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Broome County
Division of Solid Waste Management

Operational Year 8
Quarter Number 2
Monitoring Report

September 2010

ARCADIS

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Operational Year 8
Quarter Number 2
Monitoring Report

Colesville Landfill,
Broome County, New York
NYSDEC Site 704010

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Broome County Division of Solid Waste Management

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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 issued in March 1991 and Explanation of Significant Differences 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), and the Proposed Modifications to the Long Term Monitoring Program (ARCADIS G&M, Inc. 2005) 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 March 2010 groundwater quality monitoring event conducted during Operational Year 8, Quarter Number 2. A description of the operation, maintenance, and monitoring (OM&M) associated with the Groundwater Remediation System from January 2010 through March 2010 has also been provided. 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 remedial system performance monitoring methodology for Operational Year 8, Quarter Number 2. A site plan showing the environmental effectiveness monitoring locations is provided on Figure 1.

2.1 Environmental Effectiveness Monitoring

The environmental effectiveness monitoring performed during Operational Year 8, Quarter Number 2 included the following:

- Water-level (hydraulic) measurements were collected from 25 monitoring wells on March 24, 2010.

- Groundwater samples were collected from six monitoring wells (Year 8, Q2 list of wells plus alternate electron donor test well TW-1) during the week of March 22, 2010. The samples were selectively analyzed for volatile organic compounds (VOCs), dissolved gases, and total organic carbon (TOC). Field parameters were also recorded at these monitoring locations.

- A sample (VOCs only) was collected at the SP-4 surface water location on March 26, 2010.

In accordance with the Proposed Modifications to the Long-Term Monitoring Program (ARCADIS G&M, Inc. 2005), groundwater samples were collected from monitoring wells utilizing passive diffusive bag samplers.

2.2 Groundwater Remediation System Performance Monitoring

Groundwater Remediation System performance monitoring activities during Operational Year 8, Quarter Number 2, were as follows:

- Pump-and-treat (PT) system recovery well influent, combined influent, and effluent samples were collected on March 26, 2010. The samples were selectively analyzed for VOCs and total iron.

- One vapor sample from the PT system air stripper effluent was collected on March 26, 2010. The sample was analyzed for VOCs.

- PT system operating parameters were recorded during the quarterly OM&M site visit.

- TOC samples were collected from select injection wells during the week of March 22, 2010.

- A TOC sample was collected from alternate electron donor monitoring well TW-1 on March 24, 2010.

- Automated reagent injection (ARI) system operating parameters were recorded during each injection event.

PT system groundwater samples were collected as grab samples directly from the individual recovery pipelines connected to recovery wells GMPW-4, GMPW-5, the combined influent water to the low profile air stripper, and the combined effluent after the cartridge filters. A groundwater sample was not collected from recovery well GMPW-3. As discussed in the Operational Year 8, Quarter Number 1 Monitoring Report (ARCADIS of New York, Inc. 2010) the well pump for recovery well GMPW-3 was removed from operation on January 7, 2010 as a result of a faulty intake poppet. As discussed with George Jacob of the USEPA on July 20, 2010, recovery well GMPW-3 will remain off-line until the Focused Feasibility Study (FFS) remedy evaluation is completed, and determination of an alternate groundwater remedy is finalized, if warranted. The effluent air sample was collected as a grab sample directly from the designated point located on the low profile air stripper stack.

2.3 Spring Water Remediation System Performance Monitoring

SP-5 Spring Water Remediation System OM&M was conducted on March 26, 2010. 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. Discharge flow rate and depth to water in the treatment unit were also recorded. 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 24, 2010. The measurements are provided in Table 1. The water level in the project area (i.e., adjacent to the landfill western perimeter) and site-wide in the Operational Year 8, Quarter Number 2 round was consistent with previous rounds. Seasonal fluctuations are observed during each operating quarter; however, the data generally indicate groundwater flow directions consistent with that observed during the Operational Year 7, Quarter Number 4 monitoring event in September 2009.

4. Groundwater Quality

The following sections describe the analytical results for groundwater samples collected during the March 2010 monitoring round (Operational Year 8, Quarter Number 2). Groundwater analytical results are provided in Tables 2 and 3. Where applicable, the previous round of analytical results for the respective sampling location has been provided in the same table for comparative purposes.

4.1 Volatile Organic Compounds

As shown in Table 2, total VOC (TVOC) concentrations in all monitoring wells sampled during the reporting period remained generally consistent when compared to analytical results from the previous round, and with historical rounds of data. Specifically, the TVOC concentration in monitoring wells GMMW-2, GMMW-5, W-5, GMMW-6, and PW-4 were 227.4 micrograms per liter (ug/L), 128.2 ug/L, 112.9 ug/L, 338.2 ug/L, and 54.3 ug/L, respectively. The TVOC concentration in monitoring well TW-1 (111.7 ug/L) decreased when compared to December 2009 data but remained consistent with prior rounds of data. Further discussion of the TW-1 analytical data is provided in Section 7.2.2.

During the current reporting period, the TVOC concentration at recovery wells GMPW-4 and GMPW-5 remained consistent with prior rounds of data. Specifically, TVOC concentrations in recovery wells GMPW-4 and GMPW-5 were 216.0 ug/L, and 0.0 ug/L, respectively. A complete evaluation of performance monitoring conducted on the PT system is provided in Section 7.1.2 of this report.

4.2 Indicators of Reducing Conditions

Groundwater analytical results for biogeochemical parameters and field parameters were collected in accordance with the LTM plan and are provided in Table 3. In summary, field and laboratory groundwater data for Wells TW-1, GMMW-2, GMMW-5, and GMMW-6 indicate that reducing conditions are being maintained within the IRZ. This is evidenced by the presence of reduced forms of alternate electron acceptors (i.e., methane) at a concentration significantly higher than baseline conditions. Further details of the ARI system performance monitoring are provided in Section 7.2.2 of this report.

4.3 Evidence of Biodegradation

Table 3 provides the results of biodegradation end product concentrations in monitoring wells and indicates the continued occurrence of bioactivity and biodegradation of VOCs within the IRZ. Specifically, the concentrations of ethene at monitoring wells GMMW-2 and GMMW-6 continue to be elevated when compared to baseline conditions. Similarly, the concentration of ethane remained elevated at monitoring wells GMMW-5 and GMMW-6 during the reporting period. Additional details on the results of biogeochemical monitoring as evidence of Groundwater Remediation System performance and effectiveness are discussed in Section 7.2.2 of this report.

5. Spring Water Quality

The embankment of the North Stream was inspected for springs during the OM&M site visit on March 26, 2010. Springs were not observed at the SP-2 area, but iron hydroxide staining was observed in the SP-3 area at the base of the heavy stone retaining well. A spring was also observed at the SP-4 area. A spring water sampling event that addresses the EPA recommendations provided in the Third Five-Year Review Report (USEPA 2010) will be conducted in June 2010.

6. Surface Water Quality

Surface water quality analytical results for the Operational Year 8, Quarter Number 2 monitoring round are summarized in Table 2. As shown in Table 2, surface water quality at the SP-4 sampling location remained generally consistent when compared to analytical results from the previous round. Specifically, the TVOC concentration at the SP-4 sampling location was 0.0 ug/L. The data indicate that surface water quality is not being adversely impacted by the landfill.

7. Groundwater Remediation System Performance

The following sections describe the results of the Groundwater Remediation System performance monitoring conducted during Operational Year 8, Quarter Number 2.

7.1 PT System

The following section describes the results of the PT system performance monitoring conducted during Operational Year 8, Quarter Number 2.

7.1.1 Summary of Operation, Maintenance, and Monitoring

During Operational Year 8, Quarter Number 2, the PT system operated continuously with the exception of brief system shutdowns as a result of minor system alarms and routine OM&M activities.

PT system OM&M for Operational Year 8, Quarter Number 2 was conducted during the week of March 22, 2010 and included operation and maintenance of system equipment, the collection of system performance samples (water and vapor), and recording system operating parameters. Table 4 provides a summary of the recorded system operating parameters for the current operating period. As shown in Table 4, the total effluent groundwater recovery rate for Operational Year 8, Quarter Number 2 was approximately 0.49 gallons per minute (gpm), with individual recovery rates of 0.13 gpm and 0.28 gpm in GMPW-4, and GMPW-5, respectively. The average individual recovery well pumping rates during Operational Year 8, Quarter Number 2 were consistent with previous data (i.e., Operational Year 8, Quarter Number 1) but were still slightly lower than baseline (startup) conditions.

A total of 54,613 gallons of groundwater was recovered during Operational Year 8, Quarter Number 2 and a total of 2,027,454 gallons of groundwater has been recovered since system startup. The low profile air stripper operated in accordance with the design specifications and had a blower flow rate of 163 standard cubic feet per minute.

7.1.2 Results of Performance Sampling

PT system performance sampling for Operational Year 8, Quarter Number 2 was conducted on March 26, 2010. As discussed previously, four groundwater samples and one vapor sample were collected. Groundwater samples included collection of individual recovery well samples (GMPW-4 and GMPW-5), total influent, and total effluent after the cartridge filters. The vapor sample was collected from the effluent stack of the low profile air stripper.

Table 5 provides a summary of the PT system performance groundwater sampling analytical results. As shown in Table 5, all groundwater VOCs were treated to below their respective Best Professional Judgment (BPJ) limits via the low profile air stripper. Based on the total groundwater recovered during the reporting period and total influent groundwater concentration, an estimated 0.04 pounds (lbs) of VOC mass were removed from the subsurface during the quarterly reporting period, as shown in Table

6. A total of approximately 3.56 lbs of VOCs have been removed from the subsurface since system startup.

Table 7 provides a summary of the PT system performance vapor sampling analytical results. As shown in Table 7, VOCs were not detected above their respective detection limits. To be conservative, a NYSDEC DAR-1 air model was calculated using the actual analytical data for detected constituents and the detection limit of all constituents that were not detected. All COCs were below their respective short-term guideline concentrations (SGCs) and annual guideline concentrations (AGCs). Appendix B contains the NYSDEC DAR-1 AGC screening simulation based on the hand calculations provided in the NYSDEC DAR-1 AGC/SGC tables dated September 10, 2007.

7.2 ARI System

The following section describes the results of the ARI system performance monitoring conducted during Operational Year 8, Quarter Number 2.

7.2.1 Summary of Operation, Maintenance, and Monitoring

ARI system OM&M was conducted during the Operational Year 8, Quarter Number 2 OM&M site visit during the week of March 22, 2010. The visit included operation and maintenance of system equipment and the collection of samples for analysis of TOC from injection wells IW-3 and IW-13. In addition, a TOC sample was collected from injection well IW-8 and monitoring well TW-1 to evaluate the long-term performance of the alternate electron donor in providing TOC to the subsurface.

One reagent injection was completed during Operational Year 8, Quarter Number 2. The injection was initiated on October 14, 2009 and was completed on February 11, 2010. As described in the Hydraulic Injection Test and Alternate Electron Donor Pilot Test Letter Work Plan (ARCADIS G&M, Inc. 2006), a slow-release alternate electron donor (e.g., emulsified edible oil [EOS]) was injected into existing injection well IW-8 during the week of December 18, 2006. Accordingly, IW-8 was not included in the current reagent injection to allow for long-term groundwater monitoring of the alternate electron donor.

Based on the number of injection events, quantity of molasses solution delivered to each injection well, and molasses solution percentage, approximately 12,829-gallons of molasses solution were delivered to the subsurface during Operational Year 8,

Quarter Number 2. A total of 221,714-gallons of molasses solution have been injected since system startup. Appendix C provides a summary of the recorded system operating parameters for each of the injection events for Operational Year 8, Quarter Number 2.

7.2.2 Results of Performance Sampling

ARI system performance sampling was conducted during the week of March 22, 2010. As discussed previously, this event consisted of collecting TOC samples at two injection wells. In addition, analytical results from select monitoring wells under the environmental effectiveness monitoring program were used to determine the effectiveness of the ARI system. A summary of key observations is as follows:

- The TOC concentrations at injection wells IW-3 and IW-13 were 69.6 mg/L and 379 mg/L, which indicate that sufficient organic carbon is being delivered to the subsurface to maintain the IRZ.

- The TOC in monitoring well TW-1 was 60.0 mg/L. The TOC in injection well IW-8 was 150 mg/L. These data indicate that the slow-release alternate electron donor (EOS^{TM}) continues to provide sufficient organic carbon to the subsurface following the one time injection in injection well IW-8 in December 2006.

- VOC data for monitoring well TW-1 decreased when compared to December 2009 data but remained consistent when compared to historical data (i.e., prior to June 2009). The decrease in TVOCs was primarily caused by a drop in the concentration of toluene. As described in previous reports, ARCADIS believes the presence of toluene is of biogenic production, sorption/desorption of toluene into the EOS^{TM} itself, or suppression of the natural attenuation of existing toluene within the anaerobic treatment zone. However, ARCADIS believes the observed increase in toluene at TW-1 will be transient and the toluene will naturally attenuate and be utilized as an electron donor as it flows along the downgradient flow path out of the anaerobic reactive zone. The current declining trend of toluene corroborates these assumptions. ARCADIS will continue to monitor its presence and confirm that toluene is degrading. The data indicate a stable to decreasing trend in the concentration of VOCs in the vicinity of the alternate electron donor pilot test.

- Monitoring wells in close proximity to the anaerobic IRZ (i.e., GMMW-5, W-5, GMMW-6 and GMMW-2) exhibited stable VOC concentrations and remain significantly lower than baseline conditions.

- The methane concentration in monitoring wells GMMW-5 and TW-1 remained elevated at 9,700 ug/L and 13,000 ug/L, respectively.

- The ethene concentration in monitoring wells GMMW-2 and GMMW-6 remained elevated at 11,000 nanograms per liter (ng/L) and 34,000 ng/L, respectively.

- The ethane concentration remained elevated in monitoring wells GMMW-5 and GMMW-6 at 47,000 ng/L and 14,000 ng/L, respectively.

8. Spring Water Remediation System Performance

SP-5 Spring Water Remediation System OM&M was conducted on March 26, 2010 in accordance with the LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS G&M, Inc. 2003). SP-5 remediation system analytical results are provided in Table 8. As shown in Table 8, all effluent COCs were treated to below their respective BPJ limits via the LPGAC. Influent TVOC analytical data (69.2 ug/L) remained consistent with historical analytical data. Table 9 provides the SP-5 Spring Water Remediation System field parameters recorded during Operational Year 8, Quarter Number 2. As shown in Table 9, the SP-5 remedial system treated approximately 244,124 gallons of spring water during the operating period. An estimated 0.13 lbs of VOCs was removed by the SP-5 remedial system during the same period. An estimated 1,996,364 gallons of spring water have been treated and an estimated 1.3 lbs of VOC mass have been recovered since system startup.

9. Conclusions

Based on the data obtained from the Operational Year 8, Quarter Number 2 monitoring, ARCADIS concludes the following:

- The anaerobic IRZ established downgradient of the injection transect is successfully reducing the concentration of site-related VOCs through enhanced reductive dechlorination.

- The PT system is operating as designed and is treating VOCs in the recovered groundwater to below BPJ limits prior to discharge.

- Sufficient organic carbon was available in the subsurface to maintain the IRZ.

- Surface water quality continues to be consistent with historical data indicating that groundwater is being remediated and is not causing an adverse impact to surface water along the North Stream.

- Ongoing TOC data from the alternate electron donor pilot test indicate the EOS® is an effective product to provide sufficient organic carbon to the subsurface over long periods of time. VOC data from monitoring well TW-1 continues to indicate stable to decreasing VOCs in the alternate electron donor pilot test area.

- SP-5 remediation system operating parameters are consistent with historical operation and indicate that the maintenance activities completed in September 2008 and discussed in the Operational Year 7 Annual Monitoring Report (ARCADIS of New York, Inc. 2009) were successful in mitigating the presence of tailwater.

10. Recommendations

The following recommendations are made for Operational Year 8, Quarter Number 3 activities:

- Continue to inspect the former spring locations and the embankment of the North Stream. Conduct a spring water and surface water sampling event in June 2010.

- Continue to operate the ARI system without injection well IW-8. Continue to obtain and evaluate data related to the ongoing slow-release alternate electron donor pilot program. If data are favorable, consider transitioning to a slower release alternate electron donor such as EOS™ on a full-scale basis. Likewise, consider the evaluation and/or use of more economical slow release electron donors such as cheese whey.

- Continue to monitor the concentration of toluene at monitoring well TW-1. In addition, monitor the concentration of toluene at monitoring well W-5 to confirm that it is biodegrading along the downgradient flow path.

- Continue to operate the P&T system without recovery well GMPW-3. Recovery well GMPW-3 will remain off-line until the FFS remedy evaluation is completed, and determination of an alternate groundwater remedy is finalized, if warranted.

- Conduct an evaluation of the treatment system air stripper effluent vapor stream monitoring program and recommend a modification to the sampling schedule, if warranted.

11. Project Schedule

Groundwater environmental effectiveness monitoring is scheduled to be conducted for Operational Year 8 on the quarterly schedule set forth in the Proposed Modifications to Long-Term Monitoring Program (ARCADIS G&M, Inc. 2005). System OM&M of the Groundwater Remediation System will continue to be performed on a quarterly basis consistent with the LTM Plan.

12. 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.

ARCADIS G&M, Inc. 2005 Proposed Modifications to Long-Term Monitoring Program, Broome County, New York, NYSDEC Site 704010. June 28, 2005.

ARCADIS G&M, Inc. 2006. Hydraulic Injection Test and Alternate Electron Donor Pilot Test, Colesville Landfill, Broome County, New York (Site No. 704010). November 30, 2006.

ARCADIS of New York, Inc. 2009. Operational Year 7 Annual Monitoring Report, Colesville Landfill, Broome County, New York (Site No. 704010). April 30, 2009.

ARCADIS of New York, Inc. 2010. Operational Year 8 Quarter Number 1 Monitoring Report, Colesville Landfill, Broome County, New York (Site No. 704010). June 15, 2010.

United States Environmental Protection Agency (USEPA) 2010. Third Five-Year Review Report, Colesville Municipal Landfill Superfund Site, Broome County, Town of Colesville, New York. April 5, 2010.

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Table 1. Water-Level Measurements Collected During Opertational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Well Identification	MP Elevation (feet above msl)	3/24/2010 Depth to Water (feet below MP)	3/24/2010 Water-Table Elevation (feet above msl)	MP Description
GMMW-2	1,030.95	37.08	993.87	Inner casing
GMMW-3	1,028.02	34.38	993.64	Inner casing
GMMW-4	1,042.90	45.70	997.20	Inner casing
GMMW-5	1,043.66	49.04	994.62	Inner casing
GMMW-6	1,033.56	38.92	994.64	Inner casing
GMMW-7	1,045.43	47.72	997.71	Inner casing
PW-1	976.23	14.60	961.63	Inner casing
PW-2	975.28	5.75	969.53	Inner casing
PW-3	988.92	11.81	977.11	Inner casing
PW-4	1,001.75	17.06	984.69	Inner casing
PW-5	986.12	0.20	985.92	Inner casing
W-6	1,050.38	50.56	999.82	Inner casing
PW-7	1,042.47	40.43	1,002.04	Inner casing
W-7	1,049.12	43.31	1,005.81	Inner casing
PW-11	1,052.37	52.90	999.47	Inner casing
PW-13	1,072.41	62.45	1,009.96	Inner casing
W-13	1,053.43	47.70	1,005.73	Inner casing
W-14S	957.68	6.74	950.94	Inner casing
W-16S	990.33	9.15	981.18	Outer casing
W-17S	959.13	9.08	950.05	Inner casing
W-18	973.56	11.19	962.37	Inner casing
W-20S	952.88	7.23	945.65	Inner casing

msl Mean sea level.
MP Measuring point.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	GMMW-02 12/22/2009	GMMW-02 3/25/2010	GMMW-05 12/22/2009	GMMW-05 3/24/2010	GMMW-05* 3/24/2010	GMMW-06 12/22/2009	GMMW-06 3/25/2010
1,1,1,2-Tetrachloroethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,1,2,2-Tetrachloroethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,1,1-Trichloroethane		**5.9 J**	**4.2 J**	<5.0	<5.0	<5.0	**1.6 J**	<5.0
1,1,2-Trichloroethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,2,3-Trichlorobenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,2,3-Trichloropropane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,2,4-Trichlorobenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,2,4-Trimethylbenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,3,5-Trimethylbenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,2-Dibromo-3-chloropropane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,1-Dichloroethane		**110 J**	**92**	**66**	**41**	**40**	**150 J**	**140**
1,1-Dichloroethene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,1-Dichloropropene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,2-Dibromoethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,2-Dichlorobenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,2-Dichloroethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,2-Dichloropropane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,3-Dichlorobenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,3-Dichloropropane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
1,4-Dichlorobenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
2-Chlorotoluene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
2,2-Dichloropropane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0 J
4-Chlorotoluene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Benzene		**2.6 J**	**3.3 J**	**1.4 J**	**1.8 J**	**1.7 J**	**3.9 J**	**5.5**
Bromobenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Bromochloromethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Bromodichloromethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Bromoform		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Bromomethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
n-Butylbenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Carbon Tetrachloride		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Chlorobenzene		**30**	**26**	**14**	**12**	**11**	**24**	**25**
Chloroethane		**1.0**	**19**	**79**	**71**	**67**	**99**	**150**
Chloroform		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Chloromethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
cis-1,2-Dichloroethene		**67**	**55**	**1.3 J**	**1.5 J**	**1.5 J**	**8.8 J**	**3.0 J**
cis-1,3-Dichloropropene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Dibromochloromethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Dibromomethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Dichlorodifluoromethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Ethylbenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	**1.2 J**
Hexachlorobutadiene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Isopropylbenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
p-Isopropyltoluene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Methylene chloride		**1.7 J**	<5.0	**1.8 J**	<5.0 B	<5.0 B	**4.4 J**	<5.3 B
Methyl tert-butyl ether		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Naphthalene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
o-Xylene		<10	<5.0	<5.0	<5.0	<5.0	<10	**0.85 J**
m,p-Xylene		<10	<5.0	<5.0	<5.0	<5.0	<10	**2.5 J**

See notes on next page.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	GMMW-02 12/22/2009	GMMW-02 3/25/2010	GMMW-05 12/22/2009	GMMW-05 3/24/2010	GMMW-05* 3/24/2010	GMMW-06 12/22/2009	GMMW-06 3/25/2010
n-Propylbenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
sec-Butylbenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Styrene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
tert-Butylbenzene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
trans-1,3-Dichloropropene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Trichlorofluoromethane		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Tetrachloroethene		<10	<5.0	<5.0	<5.0	<5.0	<10	<5.0
Toluene		<10	<5.0	**0.92 J**	**0.91 J**	**0.86 J**	<10	**2.8 J**
trans-1,2-Dichloroethene		<10	<5.0	<5.0	<5.0	<5.0	<10	**1.1 J**
Trichloroethene		**20**	**19**	<5.0	<5.0	<5.0	**9.8 J**	**3.2 J**
Vinyl chloride		**10**	**8.9**	<5.0	<5.0	<5.0	**6.8 J**	**3.0 J**
Total VOCs		**248.2 J**	**227.4 J**	**164.4 J**	**128.2 J**	**122.1 J**	**308.3 J**	**338.2 J**

Bold constituent detected above method detection limit.

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
*	Field replicate.
J	Estimated value.
B	Compound considered non-detect at the listed value due to associated blank contamination.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	PW-04 12/22/2009	PW-04 3/25/2010	W-05 12/22/2009	W-05 3/25/2010	TW-1 12/22/2009	TW-1 3/24/2010
1,1,1,2-Tetrachloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane		**9.9**	**6.8**	<5.0	**3.6 J**	<5.0	<5.0
1,1,2-Trichloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trimethylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,3,5-Trimethylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromo-3-chloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane		**17**	**11**	**53**	**41**	**5.7**	**4.0 J**
1,1-Dichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloropropene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane		<5.0	<5.0	**0.71 J**	<5.0	<5.0	<5.0
1,3-Dichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Chlorotoluene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2,2-Dichloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Chlorotoluene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene		<5.0	<5.0	**5.5**	**1.1 J**	**2.5 J**	**2.4 J**
Bromobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromochloromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
n-Butylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon Tetrachloride		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene		<5.0	<5.0	**6.4**	<5.0	**9.5**	**6.7**
Chloroethane		**3.1 J**	**2.6 J**	**100**	**33**	**99**	**92**
Chloroform		**1.1 J**	**0.90 J**	<5.0	<5.0	<5.0	<5.0
Chloromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene		**20**	**13**	**2.6 J**	**15**	**1.8 J**	**2.1 J**
cis-1,3-Dichloropropene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromomethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Hexachlorobutadiene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Isopropylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
p-Isopropyltoluene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene chloride		<5.0	<5.0	**2.4 J**	<5.0 B	<5.0	<5.0
Methyl tert-butyl ether		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
o-Xylene		<5.0	<5.0	**1.5 J**	<5.0	**0.92 J**	<5.0
m,p-Xylene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

See notes on next page.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	PW-04 12/22/2009	PW-04 3/25/2010	W-05 12/22/2009	W-05 3/25/2010	TW-1 12/22/2009	TW-1 3/24/2010
n-Propylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
sec-Butylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Styrene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tert-Butylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene		<5.0	<5.0	<5.0	<5.0	**42**	**3.5 J**
trans-1,2-Dichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene		**25**	**20**	**1.4 J**	**17**	<5.0	<5.0
Vinyl chloride		<5.0	<5.0	<5.0	**2.2 J**	**1.2 J**	**1.0 J**
Total VOCs		**76.1 J**	**54.3 J**	**173.5 J**	**112.9 J**	**162.6 J**	**111.7 J**

Bold constituent detected above method detection limit.

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
*	Field replicate.
J	Estimated value.
B	Compound considered non-detect at the listed value due to associated blank contamination.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	SP-4 12/23/2009	SP-4 3/26/2010	F-6 12/23/2009	TBV032410 3/24/2010	TBV032510 3/25/2010	FBV032510 3/25/2010
1,1,1,2-Tetrachloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trimethylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,3,5-Trimethylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromo-3-chloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloropropene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Chlorotoluene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2,2-Dichloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Chlorotoluene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromochloromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
n-Butylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon Tetrachloride		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromomethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Hexachlorobutadiene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Isopropylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
p-Isopropyltoluene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene chloride		<5.0	<5.0	<5.0	**1.1 J**	**1.2 J**	<5.0
Methyl tert-butyl ether		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
o-Xylene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
m,p-Xylene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

See notes on next page.

Table 2. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	SP-4 12/23/2009	SP-4 3/26/2010	F-6 12/23/2009	TBV032410 3/24/2010	TBV032510 3/25/2010	FBV032510 3/25/2010
n-Propylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
sec-Butylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Styrene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
tert-Butylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl chloride		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total VOCs		**0.00**	**0.00**	**0.00**	**1.1 J**	**1.2 J**	**0.00**

Bold constituent detected above method detection limit.

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
*	Field replicate.
J	Estimated value.
B	Compound considered non-detect at the listed value due to associated blank contamination.

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Table 3. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: / Date:	GMMW-02 12/22/09	GMMW-02 03/25/10	GMMW-05 12/22/09	GMMW-05 03/24/10	GMMW-06 12/22/09	GMMW-06 03/25/10
	Units						
GENERAL CHEMISTRY							
Total Organic Carbon	mg/L	**1.3**	**1.6**	**6.5**	**7.5**	**2.4**	**4.9**
FIELD PARAMETERS							
pH	Standard units	**6.51**	**6.32**	**6.09**	**6.12**	**6.22**	**6.21**
Specific Conductance	mmhos/cm	**0.659**	**0.579**	**0.434**	**0.323**	**0.818**	**0.947**
Turbidity	NTU	--	--	--	--	--	
Dissolved Oxygen	mg/L	--	--	--	--	--	--
Temperature	deg C	**7.60**	**10.2**	**7.30**	**11.7**	**6.90**	**10.9**
ORP	mV	--	--	--	--	--	--
DISSOLVED GASES							
Carbon dioxide	mg/L	--	--	--	--	--	--
Carbon monoxide	mg/L	--	--	--	--	--	--
Ethane	ng/L	**810**	**960**	**39,000**	**47,000**	**9,000**	**14,000**
Ethene	ng/L	**12,000**	**11,000**	**1,300**	**710**	**40,000**	**34,000**
Methane	ug/L	**8,900**	**9,200**	**9,600**	**9,700**	**3,600**	**4,500**
Nitrogen	mg/L	--	--	--	--	--	--
Oxygen	mg/L	--	--	--	--	--	--

Bold constituent detected above method detection limit.

mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
NTU	Nephelometric Turbidity Units.
deg C	Degrees Celsius.
mV	Millivolts.
ng/L	Nanograms per liter.
--	Not analyzed or collected.
ug/L	Micrograms per liter.
IW	Injection well.
ORP	Oxidation-reduction potential.
J	Estimated value.

ARCADIS

Table 3. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: / Date:	PW-04 12/22/09	PW-04 03/25/10	W-05 12/22/09	W-05 03/25/10	IW-03 12/23/09	IW-03 03/25/10
	Units						
GENERAL CHEMISTRY							
Total Organic Carbon	mg/L	<1.0	<1.0	**6.2**	**7.1**	**43.8**	**69.6**
FIELD PARAMETERS							
pH	Standard units	**5.24**	**5.42**	**6.18**	**6.04**	**6.24**	**5.82**
Specific Conductance	mmhos/cm	**2.28**	**1.79**	**0.920**	**0.855**	**0.593**	**0.543**
Turbidity	NTU	--		--	--	--	--
Dissolved Oxygen	mg/L	--	--	--	--	--	--
Temperature	deg C	**8.20**	**9.48**	**7.80**	**10.4**	**7.10**	**9.74**
ORP	mV	--	--	--	--	--	--
DISSOLVED GASES							
Carbon dioxide	mg/L	--	--	--	--	--	--
Carbon monoxide	mg/L	--	--	--	--	--	--
Ethane	ng/L	**8.0 J**	**20 J**	**16,000**	**860**	--	--
Ethene	ng/L	<25	**120**	**1,200**	**2,700**	--	--
Methane	ug/L	**1.2**	**22**	**11,000**	**650**	--	--
Nitrogen	mg/L	--	--	--	--	--	--
Oxygen	mg/L	--	--	--	--	--	--

Bold constituent detected above method detection limit.

mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
NTU	Nephelometric Turbidity Units.
deg C	Degrees Celsius.
mV	Millivolts.
ng/L	Nanograms per liter.
--	Not analyzed or collected.
ug/L	Micrograms per liter.
IW	Injection well.
ORP	Oxidation-reduction potential.
J	Estimated value.

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Table 3. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: / Date:	IW-08 12/23/09	IW-08 03/25/10	IW-13 12/23/09	IW-13 03/25/10	TW-1 12/22/09	TW-1 03/24/10
	Units						
GENERAL CHEMISTRY							
Total Organic Carbon	mg/L	**308**	**150**	**1,910**	**379**	**55.1**	**60.0**
FIELD PARAMETERS							
pH	Standard units	**6.16**	**6.06**	**4.59**	**5.31**	**6.35**	**6.35**
Specific Conductance	mmhos/cm	**1.72**	**1.41**	**0.320**	**0.835**	**1.18**	**0.577**
Turbidity	NTU	--	--	--	--	--	--
Dissolved Oxygen	mg/L	--	--	--	--	--	--
Temperature	deg C	**5.50**	**9.98**	**7.40**	**11.4**	**7.10**	**10.9**
ORP	mV	--	--	--	--	--	--
DISSOLVED GASES							
Carbon dioxide	mg/L	--	--	--	--	--	--
Carbon monoxide	mg/L	--	--	--	--	--	--
Ethane	ng/L	--	--	--	--	**3,600**	**3,000**
Ethene	ng/L	--	--	--	--	**640**	**410**
Methane	ug/L	--	--	--	--	**15,000**	**13,000**
Nitrogen	mg/L	--	--	--	--	--	--
Oxygen	mg/L	--	--	--	--	--	--

Bold constituent detected above method detection limit.

mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
NTU	Nephelometric Turbidity Units.
deg C	Degrees Celsius.
mV	Millivolts.
ng/L	Nanograms per liter.
--	Not analyzed or collected.
ug/L	Micrograms per liter.
IW	Injection well.
ORP	Oxidation-reduction potential.
J	Estimated value.

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Table 4. Pump and Treat System Operating Parameters, Operational Year 8, Quarter Number 2, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Date	Time Recorded	Air Stripper Measurements: Blower Discharge Pressure PI-301 (i.w.c.)	Air Stripper Measurements: Blower Effluent Flowrate (scfm)	Flow Measurements: Total[1] Effluent Totalizer FQI-401 (gallons)	Flow Measurements: Water Bypass[2] Totalizer FQI-402 (gallons)	Flow Measurements: GMPW-3[3,5] Totalizer FQI-101 (gallons)	Flow Measurements: GMPW-4[4] Totalizer FQI-102 (gallons)	Flow Measurements: GMPW-5[4] Totalizer FQI-103 (gallons)
1/7/2010	2:04 PM	8.4	183	797,011.2	247,553.8	51,739.1	127,497.3	182,515.9
3/26/2010	12:11 PM	9.5	163	851,624.2	275,487.9	51,739.1	142,156.8	213,430.6
		Average Daily Flowrate (gpm) =		**0.49**	**0.25**	**0.00**	**0.13**	**0.28**
		Total Groundwater Recovered During Reporting Period (gallons) =		**54,613**	**27,934**	**0**	**14,660**	**30,915**

Notes:

1. Total effluent totalizer replaced on December 23, 2005.
2. Water bypass totalizer damaged as a result of freezing in February, 2007. Totalizer replaced on June 25, 2008.
3. GMPW-3 well totalizer replaced on October 7, 2009.
4. GMPW-4 and GMPW-5 well totalizers replaced on June 26, 2008.
5. GMPW-3 well pump was removed from operation on January 7, 2010 as a result of a faulty intake poppet.

gpm Gallons per minute.
i.w.c. Inches of water column.
scfm Standard cubic feet per minute.

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Table 5. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the Pump and Treat System, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York[1].

Constituents (units in ug/L)	Model Technology BPJ Limits[2,3]	Sample ID: Date:	GMPW-3 INF[6] --	GMPW-4 INF 3/26/2010	GMPW-5 INF 3/26/2010	COMBINED INF 3/26/2010	COMBINED EFF 3/26/2010
1,1,1,2-Tetrachloroethane	NA		--	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane	NA		--	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane	10-20		--	**7.6**	<5.0	**4.0 J**	<5.0
1,1,2-Trichloroethane	10		--	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene	NA		--	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichloropropane	NA		--	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene	NA		--	<5.0	<5.0	<5.0	<5.0
1,2,4-Trimethylbenzene	NA		--	<5.0	<5.0	<5.0	<5.0
1,3,5-Trimethylbenzene	NA		--	<5.0	<5.0	<5.0	<5.0
1,2-Dibromo-3-chloropropane	NA		--	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	10		--	**63**	<5.0	**30**	<5.0
1,1-Dichloroethene	10		--	**0.84 J**	<5.0	<5.0	<5.0
1,1-Dichloropropene	NA		--	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane	NA		--	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	NA		--	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	10-30		--	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	NA		--	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	NA		--	<5.0	<5.0	<5.0	<5.0
1,3-Dichloropropane	NA		--	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	NA		--	<5.0	<5.0	<5.0	<5.0
2-Chlorotoluene	NA		--	<5.0	<5.0	<5.0	<5.0
2,2-Dichloropropane	NA		--	<5.0	<5.0	<5.0	<5.0
4-Chlorotoluene	NA		--	<5.0	<5.0	<5.0	<5.0
Benzene	5		--	**3.2 J**	<5.0	**1.5 J**	<5.0
Bromobenzene	NA		--	<5.0	<5.0	<5.0	<5.0
Bromochloromethane	NA		--	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	NA		--	<5.0	<5.0	<5.0	<5.0
Bromoform	NA		--	<5.0	<5.0	<5.0	<5.0
Bromomethane	NA		--	<5.0	<5.0	<5.0	<5.0
n-Butylbenzene	NA		--	<5.0	<5.0	<5.0	<5.0
Carbon Tetrachloride	10		--	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	NA		--	**11**	<5.0	**4.9 J**	<5.0
Chloroethane	NA		--	**35**	<5.0	**18**	<5.0

See notes on last page.

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Table 5. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the Pump and Treat System, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York[1].

Constituents (units in ug/L)	Model Technology BPJ Limits[2,3]	Sample ID: Date:	GMPW-3 INF[6] --	GMPW-4 INF 3/26/2010	GMPW-5 INF 3/26/2010	COMBINED INF 3/26/2010	COMBINED EFF 3/26/2010
Chloroform	NA		--	<5.0	<5.0	<5.0	<5.0
Chloromethane	10		--	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	10		--	**38**	<5.0	**17**	<5.0
cis-1,3-Dichloropropene	NA		--	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane	NA		--	<5.0	<5.0	<5.0	<5.0
Dibromomethane	NA		--	<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane	NA		--	**2.1 J**	<5.0	<5.0	<5.0
Ethylbenzene	5		--	<5.0	<5.0	<5.0	<5.0
Hexachlorobutadiene	NA		--	<5.0	<5.0	<5.0	<5.0
Isopropylbenzene	NA		--	<5.0	<5.0	<5.0	<5.0
p-Isopropyltoluene	NA		--	<5.0	<5.0	<5.0	<5.0
Methylene Chloride	10-50		--	<5.0 B	<5.0	<5.0	<5.0
Methyl tert-butyl ether	50		--	<5.0	<5.0	<5.0	<5.0
Naphthalene	NA		--	<5.0	<5.0	<5.0	<5.0
o-Xylene	5		--	<5.0	<5.0	<5.0	<5.0
m,p-Xylene	5		--	<5.0	<5.0	<5.0	<5.0
n-Propylbenzene	NA		--	<5.0	<5.0	<5.0	<5.0
sec-Butylbenzene	NA		--	<5.0	<5.0	<5.0	<5.0
Styrene	NA		--	<5.0	<5.0	<5.0	<5.0
tert-Butylbenzene	NA		--	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	NA		--	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	10		--	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	10		--	<5.0	<5.0	<5.0	<5.0
Toluene	5		--	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	10-50		--	<5.0	<5.0	<5.0	<5.0
Trichloroethene	10		--	**47**	<5.0	**23**	<5.0
Vinyl Chloride	10-50		--	**8.3**	<5.0	**4.1 J**	<5.0
Total VOCs			--	**216.0 J**	**0.00**	**102.5 J**	**0.00**
Metals (units in mg/L)	Model Technology BPJ Limits[4,5] (mg/L)						
Total Iron	1.2 / 0.61		--	**1.67**	**0.439**	**20.2**	**0.126 J**

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Table 5. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the Pump and Treat System, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York[1].

Notes:

1. Production wells were sampled in accordance with the schedule set forth in Table 3 of the Long-Term Monitoring Plan (ARCADIS 2002).
2. Model Technology Best Professional Judgment (BPJ) Limits recommended for Air Stripping with appropriate pretreatment from Attachment C of TOGS 1.2.1.
3. 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.
4. Model Technology BPJ Limits recommended for Lime, Settle and Filter treatment.
5. The recommended daily maximum permit limit is 1.2 mg/L and the recommended daily average permit limit is 0.61 mg/L.
6. GMPW-3 well pump was removed from operation on January 7, 2010 as a result of a faulty intake poppet. Therefore, a sample was not collected at this sample location during the March 2010 sampling event.

Bold constituent detected above method detection limit.

NA	No BPJ limit listed.
J	Estimated value.
ug/L	Micrograms per liter.
mg/L	Milligrams per liter.
VOCs	Volatile organic compounds.
B	Compound considered non-detect at the listed value due to associated blank contamination.
--	Not analyzed or collected.

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Table 6. Pump and Treat System Mass Removal Rate of Volatile Organic Compounds, Operational Year 8, Quarter Number 2, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Date Sampled	Total VOC Influent Concentration (ug/L)	Total Effluent Totalizer FQI-401 (gal)	Total Groundwater Recovered[1] Between Sampling Intervals (gal)	Influent Concentration[2] Geometric Mean (ug/L)	Total Estimated Mass[3] Removed (lbs)
1/7/2010	62.2	797,011	NA	NA	NA
3/26/2010	102.5	851,624	54,613	79.8	0.04
				Total Estimated Mass Removed During Operational Year 8, Quarter Number 2 (lbs) =	**0.04**
				Total Estimated Mass Removed During Operational Year 8 (lbs) =	**0.07**
				Total Estimated Mass Removed Since System Startup (lbs) =	**3.56**

Notes:

1. Total Groundwater Recovered Between Sampling Intervals = Well Totalizer Reading for current sampling event - Well Totalizer Reading for prior sampling event.
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 Recovered Between Sampling Intervals) x Influent Concentration Geometric Mean x 3.7854 L/gallon x (1 lb / 453,592,370 ug).

NA Not applicable.
ug/L Micrograms per liter.
gal Gallons.
lbs Pounds.
VOC Volatile organic compound.

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Table 7. Concentrations of Volatile Organic Compounds Detected in Air Stripper Effluent, Operational Year 8, Quarter Number 2, Groundwater Remediation System, Colesville Landfill, Broome County, New York[1].

Compounds (units in ppbv)	CAS Numbers	Sample ID: / Date Sampled:	Effluent 3/26/2010
1,1,2,2-Tetrachloroethane	108-38-3		<7.2
1,1,1-Trichloroethane (Methyl Chloroform)	71-55-6		<7.2
1,1,2-Trichloroethane	79-00-5		<7.2
1,2,4-Trimethylbenzene	95-63-6		<7.2
1,3,5-Trimethylbenzene	108-67-8		<7.2
1,1-Dichloroethane	75-34-3		<7.2
1,1-Dichloroethene (Vinylidene Chloride)	75-35-4		<7.2
1,2-Dibromoethane	106-93-4		<7.2
1,2 - Dichlorobenzene	95-50-1		<7.2
1,2-Dichloroethane	107-06-2		<7.2
1,2-Dichloropropane	78-87-5		<7.2
1,3-Dichlorobenzene	541-73-1		<7.2
1,4-Dichlorobenzene	106-46-7		<7.2
2-Propanol (Isopropyl alcohol)	67-63-0		<29
Benzene	71-43-2		<7.2
Bromomethane	74-83-9		<7.2
Carbon Tetrachloride	56-23-5		<7.2
Chlorobenzene	108-90-7		<7.2
Chloroethane (Ethyl Chloride)	75-00-3		<7.2
Chloromethane	74-87-3		<29
Chloroform	67-66-3		<7.2
cis-1,2-Dichloroethylene	156-59-2		<7.2
Dichlorodifluoromethane (Freon 12)	75-71-8		<7.2
Ethyl benzene	100-41-4		<7.2
Freon 113	76-13-1		<7.2
Freon 114	76-14-2		<7.2
Methylene Chloride (Dichloromethane)	75-09-2		<7.2
Methyl tert-butyl ether	1634-04-4		<7.2
o-Xylene	95-47-6		<7.2
m,p-Xylene	108-38-3/106-42-3		<7.2
Tetrachloroethene	127-18-4		<7.2
Toluene	108-88-3		<7.2
trans-1,2-dichloroethylene	156-60-5		<7.2
Trichloroethene	79-01-6		<7.2
Trichlorofluoromethane	75-69-4		<7.2
Vinyl Chloride	75-01-4		<7.2

Notes:

1. Samples collected by ARCADIS personnel on the dates shown and submitted to Air Toxics Laboratories LTD. for volatile organic compound (VOC) analyses using a modified United States Environmental Protection Agency Method TO-14A.

Bold Constituent detected above MDL.
ppbv: parts per billion by volume

Table 8. Concentrations of Volatile Organic Compounds Detected in Aqueous Samples Collected from the SP-5 Spring Water Remediation System, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Model Technology BPJ Limits[1,2]	Sample ID: Date:	SP-5 INF. 3/26/2010	SP-5 EFF. 3/26/2010
VOCs				
1,1,1,2-Tetrachloroethane	NA		<5.0	<5.0
1,1,2,2-Tetrachloroethane	50		<5.0	<5.0
1,1,1-Trichloroethane	10		<5.0	<5.0
1,1,2-Trichloroethane	100		<5.0	<5.0
1,2,3-Trichlorobenzene	NA		<5.0	<5.0
1,2,3-Trichloropropane	NA		<5.0	<5.0
1,2,4-Trichlorobenzene	10		<5.0	<5.0
1,2,4-Trimethylbenzene	NA		<5.0	<5.0
1,3,5-Trimethylbenzene	NA		<5.0	<5.0
1,2-Dibromo-3-chloropropane	NA		<5.0	<5.0
1,1-Dichloroethane	10		**18**	**2.3 J**
1,1-Dichloroethene	10-100		<5.0	<5.0
1,1-Dichloropropene	NA		<5.0	<5.0
1,2-Dibromoethane	NA		<5.0	<5.0
1,2-Dichlorobenzene	10-50		<5.0	<5.0
1,2-Dichloroethane	10-100		<5.0	<5.0
1,2-Dichloropropane	10		<5.0	<5.0
1,3-Dichlorobenzene	10		<5.0	<5.0
1,3-Dichloropropane	NA		<5.0	<5.0
1,4-Dichlorobenzene	10		<5.0	<5.0
2-Chlorotoluene	10		<5.0	<5.0
2,2-Dichloropropane	NA		<5.0	<5.0
4-Chlorotoluene	10		<5.0	<5.0
Benzene	5		**1.7 J**	<5.0
Bromobenzene	NA		<5.0	<5.0
Bromochloromethane	NA		<5.0	<5.0
Bromodichloromethane	NA		<5.0	<5.0
Bromoform	50		<5.0	<5.0
Bromomethane	10		<5.0	<5.0
n-Butylbenzene	NA		<5.0	<5.0
Carbon Tetrachloride	10-50		<5.0	<5.0
Chlorobenzene	10-25		**26**	**1.2 J**
Chloroethane	10		**20**	**5.4**
Chloroform	100		<5.0	<5.0
Chloromethane	10		<5.0	<5.0
cis-1,2-Dichloroethene	10		**1.5 J**	<5.0
cis-1,3-Dichloroethene	NA		<5.0	<5.0
Dibromochloromethane	NA		<5.0	<5.0
Dibromomethane	NA		<5.0	<5.0
Dichlorodifluoromethane	10		<5.0	<5.0
Ethylbenzene	5		<5.0	<5.0
Hexachlorobutadiene	10		<5.0	<5.0
Isopropylbenzene	NA		<5.0	<5.0
p-Isopropyltoluene	NA		<5.0	<5.0
Methylene Chloride	10-100		<5.0	<5.0
Methyl tert-butyl ether	NA		<5.0	<5.0
Naphthalene	10-50		<5.0	<5.0

See notes on last page.

Table 8. Concentrations of Volatile Organic Compounds Detected in Aqueous Samples Collected from the SP-5 Spring Water Remediation System, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Model Technology BPJ Limits[1,2]	Sample ID: Date:	SP-5 INF. 3/26/2010	SP-5 EFF. 3/26/2010
VOCs				
o-Xylene	5		<5.0	<5.0
m&p-Xylenes	5		<5.0	<5.0
n-Propylbenzene	NA		<5.0	<5.0
sec-Butylbenzene	NA		<5.0	<5.0
Styrene	NA		<5.0	<5.0
tert-Butylbenzene	NA		<5.0	<5.0
trans-1,3-Dichloropropene	NA		<5.0	<5.0
Trichlorofluoromethane	10		<5.0	<5.0
Tetrachloroethene	10-50		<5.0	<5.0
Toluene	5		<5.0	<5.0
trans-1,2-Dichloroethene	10-100		<5.0	<5.0
Trichloroethene	10		**2.0 J**	<5.0
Vinyl Chloride	10		<5.0	<5.0
Total VOCs			**69.2 J**	**8.9 J**

Notes:

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.

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

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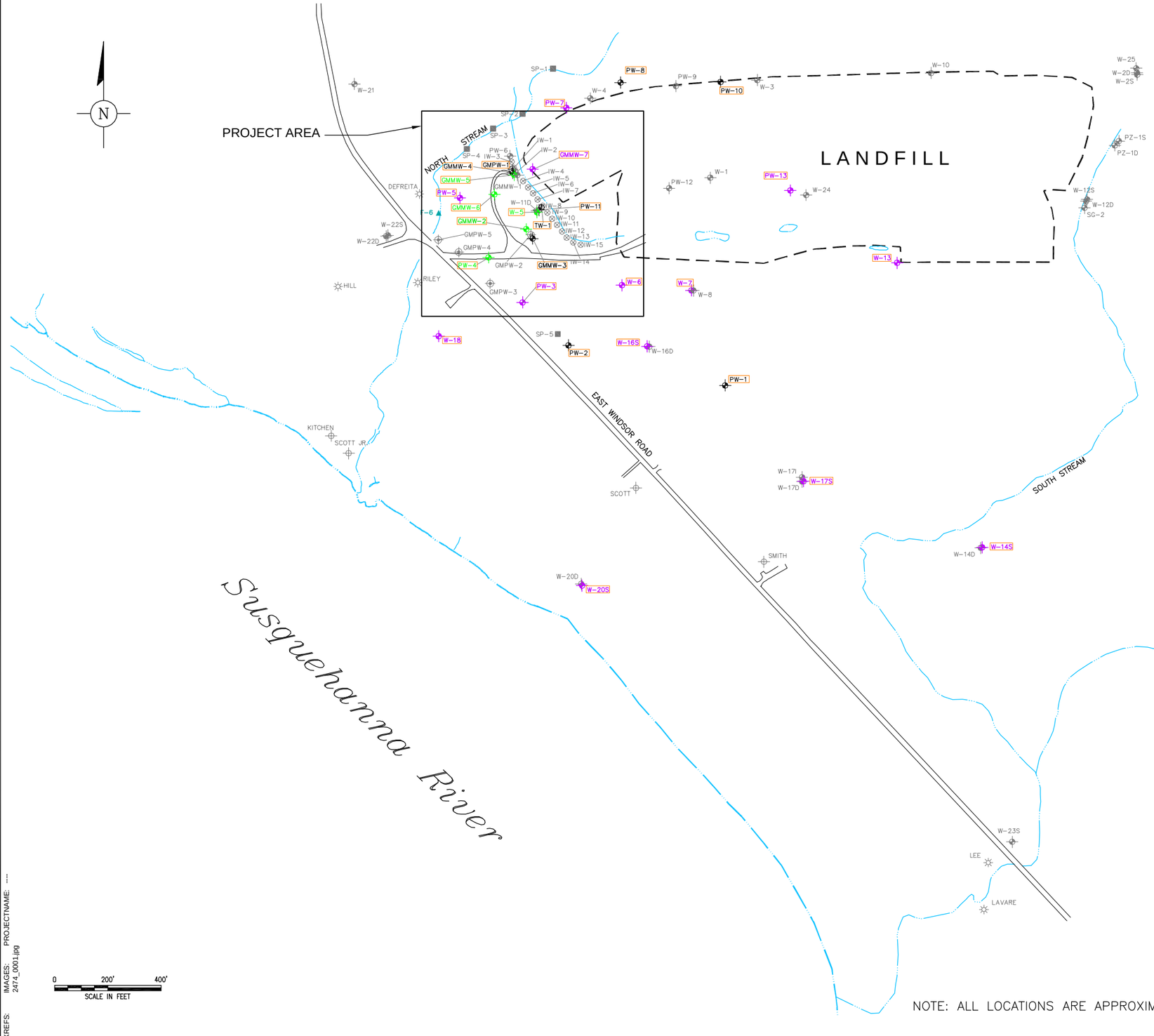
Table 9. Spring Water Remediation System Mass Removal Rate of Volatile Organic Compounds, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Date Sampled	Total VOC Influent Concentration (ug/L)	Effluent Flowrate (gpm)	Depth to Water (feet btc)	Total Groundwater Treated[1] Between Sampling Intervals (gal)	Influent Concentration[2] Geometric Mean (ug/L)	Total Estimated Mass[3] Removed (lbs)
12/22/2009	58.6	1.3	0.00	NA	NA	NA
3/26/2010	69.2	2.5	0.00	244,124	63.7	0.13
					Total Estimated Mass Removed During Current Quarter (lbs) =	**0.13**
					Total Estimated Mass Removed Since System Startup (lbs) =	**1.30**
					Total Effluent Treated Since System Startup (gallons) =	**1,996,364**

Notes:

1. Total Spring Water Treated Between Sampling Intervals = Effluent Flowrate 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/gallon x (1 lb / 453,592,370 ug).

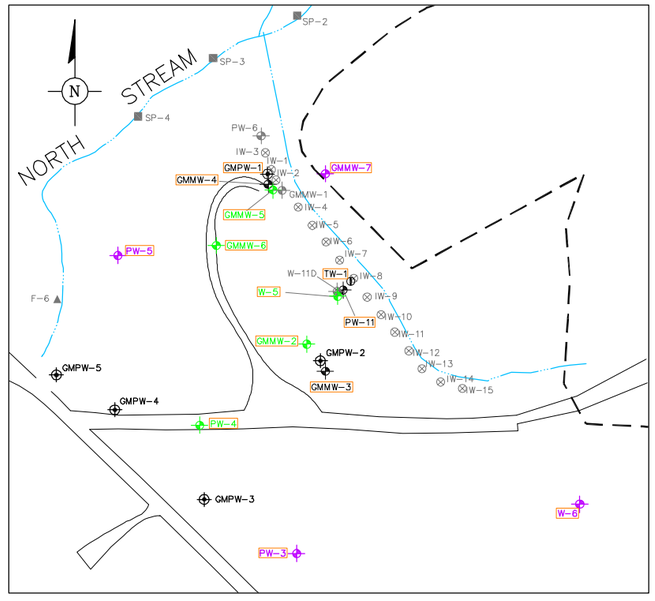
NA	Not applicable.
ug/L	Micrograms per liter.
gpm	Gallons per minute.
btc	Below top of casing.
gal	Gallons.
lbs	Pounds.
VOC	Volatile organic compound.



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

NOTE: ALL LOCATIONS ARE APPROXIMATE

COLESVILLE LANDFILL
COLESVILLE, NEW YORK
MONITORING REPORT

LONG-TERM EFFECTIVENESS MONITORING LOCATIONS

ARCADIS

FIGURE 1

CITY:MELVILLE DIV/GROUP: DB:ALS LD: PIC: PM:SF TM: LYR:ON=*;OFF=*REF*
G:\ENVCAD\Melville-NY\N1000949\network map.dwg LAYOUT: 1SAVED: 6/22/2009 2:09 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: ---PLOTSTYLETABLE: ARCADIS_MELVILLE.CTB PLOTTED: 11/3/2009 11:57 AM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ---
2474_0001.jpg

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Appendix A

Groundwater Sampling Logs

Table 3. Field Measurements of Depth to Water in Select Wells, Colesville Landfill, Broome County, New York.

Date: 3/24/2010

Well Identification		Depth to Water (feet below MP)	Comments
GMMW-2		37.08	
GMMW-3		34.38	
GMMW-4		45.70	
GMMW-5		49.04	
GMMW-6		38.92	orange buildup on Top
GMMW-7		47.72	
PW-1		14.60	
PW-2		5.75	
PW-3		11.81	
PW-4		17.06	
PW-5		0.20	
W-5		—	>46.52
W-6		50.56	
PW-7		40.43	
W-7		43.31	
PW-10		—	obstruction 11.25
PW-11		52.90	
PW-13		62.45	
TW-1		52.01	
W-13		47.70	
W-14S		6.74	
W-16S		9.15	TOC
W-17S		9.08	
W-18		11.19	TOC
W-20S		7.23	

Light snow - Sun
30°F —

0810 — 1035

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/25/10
Site/Well No.	GMMW-2	Replicate No.	—	Code No.	
Weather	Cloudy Breezy 50°	Sampling Time: Begin	1134	End	1142

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	Clear
Odor	none
Appearance	Clear
pH (s.u.)	6.32
Conductivity (mS/cm)	0.579
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	10.21
Dissolved Oxygen (mg/L)	2.19
ORP	-8
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	Na_3PO_4
TOC	40 ML Vials	2	H_2SO_4
Total Iron	250 ml plastic	—	HNO_3

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.: NY000949.0022 | Page: 1 of 1

Site Location: Harpursville NY | Date: 3/24/10

Site/Well No.: GMMW-5 | Replicate No.: REPV 032410

Weather: Sun 50° | Sampling Time: Begin 1135-1149 (PDB) End 1715-1718 (Pump)

Evacuation Data

Measuring Point	Top of PVC
Sounded Well Depth (ft bmp)	70.25
Depth to Water (ft bmp)	49.22
Depth to Packer (ft bmp)	—
Water Column in Well (ft)	21.03
Casing Diameter	2"
Gallons in Well	3.36
Gallons Pumped/Bailed Prior to Sampling	(10.09) 6.40
Sample Pump Intake Setting (ft bmp)	60' - 69.30'
Packer Pressure (psi)	—
Pumping Rate (gpm)	
Evacuation Method	Grundfos Pump
Sampling Method	* Grundfos Pump
Purge Time	Begin 1538 End 1650

1650 - DTW 63.89
1715 - 56.50

Field Parameters

	1	1V	2V (Ran dry @ 3.0 gal.)	3V (After sampling)
Color	Clear			
Odor	Slight			
Appearance	Tiny Black particles			
pH (s.u.)	5.73	6.14	6.12	
Conductivity (mS/cm)	0.401	0.396	0.323	
Conductivity (µmhos/cm)				
Temperature (°C)	11.07	14.16	11.68	
DO (mg/L)	1.62	2.45	2.36	
Turbidity (NTU)	—	—	—	—
Time	—	16:10	—	
DTW (ft bmp)	—	64.60	—	
ORP	-7	-28	-30	

Constituents Sampled	Container Description	Number / Method*	Preservative
8260B VOLATILES	40 ML VOA Vials	3 / 3(Dup) (PDB)	HCL
Ethene, Ethane, Methane	40 ML Vials	2 (PDB)	Na3PO4
TOC	40 ML Vials	2 (Bailer)	H2SO4
Total Iron	250 ml plastic	—	HNO3
Microbial	1 L Plastic	1 grundfos	—

Sampling Personnel: KB

Remarks: * dropped the pump to the bottom during purging pulled the pump up to 60' for sampling

Well Casing Volumes

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

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/25/2010
Site/Well No.	GMMW-16	Replicate No.	MS/MSD	Code No.	
Weather	partly cloudy, 50°	Sampling Time: Begin	11:19	End	1129

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	Clear
Odor	none
Appearance	orange particles
pH (s.u.)	6.21
Conductivity (mS/cm)	0.947
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	10.90
Dissolved Oxygen (mg/L)	2.70
ORP	-2
Sampling Method	PDB / Bailer
Remarks	Redeployed a PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3/2/2	HCL
Ethene, Ethane, Methane	40 ML Vials	2	
TOC	40 ML Vials	2	H2SO4
Total Iron	250 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	mililiter	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.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/25/10
Site/Well No.	PW-4	Replicate No.	—	Code No.	
Weather	Cloudy Breezy 50°	Sampling Time: Begin	1148	End	1155

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	Clear
Odor	None
Appearance	Clear
pH (s.u.)	5.42
Conductivity (mS/cm)	— 1.79
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	— 9.48
Dissolved Oxygen (mg/L)	3.20
ORP	40
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	
TOC	40 ML Vials	2	H2SO4
Total Iron	250 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.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/25/10
Site/Well No.	W-5	Replicate No.	—	Code No.	
Weather	Partly Cloudy 50°	Sampling Time:	Begin 1026	End	1028

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	Clear
Odor	None
Appearance	Clear
pH (s.u.)	6.04
Conductivity (mS/cm)	0.855
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	10.36
Dissolved Oxygen (mg/L)	1.08
ORP	-27
Sampling Method	PDB / Bailer
Remarks	Redeployed as PDB

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	2	
TOC	40 ML Vials	2	H2SO4
Total Iron	250 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	Millisiemens 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. NY000949.0022 Page 1 of 1

Site Location Harpursville NY Date 3/24/10

3/25/10 - pump

Site/Well No. TW-1 Replicate No. —

Weather Sun 45° Sampling Time: Begin 1152 - 1200 End ~~[illegible]~~ → 1254

Evacuation Data

Measuring Point	Top of PVC
Sounded Well Depth (ft bmp)	69.75
Depth to Water (ft bmp)	52.03
Depth to Packer (ft bmp)	—
Water Column in Well (ft)	17.72
Casing Diameter	2"
Gallons in Well	2.83
Gallons Pumped/Bailed Prior to Sampling	(8.50) 4.60
Sample Pump Intake Setting (ft bmp)	60'
Packer Pressure (psi)	—
Pumping Rate (gpm)	
Evacuation Method	Grundfos Pump
Sampling Method	* Grundfos Pump
Purge Time	Begin 0830 End 0931

0853 moved pump down to 68.90

Field Parameters

Color: Light Brown

Odor: Slight

Appearance: Brown

	I (3/24 Bailer)	1V (3/25 Pump)	2V	3V (After sampling)
pH (s.u.)	6.00	6.11		6.35
Conductivity (mS/cm) (μmhos/cm)	1.217	0.922		0.577
Temperature (°C)	10.91	15.28		10.85
DO (mg/L)	1.40	5.89		1.12
Turbidity (NTU)	—	—	—	—
Time	—	0905		—
DTW (ft bmp)	-	63.20		—
ORP	-36	-2		-15

Constituents Sampled	Container Description	Number / method*	Preservative
8260B VOLATILES	40 ML VOA Vials	3 (PDB)	HCL
Ethene, Ethane, Methane	40 ML Vials	2 (PDB)	Na_3PO_4
TOC	40 ML Vials	2 (Bailer)	H2SO4
Total Iron	250 ml plastic	—	HNO3
Microbial	1L plastic	1 (grundfos)	—

Sampling Personnel KB

Remarks: Well Ran dry @ 0930 ~ 4.60

Let the well Recharge to Sampled at the 60' interval

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

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

1040 - 58.02

1252 54.75 - Sampled

G:\FIELD FORMS\3 Volume Purge Water Sampling Log_Revised.XLS

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Surface Water Sampling Form

Project: Colesville Landfill Project No.: NY000949.0022 Page: ___ of ___

Site Location: Harpursville NY Date: 3/26/10

Site/Well No.: SP-4 Replicate No.: —

Weather: Sun 30° Sampling Time: Begin 0915 End 0916

Site Conditions

Water Quality Meter: Quanta

Location Condition: Rabbit to Stink

Vegetation: dormant

Depth of Water: 6"

Estimated Flow Rate: 6 sec / 5'

Collection Method: Direct collection

Field Parameters

Color	Clear
Odor	none
Appearance	Clear
pH (s.u.)	5.76
Conductivity (mS/cm)	0.090
Temperature (°C)	3.60
DO (mg/L)	9.86
Turbidity (NTU)	—
ORP	100
Time	—

Remarks:

Constituents Sampled: See COC Sampling Personnel: KA

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/25/10
Site/Well No.	IW-3	Replicate No.	—	Code No.	—
Weather	Partly cloudy, 50°	Sampling Time:	Begin 1016	End	1018

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	Light amber
Odor	Strong
Appearance	Clear
pH (s.u.)	5.82
Conductivity (mS/cm)	0.543
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	9.74
Dissolved Oxygen (mg/L)	1.86
ORP	-29
Sampling Method	Bailer
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	—	HCL
Ethene, Ethane, Methane	40 ML Vials	—	
TOC	40 ML Vials	2	H2SO4
Total Iron	250 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	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/25/10
Site/Well No.	IW-8	Replicate No.	—	Code No.	—
Weather	Sun 50°	Sampling Time: Begin	1008	End	1012

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	dark amber
Odor	Strong
Appearance	—
pH (s.u.)	6.06
Conductivity (mS/cm)	1.412
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	9.98
Dissolved Oxygen (mg/L)	0.72
ORP	-46
Sampling Method	Bailer
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	—	HCL
Ethene, Ethane, Methane	40 ML Vials	—	
TOC	40 ML Vials	2	H2SO4
Total Iron	250 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.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/25/10
Site/Well No.	IW-13	Replicate No.	—	Code No.	—
Weather	partly cloudy 50°	Sampling Time:	Begin 0950	End	0956

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	dark yellow/brown
Odor	strong
Appearance	—
pH (s.u.)	5.31
Conductivity (mS/cm)	0.835
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	11.39
Dissolved Oxygen (mg/L)	0.91
ORP	-18
Sampling Method	Bailer
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	—	HCL
Ethene, Ethane, Methane	40 ML Vials	—	
TOC	40 ML Vials	2	H2SO4
Total Iron	250 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.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/26/10
Site/Well No.	GMPW 3	Replicate No.	—	Code No.	
Weather	Indoors / Sun 25°	Sampling Time: Begin	—	End	—

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	

Field Parameters

Color	
Odor	
Appearance	
pH (s.u.)	
Conductivity (mS/cm)	
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	
Dissolved Oxygen (mg/L)	
ORP	
Sampling Method	direct collection
Remarks	System Sampling

Did Not Sample
Pump was pulled out
- not working

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	—	HCL
Ethene, Ethane, Methane	40 ML Vials	—	
TOC	40 ML Vials	—	H2SO4
Total Iron	250 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.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/26/10
Site/Well No.	GMPW-4	Replicate No.	—	Code No.	—
Weather	indoors / Sun 28°	Sampling Time: Begin	1250	End	—

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	

Field Parameters

Color	Clear
Odor	none
Appearance	Clear
pH (s.u.)	6.39
Conductivity (mS/cm)	0.842
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	10.61
Dissolved Oxygen (mg/L)	4.45
ORP	74
Sampling Method	direct collection
Remarks	System Sampling

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	—	
TOC	40 ML Vials	—	H2SO4
Total Iron	250 ml plastic	1	HNO3

Sampling Personnel: KB / CD

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.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/26/10
Site/Well No.	GMPW-5	Replicate No.	—	Code No.	
Weather	indoors / SW1 28°	Sampling Time:	Begin 1230	End	—

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	

Field Parameters

Color	Clear
Odor	none
Appearance	Clear
pH (s.u.)	6.82
Conductivity (mS/cm)	0.209
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	7.28
Dissolved Oxygen (mg/L)	6.60
ORP	71
Sampling Method	direct collection
Remarks	System Sampling

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	—	
TOC	40 ML Vials	—	H2SO4
Total Iron	250 ml plastic	1	HNO3

Sampling Personnel KB / CD

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.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/26/10
Site/Well No.	Comb. Ref. influent	Replicate No.	—	Code No.	—
Weather	indoors / sun 25°	Sampling Time: Begin	1310	End	

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	

Field Parameters

Color	Light orang tint
Odor	non
Appearance	Clear to cloudy / particles
pH (s.u.)	
Conductivity (mS/cm)	
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	
Dissolved Oxygen (mg/L)	
ORP	
Sampling Method	direct collection
Remarks	System Sampling

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	—	
TOC	40 ML Vials	—	H2SO4
Total Iron	250 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	Millsiemens 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.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/26/10
Site/Well No.	Effluent water	Replicate No.	—	Code No.	
Weather	indoors	Sampling Time:	Begin 1320	End	—

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	

Field Parameters

Color	Clear
Odor	None
Appearance	Clear
pH (s.u.)	
Conductivity (mS/cm)	
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	
Dissolved Oxygen (mg/L)	
ORP	
Sampling Method	direct collection
Remarks	System Sampling

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	—	
TOC	40 ML Vials	—	H2SO4
Total Iron	250 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

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Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0022	Page	1 of 1
Site Location	Harpursville, NY			Date	3/26/10
Site/Well No.	SP-5 influent	Replicate No.	—	Code No.	
Weather	Sun 28°	Sampling Time: Begin	1335	End	

Evacuation Data

Measuring Point	Top of PVC
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	4.12
Depth to Water (ft bmp)	0.0
Water-Level Elevation (ft)	
Water Column in Well (ft)	~~0.65~~ 4.12
Casing Diameter/Type	2"
Gallons in Well	~~0.65~~
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	Clear
Odor	
Appearance	
pH (s.u.)	6.16
Conductivity (mS/cm)	0.488
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	8.99
Dissolved Oxygen (mg/L)	1.82
ORP	-10
Sampling Method	Bailer
Remarks	

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES	40 ML VOA Vials	3	HCL
Ethene, Ethane, Methane	40 ML Vials	—	
TOC	40 ML Vials	—	H2SO4
Total Iron	250 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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Surface Water Sampling Form

Project: Colesville Landfill | Project No.: NY000949.0022 | Page: 1 of 1

Site Location: Harpursville NY | Date: 3/26/10

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

Weather: Sun 28° | Sampling Time: Begin 1345 End —

Site Conditions

Water Quality Meter: Quanta

Location Condition: Stained orange

Vegetation: dormant

Depth of Water: —

Estimated Flow Rate: 2.5 gpm

Collection Method: Direct collection

Field Parameters

Color	Clear
Odor	none
Appearance	Clear / few orange particles
pH (s.u.)	6.28
Conductivity (mS/cm)	0.448
Temperature (°C)	9.13
DO (mg/L)	3.93
Turbidity (NTU)	—
ORP	-20
Time	—

Remarks: Cleared discharge line w/ Hot Snake at 0830

GMPW-3 is OFF

Constituents Sampled: See COC | Sampling Personnel: KB / ED

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Appendix B

New York State Department of Environmental Conservation DAR-1 Air Modeling Data

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Table B-1. NYSDEC DAR-1 Air Modeling Data, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Parameters for 3/25/2010 Sampling Event			
Discharge Temperature[1]	T	540	^{o}R
Ambient Temperature[2]	Ta	521	^{o}R
Stack Diameter	D	6	in
Stack Radius	R	0.25	ft
Stack Area	A	0.20	ft^2
Exit Velocity	V	14.2	fps
Exit Flow	Q	167	acfm
Exit Flow	Q	163	scfm
Stack Height	h_s	17	ft
Building Height	h_b	13.25	ft
Ratio of Heights	h_s/h_b	1.28	
Plume rise credit? $h_s/h_b > 1.5$?	(If no, $h_e=h_s$)	(If Yes, $h_e = h_s + 1.1 (F_m)^{1/3}$)	
Momentum Flux	$F_m = T_a/T * V2 * R2$	n/a	ft^4/s^2
Effective Stack Height	h_e	17	ft
Reduction Factor? $2.5 > h_s/h_b > 1.5$?		No, do not reduce impact	
Actual Annual Impact	C_a	$RF*6*Q_a/h_e^{2.25}$	
Mass Flow	Q_a	S lbs emitted for last 12 months	

Notes/Assumptions:

1. The stack discharge temperature is 80 ^{o}F based on recorded parameters.
2. The ambient temperature is approximately 61^{o}F based on recorded conditions.
3. Calculations assume that the system will run with the maximum allowable concentrations between quarterly readings.

^{o}R: degrees Rankine.
in: inches.
ft: feet.
ft^2: square feet.
fps: feet per second.
acfm: actual cubic feet per minute.
scfm: standard cubic feet per minute.
ft^4/s^2: feet to the fourth per square second.

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Table B-2. NYSDEC DAR-1 Air Modeling Data, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Calculation of the Short-Term Guideline Concentration (SGC) for Sampling Event on 3/25/2010

Compounds	CAS Numbers	Maximum Limit (SGC[2]) (ug/m^3)	Analytical Concentration (ppb)	Detection Limit Used[3]	Actual Emissions C_a (ug/m^3)	Mass/hour (lb/hr)	Maximum Potential Impact (Step III.A.3 in DAR-1)[1] (ug/m^3)	Short Term Impact (Step III.A.5 in DAR-1)[1] (ug/m^3)	Percent of the SGC (%)
1,1,2,2-Tetrachloroethane	79-34-5	--	7.2	*	31.78	4.46E-05	0.0076	0.49582	NA
1,1,1-Trichloroethane (Methyl Chloroform)	71-55-6	68,000	7.2	*	39.93	5.61E-05	0.0096	0.62314	9.2E-04
1,1,2-Trichloroethane	79-00-5	--	7.2	*	39.93	5.61E-05	0.0096	0.62314	NA
1,2,4-Trimethylbenzene	95-63-6	--	7.2	*	35.97	5.05E-05	0.0086	0.56135	NA
1,3,5-Trimethylbenzene	108-67-8	--	7.2	*	35.97	5.05E-05	0.0086	0.56135	NA
1,1-Dichloroethane	75-34-3	--	7.2	*	29.62	4.16E-05	0.0071	0.46224	NA
1,1-Dichloroethene (Vinylidene Chloride)	75-35-4	380[4]	7.2	*	29.02	4.08E-05	0.0070	0.45280	1.2E-01
1,2-Dibromoethane	106-93-4	--	7.2	*	56.24	7.90E-05	0.0135	0.87749	NA
1,2-Dichlorobenzene	95-50-1	30,000	7.2	*	44.00	6.18E-05	0.0106	0.68661	2.3E-03
1,2-Dichloroethane	107-06-2	--	7.2	*	29.62	4.16E-05	0.0071	0.46219	NA
1,2-Dichloropropane	78-87-5	--	7.2	*	33.82	4.75E-05	0.0081	0.52772	NA
1,3-Dichlorobenzene	541-73-1	30,000	7.2	*	44.00	6.18E-05	0.0106	0.68661	2.3E-03
1,4-Dichlorobenzene	106-46-7	--	7.2	*	44.00	6.18E-05	0.0106	0.68661	NA
2-Propanol (Isopropyl alcohol)	67-63-0	98,000	29	*	72.45	1.02E-04	0.0174	1.13058	1.2E-03
Benzene	71-43-2	1,300	7.2	*	23.38	3.28E-05	0.0056	0.36481	2.8E-02
Bromomethane	74-83-9	3,900	7.2	*	28.42	3.99E-05	0.0068	0.44346	1.1E-02
Carbon Tetrachloride	56-23-5	1,900	7.2	*	46.05	6.47E-05	0.0111	0.71851	3.8E-02
Chlorobenzene	108-90-7	--	7.2	*	33.69	4.73E-05	0.0081	0.52571	NA
Chloroethane (Ethyl Chloride)	75-00-3	--	7.2	*	19.31	2.71E-05	0.0046	0.30134	NA
Chloromethane	74-87-3	22,000	29	*	60.87	8.55E-05	0.0146	0.94980	4.3E-03
Chloroform	67-66-3	150	7.2	*	35.74	5.02E-05	0.0086	0.55761	3.7E-01
cis-1,2 - Dichloroethylene	156-59-2	190,000[5]	7.2	*	29.02	4.08E-05	0.0070	0.45280	2.4E-04
Dichlorofluoromethane (Freon 12)	75-71-8	--	7.2	*	36.19	5.08E-05	0.0087	0.56466	NA
Ethyl benzene	100-41-4	54,000	7.2	*	31.78	4.46E-05	0.0076	0.49582	9.2E-04

See notes on last page.

Calculation of the Short-Term Guideline Concentration (SGC) for Sampling Event on 3/25/2010

Compounds	CAS Numbers	Maximum Limit (SGC[2]) (ug/m^3)	Analytical Concentration (ppb)	Detection Limit Used[3]	Actual Emissions C_a (ug/m^3)	Mass/hour (lb/hr)	Maximum Potential Impact (Step III.A.3 in DAR-1)[1] (ug/m^3)	Short Term Impact (Step III.A.5 in DAR-1)[1] (ug/m^3)	Percent of the SGC (%)
Freon 113	76-13-1	960,000	7.2	*	56.09	7.88E-05	0.0135	0.87516	9.1E-05
Freon 114	76-14-2	--	7.2	*	51.16	7.19E-05	0.0123	0.79828	NA
Methylene Chloride (Dichloromethane)	75-09-2	14,000	7.2	*	25.42	3.57E-05	0.0061	0.39671	2.8E-03
Methyl tert-butyl ether	1634-04-4	--	7.2	*	26.38	3.71E-05	0.0063	0.41170	NA
o-Xylene	95-47-6	4,300	7.2	*	31.78	4.46E-05	0.0076	0.49582	1.2E-02
m,p-Xylene	108-38-3/106-42-3	4,300	7.2	*	31.17	4.38E-05	0.0075	0.48639	1.1E-02
Tetrachloroethene	127-18-4	1,000	7.2	*	49.64	6.97E-05	0.0119	0.77460	7.7E-02
Toluene	108-88-3	37,000	7.2	*	27.58	3.87E-05	0.0066	0.43029	1.2E-03
trans-1,2-dichloroethylene	156-60-5	--	7.2	*	29.03	4.08E-05	0.0070	0.45304	NA
Trichloroethene	79-01-6	14,000	7.2	*	39.33	5.52E-05	0.0094	0.61370	4.4E-03
Trichlorofluoromethane	75-69-4	68,000	7.2	*	41.12	5.78E-05	0.0099	0.64163	9.4E-04
Vinyl Chloride	75-01-4	180,000	7.2	*	18.71	2.63E-05	0.0045	0.29191	1.6E-04

See notes on last page.

Notes:

1. DAR-1 refers to DAR-1 AGC/SGC Tables dated September 10,2007.
2. SGC refers to the Short-Term Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated September 10, 2007.
3. To be conservative the lower detection limit was used for compounds that were below the limit of detection.
4. An SGC was not provided in the DAR-1 AGC/SGC Tables, dated September 10, 2007. An interim SGC was developed based on in Section IV.A.2.b.1 of guidance provided the New York State DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants, 1991 edition. Specifically for 1,1- dichloroethene, which is not defined as a moderate-toxicity compound, the Interim SGC = (smaller of Time Weighted Average [TWA] - Threshold Limit Value or TWA - Recommended Exposure Limit)/4.2. or 1,600 µg/m^3 / 4.2 = approximately 380 µg/m^3. An interim SGC was developed for this compound because it has a moderate toxicity rating, as specified in the DAR-1 AGC/SGC Tables, dated September 10, 2007.
5. An SGC was not provided in the DAR-1 AGC/SGC Tables, dated September 10, 2007. An interim SGC was developed based on in Section IV.A.2.b.1 of guidance provided the New York State DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants, 1991 edition. Specifically for cis-1,2 dichloroethene, which is not defined as a moderate-toxicity compound, the interim SGC = (smaller of Time Weighted Average [TWA] - Threshold Limit Value or TWA - Recommended Exposure Limit)/4.2 or 790,000 µg/m^3 / 4.2 = approximately 190,000 µg/m^3. An interim SGC was developed for this compound because it has a moderate toxicity rating, as specified in the DAR-1 AGC/SGC Tables, dated September 10, 2007.

ug/m^3: micrograms per cubic meter

ppb: parts per billion

*: analyte concentration below detection limit, detection limit was used in calculations

lb/hr: pounds per hour

--: no SGC listed for compound; an interim SGC was not developed for these compounds because they have low toxicity ratings, as specified in the NYSDEC DAR-1 AGC/SGC tables revised September 10, 2007

NA: not applicable

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Table B-2. NYSDEC DAR-1 Air Modeling Data, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Calculation of AGC based on 3/25/2010 Sampling Event

Compounds	CAS Numbers	Maximum Limit on C_a (AGC[1]) (ug/m^3)	Maximum Mass Flow Q_a (lb/yr)	Lab Data (ppb)	Detection Limit Used[2]	Actual Emissions C_a (ug/m^3)	Actual Mass Flow per Hour (lb/hr)	Actual Mass Flow per Year (lb/yr)	**Percent of Annual** (%)
1,1,2,2-Tetrachloroethane	79-34-5	16	1,564.87	7.2	*	31.78	1.94E-05	0.17014	**0.01**
1,1,1-Trichloroethane (Methyl Chloroform)	71-55-6	1,000	97,804.50	7.2	*	39.93	2.44E-05	0.21383	**0.00**
1,1,2-Trichloroethane	79-00-5	1.4	136.93	7.2	*	39.93	2.44E-05	0.21383	**0.16**
1,2,4-Trimethylbenzene	95-63-6	290	28,363.30	7.2	*	35.97	2.20E-05	0.19262	**0.00**
1,3,5-Trimethylbenzene	108-67-8	290	28,363.30	7.2	*	35.97	2.20E-05	0.19262	**0.00**
1,1-Dichloroethane	75-34-3	0.63	61.62	7.2	*	29.62	1.81E-05	0.15862	**0.26**
1,1-Dichloroethene (Vinylidene Chloride)	75-35-4	70	6,846.31	7.2	*	29.02	1.77E-05	0.15538	**0.00**
1,2-Dibromoethane[3]	106-93-4	0.0017	0.17	7.2	*	56.24	3.44E-05	0.30111	**181.10**
1,2-Dichlorobenzene	95-50-1	360	35,209.62	7.2	*	44.00	2.69E-05	0.23561	**0.00**
1,2-Dichloroethane	107-06-2	0.038	3.72	7.2	*	29.62	1.81E-05	0.15860	**4.27**
1,2-Dichloropropane	78-87-5	4	391.22	7.2	*	33.82	2.07E-05	0.18109	**0.05**
1,3-Dichlorobenzene	541-73-1	360	35,209.62	7.2	*	44.00	2.69E-05	0.23561	**0.00**
1,4-Dichlorobenzene	106-46-7	0.09	8.80	7.2	*	44.00	2.69E-05	0.23561	**2.68**
2-Propanol (Isopropyl alcohol)	67-63-0	7,000	684,631.48	29	*	72.45	4.43E-05	0.38796	**0.00**
Benzene	71-43-2	0.13	12.71	7.2	*	23.38	1.43E-05	0.12518	**0.98**
Bromomethane	74-83-9	5	489.02	7.2	*	28.42	1.74E-05	0.15217	**0.03**
Carbon Tetrachloride	56-23-5	0.067	6.55	7.2	*	46.05	2.81E-05	0.24655	**3.76**
Chlorobenzene	108-90-7	110	10,758.49	7.2	*	33.69	2.06E-05	0.18040	**0.00**
Chloroethane (Ethyl Chloride)	75-00-3	10,000	978,044.97	7.2	*	19.31	1.18E-05	0.10340	**0.00**
Chloromethane	74-87-3	90	8,802.40	29	*	60.87	3.72E-05	0.32592	**0.00**
Chloroform	67-66-3	0.043	4.21	7.2	*	35.74	2.18E-05	0.19134	**4.55**
cis-1,2 - Dichloroethylene	156-59-2	63	6,161.68	7.2	*	29.02	1.77E-05	0.15538	**0.00**
Dichlorofluoromethane (Freon 12)	75-71-8	12,000	1,173,653.96	7.2	*	36.19	2.21E-05	0.19376	**0.00**
Ethyl benzene	100-41-4	1,000	97,804.50	7.2	*	31.78	1.94E-05	0.17014	**0.00**
Freon 113	76-13-1	180,000	17,604,809.41	7.2	*	56.09	3.43E-05	0.30031	**0.00**

See notes on last page.

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Table B-2. NYSDEC DAR-1 Air Modeling Data, Operational Year 8, Quarter Number 2, Colesville Landfill, Broome County, New York.

Calculation of AGC based on 3/25/2010 Sampling Event

Compounds	CAS Numbers	Maximum Limit on C_a (AGC[1]) (ug/m^3)	Maximum Mass Flow Q_a (lb/yr)	Lab Data (ppb)	Detection Limit Used[2]	Actual Emissions C_a (ug/m^3)	Actual Mass Flow per Hour (lb/hr)	Actual Mass Flow per Year (lb/yr)	**Percent of Annual** (%)
Freon 114	76-14-2	17,000	1,662,676.44	7.2	*	51.16	3.13E-05	0.27393	**0.00**
Methylene Chloride (Dichloromethane)	75-09-2	2.1	205.39	7.2	*	25.42	1.55E-05	0.13613	**0.07**
Methyl tert-butyl ether	1634-04-4	3,000	293,413.49	7.2	*	26.38	1.61E-05	0.14128	**0.00**
o-Xylene	95-47-6	100	9,780.45	7.2	*	31.78	1.94E-05	0.17014	**0.00**
m,p-Xylene	108-38-3/106-42-3	100	9,780.45	7.2	*	31.17	1.91E-05	0.16690	**0.00**
Tetrachloroethene	127-18-4	1	97.80	7.2	*	49.64	3.03E-05	0.26580	**0.27**
Toluene	108-88-3	5,000	489,022.48	7.2	*	27.58	1.69E-05	0.14765	**0.00**
trans-1,2-dichloroethylene	156-60-5	63	6,161.68	7.2	*	29.03	1.77E-05	0.15546	**0.00**
Trichloroethene	79-01-6	0.50	48.90	7.2	*	39.33	2.40E-05	0.21059	**0.43**
Trichlorofluoromethane	75-69-4	1,000	97,804.50	7.2	*	41.12	2.51E-05	0.22017	**0.00**
Vinyl Chloride	75-01-4	0.11	10.76	7.2	*	18.71	1.14E-05	0.10017	**0.93**

Notes/Assumptions:

1. AGC refers to the Annual Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated September 10, 2007.
2. To be conservative the lower detection limit was used for compounds that were below the limit of detection.
3. The currently available method detection limit exceeds the AGC for this compound resulting in a % of AGC greater than 100 percent. However, 1,2-Dibromomethane has not been historically detected in the influent groundwater or effluent vapor sample and is therefore not considered a site-related constituent of concern.

ug/m^3: micrograms per cubic meter

lb/yr: pounds per year

lb/hr: pounds per hour

ppb: parts per billion

*: analyte concentration below detection limit, detection limit was used in calculations

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Appendix C

Automated Reagent Injection System
Operating Parameters

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Table C-1. Automated Reagent Injection System Summary of Operational Year 8, Quarter Number 2 Injection Quantities, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Summary of Automated Reagant Injections

Date	Total Quantity of Molasses Solution Injected (gal.)	Total Quantity of Molasses Injected (gal.)	Total Quantity of Rinse Water Injected (gal.)
2/11/2010	12,829	128	147
Quarter Totals (gal.) =	**12,829**	**128**	**147**
Totals for Operational Year 8 (gal.) =	**12,829**	**128**	**147**
Totals Since Startup (gal.) =	**221,714**	**9,520**	**9,300**

Notes:

gal. Gallons

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Table C-2. Automated Reagent Injection System, Operational Year 8, Quarter Number 2 Operating Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Injection Number 62

Injection Start Date =	10/14/2009		
Injection Completion Date =	2/11/2010		
Molasses to Water Ratio (%) =	1.0	Programmed Mixing Time (min.)[1] =	60

Injection Well ID	Molasses Solution Injection Quantity (gal.)	Rinse Quantity (gal.)	Raw Molasses Per Well (gal.)	Min. Injection[2] Flowrate (gpm)	Max. Injection Pressure (psi)
PW-6	530	5	5.3	NM	28
IW-3	530	5	5.3	NM	28
IW-1	210	4	2.1	NM	29
IW-2	210	3	2.1	NM	29[3]
GMMW-1	140	3	1.4	NM	27
IW-4	989	4	9.9	NM	28
IW-5	989	5	9.9	NM	32
IW-6	989	7	9.9	NM	30
IW-7[4]	989	20	9.9	NM	30
IW-8[5]	0	0	0.0	NM	0
IW-9	1,230	11	12.3	NM	30
IW-10[4]	354	3	3.5	NM	30
IW-11	1,230	13	12.3	NM	29
IW-12	1,230	15	12.3	NM	29
IW-13	1,230	16	12.3	NM	31
IW-14	989	14	9.9	NM	29
IW-15	989[3]	19[3]	9.9	NM	28[3]
Totals (gal.) =	12,829	147	128.3	NA	NA

Notes:

1. Programmed mixing time is calculated from the expiration time of the molasses injection countdown timer to the startup of transfer pump TP-900 during an injection sequence or from the end of transfer pump TP-600 operation to the restart of an injection during a mixing sequence.
2. Parameter not measured due to SCADA malfunction.
3. Parameter not measured due to SCADA malfunction. Values shown was recorded from the Year 7, Quarter Number 4 injection.
4. Molasses solution was manually injected into IW-7 and IW-10 between January 8, 2010 and February 11, 2010. Values shown were manually recorded. These wells were not included in the automated injection due to faulty solenoid valves.
5. Injection not conducted into IW-8 for ongoing Alternate Electron Donor Pilot test evaluation.

gal. Gallons.
min. Minutes.
psi Pounds per square inch.
gpm Gallons per minute.
NA Not applicable.
NM Not measured.
SCADA Supervisory control and data acquisition.