIUM	NA			**860**	**930**	**920**	**2800**	**3500**
SELENIUM	10			< 8.7 U	< 8.7 U	< 8.7 U	< 8.7 U	< 8.7 U
SODIUM	20000			**3000**	**3300**	**4300**	**15800**	**11700**
VANADIUM	NA			< 1.5 U	< 1.5 U	< 1.5 U	**7.2**	**12**
ZINC	2000			< 1.5 U	< 1.5 U	< 1.5 U	< 23 U	**33**
Metals by Method E200.8 (µg/L)								
ANTIMONY	3			< 0.15 U	< 0.15 U	< 0.15 U	**0.22 J**	< 0.47 U
ARSENIC	25			< 0.078 U	**0.20 J**	**1.7**	**55.4**	**7.7**
LEAD	25			< 0.34 U	< 0.27 U	**0.17 J**	**2.5**	**3.0**
THALLIUM	0.5	G		< 0.012 U	< 0.011 U	< 0.0080 U	< 0.016 U	< 0.042 U
Volatile Organics by Method E524.2 (µg/L)								
ACETONE	50	G		< 0.54 U	< 0.54 U	< 1.1 U	**1.8 J**	< 0.54 U
BENZENE	1			< 0.13 U	< 0.13 U	< 0.26 U	< 0.13 U	< 0.13 U
CHLOROBENZENE	5			< 0.12 U	< 0.12 U	< 0.24 U	< 0.12 U	< 0.12 U
CIS-1,2-DICHLOROETHYLENE	5			**3.2**	< 0.12 U	< 0.24 U	**0.63**	< 0.12 U
DICHLOROFLUOROMETHANE	5			< 0.13 U	< 0.13 U	< 0.27 U	< 0.13 U	< 0.13 U
DIETHYL ETHER (ETHYL ETHER)	NA			< 0.12 U	< 0.12 U	< 0.23 U	**0.73**	< 0.12 U
TRICHLOROETHYLENE (TCE)	5			**1.2**	**0.41 J**	< 0.12 U	< 0.060 U	< 0.060 U
VINYL CHLORIDE	2			**0.34 J**	< 0.059 U	**24**	< 0.059 U	< 0.059 U

Key at end of table.

Source: Ecology and Envirnonment Engineering, P.C. 2014

Table 4 Summary of Positive Analytical Results for Groundwater Samples, September 2014
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Notes	Location ID: MW-106S Sample Name: MW-106S-SEP14 Screen Interval: 10.1 - 20.1 ft Date: 09/11/14	MW-107I MW-107I-SEP14 32.8 - 42.8 ft 09/10/14	MW-107I FD 32.8 - 42.8 ft 09/10/14	MW-107S MW-107S-SEP14 10.2 - 20.2 ft 09/10/14	MW-108I MW-108I-SEP14 34.7 - 44.7 ft 09/11/14
Metals by Method E200.7 Rev 4.4 (µg/L)							
ALUMINUM	NA		**1300**	**480**	**480**	**31500**	< 60 U
BARIUM	1000		**460**	**220**	**210**	**510**	**230**
BERYLLIUM	3	G	< 0.30 U	< 0.30 U	< 0.30 U	**1.5 J**	< 0.30 U
CADMIUM	5		< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
CALCIUM	NA		**48400**	**39900**	**37600**	**78700**	**64500**
CHROMIUM, TOTAL	50		**2.8 J**	**1.4 J**	**1.1 J**	**41**	< 1.0 U
COBALT	NA		**0.87 J**	< 0.63 U	< 0.63 U	**31**	< 0.63 U
COPPER	200		**3.4 J**	**1.9 J**	**1.7 J**	**44**	< 1.6 U
IRON	300		**4200**	**700**	**710**	**59300**	**140**
MAGNESIUM	35000	G	**11100**	**10100**	**9400**	**32200**	**13300**
MANGANESE	300		**2300**	**200**	**190**	**1300**	**260**
NICKEL	100		**2.5 J**	< 1.3 U	< 1.3 U	**66**	< 1.3 U
POTASSIUM	NA		**1200**	**1100**	**1100**	**8400**	**1100**
SELENIUM	10		**9.5 J**	< 8.7 U	< 8.7 U	< 8.7 U	< 8.7 U
SODIUM	20000		**4700**	**7000**	**6600**	**6500**	**5000**
VANADIUM	NA		**2.4 J**	< 1.5 U	< 1.5 U	**50**	< 1.5 U
ZINC	2000		< 8.3 U	**3.2 J**	**2.7 J**	**150**	< 1.9 U
Metals by Method E200.8 (µg/L)							
ANTIMONY	3		**0.28 J**	< 0.15 U	< 0.15 U	< 0.33 U	< 0.15 U
ARSENIC	25		**6.0**	**19.1**	**19.4**	**10.5**	**5.1**
LEAD	25		**2.8**	**1.0**	**2.3**	**18.9**	**0.12 J**
THALLIUM	0.5	G	< 0.0080 U	< 0.025 U	< 0.0094 U	**0.15 J**	< 0.011 U
Volatile Organics by Method E524.2 (µg/L)							
ACETONE	50	G	< 0.54 U	< 0.54 U	< 0.54 U	< 1.1 U	< 0.54 U
BENZENE	1		< 0.13 U	< 0.13 U	< 0.13 U	< 0.26 U	< 0.13 U
CHLOROBENZENE	5		< 0.12 U	< 0.12 U	< 0.12 U	< 0.24 U	< 0.12 U
CIS-1,2-DICHLOROETHYLENE	5		< 0.12 U	< 0.12 U	< 0.12 U	**3.5**	< 0.12 U
DICHLOROFLUOROMETHANE	5		< 0.13 U	< 0.13 U	< 0.13 U	< 0.27 U	< 0.13 U
DIETHYL ETHER (ETHYL ETHER)	NA		< 0.12 U	< 0.12 U	< 0.12 U	**0.44 J**	< 0.12 U
TRICHLOROETHYLENE (TCE)	5		< 0.060 U	< 0.060 U	< 0.060 U	< 0.12 U	< 0.060 U
VINYL CHLORIDE	2		< 0.059 U	< 0.059 U	< 0.059 U	**21**	< 0.059 U

Key at end of table.

Source: Ecology and Envirnonment Engineering, P.C. 2014

Table 4 Summary of Positive Analytical Results for Groundwater Samples, September 2014
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Notes	Location ID: MW-108S Sample Name: MW-108S-SEP14 Screen Interval: 10 - 20 ft Date: 09/11/14	MW-109D MW-109D-SEP14 58.8 - 68.8 ft 09/09/14	MW-109S MW-109S-SEP14 10.6 - 20.6 ft 09/09/14	MW-110I MW-110I-SEP14 31.8 - 41.8 ft 09/10/14	MW-110S MW-110S-SEP14 9.1 - 19.1 ft 09/10/14
Metals by Method E200.7 Rev 4.4 (µg/L)							
ALUMINUM	NA		**3800**	**100 J**	**17200**	**2700**	**8400**
BARIUM	1000		**1700**	**130**	**300**	**160**	**290**
BERYLLIUM	3	G	< 0.30 U	< 0.30 U	**0.68 J**	< 0.30 U	**0.33 J**
CADMIUM	5		< 0.50 U	< 0.50 U	**0.50 J**	< 0.50 U	< 0.50 U
CALCIUM	NA		**140000**	**55200**	**70100**	**34400**	**39000**
CHROMIUM, TOTAL	50		**5.6**	< 1.0 U	**24**	**4.4**	**9.4**
COBALT	NA		**2.6 J**	< 0.63 U	**15**	**1.6 J**	**4.5**
COPPER	200		**5.8 J**	< 1.6 U	**17**	**7.1 J**	**6.5 J**
IRON	300		**23100**	**250**	**26000**	**4200**	**9900**
MAGNESIUM	35000	G	**31100**	**12800**	**19200**	**9400**	**12700**
MANGANESE	300		**740**	**100**	**5200**	**310**	**260**
NICKEL	100		**7.4 J**	< 1.3 U	**31**	**3.9 J**	**11**
POTASSIUM	NA		**4600**	**990**	**5300**	**1800**	**4100**
SELENIUM	10		< 8.7 U	< 8.7 U	< 8.7 U	< 8.7 U	< 8.7 U
SODIUM	20000		**12200**	**4100**	**3300**	**5200**	**5800**
VANADIUM	NA		**6.1**	< 1.5 U	**27**	**4.6 J**	**14**
ZINC	2000		< 20 U	< 1.5 U	**76**	**16**	**31**
Metals by Method E200.8 (µg/L)							
ANTIMONY	3		**0.30 J**	**0.20 J**	**0.37 J**	< 0.62 U	< 0.28 U
ARSENIC	25		**14.0**	< 0.078 U	**8.4**	**12.1**	**10.5**
LEAD	25		**3.7**	< 0.22 U	**7.1**	**2.9**	**3.0**
THALLIUM	0.5	G	< 0.046 U	< 0.0098 U	< 0.18 U	< 0.024 U	< 0.062 U
Volatile Organics by Method E524.2 (µg/L)							
ACETONE	50	G	**2.2 J**	< 0.54 U	< 0.54 U	< 0.54 U	< 0.54 U
BENZENE	1		**0.38 J**	< 0.13 U	< 0.13 U	< 0.13 U	< 0.13 U
CHLOROBENZENE	5		**0.40 J**	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U
CIS-1,2-DICHLOROETHYLENE	5		< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U
DICHLOROFLUOROMETHANE	5		**0.85**	< 0.13 U	< 0.13 U	< 0.13 U	< 0.13 U
DIETHYL ETHER (ETHYL ETHER)	NA		**0.48 J**	< 0.12 U	< 0.12 U	< 0.12 U	< 0.12 U
TRICHLOROETHYLENE (TCE)	5		< 0.060 U	< 0.060 U	< 0.060 U	< 0.060 U	< 0.060 U
VINYL CHLORIDE	2		**0.32 J**	< 0.059 U	< 0.059 U	< 0.059 U	< 0.059 U

Key at end of table.

Source: Ecology and Envirnonment Engineering, P.C. 2014

Table 4 Summary of Positive Analytical Results for Groundwater Samples, September 2014
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Notes	Location ID: MW-111I Sample Name: MW-111I-SEP14 Screen Interval: 35.7 - 45.7 ft Date: 09/10/14	Location ID: MW-111S Sample Name: MW-111S-SEP14 Screen Interval: 9.6 - 19.6 ft Date: 09/10/14	Location ID: MW-13 Sample Name: MW-13-SEP14 Screen Interval: 35 - 75 ft Date: 09/11/14
Metals by Method E200.7 Rev 4.4 (µg/L)					
ALUMINUM	NA		**70 J**	**22700**	**310**
BARIUM	1000		**280**	**430**	**73**
BERYLLIUM	3	G	< 0.30 U	**1.0 J**	< 0.30 U
CADMIUM	5		< 0.50 U	< 0.50 U	< 0.50 U
CALCIUM	NA		**41500**	**64500**	**48700**
CHROMIUM, TOTAL	50		< 1.0 U	**28**	< 1.0 U
COBALT	NA		< 0.63 U	**17**	< 0.63 U
COPPER	200		< 1.6 U	**22**	**1.8 J**
IRON	300		**300**	**35800**	**310**
MAGNESIUM	35000	G	**13100**	**34100**	**10200**
MANGANESE	300		**210**	**670**	< 7.5 U
NICKEL	100		< 1.3 U	**40**	< 1.3 U
POTASSIUM	NA		**1500**	**7900**	**940**
SELENIUM	10		< 8.7 U	< 8.7 U	< 8.7 U
SODIUM	20000		**10100**	**10800**	**6800**
VANADIUM	NA		< 1.5 U	**35**	< 1.5 U
ZINC	2000		**2.2 J**	**92**	< 3.3 U
Metals by Method E200.8 (µg/L)					
ANTIMONY	3		**0.34 J**	< 0.23 U	< 0.15 U
ARSENIC	25		**18.0**	**11.0**	**0.16 J**
LEAD	25		**40.7**	**10.4**	**0.47 J**
THALLIUM	0.5	G	< 0.020 U	**0.15 J**	< 0.0080 U
Volatile Organics by Method E524.2 (µg/L)					
ACETONE	50	G	< 0.54 U	< 0.54 U	< 0.54 U
BENZENE	1		< 0.13 U	< 0.13 U	< 0.13 U
CHLOROBENZENE	5		< 0.12 U	< 0.12 U	< 0.12 U
CIS-1,2-DICHLOROETHYLENE	5		< 0.12 U	< 0.12 U	< 0.12 U
DICHLOROFLUOROMETHANE	5		< 0.13 U	< 0.13 U	< 0.13 U
DIETHYL ETHER (ETHYL ETHER)	NA		< 0.12 U	< 0.12 U	< 0.12 U
TRICHLOROETHYLENE (TCE)	5		< 0.060 U	< 0.060 U	< 0.060 U
VINYL CHLORIDE	2		< 0.059 U	< 0.059 U	< 0.059 U

Key at end of table.

Source: Ecology and Envirnonment Engineering, P.C. 2014

Table 4 Summary of Positive Analytical Results for Groundwater Samples, September 2014
Carroll Landfill, Frewsburg, New York

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

UJ = Not detected/estimated detection limit

Notes

G = Guidance value (no standard available)

NA = Not regulated/no available criteria

Other

µg/L = Micrograms per liter

"-FD" denotes field duplicate sample (MW-107I-SEP14-FD)

1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations,* 1998 (with updates), Class GA Groundwater Standards and Guidance Values.
2. Shaded cells exceed the screening value.
3. Bold values denote positive hits.

Key at end of table.

Source: Ecology and Envirnonment Engineering, P.C. 2014

Table 5 Historical Groundwater Sample Analytical Exceedance Summary
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Well ID:	MW-102						MW-103					
		Date:	10/01/04	03/08/05	08/28/08	08/17/10	11/06/12	09/09/14	10/12/04	03/09/05	08/18/10	08/18/10	11/08/12	09/11/14
Metals (µg/L)														
ARSENIC	25					**0.2 J**	**0.4 J**	0.078 U				**2.4**	**2.7**	**1.7**
BARIUM	1000					**94**	**82**	**71**				**237**	**240**	**250**
BERYLLIUM	3					**0.3 J**	2 U	0.30 U				0.2 U	2 U	0.30 U
CHROMIUM, TOTAL	50					0.9 U	4 U	1.0 U				0.9 U	**1.1 J**	1.0 U
COPPER	200					1.5 U	**1.9 J**	**1.6 J**				1.5 U	10 U	1.6 U
IRON	300		**32.7**	**6,220**	**NA**	23 UJ	**38 J**	19 U	**1,030**	**NS**	**NA**	273 UJ	**220**	**200**
LEAD	25					0.1 UJ	**1.2 J**	0.34 U				0.7 UJ	1 U	**0.17 J**
MAGNESIUM	35000					**19000**	**13000**	**14300**				**13000**	**16000**	**14800**
MANGANESE	300					**152 J**	**35**	**42**				**254**	**290**	**280**
NICKEL	100					1.3 U	10 U	1.3 U				**1.4 J**	10 U	1.3 U
SODIUM	20000					**3700 J**	**2500**	**3000**				**3900**	**4600 J**	**4300**
THALLIUM	0.5					**0.01 J**	**0.018 J**	0.012 U				0.008 U	0.2 U	0.0080 U
VOCs (µg/L)														
1,2-DICHLOROETHANE	0.6					0.14 U	0.5 U	0.14 U				0.14 UJ	0.5 U	0.28 U
CHLOROETHANE	5		**1 J**	**1 J**	**11**	**2**	0.5 U	0.070 U				0.07 UJ	0.5 U	0.14 U
CIS-1,2-DICHLOROETHYLENE	5		**2 J**	**1 J**	**130 D**	**24**	**0.56**	**3.2**				0.12 UJ	0.5 U	0.24 U
DICHLORODIFLUOROMETHANE	5					**0.2 J**	0.5 U	0.070 U				**0.21 J**	0.5 U	0.14 U
TRICHLOROETHYLENE (TCE)	5		10 U	10 U	**9**	**6.4**	**0.56**	**1.2**				0.06 UJ	0.5 U	0.12 U
VINYL CHLORIDE	2		**2 J**	**1 J**	**30 D**	**3.5**	0.5 U	**0.34 J**	10 U	10 U	**2**	**4.9 J**	**35 J**	**24**

Key:
D = Compound identified at secondary dilution factor.
J = Estimated value.
NA = Not applicable.
NS = Not sampled.
U = Not detected (lab reporting limit shown).
UJ = Not detected/estimated reporting limit.
µg/L = Micrograms per liter.
VOCs = Volatile organic compounds.

Note:
1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.
2. Bold values denote positive hits.
3. Shaded cells exceed the screening value.
4. In the 2012 sample for MW-105S, the metals concentrations are generally higher in the shallow groundwater monitoring well due to the high turbidity observed in the well.

Table 5 Historical Groundwater Sample Analytical Exceedance Summary
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Well ID:	MW-104						MW-105S					
		Date:	10/14/04	03/10/05	08/28/08	08/18/10	11/08/12	09/11/14	10/14/04	03/10/05	08/28/08	08/19/10	11/08/12	09/10/14
Metals (µg/L)														
ARSENIC	25		**53.2**	**24.1**	**NA**	**31**	**93**	**55.4**	**29.2**	**22.1**	**NA**	**9.6**	**108**	**7.7**
BARIUM	1000					**245**	**430**	**260**				**349**	**2200**	**250**
BERYLLIUM	3					**0.2 J**	**0.72 J**	0.30 U				**0.3 J**	**9.7**	**0.30 J**
CHROMIUM, TOTAL	50					1.5 UJ	**19**	**6.8**				**8.9**	**310**	**8.5**
COPPER	200					1.5 U	**16**	**6.2 J**				**5.5 J**	**320**	**8.9 J**
IRON	300		**13200**	**37300**	**NA**	2070 UJ	**29000**	**11100**	**53400**	**50100**	**NA**	**9870 J**	**495000**	**11400**
LEAD	25					0.5 UJ	**20**	**2.5**				**3.7**	**90**	**3.0**
MAGNESIUM	35000		**R**	**39500**	**NA**	**12000**	**24000**	**12300**				**9510**	**175000**	**12100**
MANGANESE	300					**240**	**1100**	**320**	**NA**	**NA**	**NA**	**1410**	**13000**	**300**
NICKEL	100					**2 J**	**25**	**8.3 J**				**10**	**570**	**12**
SODIUM	20000		**R**	**27100**	**NA**	**18000**	**19000 J**	**15800**				**11000**	**15000 J**	**11700**
THALLIUM	0.5					**0.01 J**	**0.25**	0.016 U				**0.09 J**	**0.93**	0.042 U
VOCs (µg/L)														
1,2-DICHLOROETHANE	0.6					0.14 UJ	0.5 U	0.14 U				0.14 UJ	0.5 UJ	0.14 U
CHLOROETHANE	5					0.07 UJ	0.5 U	0.070 U				0.07 UJ	0.5 UJ	0.070 U
CIS-1,2-DICHLOROETHYLENE	5					**1.6 J**	**0.62**	**0.63**				0.12 UJ	0.5 UJ	0.12 U
DICHLORODIFLUOROMETHANE	5					0.07 UJ	0.5 U	0.070 U				0.07 UJ	0.5 UJ	0.070 U
TRICHLOROETHYLENE (TCE)	5					0.06 UJ	0.5 U	0.060 U				0.06 UJ	0.5 UJ	0.060 U
VINYL CHLORIDE	2					**0.22 J**	**0.26 J**	0.059 U				0.059 UJ	0.5 UJ	0.059 U

Key:
D = Compound identified at secondary dilution factor.
J = Estimated value.
NA = Not applicable.
NS = Not sampled.
U = Not detected (lab reporting limit shown).
UJ = Not detected/estimated reporting limit.
µg/L = Micrograms per liter.
VOCs = Volatile organic compounds.

Note:
1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.
2. Bold values denote positive hits.
3. Shaded cells exceed the screening value.
4. In the 2012 sample for MW-105S, the metals concentrations are generally higher in the shallow groundwater monitoring well due to the high turbidity observed in the well.

Table 5 Historical Groundwater Sample Analytical Exceedance Summary
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Well ID:	MW-106S						MW-107S					
		Date:	10/14/04	03/10/05	08/28/08	08/19/10	11/07/12	09/11/14	10/12/04	03/10/05	08/28/08	08/17/10	11/07/12	09/10/14
Metals (µg/L)														
ARSENIC	25					**2.2**	**95**	**6.0**				**7.7**	**30**	**10.5**
BARIUM	1000					**328**	**1000**	**460**				**618**	**690**	**510**
BERYLLIUM	3					**0.3 J**	**1.8 J**	0.30 U				**1.6 J**	**1.3 J**	**1.5 J**
CHROMIUM, TOTAL	50					1.9 UJ	**43**	**2.8 J**				**37**	**26**	**41**
COPPER	200					1.5 U	**72**	**3.4 J**				**47**	**44**	**44**
IRON	300	**8440**	**NS**	**NS**	1610 UJ	**90000**	**4200**	**24900**	**679**	**NA**	**60000**	**44000**	**59300**	
LEAD	25				0.9 UJ	**72 J**	**2.8**				**24**	**41 J**	**18.9**	
MAGNESIUM	35000				**12000**	**63000**	**11100**	**R**	**37.6**	**NA**	**35000**	**52000**	**32200**	
MANGANESE	300				**228**	**4000**	**2300**	**NA**	**NA**	**NA**	**1470 J**	**2200**	**1300**	
NICKEL	100				**2.5 J**	**67**	**2.5 J**				**57**	**43**	**66**	
SODIUM	20000				**5000**	**5900**	**4700**				**7100 J**	**11000**	**6500**	
THALLIUM	0.5				**0.01 J**	**0.56**	0.0080 U				**0.2**	**0.42**	**0.15 J**	
VOCs (µg/L)														
1,2-DICHLOROETHANE	0.6				0.14 UJ	0.5 U	0.14 U	**2.0 J**	**0.6 J**	1 U	0.14 U	**0.44 J**	0.28 U	
CHLOROETHANE	5				0.07 UJ	0.5 U	0.070 U				**0.33 J**	**2.1**	0.14 U	
CIS-1,2-DICHLOROETHYLENE	5				0.12 UJ	0.5 U	0.12 U	**69.0 J**	**25.0 J**	**1**	**3**	**37**	**3.5**	
DICHLORODIFLUOROMETHANE	5				0.07 UJ	0.5 U	0.070 U	**9.0 J**	**3.0 J**	**0.8 J**	**0.46 J**	**2**	0.14 U	
TRICHLOROETHYLENE (TCE)	5				0.06 UJ	0.5 U	0.060 U				0.06 U	0.5 U	0.12 U	
VINYL CHLORIDE	2				0.059 UJ	**0.39 J**	0.059 U	**600 D**	**250**	**48 D**	**28**	**240**	**21**	

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µg/L = Micrograms per liter.
VOCs = Volatile organic compounds.

Note:
1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.
2. Bold values denote positive hits.
3. Shaded cells exceed the screening value.
4. In the 2012 sample for MW-105S, the metals concentrations are generally higher in the shallow groundwater monitoring well due to the high turbidity observed in the well.

Table 5 Historical Groundwater Sample Analytical Exceedance Summary
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Well ID:	MW-108S						MW-109S					
		Date:	10/14/04	03/10/05	08/28/08	08/19/10	11/06/12	09/11/14	03/13/04	03/09/05	08/28/08	08/19/10	11/06/12	09/09/14
Metals (µg/L)														
ARSENIC	25		**12.1**	**28.2**	**NA**	**8.8**	**48**	**14.0**				**2.2**	**8.1**	**8.4**
BARIUM	1000		**1230**	**890**	**NA**	**1380**	**1800**	**1700**				**145**	**200**	**300**
BERYLLIUM	3					0.2 U	**1.1 J**	0.30 U				**0.2 J**	**0.61 J**	**0.68 J**
CHROMIUM, TOTAL	50		**8.3**	**68.4**	**NA**	2.1 UJ	**33**	**5.6**				3.3 UJ	**14**	**24**
COPPER	200					**2.8 J**	**33**	**5.8 J**				**1.8 J**	**13**	**17**
IRON	300		**55100**	**82600**	**NA**	**18000 J**	**85000**	**23100**	**2,520**	**18400**	**NA**	**4220 J**	**18000**	**26000**
LEAD	25					**2.7**	**24 J**	**3.7**				1.6 U	**6.2 J**	**7.1**
MAGNESIUM	35000					**29000**	**41000**	**31100**				**13000**	**17000**	**19200**
MANGANESE	300		**3150**	**2890**	**NA**	**721**	**2400**	**740**	**NA**	**NA**	**NA**	**375**	**2400**	**5200**
NICKEL	100					**4.1 J**	**48**	**7.4 J**				**4.6 J**	**19**	**31**
SODIUM	20000					**13000**	**8600**	**12200**				**3400**	**3200**	**3300**
THALLIUM	0.5					**0.02 J**	**0.27**	0.046 U				**0.04 J**	**0.14 J**	0.18 U
VOCs (µg/L)														
1,2-DICHLOROETHANE	0.6					0.14 UJ	0.5 U	0.14 U				0.14 UJ	0.5 U	0.14 U
CHLOROETHANE	5					0.07 UJ	0.5 U	0.070 U				0.07 UJ	0.5 U	0.070 U
CIS-1,2-DICHLOROETHYLENE	5					0.12 UJ	0.5 U	0.12 U				0.12 UJ	0.5 U	0.12 U
DICHLORODIFLUOROMETHANE	5					**0.34 J**	0.5 U	0.070 U				0.07 UJ	0.5 U	0.070 U
TRICHLOROETHYLENE (TCE)	5					0.06 UJ	0.5 U	0.060 U				0.06 UJ	0.5 U	0.060 U
VINYL CHLORIDE	2					**0.32 J**	0.5 U	**0.32 J**				0.059 UJ	0.5 U	0.059 U

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2. Bold values denote positive hits.
3. Shaded cells exceed the screening value.
4. In the 2012 sample for MW-105S, the metals concentrations are generally higher in the shallow groundwater monitoring well due to the high turbidity observed in the well.

Table 5 Historical Groundwater Sample Analytical Exceedance Summary
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Well ID:	MW-110S						MW-111S					
		Date:	10/13/04	03/10/05	08/28/08	08/20/10	11/08/12	09/10/14	10/13/04	03/09/05	08/28/08	08/16/10	11/07/12	09/10/14
Metals (µg/L)														
ARSENIC	25		**35.1**	**10.9**	**NA**	**8.1**	**32**	**10.5**	**30.5**	**NS**	**NA**	**5.7**	**38**	**11.0**
BARIUM	1000					**237**	**890**	**290**				**568**	**690**	**430**
BERYLLIUM	3					0.2 U	**4.5**	**0.33 J**				**0.6 J**	**2.3**	**1.0 J**
CHROMIUM, TOTAL	50					3.7 UJ	**120**	**9.4**				**8.3**	**53**	**28**
COPPER	200					1.5 U	**110**	**6.5 J**				**39 J**	**64**	**22**
IRON	300		**74900**	**6310**	**NA**	1110 U	**176000**	**9900**	**48800**	**NS**	**NA**	**24000**	**85000**	**35800**
LEAD	25		**26.8**	**2.1 B**	**NA**	0.4 UJ	**57**	**3.0**	**NA**	**NA**	**NA**	**29**	**37 J**	**10.4**
MAGNESIUM	35000					**12000 J**	**71000**	**12700**	**NA**	**NA**	**NA**	**42000**	**57000**	**34100**
MANGANESE	300					**232 J**	**4200**	**260**	**NA**	**NA**	**NA**	**1680**	**2200**	**670**
NICKEL	100					1.3 U	**180**	**11**				**18**	**82**	**40**
SODIUM	20000					**6000**	**6800 J**	**5800**				**11000**	**12000**	**10800**
THALLIUM	0.5					**0.02 J**	**0.26**	0.062 U				**0.1 J**	**0.33**	**0.15 J**
VOCs (µg/L)														
1,2-DICHLOROETHANE	0.6					0.14 UJ	0.5 U	0.14 U				0.14 U	0.5 U	0.14 U
CHLOROETHANE	5					0.07 UJ	0.5 U	0.070 U				0.07 U	0.5 U	0.070 U
CIS-1,2-DICHLOROETHYLENE	5					0.12 UJ	0.5 U	0.12 U				0.12 U	0.5 U	0.12 U
DICHLORODIFLUOROMETHANE	5					0.07 UJ	0.5 U	0.070 U				0.07 U	0.5 U	0.070 U
TRICHLOROETHYLENE (TCE)	5					0.06 UJ	0.5 U	0.060 U				0.06 U	0.5 U	0.060 U
VINYL CHLORIDE	2					0.059 UJ	0.5 U	0.059 U				0.059 U	0.5 U	0.059 U

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VOCs = Volatile organic compounds.

Note:
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2. Bold values denote positive hits.
3. Shaded cells exceed the screening value.
4. In the 2012 sample for MW-105S, the metals concentrations are generally higher in the shallow groundwater monitoring well due to the high turbidity observed in the well.

Table 5 Historical Groundwater Sample Analytical Exceedance Summary
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Well ID:	MW-102I						MW-107I					
		Date:	10/11/04	03/09/05	08/28/08	08/17/10	11/06/12	09/09/14	10/12/04	03/09/05	08/28/08	08/17/10	11/07/12	09/10/14
Metals (µg/L)														
ARSENIC	25					**0.3 J**	**0.38 J**	**0.20 J**				**21**	**19**	**19.1**
BARIUM	1000					**103**	**84**	**77**				**298**	**230**	**220**
BERYLLIUM	3					**0.4 J**	2 U	0.30 U				**0.5 J**	2 U	0.30 U
CHROMIUM, TOTAL	50					0.9 U	**1.1 J**	**1.1 J**				**12**	**1.3 J**	**1.4 J**
COPPER	200					1.5 U	10 U	1.6 U				**12**	10 U	**1.9 J**
IRON	300		**3800**	**12200**	**NA**	277 U	**67**	**77**	**12100**	**NS**	**NA**	**15000**	**1200**	**700**
LEAD	25					0.4 UJ	**1.2 J**	0.27 U				**6.4**	**6.1 J**	**1.0**
MAGNESIUM	35000					**18000**	**15000**	**14100**				**14000**	**11000**	**10100**
MANGANESE	300					**187 J**	**490**	**65**	**NA**	**NA**	**NA**	**451 J**	**220**	**200**
NICKEL	100					1.3 U	10 U	1.3 U				**14**	**1.3 J**	1.3 U
SODIUM	20000					**3800 J**	**3100**	**3300**				**7700 J**	**7700**	**7000**
THALLIUM	0.5					**0.02 J**	**0.028 J**	0.011 U				**0.09 J**	**0.027 J**	0.025 U
VOCs (µg/L)														
1,2-DICHLOROETHANE	0.6					0.14 U	0.5 U	0.14 U				0.14 U	0.5 U	0.14 U
CHLOROETHANE	5		**7.0 J**	**5.0 J**	1 U	0.07 U	0.5 U	0.070 U				0.07 U	0.5 U	0.070 U
CIS-1,2-DICHLOROETHYLENE	5		**14**	**6.0 J**	**12**	**2.4**	0.5 U	0.12 U				0.12 U	0.5 U	0.12 U
DICHLORODIFLUOROMETHANE	5					0.07 U	0.5 U	0.070 U				0.07 U	0.5 U	0.070 U
TRICHLOROETHYLENE (TCE)	5		10 U	10 U	**20**	**3.2**	**0.37 J**	**0.41 J**				0.06 U	0.5 U	0.060 U
VINYL CHLORIDE	2		**5 J**	**3 J**	**0.6 J**	0.059 U	0.5 U	0.059 U				0.059 U	0.5 U	0.059 U

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2. Bold values denote positive hits.
3. Shaded cells exceed the screening value.
4. In the 2012 sample for MW-105S, the metals concentrations are generally higher in the shallow groundwater monitoring well due to the high turbidity observed in the well.

Table 5 Historical Groundwater Sample Analytical Exceedance Summary
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Well ID:	MW-108I						MW-110I					
		Date:	10/13/04	03/07/05	08/28/08	08/20/10	11/06/12	09/11/14	10/13/04	03/10/05	08/28/08	08/20/10	11/08/12	09/10/14
Metals (µg/L)														
ARSENIC	25					**4.7**	**4.8**	**5.1**	**87.8**	**23**	**NA**	**9.8**	**33**	**12.1**
BARIUM	1000					**233**	**240**	**230**				**231**	**510**	**160**
BERYLLIUM	3					0.2 U	2 U	0.30 U	**3.6**	**0.72**	**NA**	0.2 U	**1.8 J**	0.30 U
CHROMIUM, TOTAL	50					0.9 U	4 U	1.0 U	**112**	**24.5**	**NA**	3 UJ	**44**	**4.4**
COPPER	200					1.5 U	10 U	1.6 U				1.5 U	**66**	**7.1 J**
IRON	300		**15300**	**1740**	**NA**	634 U	**590**	**140**	**191000**	**37000**	**NA**	1670 U	**69000**	**4200**
LEAD	25					0.4 UJ	**0.18 J**	**0.12 J**	**92.4**	**15.7**	**NA**	0.7 UJ	**54**	**2.9**
MAGNESIUM	35000					**13000 J**	**13000**	**13300**	**70900**	**26300**	**NA**	**11000 J**	**52000**	**9400**
MANGANESE	300					**262 J**	**250**	**260**	**3720**	**880**	**NA**	**175 J**	**3000**	**310**
NICKEL	100					1.3 U	10 U	1.3 U				**2 J**	**65**	**3.9 J**
SODIUM	20000					**5400**	**5400**	**5000**				**5700**	**6900 J**	**5200**
THALLIUM	0.5					**0.02 J**	**0.092 J**	0.011 U	**14**	4.5 U	**NA**	**0.02 J**	**0.27**	0.024 U
VOCs (µg/L)														
1,2-DICHLOROETHANE	0.6					0.14 UJ	0.5 U	0.14 U				0.14 UJ	0.5 U	0.14 U
CHLOROETHANE	5					0.07 UJ	**0.44 J**	0.070 U				0.07 UJ	0.5 U	0.070 U
CIS-1,2-DICHLOROETHYLENE	5					0.12 UJ	0.5 U	0.12 U				0.12 UJ	0.5 U	0.12 U
DICHLORODIFLUOROMETHANE	5					0.07 UJ	0.5 U	0.070 U				0.07 UJ	0.5 U	0.070 U
TRICHLOROETHYLENE (TCE)	5					0.06 UJ	0.5 U	0.060 U				0.06 UJ	0.5 U	0.060 U
VINYL CHLORIDE	2					0.059 UJ	0.5 U	0.059 U				0.059 UJ	0.5 U	0.059 U

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4. In the 2012 sample for MW-105S, the metals concentrations are generally higher in the shallow groundwater monitoring well due to the high turbidity observed in the well.

Table 5 Historical Groundwater Sample Analytical Exceedance Summary
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Well ID:	MW-111I						MW-109D					
		Date:	10/13/04	03/09/05	08/28/08	08/16/10	11/07/12	09/10/14	10/12/04	03/08/05	08/28/08	08/19/10	11/06/12	09/09/14
Metals (µg/L)														
ARSENIC	25					**17**	**19**	**18.0**				**0.3 J**	**0.42 J**	0.078 U
BARIUM	1000					**258**	**260 J**	**280**				**137**	**130**	**130**
BERYLLIUM	3					0.2 U	2 U	0.30 U				0.2 U	2 U	0.30 U
CHROMIUM, TOTAL	50					0.9 U	**1.6 J**	1.0 U				0.9 U	4 U	1.0 U
COPPER	200					1.5 U	10 U	1.6 U				1.5 U	10 U	1.6 U
IRON	300	**20700**	**NS**	**NA**	1060 U	**300**	**300**	**8440**	**29900**	**NA**	453 UJ	**190**	**250**	
LEAD	25				**4.5**	**8.6 J**	**40.7**				0.4 UJ	1 U	0.22 U	
MAGNESIUM	35000				**13000**	**13000 J**	**13100**				**13000**	**13000**	**12800**	
MANGANESE	300				**227**	**210 J**	**210**				**55**	**87**	**100**	
NICKEL	100				1.3 U	10 U	1.3 U				1.3 U	10 U	1.3 U	
SODIUM	20000				**10000**	**11000 J**	**10100**				**3900**	**4000**	**4100**	
THALLIUM	0.5				**0.01 J**	**0.019 J**	0.020 U				0.008 U	**0.012 J**	0.0098 U	
VOCs (µg/L)														
1,2-DICHLOROETHANE	0.6				0.14 U	0.5 U	0.14 U				0.14 UJ	0.5 U	0.14 U	
CHLOROETHANE	5				0.07 U	0.5 U	0.070 U				0.07 UJ	0.5 U	0.070 U	
CIS-1,2-DICHLOROETHYLENE	5				0.12 U	0.5 U	0.12 U	10 U	**1 J**	**9**	**1.4 J**	0.5 U	0.12 U	
DICHLORODIFLUOROMETHANE	5				0.07 U	0.5 U	0.070 U				0.07 UJ	0.5 U	0.070 U	
TRICHLOROETHYLENE (TCE)	5				0.06 U	0.5 U	0.060 U				**0.73 J**	0.5 U	0.060 U	
VINYL CHLORIDE	2				0.059 U	0.5 U	0.059 U	**1.0 J**	**108**	**0.4 J**	0.059 UJ	0.5 U	0.059 U	

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Table 5 Historical Groundwater Sample Analytical Exceedance Summary
Carroll Landfill, Frewsburg, New York

Analyte	Screening Criteria [1]	Well ID: MW-13 Date: 09/03/04	10/14/05	08/28/08	08/19/10	11/05/12	09/11/14	SUPPLY WELL #5 08/16/10
Metals (µg/L)								
ARSENIC	25				**0.6 J**	**0.55 J**	**0.16 J**	**0.6 J**
BARIUM	1000				**93**	**75**	**73**	**68**
BERYLLIUM	3				0.2 U	2 U	0.30 U	0.2 U
CHROMIUM, TOTAL	50				1.1 UJ	**1.3 J**	1.0 U	0.9 U
COPPER	200				1.5 U	10 U	**1.8 J**	1.5 UJ
IRON	300	**NA**	**979**	**NA**	501 UJ	**49 J**	**310**	21 UJ
LEAD	25				0.6 UJ	1 U	**0.47 J**	0.8 UJ
MAGNESIUM	35000				**12000**	**9900**	**10200**	**9270**
MANGANESE	300				16 U	3 U	7.5 U	10 U
NICKEL	100				**1.6 J**	10 U	1.3 U	1.3 U
SODIUM	20000				**11000**	**8600**	**6800**	**7800**
THALLIUM	0.5				0.008 U	**0.017 J**	0.0080 U	**0.01 J**
VOCs (µg/L)								
1,2-DICHLOROETHANE	0.6				0.14 UJ	0.5 U	0.14 U	0.14 U
CHLOROETHANE	5				0.07 UJ	0.5 U	0.070 U	0.07 U
CIS-1,2-DICHLOROETHYLENE	5				0.12 UJ	0.5 U	0.12 U	0.12 U
DICHLORODIFLUOROMETHANE	5				0.07 UJ	0.5 U	0.070 U	0.07 U
TRICHLOROETHYLENE (TCE)	5				0.06 UJ	0.5 U	0.060 U	0.06 U
VINYL CHLORIDE	2				0.059 UJ	0.5 U	0.059 U	0.059 U

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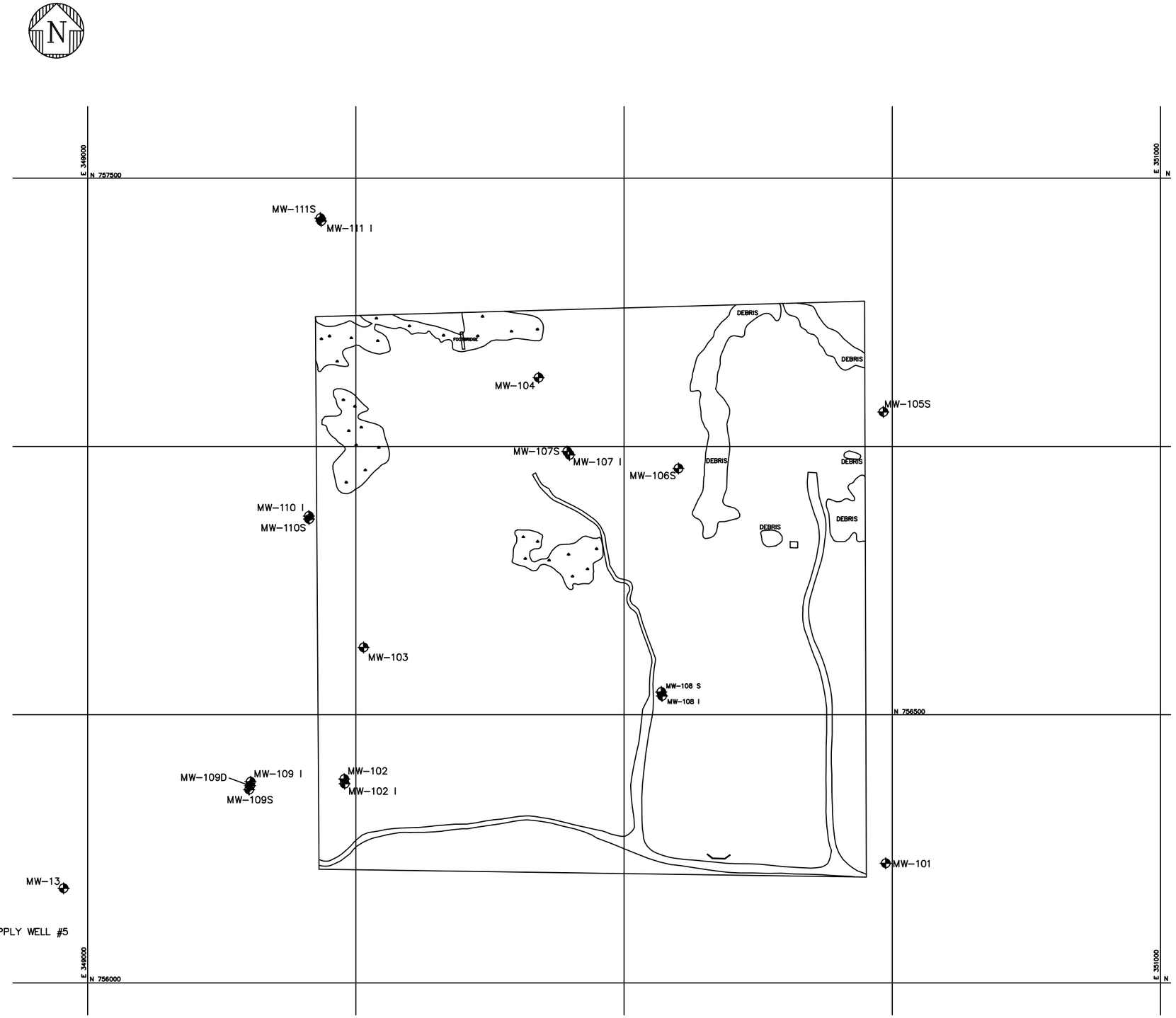
FIGURES

F:\Carroll Landfill\GW contours 8-27-10\Sitemap.dwg



LEGEND

MONITORING WELL LOCATION

NOTES

1. THIS DRAWING IS A COMBINATION OF CARROL.dwg and ACAD2000-CARROLL LANDFILL.dwg PROVIDED BY THE NYSDEC FROM THE REMEDIAL INVESTIGATION.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF AERIAL MAPPING AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING ON THE DATE OF PHOTOGRAPHY.
3. CONTROL: PROVIDED BY TVGA CONSULTANTS. COORDINATES SHOWN HEREON ARE EXPRESSED IN U.S. SURVEY FEET AND REFERENCED TO THE NORTH AMERICAN DATUM OF 1927 (NAD27) - NEW YORK STATE PLANE GRID. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29).
4. MAPPING COMPILED BY TVGA CONSULTANTS (TVGA) USING PHOTOGRAMMETRIC METHODS. AERIAL PHOTOGRAPHY FLOWN 1 APRIL 2005. THIS MAPPING COMPILED IN ACCORDANCE WITH (NMAS) NATIONAL MAP ACCURACY STANDARDS FOR MAPS AT 1 INCH EQUAL 50 FT. SCALE.

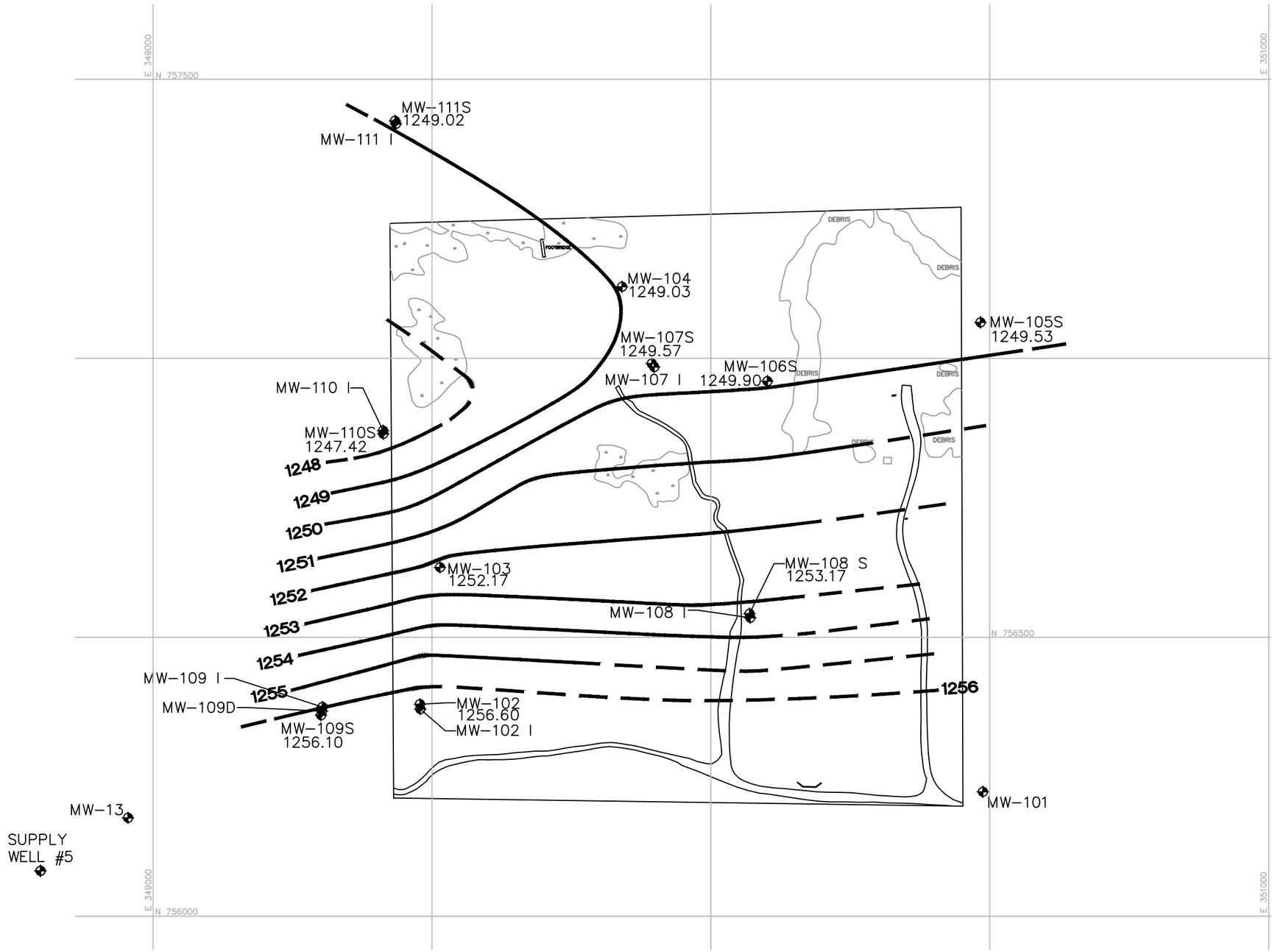
SCALE IN FEET

0 200 400 600

FIGURE 1
SITE MAP
CARROLL LANDFILL
FREWSBERG, CHAUTAUQUA COUNTY, NEW YORK

ecology and environment

F:\Carroll Landfill\GW contours 9-21-12\Shallow.dwg



LEGEND

◆	MONITORING WELL LOCATION WITH GROUND WATER ELEVATION
1249 —	GROUNDWATER CONTOUR (DASHED WHERE INFERRED)

NOTES

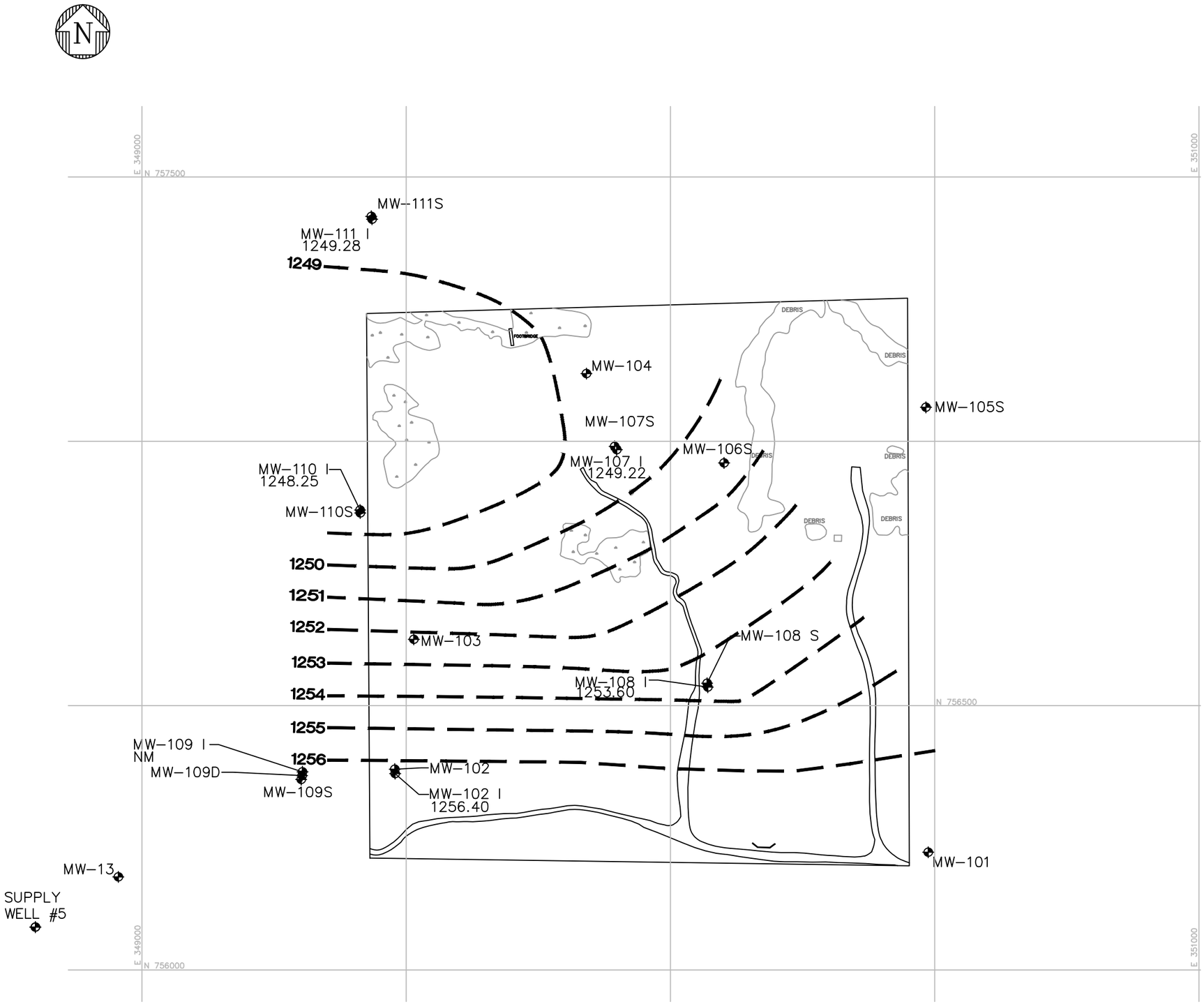
1. THIS DRAWING IS A COMBINATION OF CARROL.dwg and ACAD2000-CARROLL LANDFILL.dwg PROVIDED BY THE NYSDEC FROM THE REMEDIAL INVESTIGATION.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF AERIAL MAPPING AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING ON THE DATE OF PHOTOGRAPHY.
3. CONTROL: PROVIDED BY TVGA CONSULTANTS. COORDINATES SHOWN HEREON ARE EXPRESSED IN U.S. SURVEY FEET AND REFERENCED TO THE NORTH AMERICAN DATUM OF 1927 (NAD27) – NEW YORK STATE PLANE GRID. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29).
4. MAPPING COMPILED BY TVGA CONSULTANTS (TVGA) USING PHOTOGRAMMETRIC METHODS. AERIAL PHOTOGRAPHY FLOWN 1 APRIL 2005. THIS MAPPING COMPILED IN ACCORDANCE WITH (NMAS) NATIONAL MAP ACCURACY STANDARDS FOR MAPS AT 1 INCH EQUAL 50 FT. SCALE.

SCALE IN FEET

0 200 400 600

FIGURE 2
GROUNDWATER ELEVATION CONTOURS OF SHALLOW MONITOR WELLS
CARROLL LANDFILL
FREWSBERG, CHAUTAUQUA COUNTY, NEW YORK

F:\Carroll Landfill\GW contours 9-21-12\Shallow.dwg



LEGEND

◆	MONITORING WELL LOCATION WITH GROUND WATER ELEVATION
1249 —	GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
NM	NOT MEASURED

NOTES

1. THIS DRAWING IS A COMBINATION OF CARROL.dwg and ACAD2000-CARROLL LANDFILL.dwg PROVIDED BY THE NYSDEC FROM THE REMEDIAL INVESTIGATION.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF AERIAL MAPPING AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING ON THE DATE OF PHOTOGRAPHY.
3. CONTROL: PROVIDED BY TVGA CONSULTANTS. COORDINATES SHOWN HEREON ARE EXPRESSED IN U.S. SURVEY FEET AND REFERENCED TO THE NORTH AMERICAN DATUM OF 1927 (NAD27) – NEW YORK STATE PLANE GRID. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29).
4. MAPPING COMPILED BY TVGA CONSULTANTS (TVGA) USING PHOTOGRAMMETRIC METHODS. AERIAL PHOTOGRAPHY FLOWN 1 APRIL 2005. THIS MAPPING COMPILED IN ACCORDANCE WITH (NMAS) NATIONAL MAP ACCURACY STANDARDS FOR MAPS AT 1 INCH EQUAL 50 FT. SCALE.

SCALE IN FEET
0 200 400 600

FIGURE 3
GROUNDWATER ELEVATION CONTOURS OF INTERMEDIATE MONITOR WELLS
CARROLL LANDFILL
FREWSBERG, CHAUTAUQUA COUNTY, NEW YORK

10C3074.0016.03\Carroll Landfill_Fig4.ai-02/18/15-GRA

MW-111S

CHEMICAL NAME	08/16/10	11/07/12	09/10/14
Metals	**µg/L**	**µg/L**	**µg/L**
Arsenic	5.7	**38***	11.0
Chromium, Total	8.3	**53***	28
Iron	**24000***	**85000***	**35800***
Lead	**29***	**37 J***	10.4
Magnesium	**42000***	**57000***	34100
Manganese	**1680***	**2200***	**670***

MW-111I

CHEMICAL NAME	08/16/10	11/07/12	09/10/14
Metals	**µg/L**	**µg/L**	**µg/L**
Lead	**4.5**	8.6 J	40.7

MW-110I

CHEMICAL NAME	08/20/10	11/08/12	09/10/14
Metals	**µg/L**	**µg/L**	**µg/L**
Arsenic	9.8	**33***	12.1
Iron	1670 U	**69000***	**4200***
Lead	0.7 UJ	**54***	2.9
Magnesium	11000 J	**52000***	9400
Manganese	175 J	**3000***	**310***

MW-110S

CHEMICAL NAME	08/20/10	11/08/12	09/10/14
Metals	**µg/L**	**µg/L**	**µg/L**
Arsenic	8.1	**32***	10.5
Beryllium	0.2	**4.5***	0.33 J
Chromium, Total	3.7 UJ	**120***	9.4
Iron	1110 U	**176000***	**9900***
Lead	0.4 UJ	**57***	3.0
Magnesium	1200 J	**71000***	12700
Manganese	232 J	**4200***	260
Nickel	1.3 U	**180***	11

MW-103

CHEMICAL NAME	08/18/10	11/08/12	09/11/14
VOCs	**µg/L**	**µg/L**	**µg/L**
Vinyl Chloride	**4.9 J***	**35 J***	**24***

MW-102

CHEMICAL NAME	08/17/10	11/06/12	09/09/14
VOCs	**µg/L**	**µg/L**	**µg/L**
cis-1,2-Dichloroethene	**24***	0.56	3.2
Trichloroethylene	**6.4***	0.56	1.2
Vinyl Chloride	**3.5***	0.5 U	0.34 J

MW-102I

CHEMICAL NAME	08/17/10	11/06/12	09/09/14
Metals	**µg/L**	**µg/L**	**µg/L**
Manganese	187 J	**490***	65

MW-109I

Well unable to be sampled due to prior damage to the well casing.

MW-109S

CHEMICAL NAME	08/19/10	11/10/12	09/09/14
Metals	**µg/L**	**µg/L**	**µg/L**
Iron	**4220 J***	**18000***	**26000***
Manganese	**375***	**2400***	**5200***

MW-109D

Analytical results did not indicate any exceedances of NYS Class GA Groundwater Quality Standards.

MW-13

CHEMICAL NAME	08/19/10	11/05/12	09/11/14
Metals	**µg/L**	**µg/L**	**µg/L**
Iron	501 UJ	49 J	**310***

Supply Well #5

Well has not been sampled since August 2010 due to ongoing remedial activities. Analytical results did not indicate any exceedances of NYS Class GA Groundwater Quality Standards when it was last sampled.

MW-104

CHEMICAL NAME	08/18/10	11/08/12	09/11/14
Metals	**µg/L**	**µg/L**	**µg/L**
Arsenic	**31***	**93***	**55.4***
Iron	2070 UJ	**29000***	**11100***
Manganese	240	**1100***	**320***

MW-107I

CHEMICAL NAME	08/17/10	11/07/12	09/10/14
Metals	**µg/L**	**µg/L**	**µg/L**
Iron	**1500***	**1200***	**700***
Manganese	**451 J***	220	200

MW-107S

CHEMICAL NAME	08/17/10	11/07/12	09/10/14
Metals	**µg/L**	**µg/L**	**µg/L**
Arsenic	7.7	**30***	10.5
Iron	**60000***	**44000***	**59300***
Lead	24	**41 J***	18.9
Magnesium	35000	**52000***	32200
Manganese	**1470 J***	**2200***	**1300***
VOCs			
cis-1,2-Dichloroethylene	3	**37***	3.5
Vinyl Chloride	**28***	**240***	**21***

MW-105S

CHEMICAL NAME	08/19/10	11/08/12	09/10/14
Metals	**µg/L**	**µg/L**	**µg/L**
Arsenic	9.6	**108***	7.7
Barium	349	**2200***	250
Beryllium	0.3 J	**9.7***	0.30 J
Chromium, Total	8.9	**310***	8.5
Copper	5.5 J	**320***	8.9 J
Iron	**9870 J***	**495000***	**11400***
Lead	3.7	**90***	3.0
Magnesium	9510	**175000***	12100
Manganese	**1410***	**13000***	300
Nickel	10	**570***	12
Thallium	0.09 J	**0.93***	0.042 U

MW-106S

CHEMICAL NAME	08/19/10	11/07/12	09/11/14
Metals	**µg/L**	**µg/L**	**µg/L**
Arsenic	2.2	**95***	6.0
Iron	1610 UJ	**90000***	**4200***
Lead	0.9 UJ	**72 J***	2.8
Magnesium	12000	**63000***	11100
Manganese	228	**4000***	**2300***
Thallium	0.01 J	**0.56***	0.0080 U

MW-108I

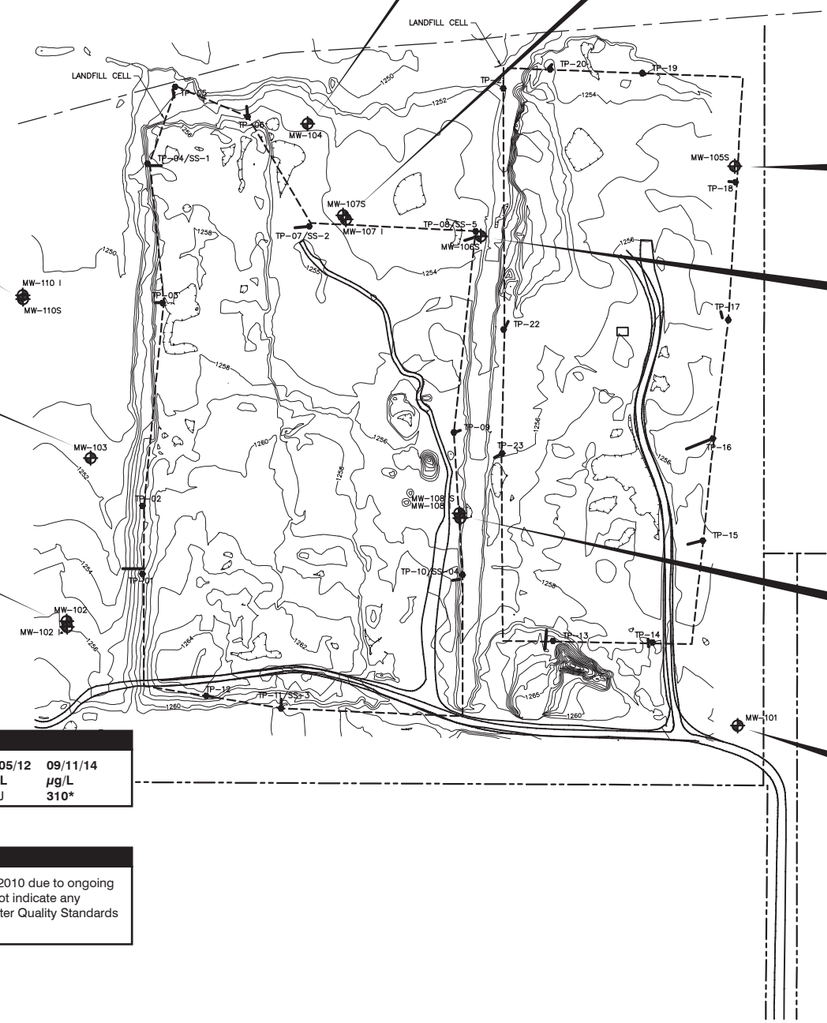
CHEMICAL NAME	08/20/10	11/06/12	09/11/14
Metals	**µg/L**	**µg/L**	**µg/L**
Iron	634 U	**590***	140

MW-108S

CHEMICAL NAME	08/19/10	11/06/12	09/11/14
Metals	**µg/L**	**µg/L**	**µg/L**
Arsenic	8.8	**48***	14.0
Barium	**1380***	**1800***	**1700***
Iron	**18000 J***	**85000 J***	**23100***
Magnesium	29000	**41000***	31100
Manganese	**721***	**2400***	**740***

MW-101

Well unable to be sampled due to prior damage to the well casing.



SOURCE: OiBrien & Gere Engineers, Inc., 2005.

APPROXIMATE SCALE IN FEET

0 150 300

Town of Carroll Landfill Site Frewsburg, New York NYSDEC SITE #9-07-017

January 2015

LEGEND

- Property Line
- Edge of Creek
- Access Road
- TP–18 Test Pit Locations
- MW–105S Monitoring Well Locations

NOTES

- NA Not Applicable
- NS Not Sampled
- U Analyte Not Detected
- B Value is Greater than IDL but less than CRDL
- * Concentration Exceeds Water Quality Standard
- J Estimated Concentration
- R Analytical Result Rejected During Validation
- D Compound Identified at Secondary Dilution Factor

NYS CLASS GA WATER QUALITY STANDARDS AND GUIDANCE (6NYCRR Part 703 or TOGS 1.1.1)

CHEMICAL NAME	
Metals	**µg/L**
Arsenic	25
Barium	1000
Beryllium	3.0
Chromium	50
Copper	200
Iron	300
Lead	25
Magnesium	35000
Manganese	3000
Nickel	100
Sodium	20000
Thallium	0.5

VOCs	**µg/L**
Dichlorodifluoromethane	5
Vinyl Chloride	2
Chloroethane	5
cis-1,2-Dichloroethene	5
1,2-Dichloroethane	0.6
Trichloroethene	5

Figure 4 Groundwater Detections Exceeding Water Quality Standards (last 3 reporting periods)

APPENDICES

Contents:

A – Well Sampling Logs

B - Data Usability Summary Report (DUSR)

C – TestAmerica Laboratories Analytical Report J67030-1 (provided electronically)

APPENDIX A

Well Sampling Logs

ecology and environment engineering, p.c.
International Specialists in the Environment
BUFFALO CORPORATE CENTER 368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW-102S
EEEPC Project No.:
Date: 9-9-14

Initial Depth to Water: 0.42 feet TOIC
Total Well Depth: ~~37.90~~ 32.19 feet TOIC
Depth to Pump: 30.19 feet TOIC
Initial Pump Rate: 600 mL/min Lpm / gpm
adjusted to: _____ at _____ minutes
adjusted to: _____ at _____ minutes

Start Time: 0850
End Time: 1031
☐ Bailer ☒ Pump
Pump Type: Typhon
Well Diameter: 2 inches
1x Well Volume: 5.17 gallons x3 15.51 gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
0850	0.0L	7.05	12.0	~~200.33~~ 233 LK	532.4	—	35.9	0.61
0855	3.0L	7.52	11.6	109	483.7	—	30.3	0.71
0900	6.0L	7.54	11.2	74	467.4	—	21.1	0.71
0905	9.0L	7.54	11.3	82	568.5	—	9.01	0.71
0910	12.0L	7.55	11.3	86	457.5	—	6.56	0.71
0915	15.0L	7.55	11.5	94	560.7	—	4.20	0.71
0920	18.0L	7.56	11.8	102	461.8	—	2.79	0.71
0925	21.0L	7.56	11.8	98	455.2	—	1.30	0.71
0930	24.0L	7.58	11.6	~~107~~ 105 LK	458.1	—	1.97	0.71
0935	27.0L	7.58	12.1	107	~~417~~ LK 455.3	—	1.10	0.71
0940	30.0L	7.58	11.3	114	455.1	—	1.17	0.71
0945	33.0L	7.59	11.3	110	458.0	—	0.93	0.71
0950	~~32~~ 36 ~~32~~ 35.0L	7.60	10.8	114	458.1	—	1.06	0.71
0955	~~38~~ 39 LK 38.0L	7.63	10.7	118	460.0	—	1.03	0.71
1000	~~44~~ 42 LK 41.0L	7.61	10.9	121	455.6	—	0.54	0.71
Final Sample Data:								

Sample ID: MW102-SEP14
Sample Time: 1031
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID: _____

Analyses: Methods:
☒ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☒ Metals ☐ _____
☐ _____ ☐ _____

Comments: 0ppm on Reading of purge water.
Casing lid not fastened to base - only held on with lock.

Sampler(s): LKalmbach / L Roell

ecology and environment engineering, p.c.
International Specialists in the Environment
BUFFALO CORPORATE CENTER 368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW-102S
EEEPC Project No.:
Date: 9-9-14

Initial Depth to Water: _____ feet TOIC
Total Well Depth: _____ feet TOIC
Depth to Pump: _____ feet TOIC
Initial Pump Rate: _____ Lpm / gpm
adjusted to: _____ at _____ minutes
adjusted to: _____ at _____ minutes

LK 9-9-14

Start Time: _____
End Time: _____
☐ Bailer ☐ Pump
Pump Type: _____
Well Diameter: _____ inches
1x Well Volume: _____ gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1005	~~49.0L~~ 45 LK 9-9-14	7.61	10.7	121	454.9	—	0.81	0.71
1010	48.0L	7.61	10.9	117	454.2	—	0.92	0.71
1015	51.0L	7.60	11.0	118	456.7	—	0.86	0.71
1020	54.0L	7.60	10.9	124	455.9	—	0.61	0.71
1025	57.0L	7.61	11.0	126	456.1	—	0.51	0.71
1030	60.0L	7.61	11.2	125	456.6	—	0.50	0.71
Final Sample Data:		7.61	11.2	125	456.6	—	0.50	0.71

Sample ID: _____ Duplicate? ☐ Dupe Samp ID: _____
Sample Time: _____ MS/MSD? ☐

Analyses: Methods:
☐ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☐ Metals ☐ _____
☐ _____ ☐ _____

Comments: _____

Sampler(s): LKahlbaugh | LRoedl

ecology and environment engineering, p.c.
International Specialists in the Environment
BUFFALO CORPORATE CENTER 368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW-103
EEEPC Project No.:
Date: 9/11/2014 LK 9.11.14

Initial Depth to Water: 1.04 feet TOIC
Total Well Depth: 30.80 feet TOIC
Depth to Pump: 25.80 feet TOIC
Initial Pump Rate: 1000ml/min Lpm / gpm
adjusted to: _____ at _____ minutes
adjusted to: _____ at _____ minutes

Start Time: 1307
End Time: 1425
☐ Bailer ☒ Pump
Pump Type: Typhoon
Well Diameter: 2" inches
1x Well Volume: 4.9 gallons = 14.7 gal 74.3 gal LK 9.11.14

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1307	0.0	7.79	11.8	-104 LK 9.11.14	457.5	—	42.6	1.95
1312	5.0L 10.0L LK 9.11.14	7.83	11.2	-117	443.2	—	24.6	6.05
1317	10.0L	7.82	11.0	-116	451.2	—	12.1	10.44
1321	15.0L	7.84	11.0	-108	450.5	—	5.47	10.61
1331	25.0 ~~20.0L~~ LK 9.11.14	7.83	11.2	-101	449.2	—	1.94	9.65
1341	35.0L	7.84	11.1	-98	443.9	—	2.34	11.54
1351	45.0L	7.85	11.1	-101	442.5	—	0.86	11.59
1401	55.0L	7.86	11.1	-104	444.3	—	0.57	11.38
1411	65.0L	7.85	11.1	-106	444.1	—	0.64	11.38
1421	75.0L	7.81	11.1	-101	445.2	—	0.33	11.38
Final Sample Data:		7.81	11.1	-101	445.2	—	0.33	11.38

Sample ID: MW103-SGP14
Sample Time: 9.11.14 1425
Duplicate? ☐ Dupe Samp ID: _____
MS/MSD? ☐

Analyses: ☒ VOCs ☐ SVOCs ☐ PCBs ☒ Metals ☐ _____ ☐ _____
Methods: ☐ CLP ☐ SW846 ☐ Drink. Wtr. ☐ _____ ☐ _____

Comments: 0 ppm at discharge to ground
Water clear, No sheen

Sampler(s): LK | LRoad

ecology and environment engineering, p.c.
International Specialists in the Environment
BUFFALO CORPORATE CENTER 368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW104
EEEPC Project No.:
Date: 9.11.14

Initial Depth to Water: 5.58 feet TOIC
Total Well Depth: 21.52 feet TOIC
Depth to Pump: ____ feet TOIC
Initial Pump Rate: SoomL/min Lpm / gpm
adjusted to: ____ at ____ minutes
adjusted to: ____ at ____ minutes

Start Time: 0905
End Time: 0930
☐ Bailer ☒ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: 2.5 gallons x3 = 7.7

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
0905	0.0	7.93	13.0	-222	334.8	—	28	6.96
0910	1 gallon or 4L	7.82	11.6	-212	333.2	—	71.4	8.71
0915	3.5 or gallon 2L	7.77	12.7	-177	336.1	—	51.9	12.61
0920	5.0L	7.78	11.2	-147	337.6	—	34.5	14.01
0925	7.5L	7.84	12.4	-170	338.1	—	71.2	15.48
9:30	10.0L	7.84	12.4	-187	328.4	—	94.0	17.52
		DRY						
Final Sample Data:		7.87	11.1	-140	336.2	—	75.7	12.42

Sample ID: MW104-SE14
Sample Time: 9.11.14 1202
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID: ____

Analyses: ☒ VOCs ☐ SVOCs ☐ PCBs ☒ Metals ☐ ____ ☐ ____
Methods: ☐ CLP ☐ SW846 ☐ Drink. Wtr. ☐ ____ ☐ ____

Comments: Soft bottom of well
Sampled with bailer at 1202
NO 5 pkg
4 ppm at discharge to ground

Sampler(s): LKalmbach | LRoedl

ecology and environment engineering, p.c.
International Specialists in the Environment
BUFFALO CORPORATE CENTER 368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY Well ID: MW105S

EEEPC Project No.: Date: 9-9-14

Initial Depth to Water: 5.44 feet TOIC Start Time: 1517

Total Well Depth: 19.33 feet TOIC End Time: 1533

Depth to Pump: feet TOIC ☐ Bailer ☒ Pump

Initial Pump Rate: 1.0 (Lpm) / gpm Pump Type: Typhoon

adjusted to: at minutes Well Diameter: inches

adjusted to: at minutes 1x Well Volume: gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1517	0.0L	8.04	15.6	3	293.5	—	>1000	
1519	1.0L	8.03	14.3	9	295.9	—	>1000	
1521	4.0L	8.05	12.9	21	292.6	—	>1000	
1524	8.0L	8.05	11.8	5	292.4	—	>1000	
1527	12.0L	8.03	11.2	22	309.8	—	>1000	
1530	16.0L	8.03	12.2	-17	316.5	—	>1000	
			Dry @	1533				
Final Sample Data:		7.21	14.5	249	352.3	—	74	4.96

Sample ID: MW105S-SEP14 Duplicate? ☐ Dupe Samp ID:

Sample Time: 9.10.14 0835 MS/MSD? ☐

Analyses:	Methods:
☒ VOCs	☐ CLP
☐ SVOCs	☐ SW846
☐ PCBs	☐ Drink. Wtr.
☒ Metals	☐ _____
☐ _____	☐ _____

Comments: no pid reading purge water dumped to ground

Sampler(s): LKalwbach | LLoed

ecology and environment engineering, p.c.
International Specialists in the Environment
BUFFALO CORPORATE CENTER 368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW106S
EEEPC Project No.:
Date: 9.10.14

Initial Depth to Water: 5.24 feet TOIC
Total Well Depth: 22.61 feet TOIC
Depth to Pump: ~~27.61~~ 17.61 JK 9.10.14 feet TOIC
Initial Pump Rate: 550 ml/min Lpm / gpm
adjusted to: _____ at _____ minutes
adjusted to: _____ at _____ minutes

Start Time: 1521
End Time: ~~Typhoon~~ 1541 JK 9.10.14
☐ Bailer ☒ Pump
Pump Type: ~~Typhoon~~
Well Diameter: 2 inches
1x Well Volume: 2.8 gallons x 3 = 8.4 gal

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1521	0.0 L	8.02	14.8	-161	331.2	-	>1000	7.94
1526	2.75 L	7.97	12.6	-159	343.4	-	147	10.00
1529	4.40 L	7.97	12.1	-158	342.7	-	69.0	12.01
1534	~~5.075 L~~ 7.150 L	7.95	12.6	-146	343.8	-	81.4	14.00
1539	9.90 L	7.93	12.0	-112	343.2	-	131	18.30
			DRY @ 1541					
9/11/14 0845		8.17	15.6	90	353.9	-	17.8	6.38
Final Sample Data:								

Sample ID: MW106S-SEP14
Sample Time: 9.11.14 0845
Duplicate? ☐ Dupe Samp ID: _____
MS/MSD? ☐

Analyses: Methods:
☒ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☒ Metals ☐ _____
☐ _____ ☐ _____

Comments: Sample taken by bailer on 9.11.14 at 0845
0 ppm at discharge to ground.

Sampler(s): JKalbach | LRoedel

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW107S
EEEPC Project No.:
Date: 9.10.14

Initial Depth to Water: 4.99 feet TOIC
Total Well Depth: 22.50 feet TOIC
Depth to Pump: 17.50 feet TOIC
Initial Pump Rate: 250 mL/min Lpm / gpm
adjusted to: _____ at _____ minutes
adjusted to: _____ at _____ minutes

Start Time: 1310
End Time: 1337
☐ Bailer ☒ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: _____ gallons

Time	Purge Volume (gallons/liters)	pH (S.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1310	0.0 L	8.08	10.8	-122	355.1	—	129	
1315	1.25 L	7.81	11.8	-142	358.2	—	66.0	12.16
1320	2.50 L	7.80	12.2	-149	360.2	—	57.9	13.28
1325	3.75 L	7.79	12.1	-128	359.3	—	>1000	14.05
1330	5.00 L	7.79	11.1	-108	362.5	—	>1000	15.69
1335	6.25 L	7.78	10.5	-108	377.7	—	>1000	19.31
			DRY	@ 1337				
Final Sample Data:								

Sample ID: MW107S-SEP14
Sample Time: 9.10.14 1503
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID: _____

Analyses: / Methods:
☒ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☒ Metals ☐ _____
☐ _____ ☐ _____

Comments: 0 ppm at discharge to ground. Sample collected by bailer at 1503 on 9/10/14. Not enough volume for water quality parameters.

Sampler(s): LKalmbach/LRoedl

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW108S
EEEPC Project No.:
Date: 9.11.14

Initial Depth to Water: 4.51 feet TOIC
Total Well Depth: 22.71 feet TOIC
Depth to Pump: feet TOIC
Initial Pump Rate: 500mL/min Lpm / gpm
adjusted to: at minutes
adjusted to: at minutes

Start Time: 1003
End Time: 1018
☐ Bailer ☒ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1003	0.0	7.13	12.4	-178	1008	—	>1000	7.57
1008	2.5	7.11	13.1	-147	998.1	—	>1000	10.67
1013	5.0	7.12	13.3	-144	1010	—	>1000	13.25
1016	6.5	7.13	13.8	-142	993.8	—	>1000	15.69
			DRY at 1018					
			pH	Temp	ORP	Cond	Turb	Water Level
Final Sample Data:			7.22	13.1	-136	1654.8	38	9.37

Sample ID: MW108S-SEP14
Sample Time: 9.11.14 1120
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID:

Analyses: Methods:
☒ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☒ Metals ☐ _____
☐ _____ ☐ _____

Comments: Soft bottom of well.
0 ppm at discharge to ground
Sampled by bailer at 1120

Sampler(s): L Kahlbach / L Roedl

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY

Well ID: MW109S

EEEPC Project No.:

Date: 9-9-14

Initial Depth to Water: 1.42 feet TOIC

Start Time: 1147

Total Well Depth: 23.07 feet TOIC

End Time: 1245

Depth to Pump: 17.07 feet TOIC

☐ Bailer ☒ Pump

Initial Pump Rate: 400 mL/min Lpm / gpm

Pump Type: Typhoon

adjusted to: ______ at ______ minutes

Well Diameter: 2 inches

adjusted to: ______ at ______ minutes

1x Well Volume: ______ gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1147	0.0	7.82	16.0	104	386.6	–	31.1	2.24
1151	1.6 L	7.82	13.9	116	374.0	–	27.6	4.57
1156	3.6 L	7.79	12.3	155	340.1	–	23.7	5.40
1200	6.0 L	7.80	12.7	123	381.5	–	17.0	8.41
1205	8.0 L	7.82	11.6	163	373.4	–	17.7	11.19
1210	10.0 L	7.81	12.0	135	354.7	–	37.3	14.20
1215	12.0 L	7.85	11.9	105	375.9	–	36.6	15.49
1220	14.0 L	7.80	11.7	103	379.5	–	29.8	15.82
1225	16.0 L	7.81	10.8	105	388.2	–	78.3	17.44
				DRY				
				@ 1230				
Final Sample Data:								

Sample ID: MW109S-SEP14

Duplicate? ☐

Dupe Samp ID:

Sample Time: 9.9.14 1245

MS/MSD? ☐

Analyses:
- ☒ VOCs
- ☐ SVOCs
- ☐ PCBs
- ☒ Metals
- ☐

Methods:
- ☐ CLP
- ☐ SW846
- ☐ Drink. Wtr.
- ☐
- ☐

Comments: Well pumped dry. Sample collected by bailer at 1245. Not enough volume for water quality. Ø ppm at discharge to ground.

Sampler(s): L Kahmbach / L Roedel

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW110S
EEEPC Project No.:
Date: 9.9.14

Initial Depth to Water: 5.74 feet TOIC
Total Well Depth: 22.69 feet TOIC
Depth to Pump: ____ feet TOIC
Initial Pump Rate: 300 mL/min Lpm / gpm
adjusted to: ____ at ____ minutes
adjusted to: ____ at ____ minutes

Start Time: 1436
End Time: 1500
☐ Bailer ☐ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: ____ gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1436	0.0 L	8.04	12.4	-79	315.5	—	>1000	5.64
~~1424~~ 1441	1.5 L	8.02	12.1	-63	315.1	—	>1000	13.15
1446	3.0 L	8.05	12.5	-61	305.6	—	>1000	15.41
1451	4.5L	8.03	11.7	-44	316.4	—	>1000	19.19
			Dry @	1452				
Final Sample Data:		7.91	15.9	18.4	319.9	—	71000	4.61

Sample ID: MW110S-SEP14
Sample Time: 9-10-14 0900
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID: ____

Analyses: Methods:
☒ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☒ Metals ☐ ____
☐ ____ ☐ ____

Comments: Oppm Reading on mini Rae Pump to ground (preservative). Samples on 9-10-14 within 24 hrs of ~~sampling~~ purging

Sampler(s): L. Kalembach, C. Rand

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW11S
EEEPC Project No.:
Date: 9.10.14

Initial Depth to Water: 4.64 feet TOIC
Total Well Depth: 18.05 feet TOIC
Depth to Pump: ____ feet TOIC
Initial Pump Rate: 700 mL/min Lpm / gpm
adjusted to: 500 mL/min at 1005 minutes
adjusted to: ____ at ____ minutes

Start Time: 1000
End Time: 1008
☐ Bailer ☒ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: ____ gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1000	0.0	7.62	16.5	233	497.6	—	>1000	
1005	3.5	7.53	14.9	118	500.7	—	>1000	10.23
1007	4.5	7.67	16.2	154	478.5	—	>1000	12.50
			DRY @ 1008					
Final Sample Data:								

Sample ID: MW11S-SEP14
Sample Time: 9.10.14 1156
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID: ____

Analyses: / Methods:
☒ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☒ Metals ☐ ____
☐ ____ ☐ ____

Comments: Sample collected with bailer at 1156
0 ppm at discharge to ground.
Not enough volume for water parameters at sampling.

Sampler(s): [illegible] | L Roedl

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW-102I
EEEPC Project No.:
Date: 9-9-14

Initial Depth to Water: 1.09 feet TOIC
Total Well Depth: 45.49 feet TOIC
Depth to Pump: 40.49 feet TOIC
Initial Pump Rate: 400 mls/per min Lpm / gpm
adjusted to: 500 mls/per min at 9:17 minutes
adjusted to: 1000 mls per min at 10.02 minutes

Start Time: 0942
End Time: 11.22
☐ Bailer ☒ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: 7.2 gallons x 3 = 21.6 g 5.41L

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
~~0945~~ 9:02 4L	0.0	7.64	12.0	107	414.2	—	78	1.09
~~10:42~~ 9:07	4.0L	7.64	11.8	108	425.2	—	119	1.09
~~10:47~~ 9:12	6.0L	7.68	12.3	108	417.6	—	102.7	1.09
~~10:07~~ 9:22	8.5	7.64	12.1	108	417.5	—	98.7	1.09
9:32	11.0	7.66	12.0	109	417.6	—	89.6	1.09
10:02	13.5	7.67	12.4	110	417.7	—	32.9	1.09
10:12	18.0	7.67	11.2	114	422.1	—	63.5	1.12
10:21	23.0	7.67	11.1	113	421.7	—	60.5	1.12
10:31	33.0	7.67	11.1	118	408.6	—	9.05	1.12
10:41	43.0	7.70	12.2	112	409.2	—	9.43	1.12
10:51	53.0	7.68	12.3	108	405.5	—	9.45	1.12
11:01	63.0	7.69	11.9	110	407.1	—	4.89	1.12
11:11	73.0	7.69	11.9	110	406.1	—	4.11	1.12
11:21	83.0	7.69	11.9	110	406.3	—	4.98	1.12
Final Sample Data:		7.69	11.9	110	406.3	—	4.98	1.12

Sample ID: MW102I-SEP14
Sample Time: 1122
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID:

Analyses: Methods:
☒ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☒ Metals ☐ _____
☐ _____ ☐ _____

Comments: 0 ppm at discharge to ground.

Sampler(s): L. Rood | LKalbach

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW107
EEEPC Project No.: 10C3074.0009.01
Date: 9.10.14

Initial Depth to Water: 5.65 feet TOIC
Start Time: 13:18
Total Well Depth: 44.60 feet TOIC
End Time: 14:47
Depth to Pump: 39.60 feet TOIC
☐ Bailer ☒ Pump
Initial Pump Rate: 1 (Lpm)/ gpm
Pump Type: Typhoon
adjusted to: ______ at ______ minutes
Well Diameter: 2" inches
adjusted to: ______ at ______ minutes
1x Well Volume: 6.3 gallons x3 = 19.0

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
13:18	0	7.94	10.8	-140	321.2	—	1000	5.81
13:23	5.0	7.94	10.5	-131	314.2	—	48	5.44
13:28	10.0	7.94	10.7	-117	317.2	—	37.4	5.56
13:33	15.0	7.94	10.3	-122	318.1	—	33.1	5.56
13:38	20.0	7.96	10.4	-120	314.3	—	27.7	5.56
13:43	25.0	7.96	10.2	-121	314.6	—	15.9	5.56
13:49	30.0	7.98	10.1	-119	315.0	—	17.8	5.56
13:54	35.0	7.98	10.2	-114	313.2	—	14.2	5.56
14:04	45.0	7.98	10.2	-118	318.1	—	16.5	5.56
14:14	55.0	7.97	10.2	-117	313.4	—	14.1	5.56
14:24	65.0	7.97	10.2	-116	314.5	—	8.95	5.56
14:34	75.0	7.97	10.2	-117	314.3	—	8.64	5.56
14:44	80.0	7.97	10.2	-117	314.4	—	8.55	5.56
Final Sample Data:		7.97	10.2	-117	314.4	—	8.55	5.56

Sample ID: MW107 Sep'14
Duplicate? ☒
Dupe Samp ID: MW107I-SEP14-FD
Sample Time: 14:47
MS/MSD? ☐

Analyses:
- ☒ VOCs
- ☐ SVOCs
- ☐ PCBs
- ☒ Metals
- ☐ ______

Methods:
- ☐ CLP
- ☐ SW846
- ☐ Drink. Wtr.
- ☐ ______
- ☐ ______

Comments: Offline on purge water Dumped to ground

Sampler(s): L.Noll / L.Kalenbach

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
EEEPC Project No.:

Well ID: MW108I
Date: 9.11.14

Initial Depth to Water: 3.99 feet TOIC
Total Well Depth: 47.33 feet TOIC
Depth to Pump: ____ feet TOIC
Initial Pump Rate: 800 ml/s per min Lpm / gpm
adjusted to: 600 ml/s at 10:10 minutes
adjusted to: 1000 ml/s at 10:55 minutes

Start Time: 10:01
End Time: 11:46
☐ Bailer ☒ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: 7.0 gallons x 3 = 21.0

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
10:01	0	7.88	12.6	-177	450.6	—	>1000	5.25
10:05	4 L.	7.74	11.2	-165	543.7	—	>1000	7.30
10:10	8 L.	7.73	11.5	-161	546.3	—	>1000	7.20
10:15	11 L.	7.69	11.1	-162	552.5	—	760	7.20
10:25	17 L.	7.77	11.5	-135	476.9	—	37.0	7.80
10:35	23 L.	7.78	11.1	-140	456.3	—	10.24	7.05
10:45	29 L.	7.80	11.1	-147	455.3	—	9.80	7.20
10:55	35 L.	7.80	11.1	-140	454.2	—	4.86	7.20
11:05	41 L.	7.80	11.1	-139	455.1	—	4.53	7.68
11:15	47 L. 55	7.79	11.1	-142	455.7	—	3.49	7.68
11:25	53 L. 65	7.80	11.1	-141	455.0	—	3.03	7.68
11:35	59 L. 75	7.79	11.1	-141	456.0	—	3.01	7.68
11:45	65 L. 85	7.80	11.1	-141	455.2	—	2.46	7.68
	71							
	77							
Final Sample Data:		7.80	11.1	-141	455.2	—	2.46	7.68

Sample ID: MW108I-SEP14
Sample Time: 11:46
Duplicate? ☐ Dupe Samp ID: ____
MS/MSD? ☐

Analyses: Methods:
☒ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☒ Metals ☐ ____
☐ ____ ☐ ____

Comments: Soft bottom of well
0 ppm at discharge to ground.

Sampler(s): LKalmbach | LRoedl

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW110I
EEEPC Project No.:
Date: 9-9-14

Initial Depth to Water: 3.78 feet TOIC
Total Well Depth: 44.52 feet TOIC
Depth to Pump: 39.52 feet TOIC
Initial Pump Rate: 600 mL/min Lpm / gpm
adjusted to: _____ at _____ minutes
adjusted to: _____ at _____ minutes

Start Time: 1413
End Time: 1430
☐ Bailer ☑ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: 6.6 gallons x 3 = 19.9

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1413	0.0 L	8.20	12.0	-80	311.8	←	>1000	6.40
1418	3.0 L	8.10	12.2	-114	316.0	←	251	7.20
~~1423~~ 1423	6.0 L	8.04	12.9	-101	314.5	←	~~>1000~~ 607	8.65
1428	9.0 L	8.02	12.1	-99	316.3	←	>1000	17.00
			DRY @ 1430					
Final Sample Data:		7.70	15.6	119	275.8	←	42.1	3.34

Sample ID: MW110I-SEP14
Sample Time: 9:07 9.10.14
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID: _____

Analyses: Methods:
☑ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☑ Metals ☐ _____
☐ _____ ☐ _____

Comments: ~~Purge~~ Well went dry at 1430.
Bailer in well filled with very fine sediment.
Sampled on Sept 10 within 24 hr of after purging
0 ppm at discharge to ground.

Sampler(s): L. Rowell L. Kalmbach

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW111I
EEEPC Project No.:
Date: 9.10.14

Initial Depth to Water: 4.43 feet TOIC
Total Well Depth: 43.01 feet TOIC
Depth to Pump: feet TOIC
Initial Pump Rate: 600 mL/min Lpm / gpm
adjusted to: 1000 mL/min at 10:36 minutes
adjusted to: at minutes

Start Time: 1026
End Time: 1152
☐ Bailer ☒ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: 6.2 gallons x3 = 18.8

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1026	0.0	7.89	13.8	-5	379.2	—	30.3	4.64
* 1036	~2.0	7.93	13.7	-219	371.6	—	23.8	4.68
1041	5.0	7.91	13.3	-196	376.2	—	14.9	4.81
10:46	10.0 L	7.92	13.2	-163	382.6	—	8.98	4.85
10.51	15.0L	7.92	12.0	-139	371.2	—	5.13	4.86
10.56	20.0L	7.92	12.0	-121	369.0	—	3.63	4.87
11.01	25.0L	7.91	12.0	-121	371.3	—	3.04	4.87
11.06	30.0L	7.91	12.0	-112	367.4	—	2.41	4.87
1111	35.0L	7.91	12.1	-122	370.5	—	2.38	4.87
1121	45.0L	7.92	12.1	~~-124~~ -107 *1049	371.0	—	2.18	4.87
1131	55.0L	7.92	11.2	-125	369.2	—	1.67	4.87
1141	65.0L	7.92	11.7	-128	369.5	—	2.30	4.87
1151	75.0L	7.91	11.7	-122	369.5	—	2.35	4.87
Final Sample Data:		7.91	11.7	-122	369.5	—	2.35	4.87

Sample ID: MW111I-SEP14
Sample Time: 9.10.14 1152
Duplicate? ☐
MS/MSD? ☐
Dupe Samp ID:

Analyses: ☒ VOCs ☐ SVOCs ☐ PCBs ☒ Metals ☐ _____
Methods: ☐ CLP ☐ SW846 ☐ Drink. Wtr. ☐ _____

Comments: * ~~Well Casing~~ has two bullett holes through one side steel and PVC casings. PVC casing shattered in two sections. * Adjusting Flow Rate.
0 ppm at discharge to ground

Sampler(s): LKalmbach | LRoedl

ecology and environment engineering, p.c.
International Specialists in the Environment
BUFFALO CORPORATE CENTER 368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY

EEEPC Project No.: ______

Well ID: MW109D

Date: 9-9-14

Initial Depth to Water: 0.91 feet TOIC

Total Well Depth: 73.19 feet TOIC

Depth to Pump: 68.19 feet TOIC

Initial Pump Rate: 1000 ml per min Lpm / gpm

adjusted to: ______ at ______ minutes

adjusted to: ______ at ______ minutes

Start Time: 11:45

End Time: 12:30

☐ Bailer ☒ Pump

Pump Type: Typhoon

Well Diameter: 2 inches

1x Well Volume: 11.7 gallons x3 35.3

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp (ºC/ºF)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
11:45	0.0	7.89	19.6	89	379.1	—	56.4	0.99
11:50	5.0 gallon	7.81	11.6	91	387.8	—	19.8	0.99
~~11:50~~ 12:00	15.0 gallon	7.83	10.4	116	383.2	—	12.3	0.99
12:05	20.0	7.81	10.6	148	387.1	—	9.48	0.99
12:10	25.0	7.81	10.1	125	387.2	—	4.91	1.00
12:15	30.0	7.81	10.1	96	390.2	—	6.67	1.00
12:20	35.0	7.81	10.1	92	391.3	—	6.49	1.00
12:25	40.0	7.80	10.1	96	391.8	—	3.59	1.00
Final Sample Data:		7.80	10.1	96	391.8	—	3.59	1.00

Sample ID: MW109D-Sep14

Sample Time: 1230

Duplicate? ☐

MS/MSD? ☒

Dupe Samp ID: MW 109D-Sep14

Analyses:
- ☒ VOCs
- ☐ SVOCs
- ☐ PCBs
- ☒ Metals
- ☐ ______

Methods:
- ☐ CLP
- ☐ SW846
- ☐ Drink. Wtr.
- ☐ ______
- ☐ ______

Comments: 0 ppm on purge water. Dumped to ground.

Sampler(s): [signature] | LKaltenbach

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WELL PURGE & SAMPLE RECORD

Site Name/Location: Carroll Town Landfill, Frewsburg, NY
Well ID: MW-13
EEEPC Project No.:
Date: September 11, 2014

Initial Depth to Water: 7.49 feet TOIC
Total Well Depth: ~~70.78~~ feet TOIC
Depth to Pump: 65.78 feet TOIC
Initial Pump Rate: 1.8 4min Lpm / gpm
adjusted to: _____ at _____ minutes
adjusted to: _____ at _____ minutes

Start Time: 1456
End Time: 1608
☐ Bailer ☒ Pump
Pump Type: Typhoon
Well Diameter: 2 inches
1x Well Volume: 10.3 gallons x 3 = 30.9gal 123L

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (°C/°F)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
1456	0.0 L	7.95	11.9	236	378.3	—	>1000	7.51
1506	~~114.8 L~~ 18.0	7.82	11.0	150	356.6	—	59.0	7.52
1516	36.0 L	7.83	10.9	127	353.3	—	46.3	7.52
1526	54.0 L	7.82	10.9	121	351.6	—	25.4	7.53
1536	72.0 L	7.83	10.9	117	351.4	—	11.4	7.52
1546	90.0 L	7.81	10.9	115	354.9	—	8.56	7.52
1556	108 L	7.84	11.0	112	351.7	—	4.41	7.52
1606	126 L	7.82	10.9	119	352.8	—	5.74	7.52
Final Sample Data:		7.82	10.9	119	352.8	—	5.74	7.52

Sample ID: MW13-SEP14
Sample Time: 9.11.14 1608
Duplicate? ☐ Dupe Samp ID: _____
MS/MSD? ☐

Analyses: Methods:
☒ VOCs ☐ CLP
☐ SVOCs ☐ SW846
☐ PCBs ☐ Drink. Wtr.
☒ Metals ☐ _____
☐ _____ ☐ _____

Comments: 0 ppm at discharge to ground.

Sampler(s): LKalmbach / LRoed

APPENDIX B

Data Usability Summary Report

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness based on applicable sections of the following guidelines.

- NYSDEC Division of Environmental Remediation Guidance for Data Deliverables and the Development of Data Usability Summary Reports (in DER-10, May 2010)
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (EPA-540-R-014-002, August 2014)
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (EPA 540-R-013-001, August 2014).
- EPA Region 2 Data Validation standard operating procedures HW-2a, HW-2b, HW-2c, and HW-24..

Specific criteria for QC limits were obtained from the master QAPP. Compliance with the project QA program is indicated in the checklist and tables below. Any major or minor concerns affecting data usability are listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

ProjectID	Lab Work Order	Laboratory Report
10C3074.0016.03	480-67030-1	Test America, Buffalo

Table 1 Sample Summary Tables

Work Order	Matrix	Sample ID	Lab ID	Sample Date	MS/MSD	ID Corrections
480-67030-1	WH	FIELDBLANK-SEP14	480-67136-8	09/11/2014		
480-67030-1	WG	MW102I-SEP14	480-67030-3	09/09/2014		MW-102I-SEP14
480-67030-1	WG	MW102-SEP14	480-67030-2	09/09/2014		MW-102-SEP14
480-67030-1	WG	MW103-SEP14	480-67136-6	09/11/2014		MW-103-SEP14
480-67030-1	WG	MW104-SEP14	480-67136-5	09/11/2014		MW-104-SEP14
480-67030-1	WG	MW105S-SEP14	480-67030-8	09/10/2014		MW-105S-SEP14
480-67030-1	WG	MW106S-SEP14	480-67136-2	09/11/2014		MW-106S-SEP14
480-67030-1	WG	MW107I-SEP14	480-67030-11	09/10/2014		MW-107I-SEP14
480-67030-1	WG	MW107I-SEP14-FD	480-67030-12	09/10/2014		MW-107I-SEP14-FD
480-67030-1	WG	MW107S-SEP14	480-67030-13	09/10/2014		MW-107S-SEP14
480-67030-1	WG	MW108I-SEP14	480-67136-3	09/11/2014		MW-108I-SEP14
480-67030-1	WG	MW108S-SEP14	480-67136-4	09/11/2014		MW-108S-SEP14
480-67030-1	WG	MW109D-SEP14	480-67030-4	09/09/2014	MS/MSD	MW-109D-SEP14
480-67030-1	WG	MW109S-SEP14	480-67030-5	09/09/2014		MW-109S-SEP14
480-67030-1	WG	MW110I-SEP14	480-67030-6	09/10/2014		MW-110I-SEP14
480-67030-1	WG	MW110S-SEP14	480-67030-7	09/10/2014		MW-110S-SEP14
480-67030-1	WG	MW111I-SEP14	480-67030-10	09/10/2014		MW-111I-SEP14
480-67030-1	WG	MW111S-SEP14	480-67030-9	09/10/2014		MW-111S-SEP14
480-67030-1	WG	MW13-SEP14	480-67136-7	09/11/2014		MW-13-SEP14
480-67030-1	WQ	TB-01-SEP14	480-67030-1	09/11/2014		
480-67030-1	WQ	TB-02-SEP-14	480-67136-1	09/09/2014		

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

Table 1A Sample Test Summary

Work Orders	Matrix	Test Method	Method Name	Number of Samples	Sample Type
480-67030-1	WG	524.2	Volatile Organic Compounds by GC/MS	18	N/FD
480-67030-1	WG	504.1	EDB, DBCP and 1,2,3-TCP (GC)	18	N/FD
480-67030-1	WG	200.7	Metals (ICP)	18	N/FD
480-67030-1	WG	200.8	Metals (ICP/MS)	18	N/FD
480-67030-1	WG	245.1	Mercury (CVAA)	18	N/FD
480-67030-1	WH	524.2	Volatile Organic Compounds by GC/MS	1	RB
480-67030-1	WH	504.1	EDB, DBCP and 1,2,3-TCP (GC)	1	RB
480-67030-1	WH	200.7	Metals (ICP)	1	RB
480-67030-1	WH	200.8	Metals (ICP/MS)	1	RB
480-67030-1	WH	245.1	Mercury (CVAA)	1	RB
480-67030-1	WQ	524.2	Volatile Organic Compounds by GC/MS	2	TB

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	Yes. The sample names were changed as noted in the ID Correction column in Table 1 to maintain consistency in nomenclature.
Did coolers arrive at lab between 2 and 6^{o}C and in good condition as indicated on COC and Cooler Receipt Form?	Yes.
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	Yes. 1 Field Duplicate/17 samples 1 MS/MSD/17 samples 1 Equipment Blank 1 Trip Blank/Cooler
Case narrative present and complete?	Yes
Any holding time violations?	Yes. Sample MW103-SEP14 was analyzed past the 24 hour holding time post extraction. There was no remaining sample to re-extract; therefore, the results were reported. The sample results were non-detect; therefore, they were qualified UJ as estimated.

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)
- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

Go to Tables List

Volatile Organics and Semi-volatile Organics by GC/MS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	No
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	No qualifications required.
Are surrogates for method blanks and LCS within limits?	Yes
Are surrogates for samples and MS/MSD within limits? (See Table 3). If not, were all samples reanalyzed for VOCs? Semi-volatile samples should be reanalyzed if more than one base-neutral and/or more than one acid phase compound for semi-volatiles is out. Matrix effects should be established.	Yes
Is laboratory QC frequency at least one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes
Are MS/MSD within QC criteria (see Table 4)? If out and LCS is compliant, then "J" flag positive data in original sample due to matrix.	No. Majority of the spiking compounds failed precision between the MS and MSD in MW-109D-SEP14. Overall, the MSD recoveries were higher than the MS recoveries indicating a laboratory spiking error rather than a matrix effect issue. No qualification of the data was made. The MS and MSD for batch 202584 were spiked with primary routine mixes due to analyst error. Bromomethane was recovered high in the MSD for MW-109D-SEP14. The result was non-detect in the parent sample; therefore, no qualification was required.
Is LCS within QC criteria (see Table 5)? If out, and the recovery is high with no positive values, then no data qualification is required.	Yes.
Do internal standards areas and retention time meet criteria? If not was sample re-analyzed to establish matrix (see Table 6)?	Yes
Is initial calibration for target compounds <20 %RSD or curve fit?	Yes
Is continuing calibration for target compounds <30 %D?	Yes
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	Yes. Samples MW-103-SEP14 and MW-107S-SEP14 were dilute due to elevated concentrations of vinyl chloride. Elevated reporting limits were provided.
For TICs are there any system related compounds that should not be reported?	N/A

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

Volatile Organics and Semi-volatile Organics by GC/MS	
Description	**Notes and Qualifiers**
Do field duplicate results show good precision for all compounds (see Table 7)?	N/A Volatile compounds were not detected in the field duplicate sample.

Metals by ICP and Mercury by CVAA	
Description	**Notes and Qualifiers**
Are any compounds present in method and field blanks as noted on Table 2?	Yes. Iron, zinc, manganese, lead and thallium were detected in method blanks. Thallium was detected in several initial calibration blanks (ICB) and continuing calibration blanks (CCB). Antimony was detected in one CCB. Calcium, magnesium, manganese, and lead were detected in the rinsate blank.
For samples, if results are <5 times the blank then "U" flag data.	Sample results for iron, zinc, manganese, lead and thallium that were less than 5X the blank detection were U qualified as elevated non-detect. One sample result for manganese and two sample results for lead were qualified as non-detect due to rinsate blank detections.
Is laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes
Are MS/MSD within QC criteria (see Table 4)? QC limits are not applicable to sample results greater than 4 times spike amount. All N flagged data for MS are flagged J as estimated.	No. Manganese was recovered high in the MSD for MW-109D-SEP14 and exhibited poor precision between MS and MSD. The results in the parent sample were J qualified as estimated. Calcium failed the MS/MSD/PDS in samples MW-109D-SEP14 and MW-108I-SEP14 due to the native concentration being 4X greater than the spiking concentration. No qualifications were required.
Were elements recovered ≤30%? If so, “R” flag associated NDs on Form 1's.	No.
Is LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	Yes.
Is there one serial dilution per 20 samples? Flag all data reported with an “E” as “J”.	Yes.
Spot check ICS recoveries 80-120%. Contact lab.	Acceptable.
Spot check ICV 95-105%. Contact lab.	The % recovery for antimony in ICV 480-202359/6 and 480-202360/6 was

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

Metals by ICP and Mercury by CVAA	
Description	**Notes and Qualifiers**
	106%. EPA SOP HW-2b allows to 90-110% recovery; therefore, no qualification of the data was made. The % recovery for Antimony in ICV 480-202577/6 was 107%. EPA SOP HW-2b allows to 90-110% recovery; therefore, no qualification of the data was made.
Spot check CCV 90-110% or 80-120% for Hg. Contact lab.	Acceptable.
Do field duplicate results show good precision for all compounds (see Table 7)?	No. Lead exhibited poor precision in the field duplicate samples. The results were J qualified as estimated.

Summary of Impacts on Data Usability

- Detections of lead, thallium, manganese, iron, and zinc in the method blanks/ICBs/CCBs resulted in low level sample results being qualified as non-detect. This impacts the comparability of data; however, no values were greater than the screening criteria.
- Detections of manganese and lead in the rinsate blank resulted in the low level sample results being qualified as non-detect. This impacts the comparability of data; however, no values were greater than the screening criteria.
- Manganese was J qualified as estimated in sample MW-109D-SEP14 due to elevated recovery in the MSD, which contributed to poor precision between MS and MSD results.
- Lead exhibited poor precision in the field duplicate samples. The results were qualified J as estimated.
- Samples MW-103-SEP14 and MW-107S-SEP14 were diluted for VOC analysis due to vinyl chloride exceeding the calibration curve. Elevated reporting limits are provided.

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

Table 2 - Positive Results for Blank Samples

Method	Sample ID	Sample Type	Analyte	Result	Qualifier	Units	MDL	PQL
E200.8	4802021691A	MB	LEAD	0.0740	J	ug/l	0.069	1.0
E200.8	4802021691A	MB	THALLIUM	0.0236	J	ug/l	0.0080	0.20
E200.8	4802021721A	MB	THALLIUM	0.0129	J	ug/l	0.0080	0.20
E200.7	4802023441A	MB	MANGANESE	0.00123	J	mg/l	0.00040	0.0030
E200.7	4802023571A	MB	IRON	0.0238	J	mg/l	0.019	0.050
E200.7	4802023571A	MB	ZINC	0.00201	J	mg/l	0.0015	0.010
E200.8	480202359/7	ICB	THALLIUM	0.0153	J	ug/l	0.0080	0.20
E200.8	480202359/51	CCB	THALLIUM	0.0213	J	ug/l	0.0080	0.20
E200.8	480202359/64	CCB	THALLIUM	0.0244	J	ug/l	0.0080	0.20
E200.8	480202359/77	CCB	THALLIUM	0.0244	J	ug/l	0.0080	0.20
E200.8	480202359/88	CCB	THALLIUM	0.0254	J	ug/l	0.0080	0.20
E200.8	480202360/7	ICB	THALLIUM	0.0135	J	ug/l	0.0080	0.20
E200.8	480202360/12	CCB	THALLIUM	0.0131	J	ug/l	0.0080	0.20
E200.8	480202360/24	CCB	THALLIUM	0.0197	J	ug/l	0.0080	0.20
E200.8	480202360/37	CCB	THALLIUM	0.0225	J	ug/l	0.0080	0.20
E200.8	480202360/50	CCB	THALLIUM	0.0193	J	ug/l	0.0080	0.20
E200.8	480202577/7	ICB	THALLIUM	0.00900	J	ug/l	0.0080	0.20
E200.8	480202577/38	CCB	THALLIUM	0.0231	J	ug/l	0.0080	0.20
E200.8	480202577/51	CCB	THALLIUM	0.0179	J	ug/l	0.0080	0.20
E200.8	480202577/64	CCB	THALLIUM	0.0249	J	ug/l	0.0080	0.20
E200.8	480202577/64	CCB	ANTIMONY	0.182	J	ug/l	0.15	1.0
E200.7	FIELDBLANK-SEP14	RB	CALCIUM	0.20	J	mg/l	0.50	0.50
E200.7	FIELDBLANK-SEP14	RB	MAGNESIUM	0.044	J	mg/l	0.20	0.20
E200.7	FIELDBLANK-SEP14	RB	MANGANESE	0.0017	J	mg/l	0.0030	0.0030
E200.8	FIELDBLANK-SEP14	RB	LEAD	0.070	J	ug/l	1.0	1.0

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

Table 2A - Samples Qualified for Method Blank Contamination

Method	Lab Blank	Matrix	Analyte	Blank Result	Sample Result	Lab Qualifier	PQL	Affected Samples	Sample Flag
E200.7	4802023571A	RB	IRON	0.0238	0.054	J	0.050	FIELDBLANK-SEP14	U
E200.7	4802023571A	RB	ZINC	0.00201	0.0026	BJ	0.010	FIELDBLANK-SEP14	U
E200.7	4802023571A	WG	ZINC	0.00201	0.023	B	0.010	MW-104-SEP14	U
E200.7	4802023571A	WG	ZINC	0.00201	0.0083	BJ	0.010	MW-106S-SEP14	U
E200.7	4802023571A	WG	ZINC	0.00201	0.0019	BJ	0.010	MW-108I-SEP14	U
E200.7	4802023571A	WG	ZINC	0.00201	0.020	B	0.010	MW-108S-SEP14	U
E200.7	4802023571A	WG	ZINC	0.00201	0.0033	BJ	0.010	MW-13-SEP14	U
E200.8	480202359/88	WG	THALLIUM	0.0254	0.011	BJ	0.20	MW-102I-SEP14	U
E200.8	480202359/88	WG	THALLIUM	0.0254	0.012	BJ	0.20	MW-102-SEP14	U
E200.8	480202359/88	WG	THALLIUM	0.0254	0.0098	BJ	0.20	MW-109D-SEP14	U
E200.8	480202359/88	WG	THALLIUM	0.0254	0.18	BJ	0.20	MW-109S-SEP14	U
E200.8	480202360/37	WG	THALLIUM	0.0225	0.011	BJ	0.20	MW-108I-SEP14	U
E200.8	480202360/37	WG	THALLIUM	0.0225	0.016	BJ	0.20	MW-104-SEP14	U
E200.8	480202360/37	WG	THALLIUM	0.0225	0.046	BJ	0.20	MW-108S-SEP14	U
E200.8	480202577/51	WG	THALLIUM	0.0179	0.025	J	0.20	MW-107I-SEP14	U
E200.8	480202577/51	WG	THALLIUM	0.0179	0.020	J	0.20	MW-111I-SEP14	U
E200.8	480202577/64	WG	THALLIUM	0.0249	0.042	J	0.20	MW-105S-SEP14	U
E200.8	480202577/64	WG	THALLIUM	0.0249	0.0094	J	0.20	MW-107I-SEP14-FD	U
E200.8	480202577/64	WG	THALLIUM	0.0249	0.024	J	0.20	MW-110I-SEP14	U
E200.8	480202577/64	WG	THALLIUM	0.0249	0.062	J	0.20	MW-110S-SEP14	U
E200.8	480202577/64	WG	ANTIMONY	0.182	0.47	J	1.0	MW-105S-SEP14	U
E200.8	480202577/64	WG	ANTIMONY	0.182	0.33	J	1.0	MW-107S-SEP14	U
E200.8	480202577/64	WG	ANTIMONY	0.182	0.62	J	1.0	MW-110I-SEP14	U
E200.8	480202577/64	WG	ANTIMONY	0.182	0.28	J	1.0	MW-110S-SEP14	U
E200.8	480202577/64	WG	ANTIMONY	0.182	0.23	J	1.0	MW-111S-SEP14	U
E200.8	4802021691A	WG	LEAD	0.0740	0.22	BJ	1.0	MW-109D-SEP14	U
E200.8	4802021691A	WG	LEAD	0.0740	0.27	BJ	1.0	MW-102I-SEP14	U
E200.8	4802021691A	WG	LEAD	0.0740	0.34	BJ	1.0	MW-102-SEP14	U

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

Table 2B - Samples Qualified for Field Blank Contamination

Method	Field Blank	Matrix	Analyte	Blank Result	Sample Result	Lab Qual	PQL	Affected Samples	Sample Flag
E200.8	FIELDBLANK-SEP14	RB	LEAD	0.070	0.12	J	1.0	MW-108I-SEP14	U
E200.8	FIELDBLANK-SEP14	RB	LEAD	0.070	0.17	J	1.0	MW-103-SEP14	U
E200.7	FIELDBLANK-SEP14	RB	MANGANESE	0.0017	0.0075		0.0030	MW-13-SEP14	U

Table 3 - Samples with Surrogates outside Control Limits
None.

Table 4 - MS/MSD Recoveries and RPDs Outside Control Limits

Method	Sample ID	Sample Type	Analyte	Orig. Result	Spike Amount	Rec.	Dil. Fac.	Low Limit	High Limit	Sample Qualifier
E200.7	MW-109D-SEP14	MS	CALCIUM	55.2	10.0	58	1	70	130	4X
E200.7	MW-108I-SEP14	MSD	CALCIUM	64.5	10.0	61	1	70	130	4X
E200.7	MW-109D-SEP14	MSD	CALCIUM	55.2	10.0	66	1	70	130	4X
E200.7	MW-109D-SEP14	MSD	MANGANESE	0.10	0.201	139	1	70	130	J Flag
E524.2	MW-109D-SEP14	MSD	BROMOMETHANE	0.50	4.00	132	1	70	130	None

Method	Parent Sample	Analyte	Dil Fac	Unit	RPD	RPD Limit	Qualifier	Sample Type
E200.7	MW-109D-SEP14	MANGANESE	1	mg/l	27	20	J Flag	MS/MSD
E524.2	MW-109D-SEP14	1,1,1,2-TETRACHLOROETHANE	1	ug/l	27	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,1,1-TRICHLOROETHANE	1	ug/l	35	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,1,2-TRICHLOROETHANE	1	ug/l	23	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,1-DICHLOROETHANE	1	ug/l	32	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,1-DICHLOROETHENE	1	ug/l	32	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,1-DICHLOROPROPENE	1	ug/l	36	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,2,3-TRICHLOROBENZENE	1	ug/l	31	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,2,4-TRICHLOROBENZENE	1	ug/l	32	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,2,4-TRIMETHYLBENZENE	1	ug/l	35	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,2-DICHLOROBENZENE	1	ug/l	29	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,2-DICHLOROETHANE	1	ug/l	26	20	None	MS/MSD

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

Method	Parent Sample	Analyte	Dil Fac	Unit	RPD	RPD Limit	Qualifier	Sample Type
E524.2	MW-109D-SEP14	1,2-DICHLOROPROPANE	1	ug/l	28	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,3,5-TRIMETHYLBENZENE (MESITYLENE)	1	ug/l	35	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,3-DICHLOROBENZENE	1	ug/l	31	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,3-DICHLOROPROPANE	1	ug/l	23	20	None	MS/MSD
E524.2	MW-109D-SEP14	1,4-DICHLOROBENZENE	1	ug/l	29	20	None	MS/MSD
E524.2	MW-109D-SEP14	2,2-DICHLOROPROPANE	1	ug/l	29	20	None	MS/MSD
E524.2	MW-109D-SEP14	2-CHLOROTOLUENE	1	ug/l	31	20	None	MS/MSD
E524.2	MW-109D-SEP14	4-CHLOROTOLUENE	1	ug/l	33	20	None	MS/MSD
E524.2	MW-109D-SEP14	BENZENE	1	ug/l	31	20	None	MS/MSD
E524.2	MW-109D-SEP14	BROMOBENZENE	1	ug/l	28	20	None	MS/MSD
E524.2	MW-109D-SEP14	BROMOCHLOROMETHANE	1	ug/l	25	20	None	MS/MSD
E524.2	MW-109D-SEP14	BROMODICHLOROMETHANE	1	ug/l	27	20	None	MS/MSD
E524.2	MW-109D-SEP14	BROMOMETHANE	1	ug/l	36	20	None	MS/MSD
E524.2	MW-109D-SEP14	CARBON DISULFIDE	1	ug/l	36	20	None	MS/MSD
E524.2	MW-109D-SEP14	CARBON TETRACHLORIDE	1	ug/l	33	20	None	MS/MSD
E524.2	MW-109D-SEP14	CHLOROBENZENE	1	ug/l	29	20	None	MS/MSD
E524.2	MW-109D-SEP14	CHLOROFORM	1	ug/l	28	20	None	MS/MSD
E524.2	MW-109D-SEP14	CIS-1,2-DICHLOROETHYLENE	1	ug/l	30	20	None	MS/MSD
E524.2	MW-109D-SEP14	CIS-1,3-DICHLOROPROPENE	1	ug/l	24	20	None	MS/MSD
E524.2	MW-109D-SEP14	CYMENE	1	ug/l	35	20	None	MS/MSD
E524.2	MW-109D-SEP14	DIBROMOCHLOROMETHANE	1	ug/l	26	20	None	MS/MSD
E524.2	MW-109D-SEP14	DIBROMOMETHANE	1	ug/l	26	20	None	MS/MSD
E524.2	MW-109D-SEP14	ETHYLBENZENE	1	ug/l	33	20	None	MS/MSD
E524.2	MW-109D-SEP14	HEXACHLOROBUTADIENE	1	ug/l	36	20	None	MS/MSD
E524.2	MW-109D-SEP14	ISOPROPYLBENZENE (CUMENE)	1	ug/l	37	20	None	MS/MSD
E524.2	MW-109D-SEP14	METHYLENE CHLORIDE	1	ug/l	30	20	None	MS/MSD
E524.2	MW-109D-SEP14	NAPHTHALENE	1	ug/l	24	20	None	MS/MSD
E524.2	MW-109D-SEP14	N-BUTYLBENZENE	1	ug/l	40	20	None	MS/MSD
E524.2	MW-109D-SEP14	N-PROPYLBENZENE	1	ug/l	34	20	None	MS/MSD
E524.2	MW-109D-SEP14	SEC-BUTYLBENZENE	1	ug/l	38	20	None	MS/MSD
E524.2	MW-109D-SEP14	STYRENE	1	ug/l	32	20	None	MS/MSD

Method	Parent Sample	Analyte	Dil Fac	Unit	RPD	RPD Limit	Qualifier	Sample Type
E524.2	MW-109D-SEP14	T-BUTYLBENZENE	1	ug/l	37	20	None	MS/MSD
E524.2	MW-109D-SEP14	TETRACHLOROETHYLENE(PCE)	1	ug/l	34	20	None	MS/MSD
E524.2	MW-109D-SEP14	TOLUENE	1	ug/l	31	20	None	MS/MSD
E524.2	MW-109D-SEP14	TRANS-1,2-DICHLOROETHENE	1	ug/l	31	20	None	MS/MSD
E524.2	MW-109D-SEP14	TRANS-1,3-DICHLOROPROPENE	1	ug/l	25	20	None	MS/MSD
E524.2	MW-109D-SEP14	TRICHLOROETHYLENE (TCE)	1	ug/l	32	20	None	MS/MSD
E524.2	MW-109D-SEP14	XYLENES, TOTAL	1	ug/l	31	20	None	MS/MSD

Table 5 - LCS Recoveries outside Control Limits
None

Table 6 –Samples that were Reanalyzed

Sample ID	Lab ID	Method	Sample Type	Action
MW-103-SEP14	480-67136-6	E524.2	WG	2X: Dilute to bring the concentration of vinyl chloride within calibration range. Elevated reporting limits provided.
MW-107S-SEP14	480-67030-13	E524.2	WG	5X: Dilute to bring the concentration of vinyl chloride within calibration range. Elevated reporting limits provided.

Table 7 – Summary of Field Duplicate Results

Method	Analyte	Unit	Matrix	PQL	MW-107I-SEP14	MW-107I-SEP14-FD	RPD	RPD Rating	Sample Qual
E200.7	ALUMINUM	mg/l	Water	0.20	0.48	0.48	0.0%	Good	None
E200.7	BARIUM	mg/l	Water	0.0020	0.22	0.21	4.7%	Good	None
E200.7	CALCIUM	mg/l	Water	0.50	39.9	37.6	5.9%	Good	None
E200.7	CHROMIUM, TOTAL	mg/l	Water	0.0040	0.0014	0.0011	24.0%	Good	None
E200.7	COPPER	mg/l	Water	0.010	0.0019	0.0017	11.1%	Good	None
E200.7	IRON	mg/l	Water	0.050	0.70	0.71	1.4%	Good	None
E200.7	MAGNESIUM	mg/l	Water	0.20	10.1	9.4	7.2%	Good	None
E200.7	MANGANESE	mg/l	Water	0.0030	0.20	0.19	5.1%	Good	None
E200.7	POTASSIUM	mg/l	Water	0.50	1.1	1.1	0.0%	Good	None
E200.7	SODIUM	mg/l	Water	1.0	7.0	6.6	5.9%	Good	None

Data Usability Summary Report	Project: Carroll Landfill
Date Completed: October 23, 2014	Completed by: Lynne Kalmbach and Marcia Meredith Galloway

Method	Analyte	Unit	Matrix	PQL	MW-107I-SEP14	MW-107I-SEP14-FD	RPD	RPD Rating	Sample Qual
E200.7	ZINC	mg/l	Water	0.010	0.0032	0.0027	16.9%	Good	None
E200.8	ARSENIC	ug/l	Water	1.0	19.1	19.4	1.6%	Good	None
E200.8	LEAD	ug/l	Water	1.0	1.0	2.3	78.8%	Poor	J Flag

Acronym List and Table Key:

COC = chain of custody
DUSR = data usability summary report
GC/MS = gas chromatography / mass spectrometry
LCS = laboratory control sample
MBLK = method blank
MS = matrix spike
MSD = matrix spike duplicate
ND = not detected
NYSDEC = New York State Department of Environmental Conservation
PQL = practical quantitation limit
QA = quality assurance
QAPP = quality assurance project plan
QC = quality control
RPD = relative percent difference
SDG = sample delivery group
TIC = tentatively identified compound
VOC = volatile organic compound
WQ = water quality

APPENDIX C

Laboratory Data Report