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Broome County
Division of Solid Waste Management

Operational Year 11
Semi-Annual
Monitoring Report

March 2013

ARCADIS

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Operational Year 11
Semi-Annual
Monitoring Report

Colesville Landfill,
Broome County, New York
NYSDEC Site 704010

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1. Introduction

This Monitoring Report (report) was prepared on behalf of the Broome County Division of Solid Waste Management for the Colesville Landfill, located in Broome County, New York (site) to evaluate and document long-term monitoring (LTM) activities at the site. Remediation and monitoring activities are being conducted pursuant to the Record of Decision (ROD) issued in March 1991 and Explanation of Significant Differences (ESD) that were issued in September 2000 and July 2004, respectively. LTM activities (which include environmental effectiveness and remediation system performance monitoring) were performed in accordance with the LTM Plan (ARCADIS G&M, Inc. 2002), LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS G&M, Inc. 2003), Interim Remedial Action Report (ARCADIS G&M, Inc. 2004), the Proposed Modifications to the Long Term Monitoring Program (ARCADIS G&M, Inc. 2005), and the In-Situ Reactive Zone Discontinuation Pilot Test Work Plan (hereinafter referred to as the "discontinuation pilot test" [ARCADIS of New York Inc. 2012]), which were approved by the United States Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC). These documents provide a detailed description of the LTM program, methodology, and rationale. Where applicable these elements are either summarized or incorporated by reference herein.

This report describes the results of the December 2012 and March 2013 groundwater quality monitoring, pilot test activities and data evaluation event conducted during Operational Year 11, Quarter Numbers 1 and 2 (October 1, 2012 to March 31, 2013) (hereinafter referred to as the reporting period). Following the detailed data analysis and discussion is a summary of findings, conclusions, and recommendations.

2. Methodology

The following section provides a summary of the environmental effectiveness and discontinuation pilot test monitoring methodology for the reporting period. A site plan showing the monitoring locations is provided on Figure 1.

2.1 Groundwater Monitoring

Groundwater monitoring performed during the reporting period included the following:

- Water-level (hydraulic) measurements were collected from 23 monitoring wells on March 26, 2013 (Table 1).

- Groundwater samples were collected from the five quarterly monitoring wells (GMMW-2, GMMW-5, GMMW-6, PW-4 and TW-1) during the week of December 18, 2012) and from the six semi-annual monitoring wells (quarterly list of wells plus PW-7) during the week of March 25, 2013. The samples were selectively analyzed for volatile organic compounds (VOCs), dissolved gases, alternate electron acceptors (dissolved iron, dissolved manganese, total iron, total manganese, nitrate, nitrite and sulfate), and total organic carbon (TOC). Field parameters were also recorded at these monitoring locations (Table 2 and 3).

- Groundwater samples were collected from select injection wells (IW-3, IW-8 and IW-13) the weeks of December 18, 2012 and March 25, 2013. The samples were analyzed for TOC. Field parameters were also recorded at these monitoring locations (Table 3).

Groundwater samples were collected from monitoring wells utilizing passive diffusive bag (PDB) samplers (VOCs and dissolved gases) or as grab samples utilizing bailers or whale pump (TOC and alternate electron acceptors) in accordance with the LTM Plan (ARCADIS G&M, Inc. 2002) and/or the Proposed Modifications to the Long-Term Monitoring Program (ARCADIS G&M, Inc. 2005).

2.2 Surface Water Monitoring

Surface water samples were collected at the SW-2, SW-3, SW-4, and F-6 locations during the week of March 25, 2013. The samples were analyzed for VOCs and metals (Table 4). Field parameters were also recorded at these surface water locations (Appendix A). Surface water samples were collected mid-stream as grab samples in accordance with the LTM Plan (ARCADIS G&M, Inc. 2002) and/or the Proposed Modifications to the Long-Term Monitoring Program (ARCADIS G&M, Inc. 2005).

2.3 Spring Water and Sediment Monitoring

Spring water samples were collected at the SP-2, SP-3, and SP-4 sampling locations during the weeks of December 18, 2012 and March 25, 2013. The samples were analyzed for VOCs and metals (Table 5). Field parameters were also recorded at these spring locations (Appendix B). Spring water samples were collected as grab samples, where feasible, or with a peristaltic pump.

A sediment sample was collected at the SP-3 spring water location during the week of March 25, 2013. The sample was analyzed for metals (Table 6). Sediment samples

were collected as grab samples from a sample matrix that was homogenized in a stainless steel bowl.

2.4 Spring Water Remediation System Performance Monitoring

SP-5 Spring Water Remediation System OM&M was conducted on December 19, 2012 and March 28, 2013. System OM&M was conducted in accordance with the LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS G&M, Inc. 2003) and consisted of the collection of influent and effluent spring water samples for analysis of VOCs. The influent sample was collected after removing three well volumes from the influent monitoring well, which is located within the SP-5 treatment unit and screened below the liquid phase granular activated carbon (LPGAC) zone. The treatment system effluent sample was collected as a grab sample from the discharge pipe prior to entering the outfall stone apron. All spring water samples were analyzed for VOCs using USEPA Method 8260.

3. Groundwater Flow

Water-level measurements were made from existing wells on March 26, 2013. The measurements are provided in Table 1. Water-level elevation data for this reporting period was similar to prior rounds of data. Seasonal fluctuations are observed during each operating quarter; however, the data indicate groundwater flow directions consistent with the conceptual site model (CSM) of groundwater flow toward the discharge boundaries of the North Stream and Susquehanna River.

4. Groundwater Quality

Groundwater analytical results are provided in Tables 2 (VOCs) and 3 (general chemistry, field parameters and dissolved gases). Where applicable, the previous round of analytical results for the respective sampling location has been provided in the same table for comparative purposes. In addition, Figures A-1 through A-8 provided in Appendix A present the concentration of tetrachloroethylene (PCE)-related degradation compounds versus time or trichloroethane (TCA)-related degradation compounds versus time for monitoring wells GMMW-2, GMMW-5, GMMW-6, and TW-1. The concentration of VOCs has been converted into micromoles per liter (umol/L) by dividing the mass based concentration of a compound by the molecular weight. This conversion allows for the VOCs to be compared on a molecular basis as opposed to a mass basis. Because anaerobic in-situ reactive zones (IRZs) are constantly releasing adsorbed phase mass and degrading mass to daughter compounds with different

molecular weights, the evaluation of anaerobic IRZs on a molecular basis is the appropriate methodology for analyzing the data.

As shown in Table 2 and on Figures A-1 through A-8, total VOC (TVOC) concentrations in all monitoring wells sampled during the reporting period remained stable to decreasing when comparing the March 2013 data to historical data. Specifically, the March 2013 TVOC concentration in mid-plume monitoring wells GMMW-2, GMMW-6, GMMW-5, TW-1, and PW-4 were 147 ug/L, 322 ug/L, 34 ug/L, 83 ug/L, and 22 ug/L, respectively. TVOC concentrations in landfill perimeter monitoring well PW-7 remained stable at a concentration of 400 µg/L.

The data continue to indicate that the dissolved phase plume is stable to decreasing in size. Furthermore, the data indicate that shutdown of the groundwater extraction and treatment and automated injection systems have not resulted in an adverse impact to groundwater quality.

Further discussion of groundwater quality, including a discussion of general chemistry and dissolved gas analytical data is provided in Section 5.

5. Discontinuation Pilot Test

The following section describes objectives and results of the discontinuation pilot test.

5.1 Discontinuation Pilot Test Objectives

Initiation of the discontinuation pilot test began in October 2012. As discussed in the discontinuation pilot test work plan (ARCADIS of New York Inc. 2012), the pilot test includes the temporary discontinuation of carbon injections and temporary shutdown of the groundwater extraction system to evaluate the resulting effect on groundwater and spring water quality. The objectives of the discontinuation pilot test are to:

- Demonstrate that there is little to no benefit to groundwater quality by continuing injections and groundwater extraction and treatment.

- Document the response of groundwater geochemistry including the evaluation of alternate electron acceptors such as dissolved iron and manganese.

- Evaluate if nearby springs (e.g., SP-3) have a positive response to the discontinuation of injections, including a reduction in visible iron staining and reduction in overall spring water volume.

- Evaluate VOC and metals concentration trends in spring water relative to NYSDEC Division of Technical and Operational Guidance Series (TOGS) 1.1.1 Water Quality Standards and Guidance Values (NYS WQS); and,

- Evaluate metals concentration trends in sediment relative to NYSDEC Technical Guidance for Screening Contaminated Sediments (NYSDEC 1999) and Draft Screening and Assessment of Contaminated Sediments (NYSDEC 2013).

A discussion of the performance monitoring results relative to the discontinuation pilot test objectives is provided below.

5.2 Monitoring Results and Evaluation

The primary monitoring wells that are used to monitor and evaluate the discontinuation pilot test include monitoring wells GMMW-2, GMMW-5, GMMW-6, and TW-1. In addition, monitoring well PW-7, which is located upgradient of the discontinuation pilot test area, will be used as a background well to document the geochemistry of landfill impacted groundwater. Table 3 provides a summary of the geochemical monitoring results including general chemistry and dissolved gas parameters. In order to evaluate the geochemical analytical results relative to baseline conditions, the December 7, 1998 analytical results for monitoring well GMMW-5 have been provided in the same table. These historical data were collected to establish baseline conditions during the Enhanced Reductive Dechlorination Pilot Test (ARCADIS G&M, Inc. 1999) and are representative of conditions prior to the initiation of the IRZ injections.

Geochemical analytical data collected during the reporting period indicate that the groundwater geochemistry remains moderately to strongly anaerobic in and immediately downgradient of the reagent injection wells despite the discontinuation of reagent injections on May 1, 2012. Dissolved methane data from select wells located closest to the injection network indicate that the groundwater system is transitioning from strongly anaerobic to mild/moderately anaerobic. The concentration and speciation of chlorinated VOCs and end-products (ethene and ethane) support that enhanced natural attenuation processes (e.g., biologically mediated complete reductive dechlorination) continue to occur. These observations are supported by the following:

- Nitrate concentrations in groundwater monitoring wells in close proximity and downgradiant of the anaerobic IRZ are low and considerably below the baseline concentration of 0.632 mg/L. The highest concentration (0.11 mg/L) is observed in close proximity to the anaerobic IRZ at monitoring well TW-1. The lowest concentration (0.039 mg/L) is observed downgradient of the discontinuation pilot test area at mid-plume monitoring well GMMW-2. The absence of nitrate is an indicator of reducing conditions.

- Dissolved (filtered) iron concentrations remained elevated and significantly higher than baseline conditions in close proximity to the anaerobic IRZ and downgradient flow path. The highest dissolved iron concentrations are observed in close proximity to the injection well network at monitoring wells GMMW-5 (23.8 mg/l) and TW-1 (87.3 mg/l) and slightly downgradient at GMMW-6 (14.8 mg/l). The concentration of dissolved iron at downgradient monitoring well GMMW-2 (<0.05 mg/l) is similar to the baseline data from GMMW-5. The presence of elevated dissolved iron is an indicator of reducing conditions.

- Dissolved (filtered) manganese concentrations remained elevated and significantly higher than baseline conditions in close proximity to the anaerobic IRZ and downgradient flow path. The highest dissolved manganese concentrations are observed in close proximity to the injection well network at monitoring well TW-1 (7.4 mg/l) and slightly downgradient at GMMW-6 (8.7 mg/l). The concentration of dissolved manganese at downgradient monitoring well GMMW-2 (1.5 mg/l) is similar to the baseline data from GMMW-5. The presence of elevated dissolved manganese is an indicator of reducing conditions.

- Methane concentrations remained elevated and significantly higher when compared to baseline conditions in close proximity to the anaerobic IRZ and downgradient flow path. The presence of methane at elevated concentrations is an indicator of strongly reducing conditions. However, methane concentrations are decreasing when comparing the analytical results from the March 2013 sampling event to the September 2012 sampling event at monitoring wells GMMW-5, GMMW-6, and TW-1. These data indicate that the groundwater geochemistry is beginning to shift from strongly to mild or moderately reducing conditions in wells closest to the injection well network.

- Ethene and/or ethane were detected at elevated concentrations at all monitoring wells located in close proximity to the anaerobic IRZ. As referenced in Section 5, the concentration of PCE, TCE, cis-1,2-DCE, and VC remain stable to decreasing.

When combined with geochemical data, the results indicate that enhanced natural attenuation continue to occur through an anaerobic biologically mediated pathway.

- The concentration of TOC within injection and monitoring wells located in the vicinity of the injection network (e.g., GMMW-5, TW-1, IW-3, IW-8, and IW-13) decreased during the reporting period and ranged from below the limits of detection (TW-1) to 65.9 mg/L (IW-8) during the March 2013 sampling event. The data indicate that TOC remains at concentrations appropriate to support reductive dechlorination, but is limited to the general vicinity of the injection wells.

An evaluation of groundwater quality relative to shutdown of the extraction system will be completed during the next reporting period based upon the sampling results from the shut down recovery wells (GMPW-3, GMPW-4 and GMPW-5) and nearby monitoring wells (i.e., PW-3, PW-4, and W-18).

Based on quarterly site inspections of the presence of springs since the beginning of the pilot test, no trend in spring conditions has been discerned. A description and evaluation of spring water and sediment quality relative to the discontinuation pilot test is provided in Sections 6 and 7, respectively.

6. Spring Water Quality

The embankment of the North Stream was inspected for springs during the OM&M site visits on December 19, 2012 and March 28, 2013. During the December 19 inspection, no spring water was observed around the SP-4 area. Minor iron hydroxide staining was observed around the SP-2 and SP-4 area, with a higher degree of staining observed at the SP-3 area. During the March 28, 2013 inspection, spring water and iron hydroxide staining was observed in the SP-2 and SP-3 areas, with the SP-3 area being the most highly impacted with iron hydroxide staining. Minor iron staining was also observed in the SP-4 area. These observations have been generally consistent with conditions prior to the beginning of the pilot test.

Spring water samples were collected at the SP-2, SP-3 and SP-4 locations during the March 28, 2013 inspection. Spring water quality analytical results are summarized in Table 5. As shown in Table 5, spring water at the SP-2 location was non-detect for VOCs and consistent with the baseline round of monitoring data (ARCADIS of New York Inc. 2012). TVOC concentrations decreased at the SP-3 spring water location when compared to the previous rounds; however, several VOCs were detected at concentrations above NYSDEC Part 703 Water Quality Standards (WQS). Spring

water at the SP-4 location exhibited higher concentrations of select VOCs when compared to previous rounds and historical data and several VOCs were also detected at concentrations above the NYSDEC WQS. Despite the presence of VOCs in spring water, non-detect to trace concentrations of VOCs are present in the surface water. These data continue to demonstrate that VOCs detected in the spring water are not adversely impacting surface water quality in the North Stream.

7. Sediment Quality

In conjunction with the spring water sampling effort in March 28, 2013, a sediment sample was collected within the North Stream in the vicinity of SP-3. Sediment quality analytical results are summarized in Table 6. As shown in Table 6, the sediment sample (SP-3C-SED) collected during the reporting period has metals concentrations that are generally consistent with the background sediment sample (SP-2-SED [opposite bank]), with the exception of significantly higher manganese concentrations. With respect to the NYSDEC Freshwater Sediment Screening Values, concentrations of arsenic, copper, iron, and nickel were detected below the Severe Effect Level (SEL) during the reporting period, but slightly higher than the Lowest Effect Level (LEL). The concentration of manganese of 1,140 mg/kg marginally exceeded the SEL screening criteria of 1,100 mg/kg.

The metals results for SP-3C-SED were also evaluated relative to Table 1a of the NYSDEC Draft Screening and Assessment of Contaminated Sediment document (NYSDEC 2013), which characterizes freshwater sediment as either Class A (low risk to aquatic life), Class B (slightly to moderately contaminated and additional testing is required to evaluate the potential risks to aquatic life, and Class C (sediments are considered to be highly contaminated and likely to pose a risk to aquatic life). The metals concentrations exhibited at the SP-3C-SED location fall under the Class A designation, with the exception of two metals that only slightly exceed the limits of the Class A designation. Specifically, arsenic exhibited a concentration of 10.2 mg/kg (with a Class A limit of < 10 mg/kg) and the nickel concentration was 23.0 mg/kg (with a Class A limit of < 23 mg/kg).

8. Surface Water Quality

Surface water quality analytical results are summarized in Table 4. As shown in Table 4, surface water quality remained consistent when compared to historical data. Specifically, the TVOC concentrations at the F-6, SW-2, and SW-3 sampling locations were below the limits of detection. The TVOC concentration at the SW-4 sampling

location was 0.49 ug/L. The metals concentrations at the F-6, SW-3 and SW-4 sampling locations were also consistent with upgradient sample SW-2. These data indicate that surface water quality is not being adversely impacted by the landfill.

9. Spring Water Remediation System Performance

SP-5 Spring Water Remediation System OM&M was conducted on December 19, 2012 and March 28, 2013 in accordance with the LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS G&M, Inc. 2003). SP-5 Spring Water Remediation System analytical results for this reporting period are provided in Table 7. As shown in Table 7, all effluent VOCs were treated to below their respective BPJ limits via the LPGAC; however, effluent TVOC analytical data (6.4 µg/L in December 2012 and 26.57 µg/L in March 2013) indicate that the LPGAC has achieved breakthrough and may require replacement. Influent TVOC concentrations remained stable when compared to September 2012 analytical data.

Table 8 contains the SP-5 spring water remediation system operating parameters recorded during the reporting period. As shown in Table 8, approximately 256,341 gallons of spring water was treated and approximately 0.08 lbs of mass was recovered during the reporting period. An estimated 3,941,582 gallons of spring water has been treated and an estimated 2.0 lbs of VOC mass has been recovered since system startup.

10. Conclusions

Based on the data obtained from the reporting period monitoring, ARCADIS concludes the following:

- Water level measurements in the project area (i.e., adjacent to the landfill western perimeter) and site-wide in the March 2013 round were consistent with previous rounds. The groundwater flow direction in the project area is toward the southwest from the western perimeter of the landfill. The groundwater flow direction in areas further to the east of the project area is toward the south/southwest.

- The concentration of VOCs remained stabled to decreasing during the reporting period when compared with historical data.

- Enhanced natural attenuation mechanisms (e.g., completed reductive dechlorination completed through a biologically mediated pathway) continue to

degrade chlorinated VOCs within the discontinuation pilot test area despite the discontinuation of carbon injections as evidenced by stable to decreasing VOC concentrations and elevated ethene and/or ethane.

- The presence of elevated concentrations of reduced forms of alternate electron acceptors (e.g., dissolved iron, dissolved manganese, and dissolved methane) indicate that the groundwater geochemistry was strongly anaerobic during the reporting period. However, the concentration of methane declined at monitoring wells located closest to the injection well network which indicate that the geochemistry is transitioning from strongly anaerobic to mildly or moderately anaerobic.

- The concentration of TOC within injection and monitoring wells decreased during the reporting period and ranged from below the limits of detection (TW-1) to 65.9 mg/L (IW-8) during the March 2013 sampling event. The data indicate that TOC remains at concentrations appropriate to support reductive dechlorination, but is limited to the general vicinity of the injection wells.

- There have not been any discernible trends in the appearance of spring areas thus far relative to the implementation of the pilot test.

- VOC and metals concentrations in surface water continue to be low or non-detect and consistent with historical data, despite the presence of VOCs and metals in the spring water at concentrations above NYSDEC WQS.

- The sediment sample collected during the reporting period exhibited similar concentrations when compared with previous rounds, and these concentrations are generally consistent with the background sediment sample (SP-2-SED [opposite bank]) with the exception of manganese. The results indicate that the sediment is generally categorized as Class A (low risk to aquatic life).

11. Recommendations

The following recommendations are made for this reporting period:

- Continue the IRZ Discontinuation Pilot Test and evaluate the resultant response on geochemical conditions in groundwater, volatile organic compound (VOC) concentration trends, and groundwater / surface water interactions.

- Continue to inspect the former spring locations and the embankment of the North Stream.

- Collect a background sediment sample upstream of the SP-2 area to confirm background concentrations for the full suite of metals.

12. Project Schedule

Groundwater environmental effectiveness monitoring is scheduled to be conducted for Operational Year 12 on the quarterly schedule set forth in Table 4 of the discontinuation pilot test (ARCADIS of New York Inc. 2012). OM&M of the ARI and PT systems is temporarily discontinued as part of the IRZ Discontinuation Pilot Test Work Plan and will be restarted at the completion of the pilot test, or sooner if groundwater quality data indicates restart of the systems is necessary for the protection of public health or the environment.

13. References

ARCADIS G&M, Inc. 2002. Long-Term Monitoring Plan, Colesville Landfill, Broome County, New York, NYSDEC Site 704010. June 28, 2002.

ARCADIS G&M, Inc. 2003. Long-Term Monitoring Plan Addendum for Spring Water Remediation Systems, Colesville Landfill, Broome County, New York, NYSDEC Site 704010. November 3, 2003.

ARCADIS G&M, Inc. 2004. Interim Remedial Action Report, Colesville Landfill, Broome County, New York, NYSDEC Site 704010. September 22, 2004.

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ARCADIS of New York, Inc. 2012. In-Situ Reactive Zone Discontinuation Pilot Test Work Plan, Colesville Landfill Superfund Site, Colesville, New York. October 11, 2012.

New York State Department of Environmental Conservation (NYSDEC) 1999. Technical Guidance for Screening Contaminated Sediments. January 25, 1999.

New York State Department of Environmental Conservation (NYSDEC) 2013. Draft Screening and Assessment of Contaminated Sediment. Draft version 4.0, January 24, 2013

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Tables

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Table 1. Water-Level Measurements, Colesville Landfill, Broome County, New York.

Well Identification	MP Elevation (feet above msl)	3/26/2013 Depth to Water (feet below MP)	3/26/2013 Water-Table Elevation (feet above msl)	MP Description
GMMW-2	1,030.95	37.03	993.92	Inner casing
GMMW-3	1,028.02	34.74	993.28	Inner casing
GMMW-4	1,042.90	46.14	996.76	Inner casing
GMMW-5	1,043.66	49.61	994.05	Inner casing
GMMW-6	1,033.56	38.92	994.64	Inner casing
GMMW-7	1,045.43	48.22	997.21	Inner casing
PW-1	976.23	14.63	961.60	Inner casing
PW-2	975.28	5.88	969.40	Inner casing
PW-3	988.92	11.91	977.01	Inner casing
PW-4	1,001.75	17.37	984.38	Inner casing
PW-5	986.12	0.5	985.62	Inner casing
PW-7	1,042.47	41.00	1,001.47	Inner casing
PW-10[(1)]	1,049.29	--	--	Inner casing
PW-11	1,052.37	53.60	998.77	Inner casing
PW-13	1,072.41	62.59	1,009.82	Inner casing
W-5	1,051.41	52.74	998.67	Inner casing
W-6	1,050.38	50.97	999.41	Inner casing
W-7	1,049.12	43.47	1,005.65	Inner casing
W-13	1,053.43	46.50	1,006.93	Inner casing
W-14S	957.68	5.77	951.91	Inner casing
W-16S	990.33	9.31	981.02	Outer casing
W-17S	959.13	9.06	950.07	Inner casing
W-18	973.56	10.15	963.41	Inner casing
W-20S	952.88	8.45	944.43	Inner casing

1. Measurement not collected due to obstruction in well at 11.21 feet below M

msl Mean sea level
MP Measuring point
-- Not measured

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	GMMW-2 9/19/2012	GMMW-2 12/18/2012	GMMW-2 3/27/2013	GMMW-5 9/20/2012
1,1,1-Trichloroethane		**1.6**	**1.2**	**1.4**	<2.0
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<2.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<1.0	<2.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<2.0
1,1-Dichloroethane		**55**	**49**	**49**	<2.0
1,1-Dichloroethene		<1.0	<1.0	<1.0	<2.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<1.0	<2.0
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<1.0	<2.0
1,2-Dibromoethane		<1.0	<1.0	<1.0	<2.0
1,2-Dichlorobenzene		<1.0	<1.0	<1.0	<2.0
1,2-Dichloroethane		<1.0	**0.37 J**	<1.0	**0.66 J**
1,2-Dichloropropane		<1.0	<1.0	<1.0	<2.0
1,3-Dichlorobenzene		<1.0	<1.0	<1.0	<2.0
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	<2.0
2-Butanone		<10	<10	<10	<20
2-Hexanone		<5.0	<5.0	<5.0	<10
4-Methyl-2-pentanone		<5.0	<5.0	<5.0	<10
Acetone		<10	<10	<10	<20
Benzene		**2.2**	**2.1**	**2.1**	**1.4 J**
Bromodichloromethane		<1.0	<1.0	<1.0	<2.0
Bromoform		<1.0	<1.0	<1.0	<2.0
Bromomethane		<1.0	<1.0	<1.0	<2.0
Carbon Disulfide		<1.0	<1.0	<1.0	<2.0
Carbon Tetrachloride		<1.0	<1.0	<1.0	<2.0
Chlorobenzene		**28**	**25**	**29**	**14**
Chloroethane		**30**	**14**	**18**	**86**
Chloroform		<1.0	<1.0	<1.0	<2.0
Chloromethane		<1.0	<1.0	<1.0	<2.0
cis-1,2-Dichloroethene		**24**	**20**	**27**	<2.0
cis-1,3-Dichloropropene		<1.0	<1.0	<1.0	<2.0
Cyclohexane		**0.32 J**	<1.0	**0.53 J**	**1.9 J**
Dibromochloromethane		<1.0	<1.0	<1.0	<2.0
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<2.0
Ethylbenzene		<1.0	<1.0	<1.0	<2.0
Isopropylbenzene		<1.0	<1.0	<1.0	<2.0
Methyl acetate		<1.0	<1.0	<1.0	<2.0
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<2.0
Methylcyclohexane		<1.0	<1.0	<1.0	<2.0
Methylene Chloride		**0.52 J**	<1.0	<1.0	<2.0
Styrene		<1.0	<1.0	<1.0	<2.0
Tetrachloroethene		<1.0	<1.0	<1.0	<2.0
Toluene		<1.0	<1.0	<1.0	**18**
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<2.0
trans-1,3-Dichloropropene		<1.0	<1.0	<1.0	<2.0
Trichloroethene		**16**	**13**	**14**	<2.0
Trichlorofluoromethane		<1.0	<1.0	<1.0	<2.0
Vinyl Chloride		**6.5**	**6.1**	**6.2**	<2.0
Xylenes (total)		<2.0	<2.0	<2.0	<4.0
Total VOCs		**164 J**	**131 J**	**147 J**	**122 J**

Notes and abbreviations on last page.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	GMMW-5 12/18/2012	GMMW-5 3/26/2013	GMMW-6 9/19/2012	GMMW-6 12/18/2012
1,1,1-Trichloroethane		<1.0	<1.0	<1.0	**0.92 J**
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane		<1.0	**0.43 J**	**110 D**	**120 D**
1,1-Dichloroethene		<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane		<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane		**0.21 J**	<1.0	**0.85 J**	**0.81 J**
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0
2-Butanone		<10	<10	<10	<10
2-Hexanone		<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone		<5.0	<5.0	<5.0	<5.0
Acetone		<10	<10	<10 B	<10
Benzene		**0.69 J**	<1.0	**5.9**	**5.2**
Bromodichloromethane		<1.0	<1.0	<1.0	<1.0
Bromoform		<1.0	<1.0	<1.0	<1.0
Bromomethane		<1.0	<1.0	<1.0	<1.0
Carbon Disulfide		<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride		<1.0	<1.0	<1.0	<1.0
Chlorobenzene		**10**	**4.2 J**	**26**	**22**
Chloroethane		**27**	**29**	**240 D**	**140 D**
Chloroform		<1.0	<1.0	<1.0	<1.0
Chloromethane		<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene		<1.0	<1.0	**9.6**	**8.3**
cis-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0
Cyclohexane		**0.30 J**	<1.0	<1.0	**2.9**
Dibromochloromethane		<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<1.0
Ethylbenzene		<1.0	<1.0	**0.89 J**	<1.0
Isopropylbenzene		<1.0	<1.0	<1.0	<1.0
Methyl acetate		<1.0	<1.0	<1.0	<1.0
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0
Methylcyclohexane		<1.0	<1.0	<1.0	<1.0
Methylene Chloride		<1.0	<1.0	**3.9**	**3.2**
Styrene		<1.0	<1.0	<1.0	<1.0
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0
Toluene		**2.7**	<1.0	**2.8**	**2.1**
trans-1,2-Dichloroethene		<1.0	<1.0	**0.93 J**	<1.0
trans-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0
Trichloroethene		<1.0	**0.49 J**	**3.3**	**7.1**
Trichlorofluoromethane		<1.0	<1.0	<1.0	<1.0
Vinyl Chloride		<1.0	<1.0	**11**	**7.8**
Xylenes (total)		**1.6 J**	<1.0	**1.7 J**	**1.2 J**
Total VOCs		**43 J**	**34 J**	**417 DJ**	**322 DJ**

Notes and abbreviations on last page.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	GMMW-6 3/26/2013	PW-4 9/19/2012	PW-4 12/18/2012	PW-4 3/26/2013
1,1,1-Trichloroethane		<2.0	**6.0**	**5.8**	**4.5**
1,1,2,2-Tetrachloroethane		<2.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		<2.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane		<2.0	<1.0	<1.0	<1.0
1,1-Dichloroethane		**110 J**	**9.7**	**7.7**	**4.8**
1,1-Dichloroethene		<2.0	<1.0	**0.30 J**	<1.0
1,2,4-Trichlorobenzene		<2.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane		<2.0	<1.0	<1.0	<1.0
1,2-Dibromoethane		<2.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene		<2.0	<1.0	<1.0	<1.0
1,2-Dichloroethane		<2.0	<1.0	<1.0	<1.0
1,2-Dichloropropane		<2.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene		<2.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene		<2.0	<1.0	<1.0	<1.0
2-Butanone		<20	<10	<10	<10
2-Hexanone		<10	<5.0	<5.0	<5.0
4-Methyl-2-pentanone		<10	<5.0	<5.0	<5.0
Acetone		<20	<10	<10	<10
Benzene		**5.0**	<1.0	<1.0	<1.0
Bromodichloromethane		<2.0	<1.0	<1.0	<1.0
Bromoform		<2.0	<1.0	<1.0	<1.0
Bromomethane		<2.0	<1.0	<1.0	<1.0
Carbon Disulfide		<2.0	<1.0	<1.0	<1.0
Carbon Tetrachloride		<2.0	<1.0	<1.0	<1.0
Chlorobenzene		**26**	<1.0	<1.0	<1.0
Chloroethane		**150**	**3.5**	**1.0**	<1.0
Chloroform		<2.0	**0.56 J**	**0.53 J**	<1.0
Chloromethane		<2.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene		**13**	**5.2**	**4.4**	**2.9**
cis-1,3-Dichloropropene		<2.0	<1.0	<1.0	<1.0
Cyclohexane		<2.0	<1.0	**0.69 J**	<1.0
Dibromochloromethane		<2.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane		<2.0	**1.8**	<1.0	<1.0
Ethylbenzene		<2.0	<1.0	<1.0	<1.0
Isopropylbenzene		<2.0	<1.0	<1.0	<1.0
Methyl acetate		<2.0	<1.0	<1.0	<1.0
Methyl tert-butyl ether		<2.0	<1.0	<1.0	<1.0
Methylcyclohexane		<2.0	<1.0	<1.0	<1.0
Methylene Chloride		**4.6**	<1.0	<1.0	<1.0
Styrene		<2.0	<1.0	<1.0	<1.0
Tetrachloroethene		<2.0	<1.0	<1.0	<1.0
Toluene		<2.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene		<2.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene		<2.0	<1.0	<1.0	<1.0
Trichloroethene		**5.3**	**15**	**14**	**10**
Trichlorofluoromethane		<2.0	<1.0	<1.0	<1.0
Vinyl Chloride		**7.7**	<1.0	<1.0	<1.0
Xylenes (total)		<4.0	<2.0	<2.0	<2.0
Total VOCs		**322 J**	**42 J**	**34 J**	**22**

Notes and abbreviations on last page.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	PW-7 9/19/2012	PW-7 3/27/2013	TW-1 9/20/2012	TW-1 12/18/2012
1,1,1-Trichloroethane		<1.0	<2.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane		<1.0	<2.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<2.0	<1.0	<1.0
1,1,2-Trichloroethane		**0.51 J**	**0.49 J**	<1.0	<1.0
1,1-Dichloroethane		**160 D**	**180**	<1.0	<1.0
1,1-Dichloroethene		**0.38 J**	<2.0	<1.0	<1.0
1,2,4-Trichlorobenzene		<1.0	<2.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane		<1.0	<2.0	<1.0	<1.0
1,2-Dibromoethane		<1.0	<2.0	<1.0	<1.0
1,2-Dichlorobenzene		<1.0	<2.0	<1.0	<1.0
1,2-Dichloroethane		**1.1**	<2.0	<1.0	**0.25 J**
1,2-Dichloropropane		<1.0	<2.0	<1.0	<1.0
1,3-Dichlorobenzene		<1.0	<2.0	<1.0	<1.0
1,4-Dichlorobenzene		<1.0	<2.0	<1.0	<1.0
2-Butanone		<10	<20	**2.9 J**	<10
2-Hexanone		<5.0	<10	<5.0	<5.0
4-Methyl-2-pentanone		<5.0	<10	<5.0	<5.0
Acetone		<10	<20	<10	<10
Benzene		**1.1**	**1.9 J**	**2.2**	**3.1**
Bromodichloromethane		<1.0	<2.0	<1.0	<1.0
Bromoform		<1.0	<2.0	<1.0	<1.0
Bromomethane		<1.0	<2.0	<1.0	<1.0
Carbon Disulfide		<1.0	<2.0	<1.0	<1.0
Carbon Tetrachloride		<1.0	<2.0	<1.0	<1.0
Chlorobenzene		**34**	**15**	**7.7**	**5.5**
Chloroethane		**71**	**81**	**100 D**	**63**
Chloroform		<1.0	<2.0	<1.0	<1.0
Chloromethane		<1.0	<2.0	<1.0	<1.0
cis-1,2-Dichloroethene		**75**	**79**	**1.8**	**1.7**
cis-1,3-Dichloropropene		<1.0	<2.0	<1.0	<1.0
Cyclohexane		<1.0	<2.0	**7.7**	**1.4**
Dibromochloromethane		<1.0	<2.0	<1.0	<1.0
Dichlorodifluoromethane		<1.0	<2.0	<1.0	<1.0
Ethylbenzene		**13**	<2.0	<1.0	<1.0
Isopropylbenzene		**1.3**	<2.0	<1.0	<1.0
Methyl acetate		<1.0	<2.0	<1.0	<1.0
Methyl tert-butyl ether		<1.0	<2.0	<1.0	<1.0
Methylcyclohexane		<1.0	<2.0	<1.0	<1.0
Methylene Chloride		**0.68 J**	**2.0**	<1.0	<1.0
Styrene		<1.0	<2.0	<1.0	<1.0
Tetrachloroethene		**0.52 J**	<2.0	<1.0	<1.0
Toluene		<1.0	<2.0	**6.1**	**0.85 J**
trans-1,2-Dichloroethene		<1.0	<2.0	<1.0	<1.0
trans-1,3-Dichloropropene		<1.0	<2.0	<1.0	<1.0
Trichloroethene		**11**	**9.4**	**1.4**	**0.81 J**
Trichlorofluoromethane		<1.0	<2.0	<1.0	<1.0
Vinyl Chloride		**44**	**31**	**1.6**	**1.1**
Xylenes (total)		**0.87 J**	<4.0	<2.0	<2.0
Total VOCs		**414 DJ**	**400 J**	**131 DJ**	**78 J**

Notes and abbreviations on last page.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	TW-1 3/27/2013
1,1,1-Trichloroethane		<1.0
1,1,2,2-Tetrachloroethane		<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0
1,1,2-Trichloroethane		<1.0
1,1-Dichloroethane		<1.0
1,1-Dichloroethene		<1.0
1,2,4-Trichlorobenzene		<1.0
1,2-Dibromo-3-chloropropane		<1.0
1,2-Dibromoethane		<1.0
1,2-Dichlorobenzene		<1.0
1,2-Dichloroethane		<1.0
1,2-Dichloropropane		<1.0
1,3-Dichlorobenzene		<1.0
1,4-Dichlorobenzene		<1.0
2-Butanone		<10
2-Hexanone		<5.0
4-Methyl-2-pentanone		<5.0
Acetone		<10
Benzene		**3.6**
Bromodichloromethane		<1.0
Bromoform		<1.0
Bromomethane		<1.0
Carbon Disulfide		<1.0
Carbon Tetrachloride		<1.0
Chlorobenzene		**4.3**
Chloroethane		**70**
Chloroform		<1.0
Chloromethane		<1.0
cis-1,2-Dichloroethene		**1.4**
cis-1,3-Dichloropropene		<1.0
Cyclohexane		<1.0
Dibromochloromethane		<1.0
Dichlorodifluoromethane		<1.0
Ethylbenzene		<1.0
Isopropylbenzene		<1.0
Methyl acetate		<1.0
Methyl tert-butyl ether		<1.0
Methylcyclohexane		<1.0
Methylene Chloride		<1.0
Styrene		<1.0
Tetrachloroethene		<1.0
Toluene		**0.75 J**
trans-1,2-Dichloroethene		<1.0
trans-1,3-Dichloropropene		<1.0
Trichloroethene		**0.55 J**
Trichlorofluoromethane		<1.0
Vinyl Chloride		**0.92 J**
Xylenes (total)		**1.5 J**
Total VOCs		**83 J**

Notes and abbreviations on last page.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater, Colesville Landfill, Broome County, New York.

Notes and Abbreviations:

Bold constituent detected above method detection limit.

B	Compound considered non-detect at the listed value due to associated blank contamination.
D	Concentration is based on a diluted sample analysis.
J	Estimated value.
ug/L	Micrograms per liter.
VOCs	Volatile organic compounds.
<	Analyte below detection limit.

Table 3. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Colesville Landfill, Broome County, New York.

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [1]	Sample ID:	GMMW-2	GMMW-2	GMMW-2	GMMW-5	GMMW-5	GMMW-5
			Date:	9/19/2012	12/18/2012	3/27/2013	9/20/2012	12/18/2012	3/26/2013
GENERAL CHEMISTRY									
Total Organic Carbon	mg/L	**6.6**		<1.0	**1.5**	**2.6**	**19.2**	**17.3**	**12.4**
FIELD PARAMETERS									
pH	Standard units	**6.88**		**6.36**	**6.50**	**6.83**	**6.54**	**6.42**	**6.46**
Specific Conductance	mmhos/cm	**0.420**		**0.560**	**0.622**	**0.619**	**0.710**	**0.299**	**0.336**
Temperature	deg C	**13**		**11.8**	**9.9**	**10.4**	**14.2**	**9.9**	**9.3**
DISSOLVED GASES									
Ethane	ng/L	**2,590**		**910**	**380**	**420**	**8,900**	**7,900**	**8,300**
Ethene	ng/L	**7,700**		**3,600**	**3,000**	**1,900**	**35**	**53**	**150**
Methane	ug/L	**0.45**		**14,000**	**13,000**	**12,000**	**18,000**	**12,000**	**4,500**
MISCELLANEOUS									
Ferrous Iron	mg/L	**0.27**				--	--	--	--
Iron	mg/L	**0.493**		--	--	**0.200**	--	--	**19.4 J**
Iron (Filtered)	mg/L	**0.455**		--	--	<0.05	--	--	**23.8 J**
Manganese	mg/L	**2.15**		--	--	**1.50**	--	--	**1.20 J**
Manganese (Filtered)	mg/L	**1.79**		--	--	**1.5**	--	--	**1.6 J**
Nitrate	mg/L	**0.632**		--	--	**0.039 J**	--	--	**0.051**
Nitrite	mg/L	**0.026**		--	--	R	--	--	R
Sulfate	mg/L	**4.38**		--	--	**4.7 J**	--	--	**3.9 J**

Notes and Abbreviations:

1. Value represent data from monitoring well GMMW-5 collected on December 7, 1998.

Bold constituent detected above method detection limit.

B	Compound considered non-detect at the listed value due to associated blank contamination.
deg C	Degrees Celsius.
R	The sample results are rejected; due to significant quality control problems, the analysis is invalid and provides no information as to whether the compound is present or not.
J	Estimated value.
mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
mV	Millivolts.
ng/L	Nanograms per liter.
ug/L	Micrograms per liter.
--	Not analyzed or collected.

Table 3. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Colesville Landfill, Broome County, New York.

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [1]	Sample ID:	GMMW-6	GMMW-6	GMMW-6	PW-4	PW-4	PW-4
			Date:	9/19/2012	12/18/2012	3/26/2013	9/19/2012	12/18/2012	3/26/2013
GENERAL CHEMISTRY									
Total Organic Carbon	mg/L	**6.6**		**2.6**	**3.1**	**3.8**	<1.0	<1.0	**2.8**
FIELD PARAMETERS									
pH	Standard units	**6.88**		**6.63**	**6.58**	**6.72**	**7.01**	**6.73**	**6.39**
Specific Conductance	mmhos/cm	**0.420**		**0.930**	**0.858**	**0.826**	**0.330**	**0.531**	**0.541**
Temperature	deg C	**13**		**12.0**	**9.9**	**9.0**	**17.2**	**10.9**	**9.0**
DISSOLVED GASES									
Ethane	ng/L	**2,590**		**7,800**	**16,000**	**11,000**	**11 J**	**98**	**33**
Ethene	ng/L	**7,700**		**5,100**	**12,000**	**15,000**	**27**	**22 J**	**47**
Methane	ug/L	**0.45**		**13,000**	**9,000**	**4,600**	**0.13**	**3.0**	**1.1**
MISCELLANEOUS									
Ferrous Iron	mg/L	**0.27**		--	--	--	--	--	--
Iron	mg/L	**0.493**		--	--	**17.8**	--	--	--
Iron (Filtered)	mg/L	**0.455**		--	--	**14.8**	--	--	--
Manganese	mg/L	**2.15**		--	--	**8.50**	--	--	--
Manganese (Filtered)	mg/L	**1.79**		--	--	**8.7**	--	--	--
Nitrate	mg/L	**0.632**		--	--	R	--	--	--
Nitrite	mg/L	**0.026**		--	--	R	--	--	--
Sulfate	mg/L	**4.38**		--	--	**13.4 J**	--	--	--

Notes and Abbreviations:

1. Value represent data from monitoring well GMMW-5 collected on December 7, 1998.

Bold constituent detected above method detection limit.

B	Compound considered non-detect at the listed value due to associated blank contamination.
deg C	Degrees Celsius.
R	The sample results are rejected; due to significant quality control problems, the analysis is invalid and provides no information as to whether the compound is present or not.
J	Estimated value.
mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
mV	Millivolts.
ng/L	Nanograms per liter.
ug/L	Micrograms per liter.
--	Not analyzed or collected.

Table 3. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Colesville Landfill, Broome County, New York.

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [1]	Sample ID:	PW-7	PW-7	TW-1	TW-1	TW-1	IW-3
			Date:	9/19/2012	3/27/2013	9/20/2012	12/18/2012	3/27/2013	9/20/2012
GENERAL CHEMISTRY									
Total Organic Carbon	mg/L	**6.6**		--	<1.0	**14.8**	**24.5**	<1.0	**7.8**
FIELD PARAMETERS									
pH	Standard units	**6.88**		**6.12**	**6.35**	**6.37**	**6.34**	**6.71**	**6.29**
Specific Conductance	mmhos/cm	**0.420**		**0.360**	**0.306**	**0.940**	**1.099**	**1.137**	**0.740**
Temperature	deg C	**13**		**14.3**	**11.2**	**14.4**	**10.6**	**9.1**	**14.4**
DISSOLVED GASES									
Ethane	ng/L	**2,590**		--	**260**	**4,900**	**6,500**	**4,100**	--
Ethene	ng/L	**7,700**		--	**2,000**	**700**	**260**	**400**	--
Methane	ug/L	**0.45**		--	**500**	**10,000**	**9,500**	**7,400**	--
MISCELLANEOUS									
Ferrous Iron	mg/L	**0.27**		--	--	--	--	--	--
Iron	mg/L	**0.493**		--	**189**	--	--	**87.9**	--
Iron (Filtered)	mg/L	**0.455**		--	**20.5**	--	--	**87.3**	--
Manganese	mg/L	**2.15**		--	**7.5**	--	--	**5.20 J**	--
Manganese (Filtered)	mg/L	**1.79**		--	**7.2**	--	--	**7.4 J**	--
Nitrate	mg/L	**0.632**		--	**0.55 J**	--	--	**0.11 J**	--
Nitrite	mg/L	**0.026**		--	R	--	--	R	--
Sulfate	mg/L	**4.38**		--	**18.4 J**	--	--	**24.1 J**	--

Notes and Abbreviations:

1. Value represent data from monitoring well GMMW-5 collected on December 7, 1998.

Bold constituent detected above method detection limit.

B	Compound considered non-detect at the listed value due to associated blank contamination.
deg C	Degrees Celsius.
R	The sample results are rejected; due to significant quality control problems, the analysis is invalid and provides no information as to whether the compound is present or not.
J	Estimated value.
mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
mV	Millivolts.
ng/L	Nanograms per liter.
ug/L	Micrograms per liter.
--	Not analyzed or collected.

Table 3. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Colesville Landfill, Broome County, New York.

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [1]	Sample ID:	IW-3	IW-3	IW-8	IW-8	IW-8	IW-13
			Date:	12/18/2012	3/28/2013	12/19/2012	9/20/2012	3/27/2013	9/20/2012
GENERAL CHEMISTRY									
Total Organic Carbon	mg/L	**6.6**		**9.1**	**6.4**	**113**	**328**	**65.9**	**97.1**
FIELD PARAMETERS									
pH	Standard units	**6.88**		**6.13**	**6.68**	**6.24**	**5.92**	**6.65**	**6.16**
Specific Conductance	mmhos/cm	**0.420**		--	**0.600**	--	**1.380**	**1.048**	**1.030**
Temperature	deg C	**13**		--	**8.1**	--	**16.6**	**10.4**	**15.7**
DISSOLVED GASES									
Ethane	ng/L	**2,590**		--	--	--	--	--	--
Ethene	ng/L	**7,700**		--	--	--	--	--	--
Methane	ug/L	**0.45**		--	--	--	--	--	--
MISCELLANEOUS									
Ferrous Iron	mg/L	**0.27**		--	--	--	--	--	--
Iron	mg/L	**0.493**		--	--	--	--	--	--
Iron (Filtered)	mg/L	**0.455**		--	--	--	--	--	--
Manganese	mg/L	**2.15**		--	--	--	--	--	--
Manganese (Filtered)	mg/L	**1.79**		--	--	--	--	--	--
Nitrate	mg/L	**0.632**		--	--	--	--	--	--
Nitrite	mg/L	**0.026**		--	--	--	--	--	--
Sulfate	mg/L	**4.38**		--	--	--	--	--	--

Notes and Abbreviations:

1. Value represent data from monitoring well GMMW-5 collected on December 7, 1998.

Bold constituent detected above method detection limit.

B	Compound considered non-detect at the listed value due to associated blank contamination.
deg C	Degrees Celsius.
R	The sample results are rejected; due to significant quality control problems, the analysis is invalid and provides no information as to whether the compound is present or not.
J	Estimated value.
mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
mV	Millivolts.
ng/L	Nanograms per liter.
ug/L	Micrograms per liter.
--	Not analyzed or collected.

Table 3. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Colesville Landfill, Broome County, New York.

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [1]	Sample ID:	IW-13	IW-13
			Date:	12/19/2012	3/28/2013
GENERAL CHEMISTRY					
Total Organic Carbon	mg/L	**6.6**		**61.1**	**46.2**
FIELD PARAMETERS					
pH	Standard units	**6.88**		**6.28**	**6.66**
Specific Conductance	mmhos/cm	**0.420**		--	**0.921**
Temperature	deg C	**13**		--	**10.3**
DISSOLVED GASES					
Ethane	ng/L	**2,590**		--	--
Ethene	ng/L	**7,700**		--	--
Methane	ug/L	**0.45**		--	--
MISCELLANEOUS					
Ferrous Iron	mg/L	**0.27**		--	--
Iron	mg/L	**0.493**		--	--
Iron (Filtered)	mg/L	**0.455**		--	--
Manganese	mg/L	**2.15**		--	--
Manganese (Filtered)	mg/L	**1.79**		--	--
Nitrate	mg/L	**0.632**		--	--
Nitrite	mg/L	**0.026**		--	--
Sulfate	mg/L	**4.38**		--	--

Notes and Abbreviations:

1. Value represent data from monitoring well GMMW-5 collected on December 7, 1998.

Bold constituent detected above method detection limit.

B	Compound considered non-detect at the listed value due to associated blank contamination.
deg C	Degrees Celsius.
R	The sample results are rejected; due to significant quality control problems, the analysis is invalid and provides no information as to whether the compound is present or not.
J	Estimated value.
mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
mV	Millivolts.
ng/L	Nanograms per liter.
ug/L	Micrograms per liter.
--	Not analyzed or collected.

Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, Colesville Landfill, Broome County, New York.

Constituents	Sample ID: / Date:	F-6 3/28/2013	SW-2 3/28/2013	SW-3 3/28/2013	SW-4 3/28/2013
Volatile organic compounds (VOCs) (Units in ug/L)					
1,1,1-Trichloroethane		<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane		<1.0	<1.0	<1.0	**0.49 J**
1,1-Dichloroethene		<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane		<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane		<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0
2-Butanone		<10	<10	<10	<10
2-Hexanone		<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone		<5.0	<5.0	<5.0	<5.0
Acetone		<10	<10	<10	<10
Benzene		<1.0	<1.0	<1.0	<1.0
Bromodichloromethane		<1.0	<1.0	<1.0	<1.0
Bromoform		<1.0	<1.0	<1.0	<1.0
Bromomethane		<1.0	<1.0	<1.0	<1.0
Carbon Disulfide		<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride		<1.0	<1.0	<1.0	<1.0
Chlorobenzene		<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	<1.0	<1.0	<1.0
Chloroform		<1.0	<1.0	<1.0	<1.0
Chloromethane		<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0
Cyclohexane		<1.0	<1.0	<1.0	<1.0
Dibromochloromethane		<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<1.0
Ethylbenzene		<1.0	<1.0	<1.0	<1.0
Isopropylbenzene		<1.0	<1.0	<1.0	<1.0
Methyl acetate		<1.0	<1.0	<1.0	<1.0
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0
Methylcyclohexane		<1.0	<1.0	<1.0	<1.0
Methylene Chloride		<1.0	<1.0	<1.0	<1.0
Styrene		<1.0	<1.0	<1.0	<1.0
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0
Toluene		<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0
Trichloroethene		<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane		<1.0	<1.0	<1.0	<1.0
Vinyl Chloride		<1.0	<1.0	<1.0	<1.0
Xylenes (total)		<2.0	<2.0	<2.0	<2.0
Total VOCs		NA	NA	NA	**0.49 J**
Metals (Units in mg/L)					
Aluminum		**0.077 J**	**0.13 J**	**0.11 J**	**0.085 J**
Antimony		<0.020	<0.020	<0.020	<0.020
Arsenic		<0.010	<0.010	<0.010	<0.010
Barium		**0.0066**	**0.0067**	**0.0065**	**0.0066**
Beryllium		<0.0020	<0.0020	<0.0020	<0.0020
Cadmium		<0.0010	<0.0010	<0.0010	<0.0010
Calcium		**8.7**	**5.3**	**7.2**	**7.9**

See notes on last page.

Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, Colesville Landfill, Broome County, New York.

Constituents	Sample ID: / Date:	F-6 3/28/2013	SW-2 3/28/2013	SW-3 3/28/2013	SW-4 3/28/2013
Metals (Units in mg/L) (Continued)					
Chromium		<0.0040	<0.0040	<0.0040	<0.0040
Cobalt		<0.0040	<0.0040	<0.0040	<0.0040
Copper		<0.010	<0.010	<0.010	<0.010
Iron		**0.16**	**0.16**	**0.13**	**0.18**
Lead		<0.0050	<0.0050	<0.0050	<0.0050
Magnesium		**2.4**	**1.9**	**2.2**	**2.3**
Manganese		**0.064**	**0.025**	**0.021**	**0.061**
Mercury		<0.00020	<0.00020	<0.00020	<0.00020
Nickel		<0.010	<0.010	<0.010	<0.010
Potassium		**0.87**	**0.92**	**0.91**	**0.87**
Selenium		<0.015	<0.015	<0.015	<0.015
Silver		<0.0030	<0.0030	<0.0030	<0.0030
Sodium		**5.1**	**4.9**	**5.0**	**5.0**
Thallium		<0.020	<0.020	<0.020	<0.020
Vanadium		<0.0050	<0.0050	<0.0050	<0.0050
Zinc		<0.010	**0.0016 J**	<0.010	<0.010

Notes and Abbreviations:

Bold constituent detected above method detection limit.

J	Estimated value.
mg/L	Milligrams per liter.
NA	Not applicable.
ug/L	Micrograms per liter.
<	Analyte below detection limit.
--	Not analyzed or collected.

Table 5. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	SP-2 7/13/2012	SP-2 3/28/2013	SP-3 7/13/2012	SP-3 3/28/2013	SP-4 9/20/2012	SP-4 3/28/2013
	NYSDEC Part 703 WQS						
1,1,1-Trichloroethane	5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane	5	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	1	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	5	<5.0	<1.0	**76**	**41**	**1.8**	**14**
1,1-Dichloroethene	5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	5	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	0.04	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.0006	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	3	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	0.6	<5.0	<1.0	<5.0	<1.0	<1.0	**0.51 J**
1,2-Dichloropropane	1	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	3	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	3	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
2-Butanone	50	<10	<10	<10	<10	<10	<10
2-Hexanone	50	<10	<5.0	<10	<5.0	<5.0	<5.0
4-Methyl-2-pentanone	NA	<10	<5.0	<10	<5.0	<5.0	<5.0
Acetone	50	<10	<10	<10	<10	<10	<10
Benzene	10	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Bromodichloromethane	50	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Bromoform	50	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Bromomethane	5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Carbon Disulfide	60	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	5	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
Chlorobenzene	5	<5.0	<1.0	**42**	**3.5**	<1.0	**4.0**
Chloroethane	5	<5.0	<1.0	**18**	**7.0**	<1.0	**55**
Chloroform	7	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Chloromethane	5	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	5	<5.0 Q	<1.0	**24 Q**	**14**	<1.0	**0.88 J**
cis-1,3-Dichloropropene	0.4	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
Cyclohexane	NA	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
Dibromochloromethane	50	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Ethylbenzene	5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Isopropylbenzene	5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Methyl acetate	NA	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
Methyl tert-butyl ether	10	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
Methylcyclohexane	NA	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
Methylene Chloride	5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Styrene	50	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
Tetrachloroethene	5	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
Toluene	6000	**12**	<1.0	<5.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	0.4	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
Trichloroethene	5	<5.0	<1.0	**7.0**	**4.8**	<1.0	**0.78 J**
Trichlorofluoromethane	0.4	<5.0 Q	<1.0	<5.0 Q	<1.0	<1.0	<1.0
Vinyl Chloride	2	<5.0	<1.0	**21**	**2.1**	<1.0	<1.0
Xylenes (total)	5	<5.0	<2.0	<5.0	<2.0	<2.0	<2.0
Total VOCs	NA	**12**	NA	**188**	**72**	**1.8**	**75 J**
Metals (Units in mg/L)							
Aluminum	0.100	NA	**0.39**	NA	<0.20	--	<0.20
Antimony	0.003	NA	<0.020	NA	<0.020	--	<0.020
Arsenic	0.15	NA	<0.010	NA	<0.010	--	**0.023**
Barium	1	NA	**0.0087**	NA	**0.015**	--	**0.065**
Beryllium	0.003	NA	<0.0020	NA	<0.0020	--	<0.0020
Cadmium	0.01	NA	<0.0010	NA	<0.0010	--	<0.0010
Calcium	NA	NA	**7.20**	NA	**21.3**	--	**61.8**
Chromium	0.05	NA	<0.0040	<0.0500	<0.0040	--	<0.0040
Cobalt	0.005	NA	<0.0040	<0.0500	**0.0013 J**	--	**0.0012 J**

See notes on last page.

Table 5. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	SP-2 7/13/2012	SP-2 3/28/2013	SP-3 7/13/2012	SP-3 3/28/2013	SP-4 9/20/2012	SP-4 3/28/2013
	NYSDEC Part 703 WQS						
Metals (Units in mg/L) (Continued)							
Copper	NA	NA	<0.010	NA	<0.010	--	<0.010
Iron	0.3	NA	**0.51**	**16.0**	**0.84**	--	**7.1**
Lead	0.025	NA	<0.0050	NA	<0.0050	--	<0.0050
Magnesium	35	NA	**2.0**	**7.00**	**5.0**	--	**14.7**
Manganese	0.3	NA	**0.12**	**4.40**	**1.4**	--	**4.7**
Mercury	0.0000007	NA	<0.00020	NA	<0.00020	--	<0.00020
Nickel	0.1	NA	<0.010	NA	**0.0019 J**	--	<0.010
Potassium	NA	NA	**0.75**	NA	**1.1**	--	**1.3**
Selenium	0.0046	NA	<0.015	NA	<0.015	--	<0.015
Silver	0.0001	NA	<0.0030	<0.0500	<0.0030	--	<0.0030
Sodium	20	NA	**4.5**	NA	**3.8**	--	**9.4**
Thallium	0.008	NA	<0.020	NA	<0.020	--	<0.020
Vanadium	0.014	NA	<0.0050	<0.300	<0.0050	--	<0.0050
Zinc	0.066	NA	**0.0023 J**	NA	**0.0020 J**	--	<0.010

Notes and Abbreviations:

Bold constituent detected above method detection limit.

	Exceeds WQS.
J	Estimated value.
mg/L	Milligrams per liter.
NA	Not applicable
VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
<	Analyte below detection limit.
--	Not analyzed or collected.
Q	Outyling QC recoveries were associated with this parameter, as noted in the Upsate Laboratories, Inc. analytical report.

Table 6. Concentrations of Metals Detected in Sediment Samples Associated with Springs, Colesville Landfill, Broome County, New York.

	NYSDEC Freshwater Sediment Screening Values[a]								
Location ID:				SED-2	SED-2	SED-3	SED-3	SED-3	SED-3
Sample ID:				SP-2-SED (Opposite Bank)	SP-2-SED	SP-3-SED	SP-3-SED (Outlet)	SP-3-SED (Stream Sediment)	SP-3C-SED
Date:				7/13/2012 (1)	7/13/2012	7/13/2012 (2)	8/8/2012 (3)	8/8/2012 (4)	3/28/2013 (5)
Constituents	**Lowest Effects Level (LEL)**	**Severe Effects Level (SEL)**	**NOAA SQuiRT values[b]**						
Metals (Units in mg/kg)									
Aluminum	NA	NA	NA	--	--	--	**9,000**	**8,100**	**9,360**
Antimony	2	25	NA	--	--	--	<6.50	<5.60	<19.4
Arsenic	6	33	NA	--	--	--	**16.0**	**14.0**	**10.2**
Barium	NA	NA	NA	--	--	--	<190 Q	<170 Q	**44.3**
Beryllium	NA	NA	NA	--	--	--	<3.20	<2.80	**0.39**
Cadmium	0.6	9	NA	--	--	--	<3.20	<2.80	**0.19 J**
Calcium	NA	NA	NA	--	--	--	**810**	**630**	**917**
Chromium	26	110	NA	**15.0 J**	**18.0 J**	**34.0 J**	**18.0 J**	**15.0 J**	**13.2**
Cobalt	NA	NA	50+[c]	<32.0	<32.0	<83.0	<32.0	<28.0	**10.3**
Copper	16	110	NA	--	--	--	**21.0**	**19.0**	**18.9**
Iron	20,000	40,000	NA	**19,000 B**	**23,000 B**	**55,000 B**	**24,000**	**19,000**	**23,100**
Lead	31	110	NA	--	--	--	**12.0**	**19.0**	**14.1**
Magnesium	NA	NA	NA	**2,700**	**2,800**	**4,600**	**2,900**	**2,500**	**3,260**
Manganese	460	1100	NA	**300**	**1,200**	**10,000**	**640**	**490**	**1,140**
Mercury	0.15	1.3	NA	--	--	--	<0.112	<0.0911	<0.026
Nickel	16	50	NA	--	--	--	**17.0 QJ**	**15.0 QJ**	**23.0**
Potassium	NA	NA	NA	--	--	--	**730**	**490**	**793**
Selenium	NA	NA	NA	--	--	--	<3.90 Q	<3.40 Q	**0.60 J**
Silver	1	2.2	NA	<32.0 Q	<32.0 Q	<83.0 Q	<32.0	<28.0	<0.65
Sodium	NA	NA	NA	--	--	--	<320	<280	**30.0 J**
Thallium	NA	NA	NA	--	--	--	<3.90	<3.40	<7.8
Vanadium	NA	NA	NA	<190	<190	<500	<190	<170	13.0
Zinc	120	270	NA	--	--	--	**47.0**	**45.0**	**59.6**
Miscellaneous									
Percent Moisture (% by wt.)	NA	NA	NA	**20.8**	**21.1**	**70**	**27.7**	**18.4**	**27.0**

See acronyms and notes on the last page.

Table 6. Concentrations of Metals Detected in Sediment Samples Associated with Springs, Colesville Landfill, Broome County, New York.

Notes and Abbreviations:

a	Values obtained from NYSDEC 1999. Technical Guidance for Screening Contaminated Sediments.
b	Values obtained from NOAAs Screening Quick Reference Tables (Buchman, MF. 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle, WA. Office of Response and Restoration Division, NOAA, 34 pp.)
c	Value from Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario, Canada. Aug 1993. Value is Lowest Effects Level (LEL) from Canadian Sediment Guidelines.
1.	Background sediment sample collected by Broome County upstream and on the opposite bank from SP-2 spring sample location.
2.	Sediment/iron oxide film composite sample collected by Broome County from the SP-3 spring sample location.
3.	Sample collected by Broome County from the SP-3 spring outlet area in close proximity to the North Stream.
4.	Sample collected by Broome County from North Stream sediment at the SP-3 spring area.
5.	Sediment composite sample collected by ARCADIS from SP-3 spring sample location as part of the spring water and sediment monitoring program of the In-Situ Reactive Zone Discontinuation Pilot Test.

Bold constituent detected above method detection limit.

B	Analyte detected in the associated Method Blank.
J	Analyte detected below qantitation limit.
mg/kg	Milligrams per kilogram.
NA	Not applicable.
Q	Outlying QC recoveries were associates with this parameter.
	Exceeds Lowest Effects Level.
	Exceeds Severe Effects Level.
<	Analyte below detection limit.
--	Constituent not analyzed.

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Table 7. Concentrations of Volatile Organic Compounds Detected in Aqueous Samples Collected from the SP-5 Spring Water Remediation System, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Model Technology BPJ Limits[1,2]	Sample ID: Date:	SP-5 INF. 9/20/2012	SP-5 INF. 12/19/2012	SP-5 INF. 3/28/2013	SP-5 EFF. 9/20/2012	SP-5 EFF. 12/19/2012	SP-5 EFF. 3/28/2013
VOCs								
1,1,1-Trichloroethane	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	50		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	100		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	10		**12**	**12**	**12**	**1.7**	**1.1**	**8.5**
1,1-Dichloroethene	10-100		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	10-50		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	10-100		**0.33 J**	**0.32 J**	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone	NA		<10	<10	<10	<10	<10	<10
2-Hexanone	NA		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone	NA		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone	NA		<10	<10	<10	<10	<10	<10
Benzene	5		**1.3**	**1.4**	**1.4**	<1.0	<1.0	**0.97 J**
Bromodichloromethane	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	50		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	10-50		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	10-25		**20**	**17**	**19**	<1.0	<1.0	**15**
Chloroethane	10		**9.7**	**2.0**	**0.65 J**	**5.3**	**5.3**	<1.0
Chloroform	100		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	10		**1.6**	**1.5**	**0.97 J**	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	5		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl acetate	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl tert-butyl ether	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	10-100		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	10-50		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	5		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	10-100		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	10		**2.6**	**2.5**	**2.7**	<1.0	<1.0	**2.1**
Trichlorofluoromethane	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (total)	NA		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total VOCs			**48 J**	**37 J**	**37 J**	**7.0**	**6.4**	**27 J**

Notes and Abbreviations:

1. Model Technology Best Professional Judgment (BPJ) Limits recommended for carbon adsorption with appropriate pretreatment from Attachment C of TOGS 1.2.1.
2. When a range is listed for the BPJ limit, a variation in available references was found. Recommended daily maximum limits should be in this range.

Bold constituent detected above method detection limit.

<	Analyte below detection limit.
EFF.	Effluent.
INF.	Influent.
J	Estimated value.
NA	No BPJ limit listed.
ug/L	Micrograms per liter.
VOCs	Volatile organic compounds.

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Table 8. SP-5 Spring Water Remediation System Mass Removal Rate of Volatile Organic Compounds, Colesville Landfill, Broome County, New York.

Date Sampled	Total VOC Influent Concentration (ug/L)	Effluent Flowrate (gpm)	Depth to Water (feet btc)	Total Spring Water Treated [1] Between Sampling Intervals (gal)	Influent Concentration [2] Geometric Mean (ug/L)	Total Estimated Mass [3] Removed (lbs)
9/20/2012	48	0.29	NM	NA	NA	NA
12/19/2012	37	1.1	0.00	71,823	42	0.025
3/28/2013	37	1.6	0.30	184,517	37	0.057

Total Estimated Mass Removed During Reporting Period (lbs) =	**0.082**
Total Estimated Mass Removed Since System Startup (lbs) =	**2.0**
Total Effluent Treated During Reporting Period (gallons) =	**256,341**
Total Effluent Treated Since System Startup (gallons) =	**3,941,582**

Notes and Abbreviations:

1. Total Spring Water Treated Between Sampling Intervals = Effluent Flowrate Geometric Mean x 1440 min/day x days between sampling events.
2. Influent Concentration Geometric Mean = (Influent Concentration for prior sampling event x Influent Concentration for current sampling event)^(1/2).
3. Total Mass Removed = (Total Groundwater Treated Between Sampling Intervals) x Influent Concentration Geometric Mean x 3.7854 L/gal x (1 lbs / 453,592,370 ug).

btc	Below top of casing.
gal	Gallons.
gpm	Gallons per minute.
lbs	Pounds.
NA	Not applicable.
NM	Not measured.
ug/L	Micrograms per liter.
VOC	Volatile organic compound.

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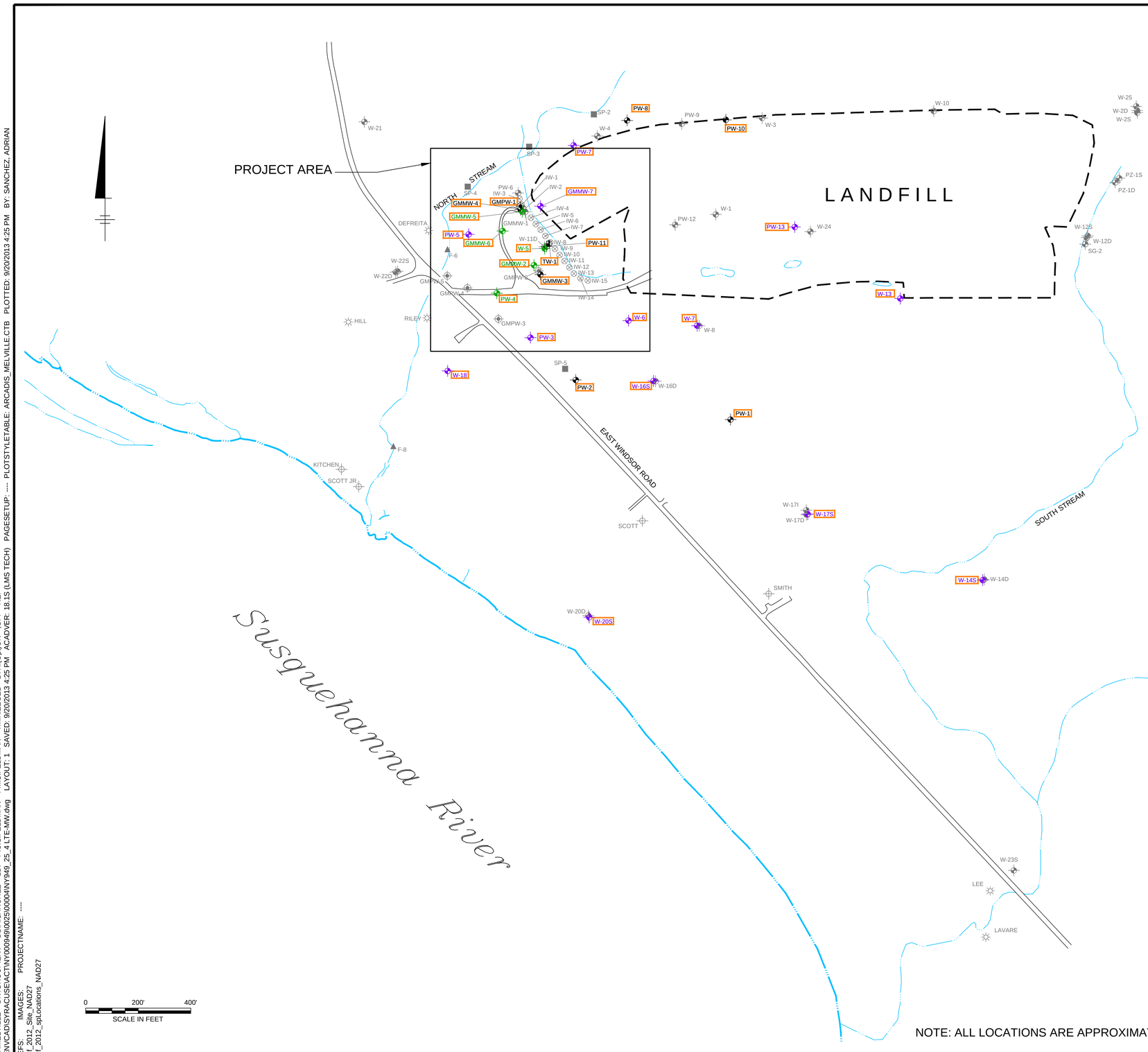
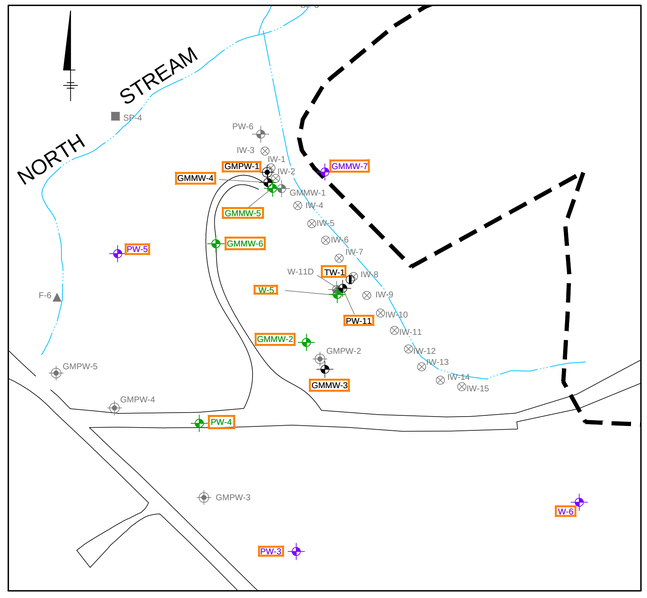
Figures



EXPLANATION

LONG-TERM MONITORING PLAN DESIGNATIONS

W–24	LOCATION AND DESIGNATION OF MONITORING WELL
SCOTT	LOCATION AND DESIGNATION OF EXISTING HOMEOWNER WELL
HILL	LOCATION AND DESIGNATION OF FORMER HOMEOWNER WELL
IW–2	LOCATION AND DESIGNATION OF INJECTION WELL
GMPW–3	LOCATION AND DESIGNATION OF PRODUCTION WELL
TW–1	LOCATION AND DESIGNATION OF TEST MONITORING WELL
F–6	LOCATION AND DESIGNATION OF SURFACE WATER SAMPLE
SP–2	LOCATION AND DESIGNATION OF SPRING SAMPLE
GMMW–5	LOCATION AND DESIGNATION OF QUARTERLY MONITORING WELL
PW–3	LOCATION AND DESIGNATION OF ANNUAL MONITORING WELL
	LOCATION AND DESIGNATION OF WELLS INCLUDED IN ANNUAL HYDRAULIC MEASUREMENT PROGRAM



SITE PLAN SHOWING PROJECT AREA

0 100' 200'

SCALE IN FEET

0 200' 400'

SCALE IN FEET

NOTE: ALL LOCATIONS ARE APPROXIMATE

COLESVILLE LANDFILL
COLESVILLE, NEW YORK
SEMI-ANNUAL MONITORING REPORT

LONG-TERM EFFECTIVENESS MONITORING LOCATIONS

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FIGURE
1

CITY:MELVILLE DIV/GROUP:ENV DB:A.SANCHEZ LD: PIC:S.FELDMAN PM:S.FELDMAN TM:K.ZEGEL LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVITY\00949\0025\00004\NY949_25_4 LTE-MW.dwg LAYOUT: 1 SAVED: 9/20/2013 4:25 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS_MELVILLE.CTB PLOTTED: 9/20/2013 4:25 PM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ----
Xref_2012_Site_NAD27
Xref_2012_spLocations_NAD27

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Appendix **A**

Degradation Trend Figures

Figure A-1. Concentrations of PCE Daughter Products Versus Time in GMMW-05

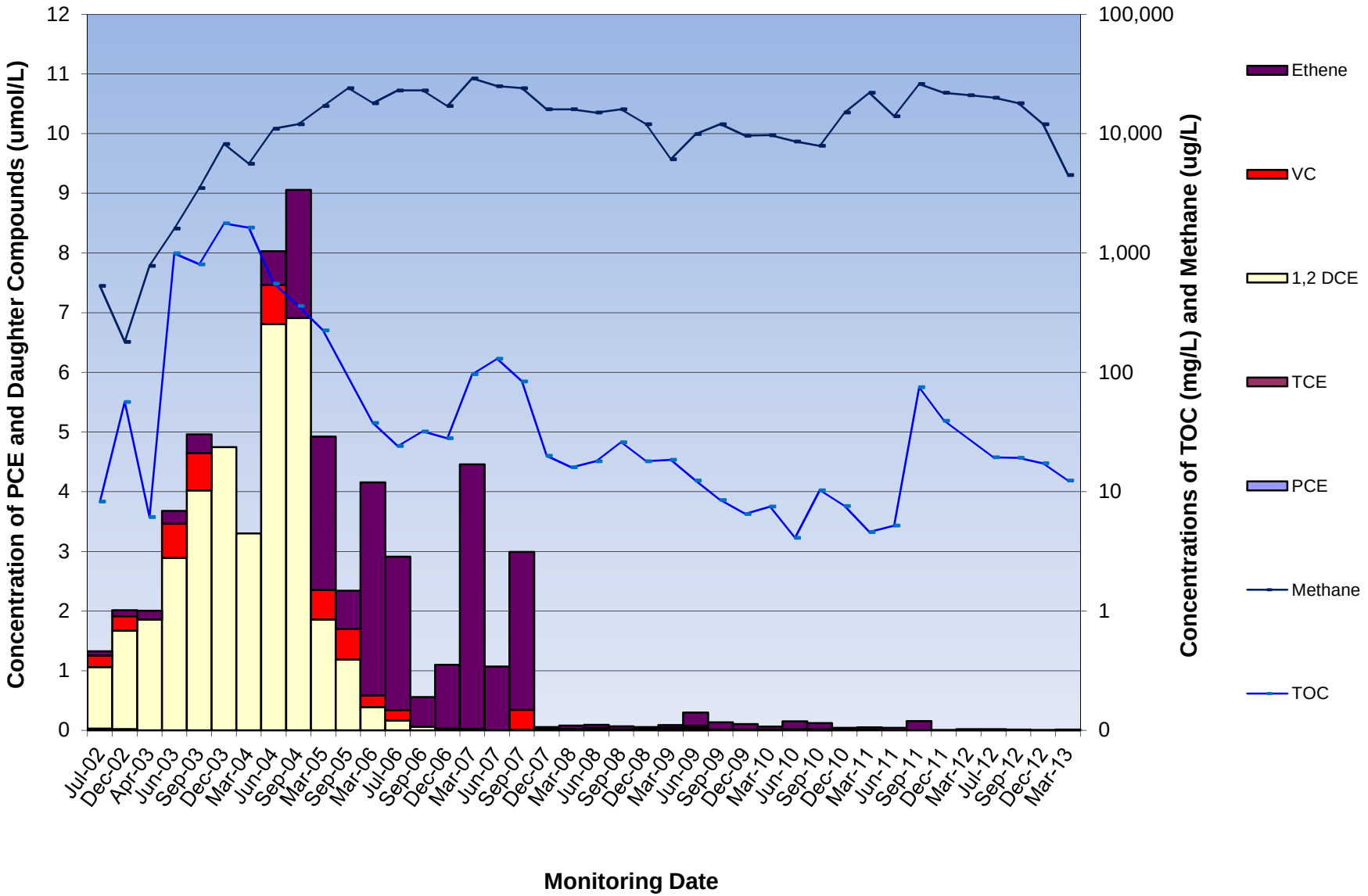


Figure A-2. Concentrations of PCE Daughter Products Versus Time in GMMW-06

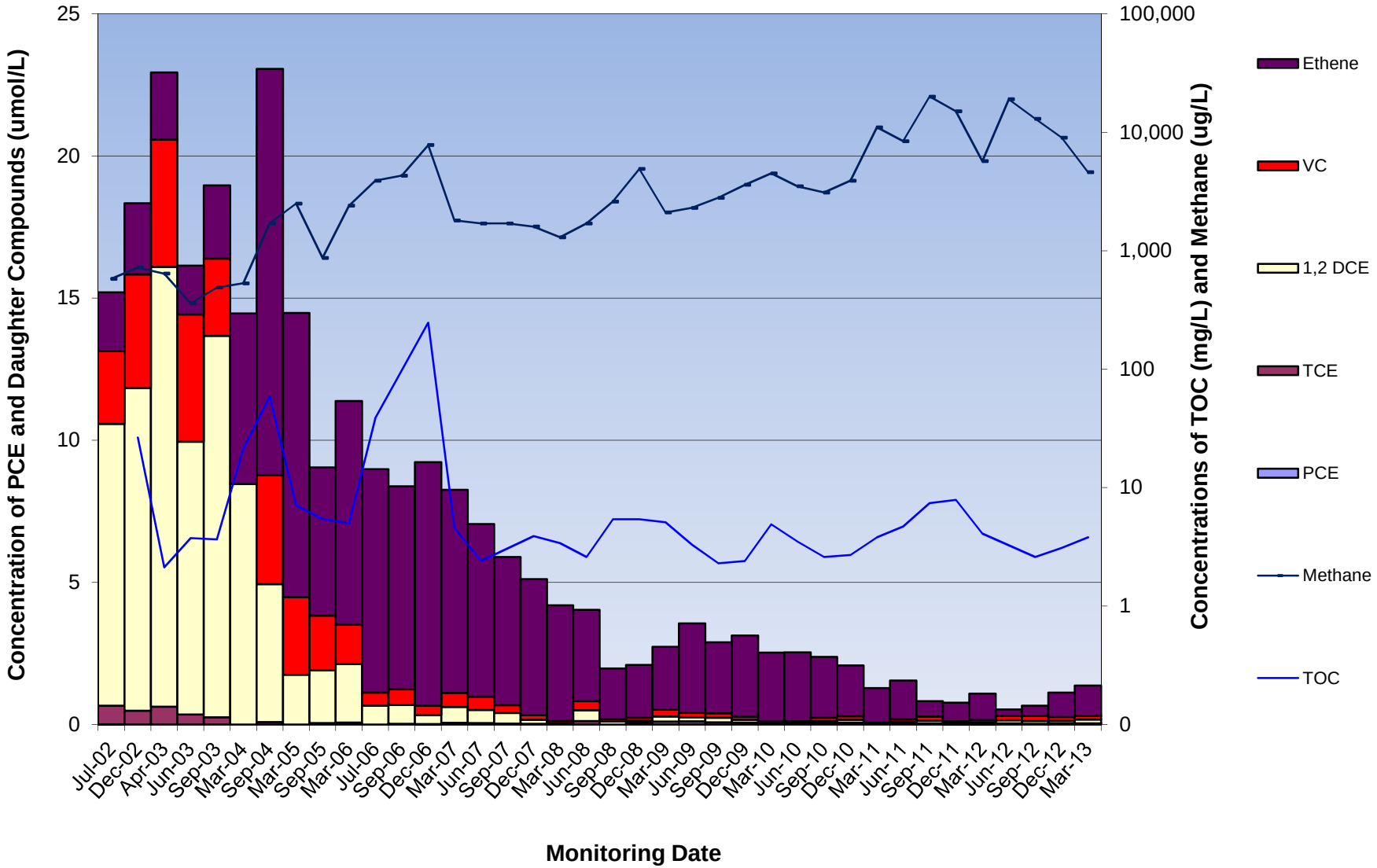


Figure A-3. Concentrations of PCE Daughter Products Versus Time in GMMW-02

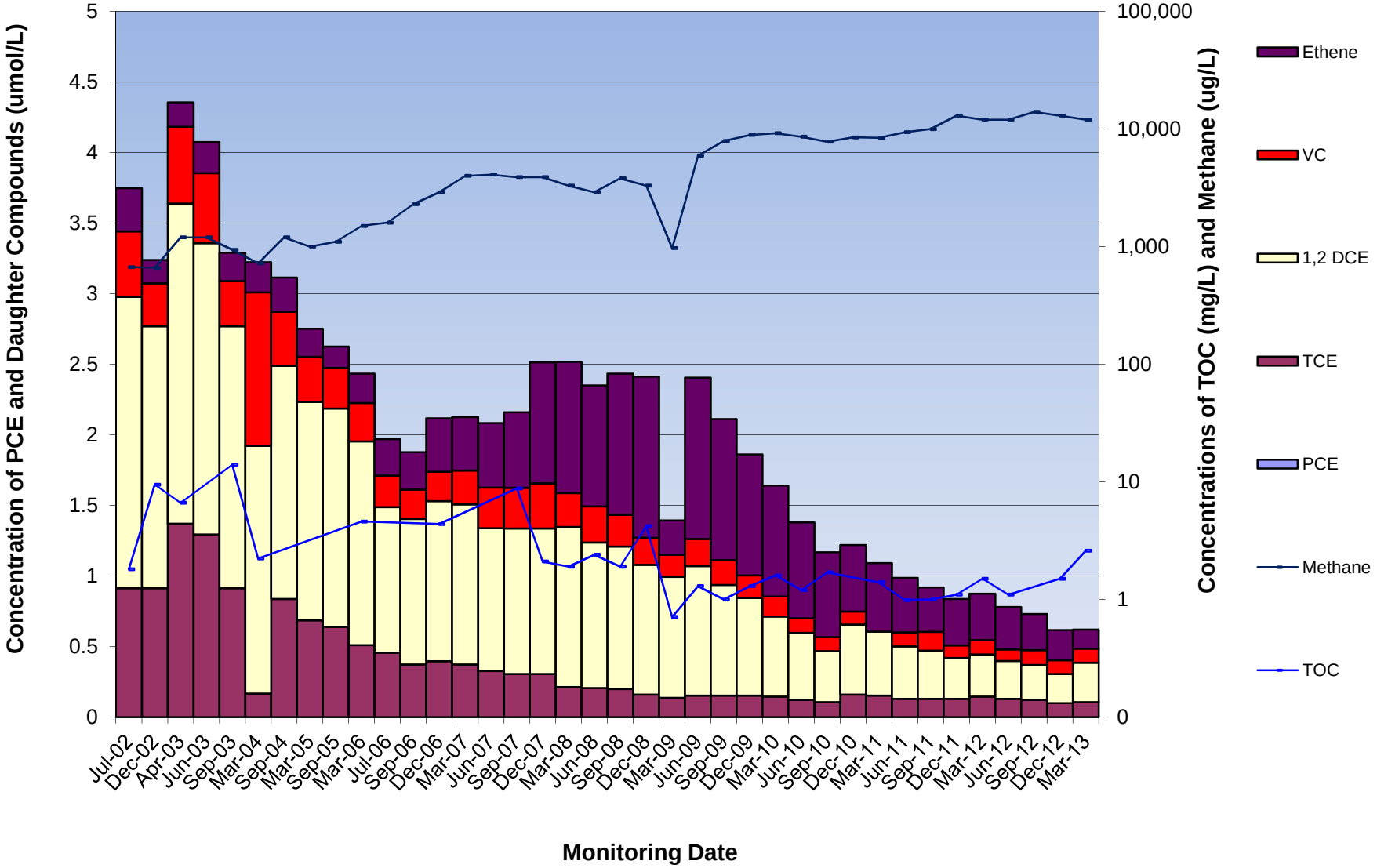


Figure A-4. Concentrations of PCE Daughter Products Versus Time in TW-1

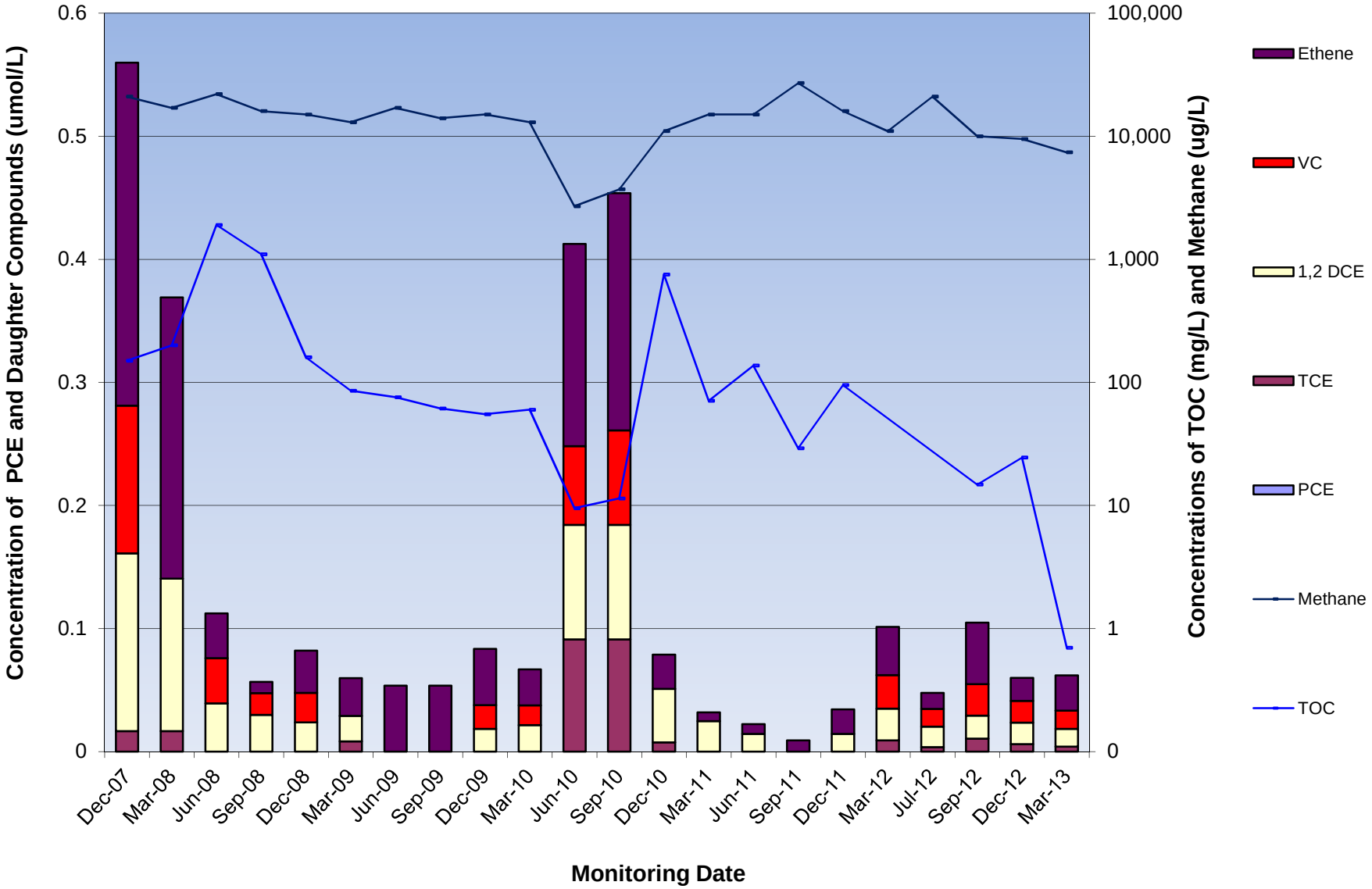


Figure A-5. Concentrations of 1,1,1-TCA Daughter Products Versus Time in GMMW-05

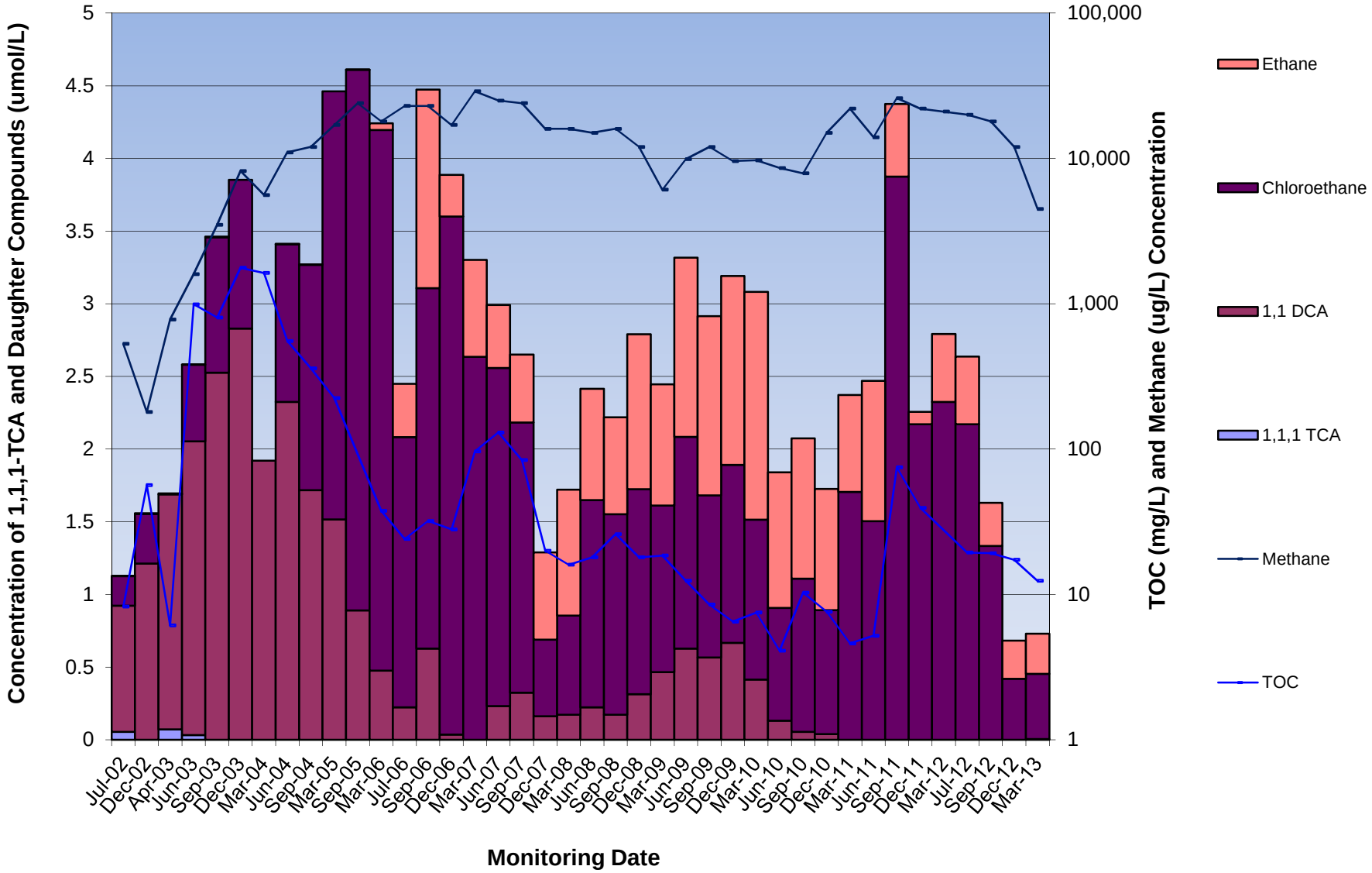


Figure A-6. Concentrations of 1,1,1-TCA Daughter Products Versus Time in GMMW-06

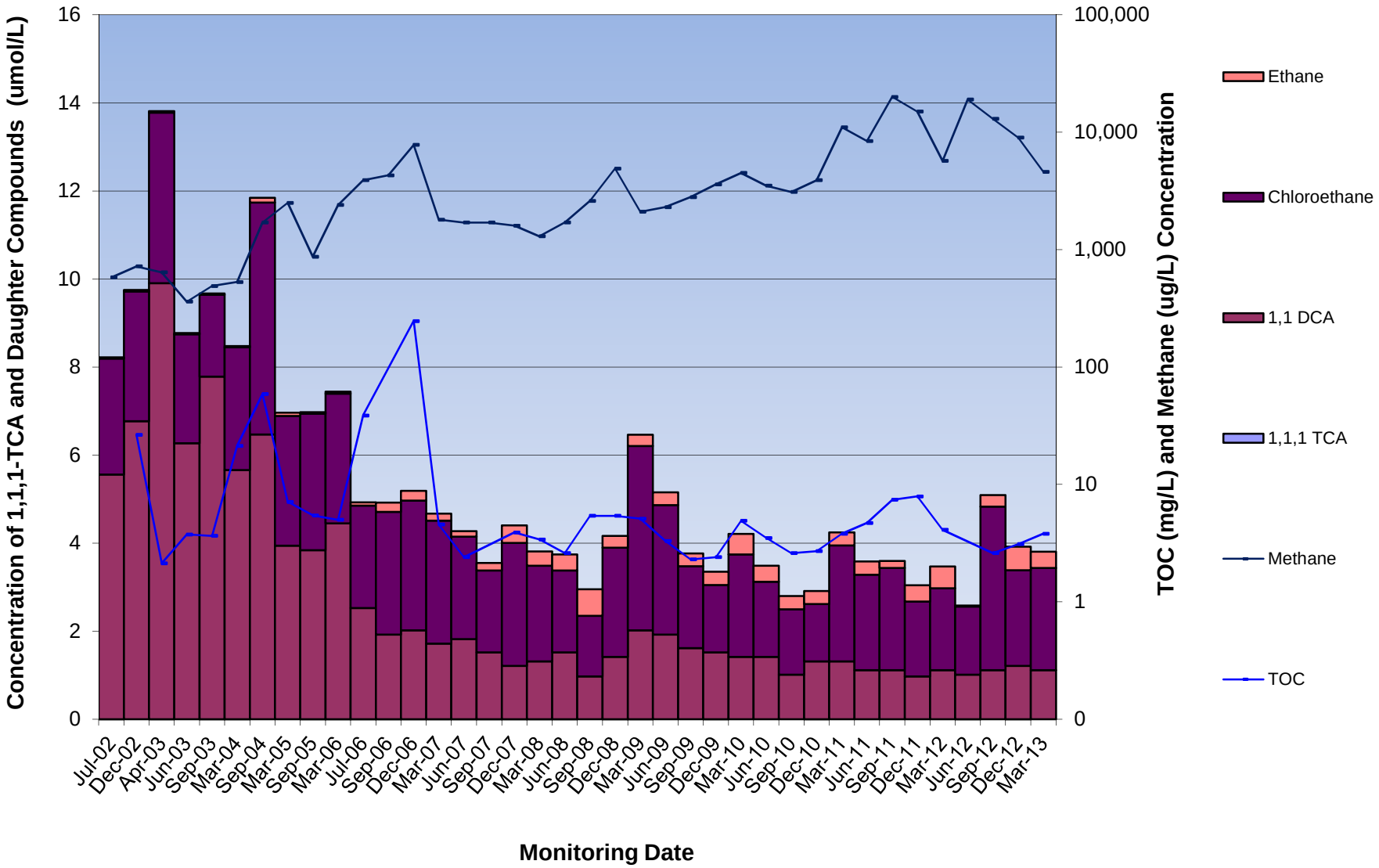


Figure A-7. Concentrations of 1,1,1-TCA Daughter Products Versus Time in GMMW-02

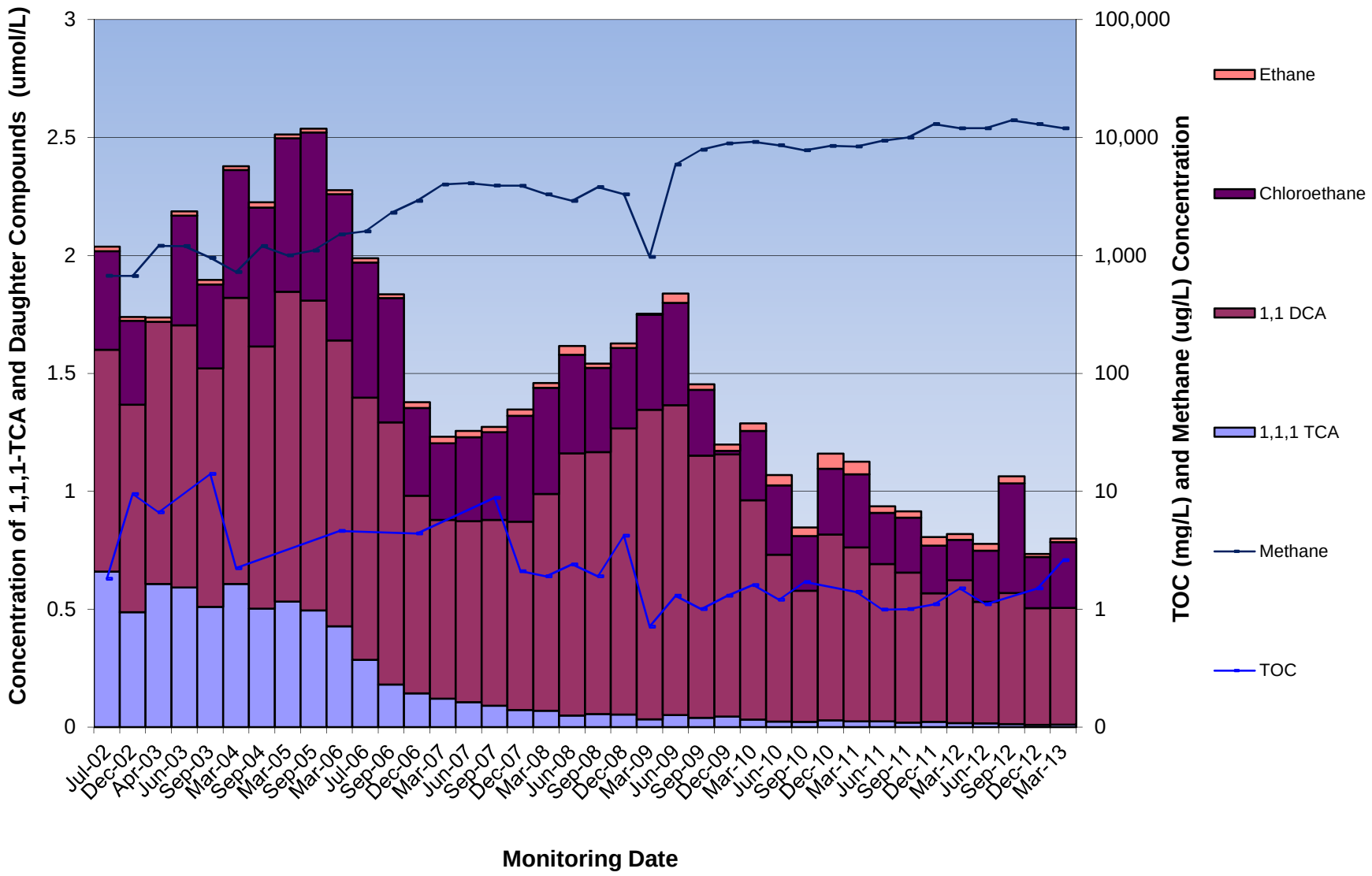
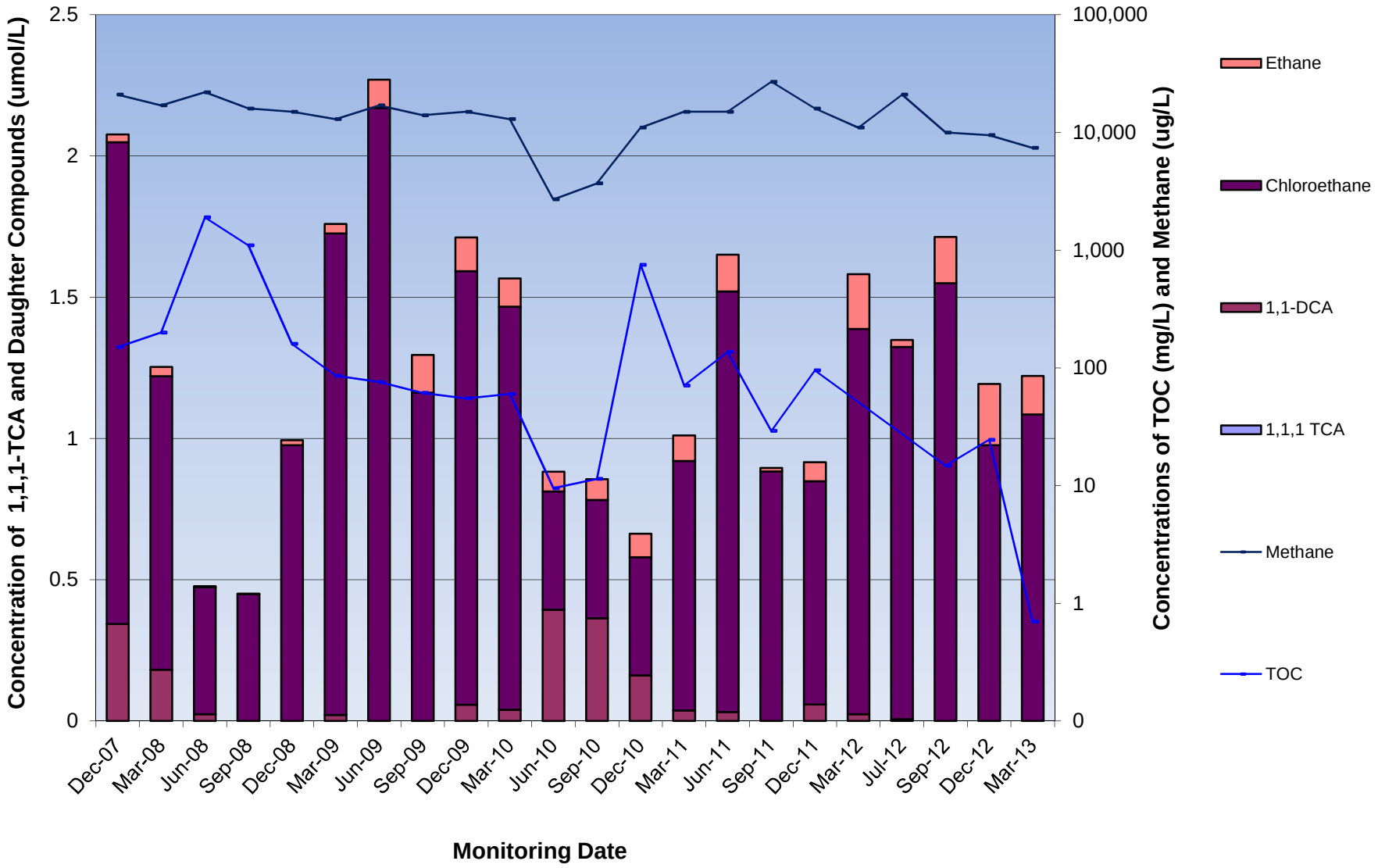


Figure A-8. Concentrations of 1,1,1-TCA Daughter Products Versus Time in TW-1



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Appendix **B**

Groundwater Sampling Logs

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0025	Page	1 of 1
Site Location	Colesville, NY			Date	12/18/12
Site/Well No.	GMMW-2	Replicate No.	-	Code No.	
Weather	Cloudy 40°	Sampling Time: Begin	1240	End	1255

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	37.36
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	Colorless
Odor	none
Appearance	Clear
pH (s.u.)	6.50
Conductivity (mS/cm)	0.622
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	9.87
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	PDB / Bailer
Remarks	Rockplayed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4
Total Iron	500 ml plastic	—	HNO3

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0025	Page	1 of 1
Site Location	Colesville, NY			Date	12/18/12
Site/Well No.	GMMW-5	Replicate No.	REPV 121812	Code No.	
Weather	Cloudy 40°	Sampling Time: Begin	1140	End	1150

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	49.05
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	65.50
Purge Time	begin 8 min end
Pumping Rate (gpm)	
Evacuation Method	PDB/ Whale pump

Field Parameters

Color	colorless / Slight yellow
Odor	Slight
Appearance	clear
pH (s.u.)	6.42
Conductivity (mS/cm)	0.299
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	9.93
Dissolved Oxygen (mg/L)	
ORP	
Sampling Method	PDB / whale pump
Remarks	Redeployed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3/3	HCL } PDB
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4 (whale pump)
TAL Metals	250 ml plastic		

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0025	Page	1 of 1
Site Location	Colesville, NY			Date	12/18/12
Site/Well No.	GMMW-6	Replicate No.	MS/MSD	Code No.	
Weather	Cloudy 40	Sampling Time: Begin	1220	End	1235

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	39.62
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	Colorless / Slight yellow
Odor	None
Appearance	Clear / Trace particles
pH (s.u.)	6.58
Conductivity (mS/cm)	0.858
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	9.91
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	PDB / Bailer
Remarks	Redeployed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3/3/3	HCL
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4
Total Iron	500 ml plastic	—	HNO3

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0025	Page	1 of 1
Site Location	Colesville, NY			Date	12/18/12
Site/Well No.	PW-4	Replicate No.	—	Code No.	
Weather	Rain 40°S	Sampling Time: Begin	1300	End	1310

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	18.48
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	Colorless
Odor	none
Appearance	Clear
pH (s.u.)	6.73
Conductivity (mS/cm)	0.531
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	10.93
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	PDB / Bailer
Remarks	Redeployed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4
Total Iron	500 ml plastic	—	HNO3

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0025	Page	1 of 1
Site Location	Colesville, NY			Date	12/18/12
Site/Well No.	Tw-1	Replicate No.	—	Code No.	
Weather	Cloudy 40°	Sampling Time:	Begin 1125	End	1130

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	52.64
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	63.70
Purge Time	begin 10 min end
Pumping Rate (gpm)	
Evacuation Method	PDB/ Whale pump

Field Parameters

Color	Clear / slight yellow
Odor	Slight
Appearance	Clear / Trace black particles
pH (s.u.)	6.34
Conductivity (mS/cm)	1.099
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	10.64
Dissolved Oxygen (mg/L)	—
ORP	
Sampling Method	PDB / whale pump
Remarks	deployed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL / PDB
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4 whale pump
TAL Metals	250 ml plastic		

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.			
1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0025	Page	1 of 1
Site Location	Colesville, NY			Date	12/19/12
Site/Well No.	IW-3	Replicate No.		Code No.	
Weather	Partly Cloudy 40°	Sampling Time:	Begin 1100	End	1105

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	42.2
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	57.5'
Purge Time	begin 10 min end
Pumping Rate (gpm)	
Evacuation Method	Recirculation

Field Parameters

Color	gray tint
Odor	mod.
Appearance	clear
pH (s.u.)	6.13
Conductivity (mS/cm)	
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	
Dissolved Oxygen (mg/L)	
ORP	
Sampling Method	whale pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	–	HCL
Ethene, Ethane, Methane	40 ML Vials	–	Na3PO4
TOC	40 ML Vials	2	H2SO4
TAL Metals	500 ml plastic	–	HNO3

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0025	Page	1 of 1
Site Location	Colesville, NY			Date	12/19/12
Site/Well No.	EW-8	Replicate No.	—	Code No.	
Weather	Partly cloudy 40°	Sampling Time: Begin	1140	End	1150

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	51.89
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	59.60
Purge Time	begin 15min end
Pumping Rate (gpm)	
Evacuation Method	Recirculation

Field Parameters

Color	Orang. tint
Odor	Mod
Appearance	Clear
pH (s.u.)	6.24
Conductivity (mS/cm)	
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	
Dissolved Oxygen (mg/L)	
ORP	
Sampling Method	whale pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	—	HCL
Ethene, Ethane, Methane	40 ML Vials	—	Na3PO4
TOC	40 ML Vials	2	H2SO4
TAL Metals	500 ml plastic	—	HNO3

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0025	Page	1 of 1
Site Location	Colesville, NY			Date	12/19/12
Site/Well No.	IW-1.3	Replicate No.	—	Code No.	
Weather	Partly Cloudy 40°	Sampling Time:	Begin 1230	End	1235

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	55.50
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	59.60
Purge Time	begin 12min end
Pumping Rate (gpm)	
Evacuation Method	~~PDB~~/ Whale pump

Field Parameters

Color	Orange tint
Odor	Med
Appearance	Clear
pH (s.u.)	6.28
Conductivity (mS/cm)	
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	
Dissolved Oxygen (mg/L)	
ORP	
Sampling Method	~~PDB~~ / whale pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	—	HCL
Ethene, Ethane, Methane	40 ML Vials	—	Na3PO4
TOC	40 ML Vials	2	H2SO4
TAL Metals	250 ml plastic	—	

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0025	Page	1 of 1
Site Location	Colesville, NY			Date	12/19/12
Site/Well No.	SP-5 influent	Replicate No.	—	Code No.	—
Weather	Partly Cloudy 40°	Sampling Time: Begin	1405	End	1410

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	3.80
Depth to Water (ft bmp)	0.0
Water-Level Elevation (ft)	—
Water Column in Well (ft)	3.80
Casing Diameter/Type	2"
Gallons in Well	0.619
Gallons Pumped/Bailed Prior to Sampling	2.00
Sample Pump Intake Setting (ft bmp)	—
Purge Time	begin 1400 end 1405
Pumping Rate (gpm)	
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	Colorless
Odor	none
Appearance	Clear
pH (s.u.)	6.31
Conductivity (mS/cm)	0.498
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	7.67
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	Bailer
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	—	Na3PO4
TOC	40 ML Vials	—	H2SO4
~~Total Iron~~ TAL metals	500 ml plastic	1	HNO3

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Surface Water Sampling Form

Project: Colesville Landfill | Project No.: NY000949.0025 | Page 1 of 1

Site Location: Colesville, NY | Date: 12/19/12

Site/Well No.: SP-5 effluent | Replicate No.: —

Weather: Partly Cloudy 40° | Sampling Time: Begin 1353 End 1356

Site Conditions

Water Quality Meter: YSI

Location Condition: Cleared out pipe + Stream prior to Sampling

Vegetation: dormant

Depth of Water: —

Estimated Flow Rate: 1.5 Sec / 100mL

Collection Method: Direct collection

Field Parameters

Color	Colorless
Odor	None
Appearance	Clear
pH (s.u.)	6.15
Conductivity (mS/cm)	0.478
Temperature (°C)	7.40
DO (mg/L)	—
Turbidity (NTU)	—
ORP	—
Time	—

Remarks: VOC's / TAL metals - Submitted

Constituents Sampled: See COC | Sampling Personnel: KB

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/27/13
Site/Well No.	GwMW-2	Replicate No.	—	Code No.	—
Weather	Cloudy 40°	Sampling Time: Begin	1350	End	1420

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	56.05 T.of PVC
Depth to Water (ft bmp)	38.75
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	51'
Purge Time	begin ____ end ____
Pumping Rate (gpm)	~5min (2.0 gallons
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	ColorLess
Odor	none
Appearance	Clear
pH (s.u.)	6.83
Conductivity (mS/cm)	619 us/cm
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	10.4
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	PDB / Bailer / whale pump
Remarks	Redeployed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4 Bailer
Total Iron	500 ml plastic	—	HNO3
alternate Electron Acceptors		4	W. pump

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/l	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

* metals - Lab Filter * Pres was Rinsed out

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/26/13
Site/Well No.	GMMW-5	Replicate No.	REPV032613	Code No.	
Weather	Partly Cloudy 35°	Sampling Time:	Begin 1605	End	1630

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	Screen 53-63'
Depth to Water (ft bmp)	49.61
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	5 min 2.5 gallons
Sample Pump Intake Setting (ft bmp)	58'
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	Colorless - Slight Yellow
Odor	Slight
Appearance	Clear
pH (s.u.)	6.46
Conductivity (mS/cm)	336 us/cm
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	9.30
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	PDB / ~~Bailer~~ / Whale pump
Remarks	Redeployed a PDB

Well Ran dry during Sampling Recharged & continued to sample

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3/3	HCL
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4 w.p
Total Iron	500 ml plastic	—	HNO3
alternate Electron Acceptors		4	whale pump

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/26/13
Site/Well No.	Gwmw-6	Replicate No.	ms/MSD	Code No.	
Weather	Cloudy 35°	Sampling Time:	Begin 1500	End	1520

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	Screen 40-50'
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	5 min / 1.25
Sample Pump Intake Setting (ft bmp)	45'
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	colorless
Odor	none to slight
Appearance	clear
pH (s.u.)	6.72
Conductivity (mS/cm)	826 uS/in
(µmhos/cm)	
Turbidity (NTU)	—
Temperature (°C)	9.0
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	PDB / Bailer / whale pump
Remarks	Redeployed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3/3/3	HCL ms/MSD
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4 Bailer
Total Iron	500 ml plastic	—	HNO3
alternate Electron Acceptors			whale pump

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/27/13
Site/Well No.	Tw-1	Replicate No.	—	Code No.	
Weather	partly cloudy 40°	Sampling Time: Begin	1445	End	1510

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	Screen 50-70'
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	56'
Purge Time	begin ____ end ____
Pumping Rate (gpm)	10 min - 2 gallons
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	Slight yellow tint
Odor	Slight odor
Appearance	Clear
pH (s.u.)	6.71
Conductivity (mS/cm)	1137 us/cm
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	9.1
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	PDB / ~~Bailer~~ / whale pump
Remarks	Redeployed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4 w. pump
Total Iron	500 ml plastic	—	HNO3
alternate Electron Acceptors		4	whale pump

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/26/13
Site/Well No.	PW-4	Replicate No.	—	Code No.	—
Weather	Cloudy 35° windy	Sampling Time:	Begin 1425	End	1435

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	—
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	Colorless
Odor	~~Etc~~ None
Appearance	Clear
pH (s.u.)	6.39
Conductivity (mS/cm)	541 us/cm
(µmhos/cm)	
Turbidity (NTU)	—
Temperature (°C)	9.0
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	PDB / Bailer
Remarks	Redeployed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4
Total Iron	500 ml plastic	—	HNO3
alternate Electron Acceptors		—	

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/27/13
Site/Well No.	PW-7	Replicate No.	—	Code No.	—
Weather	part sun 40°	Sampling Time: Begin	1123	End	1128 PDB

1600 - 1610

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	60.50
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	45'/53'
Purge Time	begin ____ end ____
Pumping Rate (gpm)	5 gallons (17 min)
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	Turbid - Red Brown
Odor	Slight
Appearance	Turbid
pH (s.u.)	6.35
Conductivity (mS/cm)	306 us/cm
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	11.2
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	PDB / Bailer / whale pump
Remarks	very turbid while purging w/ a whale pump w/ drops Fast

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	2	Na3PO4
TOC	40 ML Vials	2	H2SO4
Total Iron	500 ml plastic	—	HNO3
alternate Electron Acceptors		4	

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

Let the well Recharg
12-4 pm

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/28/13
Site/Well No.	SP-5 influent	Replicate No.	—	Code No.	—
Weather	Cloudy 40°	Sampling Time: Begin	1130	End	1134

Evacuation Data

Measuring Point	—
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	4.15
Depth to Water (ft bmp)	0.30
Water-Level Elevation (ft)	3.
Water Column in Well (ft)	3.85
Casing Diameter/Type	2"
Gallons in Well	0.62
Gallons Pumped/Bailed Prior to Sampling	2.00
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	2" Disposable poly bailer

Field Parameters

Color	Colorless
Odor	None
Appearance	Clear
pH (s.u.)	6.78
Conductivity (mS/cm)	475 us/cm
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	5.5
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	~~PDB~~ Bailer
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials		Na3PO4
TOC	40 ML Vials		H2SO4
Total Iron	500 ml plastic	1	HNO3
alternate Electron Acceptors			

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.			
1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Surface Water Sampling Form

Project: Colesville Landfill | Project No.: NY000949.0026 | Page: 1 of 1

Site Location: Colesville, NY | Date: 3/28/13

Site/Well No.: SP-5 effluent | Replicate No.: —

Weather: Cloudy 40° | Sampling Time: Begin 1115 End 1119

Site Conditions

Water Quality Meter: multi 340i

Location Condition: Cleared out stream bed Stained orange

Vegetation: dormant

Depth of Water:

Estimated Flow Rate: 100 mL / 1 Sec

Collection Method: Direct collection

Field Parameters

Color	Colorless
Odor	none
Appearance	Clear
pH (s.u.)	6.94
Conductivity (mS/cm)	466 us/cm
Temperature (°C)	5.5
DO (mg/L)	—
Turbidity (NTU)	—
ORP	—
Time	—

Remarks: soaked out the line 3/27/13

Constituents Sampled: See COC | Sampling Personnel: KB

ARCADIS

Surface Water Sampling Form

Project Colesville Landfill Project No. NY000949.0026 Page 1 of 1

Site Location Colesville, NY Date 3/28/13

Site/Well No. SW-2 Replicate No. —

Weather Cloudy, 40° Sampling Time: Begin 1510 End 1513

Site Conditions

Water Quality Meter: Multi 340i

Location Condition: Cobble to Stone

Vegetation: —

Depth of Water: 4.5"

Estimated Flow Rate: 5 Sec / 5'

Collection Method: Direct collection

Field Parameters

Color: ColorLess

Odor: none

Appearance: Clear

pH (s.u.): 7.35

Conductivity (mS/cm): 81 us/cm

Temperature (°C): 4.4

DO (mg/L): —

Turbidity (NTU): —

ORP: —

Time: —

Remarks:

Constituents Sampled: See COC Sampling Personnel: KB

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Surface Water Sampling Form

Project Colesville Landfill Project No. NY000949.0026 Page 1 of 1

Site Location Colesville, NY Date 3/28/13

Site/Well No. ~~SP~~ SW-3 Replicate No. —

Weather Cloudy 40° Sampling Time: Begin 1442* End 1443

Site Conditions

Water Quality Meter: multi 340i

Location Condition: Stone

Vegetation: —

Depth of Water: 3"

Estimated Flow Rate: 6.5* Sed 5'

Collection Method: Direct collection

Field Parameters

Color: ColorLess

Odor: None

Appearance: Clear

pH (s.u.): 7.70

Conductivity (mS/cm): 97us/cm

Temperature (°C): 5.2

DO (mg/L): —

Turbidity (NTU): —

ORP: —

Time: —

Remarks: * SP-3C-SED* Collected at 1435
Sand + gravel Brown Little Staining + build up in Sampling Area

Constituents Sampled: See COC Sampling Personnel: KB

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Surface Water Sampling Form

Project Colesville Landfill Project No. NY000949.0026 Page 1 of 1

Site Location Colesville, NY Date 3/28/13

Site/Well No. SW-4 Replicate No. —

Weather Cloudy 40° Sampling Time: Begin 1324 End 1327

Site Conditions

Water Quality Meter: multi 340i

Location Condition: Cobble to Stone
Orange staining at SP-4

Vegetation:
dormant

Depth of Water: 5 inches

Estimated Flow Rate: 7 Sec / 5'

Collection Method: Direct collection

Field Parameters

Color	Colorless
Odor	none
Appearance	Clear
pH (s.u.)	7.16
Conductivity (mS/cm)	101 us/cm
Temperature (°C)	5.5
DO (mg/L)	—
Turbidity (NTU)	—
ORP	—
Time	—

Remarks: mid stream

Constituents Sampled: See COC Sampling Personnel: KB

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Sediment Sampling Form

Project: Colesville Landfill | Project No.: NY000949.0026 | Page: 1 of 1

Site Location: Colesville, NY | Date: 3/28/13

Site/Well No.: F-6 | Replicate No.: –

Weather: Cloudy 40° | Sampling Time: Begin 1300 End 1302

Site Conditions

Water Quality Meter: multi 340i

Location Condition: Stone to Cobble. Little orange staining a little foamy. Just upstream

Vegetation: dormant

Depth of Water: 5.5"

Estimated Flow Rate: 5 Sec. / 5'

Collection Method: Direct collection

Field Parameters

Color	Colorless
Odor	none
Appearance	Clear
pH (s.u.)	7.65
Conductivity (mS/cm)	108 us/cm
Temperature (°C)	5.4
DO (mg/L)	–
Turbidity (NTU)	–
ORP	–
Time	–

Remarks:

Constituents Sampled: See COC | Sampling Personnel: KB

ARCADIS

Surface Water Sampling Form

Project: Colesville Landfill | Project No.: NY000949.0026 | Page: 1 of 1

Site Location: Colesville, NY | Date: 3/28/13

Site/Well No.: SP-2 | Replicate No.: —

Weather: Cloudy 40° | Sampling Time: Begin 1525 End 1530

Site Conditions

Water Quality Meter: Multi 340i

Location Condition: See Below

Vegetation: green algae - Build up

Depth of Water: > 0.5'

Estimated Flow Rate: —

Collection Method: ~~Direct collection~~ Peristaltic Pump

Field Parameters

Color	Colorless
Odor	None
Appearance	Clear Trace Organic matter
pH (s.u.)	6.88
Conductivity (mS/cm)	87 us/cm
Temperature (°C)	6.2
DO (mg/L)	—
Turbidity (NTU)	—
ORP	—
Time	—

Remarks: Sampled by North Stream bank Spring From under north Retaining wall

Constituents Sampled: See COC | Sampling Personnel: KB

ARCADIS

Sediment Sampling Form

Project: Colesville Landfill | Project No.: NY000949.0026 | Page: 1 of 1

Site Location: Colesville, NY | Date: 3/28/13

Site/Well No.: SP-3 @ SP-3C | Replicate No.: —

Weather: Cloudy 40° | Sampling Time: Begin 1535 End 1540

Site Conditions

Water Quality Meter: _____

Location Condition: Some orange staining + build up

Vegetation: None

Depth of Water: 4"

Estimated Flow Rate: —

Collection Method: Direct collection

Field Parameters

Color	Colorless
Odor	None
Appearance	Clear / Trace orange Particles.
pH (s.u.)	6.78
Conductivity (~~mS/cm~~)	192 uS/cm
Temperature (°C)	4.9
DO (mg/L)	—
Turbidity (NTU)	—
ORP	—
Time	—

Remarks: Collected Sample in the Pocket of Flowing water near the Rip-Rap
No Flow at SP-3 - Relocated to SP-3C

Constituents Sampled: See COC | Sampling Personnel: KB

ARCADIS

Surface Water Sampling Form

Project: Colesville Landfill | Project No.: NY000949.0026 | Page: 1 of 1

Site Location: Colesville, NY | Date: 3/28/13

Site/Well No.: SP-4 | Replicate No.: —

Weather: Cloudy 40° | Sampling Time: Begin 1350 End 1355

Site Conditions

Water Quality Meter: Multi 340i

Location Condition: spring from bank orange staining + build up behind Rocks

Vegetation: none

Depth of Water: > 0.5"

Estimated Flow Rate: —

Collection Method: Peristaltic Pump ~~Direct collection~~

Field Parameters

Color	Colorless
Odor	none
Appearance	Clear - w/ trace orange particles
pH (s.u.)	7.02
Conductivity (mS/cm)	496 uS/cm
Temperature (°C)	3.8
DO (mg/L)	—
Turbidity (NTU)	—
ORP	—
Time	—

Remarks: along bank

Constituents Sampled: See COC | Sampling Personnel: KB

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/27/13
Site/Well No.	IW-8	Replicate No.	—	Code No.	
Weather	Cloudy 40°	Sampling Time:	Begin 1550	End	1552

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	1537- 1550
Evacuation Method	Recirculation

Field Parameters

Color	yellow
Odor	Med.
Appearance	Clear
pH (s.u.)	6.65
Conductivity (mS/cm)	1048 us/cm
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	10.4
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	whale pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	—	HCL
Ethene, Ethane, Methane	40 ML Vials	—	Na3PO4
TOC	40 ML Vials	2	H2SO4
TAL Metals	500 ml plastic	—	HNO3

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/28/13
Site/Well No.	IW-3	Replicate No.	—	Code No.	—
Weather	Cloudy 35°	Sampling Time: Begin	1012	End	1015

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	56.05
Depth to Water (ft bmp)	38.75
Water-Level Elevation (ft)	38.75
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	0955 - 1010
Evacuation Method	Recirculation

Field Parameters

Color	Slight gray tint
Odor	Slight odor
Appearance	Clear
pH (s.u.)	6.68
Conductivity (mS/cm)	600 us/cm
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	8.1
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	whale pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	—	HCL
Ethene, Ethane, Methane	40 ML Vials	—	Na3PO4
TOC	40 ML Vials	2	H2SO4
TAL Metals	500 ml plastic	—	HNO3

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0026	Page	1 of 1
Site Location	Colesville, NY			Date	3/28/13
Site/Well No.	IW-13	Replicate No.	—	Code No.	
Weather	Cloudy 35°	Sampling Time:	Begin 1057	End	1058

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	1038 - 1056
Evacuation Method	Recirculation

Field Parameters

Color	yellow tint
Odor	Medium
Appearance	Clear / Tiny particles
pH (s.u.)	6.66
Conductivity (mS/cm)	921 uS/cm
(µmhos/cm)	
Turbidity (NTU)	—
Temperature (°C)	10.3
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	whale pump
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	—	HCL
Ethene, Ethane, Methane	40 ML Vials	—	Na3PO4
TOC	40 ML Vials	2	H2SO4
TAL Metals	500 ml plastic	—	HNO3

Sampling Personnel: KB

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds