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Broome County
Division of Solid Waste Management

Operational Year 8
Quarter Number 3
Monitoring Report

February 2011

ARCADIS

Kenneth Zegel, P.E.
Senior Engineer

Steven M. Feldman
Project Director

Christina Berardi Tuohy, P.E.
Senior Engineer
License Number 078743-1, New York

Operational Year 8
Quarter Number 3
Monitoring Report

Colesville Landfill,
Broome County, New York
NYSDEC Site 704010

Prepared for:
Broome County Division of Solid Waste Management

Prepared by:
ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville
New York 11747
Tel 631.249.7600
Fax 631.249.7610

Our Ref.:
NY000949.0023.00004

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ARCADIS

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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 June 2010 groundwater quality monitoring event conducted during Operational Year 8, Quarter Number 3. A description of the operation, maintenance, and monitoring (OM&M) associated with the Groundwater Remediation System from April 2010 through June 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 3. 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 3 included the following:

- Groundwater samples were collected from six monitoring wells (Year 8, Q3 list of wells plus alternate electron donor test well TW-1) during the week of June 21, 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.

- Samples (VOCs only) were collected at the SP-4 and F-6 surface water locations on June 22, 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 3, were as follows:

- Pump-and-treat (PT) system recovery well influent, combined influent, and effluent samples were collected on June 23, 2010. The samples were selectively analyzed for VOCs and total iron.

- One vapor sample from the PT system air stripper effluent was collected on June 23, 2010. The sample was analyzed for VOCs.

- PT system operating parameters were recorded during the quarterly OM&M site visit on June 22, 2010.

- TOC samples were collected from select injection wells during the week of June 21, 2010.

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

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 June 24, 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

A synoptic round of water level measurements will be conducted during Quarters 2 and 4 for evaluation of groundwater flow conditions.

4. Groundwater Quality

The following sections describe the analytical results for groundwater samples collected during the June 2010 monitoring round (Operational Year 8, Quarter Number 3). Groundwater analytical results are provided in Tables 1 and 2. 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 1, 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. Specifically, the TVOC concentration in monitoring wells GMMW-2, GMMW-5, W-5, GMMW-6, and PW-4 were 187.5 micrograms per liter (ug/L), 73.6 ug/L, 167.0 ug/L, 299.8 ug/L, and 47.0 ug/L, respectively. The TVOC concentration in monitoring well TW-1 (111.1 ug/L) remained consistent when compared to March 2010 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 113.1 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 2. In summary, field and laboratory groundwater data for Wells GMMW-2, GMMW-5, GMMW-6, and W-5 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 automated reagent injection (ARI) system performance monitoring are provided in Section 7.2.2 of this report.

4.3 Evidence of Biodegradation

Table 2 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

In response to EPA recommendations provided in the Third Five-Year Review Report (USEPA 2010), spring water samples were collected during the week of June 21, 2010 at locations where groundwater was exfiltrating along the embankment of the North Stream. In addition, surface water samples were collected in close proximity to the springs and downstream of the springs. The objective of this evaluation was to determine whether the occurrence of the spring at SP-4 and other intermittent springs along the North Stream pose an ecological risk. Samples were analyzed for target compound list (TCL) VOCs and target analyte list (TAL) metals. Field parameters (i.e., pH, temperature, and specific conductance) were also collected. The results of this ecological screening of spring water and surface water were documented in a letter report submitted to EPA on October 1, 2010. The data evaluation indicated that there is no potential for adverse effects to aquatic organisms from concentrations of VOCs or metals in springs or surface water associated with the North Stream.

6. Surface Water Quality

Surface water quality analytical results for the Operational Year 8, Quarter Number 3 monitoring round are summarized in Table 1. As shown in Table 1, surface water quality at the SP-4 and F-6 sampling locations remained generally consistent when compared to analytical results from the previous round. Specifically, the TVOC concentrations at the SP-4 and F-6 sampling locations were 3.2 ug/L and 1.3 ug/L, respectively. 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 3.

7.1 PT System

The following section describes the results of the PT system performance monitoring conducted during Operational Year 8, Quarter Number 3.

7.1.1 Summary of Operation, Maintenance, and Monitoring

During Operational Year 8, Quarter Number 3, 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 3 was conducted during the week of June 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 3 provides a summary of the recorded system operating parameters for the current operating period. As shown in Table 3, the total effluent groundwater recovery rate for Operational Year 8, Quarter Number 3 was approximately 0.55 gallons per minute (gpm), with individual recovery rates of 0.00 gpm, 0.16 gpm, and 0.25 gpm in GMPW-3, GMPW-4, and GMPW-5, respectively. The average individual recovery well pumping rates during Operational Year 8, Quarter Number 3 were consistent with previous data (i.e., Operational Year 8, Quarter Number 2) but were still slightly lower than baseline (startup) conditions.

A total of 69,552 gallons of groundwater was recovered during Operational Year 8, Quarter Number 3 and a total of 2,097,006 gallons of groundwater has been recovered since system startup as shown in Table 3. The low profile air stripper operated in accordance with the design specifications and had a blower flow rate of 196 standard cubic feet per minute.

7.1.2 Results of Performance Sampling

PT system performance sampling for Operational Year 8, Quarter Number 3 was conducted on June 23, 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 4 provides a summary of the PT system performance groundwater sampling analytical results. As shown in Table 4, 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 5. A total of approximately 3.60 lbs of VOCs have been removed from the subsurface since system startup.

Table 6 provides a summary of the PT system performance vapor sampling analytical results. As shown in Table 6, 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 but have historically been detected in the influent groundwater. 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 3.

7.2.1 Summary of Operation, Maintenance, and Monitoring

ARI system OM&M was conducted during the Operational Year 8, Quarter Number 3 OM&M site visit during the week of June 21, 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 3. The injection was initiated on April 8, 2010 and was completed on June 23, 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 15,465-gallons

of molasses solution were delivered to the subsurface during Operational Year 8, Quarter Number 3. A total of 237,179 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 3.

7.2.2 Results of Performance Sampling

ARI system performance sampling was conducted during the week of June 21, 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 4,820 mg/L and 236 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 9.5 mg/L. The TOC in injection well IW-8 was 145 mg/L. These data indicate that the slow-release alternate electron donor (EOS^{TM}) is no longer providing sufficient organic carbon in the subsurface to maintain conditions conclusive for complete reductive dechlorination (i.e. methanogenic conditions). Injection well IW-8 will be included in the next quarterly ARI system injection.

- VOC data for monitoring well TW-1 remained consistent when compared to March 2010 data. The data indicate a stable to decreasing trend in the concentration of VOCs in the vicinity of the alternate electron donor pilot test, despite the decrease in the TOC concentration at well TW-1.

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

- The methane concentration in monitoring wells GMMW-5, W-5, GMMW-6, and GMMW-2 remained elevated at 8,600 ug/L, 4,900 ug/L, 3,500 ug/L, and 8,600 ug/L, respectively. These data provide evidence that strongly reducing conditions (methanogenic) are being maintained within the IRZ.

- The methane concentration decreased at monitoring well TW-1. These data corroborate the TOC concentration at TW-1 and indicate that insufficient TOC is being provided by the EOS™ to maintain methanogenic conditions.

- The ethene concentration in monitoring wells GMMW-2 and GMMW-6 remained elevated at 9,500 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 28,000 ng/L and 11,000 ng/L, respectively.

8. Spring Water Remediation System Performance

SP-5 Spring Water Remediation System OM&M was conducted on June 24, 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 7. As shown in Table 7, all effluent COCs were treated to below their respective BPJ limits via the LPGAC. Influent TVOC analytical data (42.3 ug/L) remained consistent with historical analytical data. Table 8 provides the SP-5 Spring Water Remediation System field parameters recorded during Operational Year 8, Quarter Number 3. As shown in Table 8, the SP-5 remedial system treated approximately 243,244 gallons of spring water during the operating period. An estimated 0.11 lbs of VOCs was removed by the SP-5 remedial system during the same period. An estimated 2,239,608 gallons of spring water have been treated and an estimated 1.41 lbs of VOC mass have been recovered since system startup.

9. Conclusions

Based on the data obtained from the Operational Year 8, Quarter Number 3 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.

- The ARI system is providing sufficient organic carbon was available in the subsurface to maintain the IRZ.

- Surface water quality at the stream sampling locations continues to be consistent with historical data; indicating there are no adverse impacts to surface water in the North Stream.

- Ongoing TOC and methane data from the alternate electron donor pilot test indicate the EOS™ is no longer providing sufficient organic carbon to maintain methanogenic conditions. VOC data from monitoring well TW-1 continues to indicate stable VOCs in the alternate electron donor pilot test area, despite the decrease in TOC and methane concentration.

- 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 6 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 4 activities:

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

- Include injection well IW-8 in the ARI system operation during the next quarterly injection event.

- 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.

- As approved by the NYSDEC, reduce the frequency of collection of the treatment system air stripper effluent vapor stream from quarterly to annually.

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.

Injection of a new, high solution strength electron donor is scheduled to be conducted during Quarter Number 1 of Operational Year 9. The Molasses-Whey (Mol-Whey) Injection Pilot Test is scheduled to be conducted with the intent to enhance the site-specific existing rate of reductive dechlorination. ARCADIS will monitor the pilot test results and will evaluate the efficiency of this alternative groundwater remedy treatment.

12. References

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

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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 6 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.

USEPA 2010. Third Five-Year Review Report, Colesville Municipal Landfill Superfund Site, Broome County, Town of Colesville, New York. April 2010.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	GMMW-02 3/25/2010	GMMW-02 6/24/2010	GMMW-05 3/24/2010	GMMW-05 6/24/2010	GMMW-05* 6/24/2010	GMMW-06 3/25/2010	GMMW-06 6/24/2010
1,1,1,2-Tetrachloroethane		<5.0	<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	<5.0
1,1,1-Trichloroethane		**4.2 J**	**3.1 J**	<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	<5.0
1,2,3-Trichlorobenzene		<5.0	<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	<5.0
1,2,4-Trichlorobenzene		<5.0	<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	<5.0
1,3,5-Trimethylbenzene		<5.0	<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	<5.0
1,1-Dichloroethane		**92**	**70**	**41**	**13**	**13**	**140**	**140**
1,1-Dichloroethene		<5.0	<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	<5.0
1,2-Dibromoethane		<5.0	<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	<5.0
1,2-Dichloroethane		<5.0	<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	**0.74 J**
1,3-Dichlorobenzene		<5.0	<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	<5.0
1,4-Dichlorobenzene		<5.0	<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	<5.0
2,2-Dichloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0 J	<5.0
4-Chlorotoluene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene		**3.3 J**	**2.9 J**	**1.8 J**	**0.97 J**	**0.80 J**	**5.5**	**5.7**
Bromobenzene		<5.0	<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	<5.0
Bromodichloromethane		<5.0	<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	<5.0
Bromomethane		<5.0	<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	<5.0
Carbon Tetrachloride		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene		**26**	**24**	**12**	**5.7**	**4.9 J**	**25**	**24**
Chloroethane		**19**	**19**	**71**	**50**	**82**	**150**	**110**
Chloroform		<5.0	<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	<5.0 J
cis-1,2-Dichloroethene		**55**	**46**	**1.5 J**	**1.5 J**	**1.6 J**	**3.0 J**	**3.7 J**
cis-1,3-Dichloropropene		<5.0	<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	<5.0
Dibromomethane		<5.0	<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	R
Ethylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0	**1.2 J**	**0.95 J**
Hexachlorobutadiene		<5.0	<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	<5.0
p-Isopropyltoluene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene chloride		<5.0	<5.0	<5.0 B	<5.0	<5.0	<5.3 B	<5.0 B
Methyl tert-butyl ether		<5.0	<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	<5.0
o-Xylene		<5.0	<5.0	<5.0	<5.0	<5.0	**0.85 J**	**0.70 J**
m,p-Xylene		<5.0	<5.0	<5.0	<5.0	<5.0	**2.5 J**	**2.4 J**

See notes on next page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	GMMW-02 3/25/2010	GMMW-02 6/24/2010	GMMW-05 3/24/2010	GMMW-05 6/24/2010	GMMW-05* 6/24/2010	GMMW-06 3/25/2010	GMMW-06 6/24/2010
n-Propylbenzene		<5.0	<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	<5.0
Styrene		<5.0	<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	<5.0
trans-1,3-Dichloropropene		<5.0	<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	<5.0
Tetrachloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene		<5.0	<5.0	**0.91 J**	**1.3 J**	**1.3 J**	**2.8 J**	**3.7 J**
trans-1,2-Dichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	**1.1 J**	**1.0 J**
Trichloroethene		**19**	**16**	<5.0	**1.1 J**	**0.90 J**	**3.2 J**	**4.0 J**
Vinyl chloride		**8.9**	**6.5**	<5.0	<5.0	<5.0	**3.0 J**	**2.9 J**
Total VOCs		**227.4 J**	**187.5 J**	**128.2 J**	**73.6 J**	**104.5 J**	**338.2 J**	**299.8 J**

Bold constituent detected above method detection limit.

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
*	Field replicate.
B	Compound considered non-detect at the listed value due to associated blank contamination.
J	Estimated value.
R	Results rejected.
--	Not analyzed.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	PW-04 3/25/2010	PW-04 6/24/2010	W-05 3/25/2010	W-05 6/24/2010	SP-4 3/26/2010	SP-4 6/22/2010	F-6 12/23/2009
1,1,1,2-Tetrachloroethane		<5.0	<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	<5.0
1,1,1-Trichloroethane		**6.8**	**5.5**	**3.6 J**	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane		<5.0	<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	<5.0
1,2,3-Trichloropropane		<5.0	<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	<5.0
1,2,4-Trimethylbenzene		<5.0	<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	<5.0
1,2-Dibromo-3-chloropropane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane		**11**	**8.8**	**41**	**51**	<5.0	**3.2 J**	<5.0
1,1-Dichloroethene		<5.0	<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	<5.0
1,2-Dibromoethane		<5.0	<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	<5.0
1,2-Dichloroethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane		<5.0	<5.0	<5.0	**0.79 J**	<5.0	<5.0	<5.0
1,3-Dichlorobenzene		<5.0	<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	<5.0
1,4-Dichlorobenzene		<5.0	<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	<5.0
2,2-Dichloropropane		<5.0	<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	<5.0
Benzene		<5.0	<5.0	**1.1 J**	**5.4**	<5.0	<5.0	<5.0
Bromobenzene		<5.0	<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	<5.0
Bromodichloromethane		<5.0	<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	<5.0
Bromomethane		<5.0	<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	<5.0
Carbon Tetrachloride		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene		<5.0	<5.0	<5.0	**5.5**	<5.0	<5.0	<5.0
Chloroethane		**2.6 J**	**7.7**	**33**	**100**	<5.0	<5.0	<5.0
Chloroform		**0.90 J**	**0.91 J**	<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene		**13**	**7.1**	**15**	**2.4 J**	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene		<5.0	<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	<5.0
Dibromomethane		<5.0	<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	<5.0
Ethylbenzene		<5.0	<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	<5.0
Isopropylbenzene		<5.0	<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	<5.0
Methylene chloride		<5.0	<5.0	<5.0 B	<5.0 B	<5.0	<5.0	<5.0
Methyl tert-butyl ether		<5.0	<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	<5.0
o-Xylene		<5.0	<5.0	<5.0	**1.3 J**	<5.0	<5.0	<5.0
m,p-Xylene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

See notes on next page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	PW-04 3/25/2010	PW-04 6/24/2010	W-05 3/25/2010	W-05 6/24/2010	SP-4 3/26/2010	SP-4 6/22/2010	F-6 12/23/2009
n-Propylbenzene		<5.0	<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	<5.0
Styrene		<5.0	<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	<5.0
trans-1,3-Dichloropropene		<5.0	<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	<5.0
Tetrachloroethene		<5.0	<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	<5.0
trans-1,2-Dichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene		**20**	**17**	**17**	**0.65 J**	<5.0	<5.0	<5.0
Vinyl chloride		<5.0	<5.0	**2.2 J**	<5.0	<5.0	<5.0	<5.0
Total VOCs		**54.3 J**	**47.0 J**	**112.9 J**	**167.0 J**	**0.00**	**3.2 J**	**0.00**

Bold constituent detected above method detection limit.

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
*	Field replicate.
B	Compound considered non-detect at the listed value due to associated blank contamination.
J	Estimated value.
R	Results rejected.
--	Not analyzed.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	F-6 6/22/2010	TW-1 3/24/2010	TW-1 6/24/2010	TBV 240610 6/24/2010	FBV 240610 6/24/2010
1,1,1,2-Tetrachloroethane		--	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane		<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane		<5.0	<5.0	**1.6 J**	<5.0	<5.0
1,1,2-Trichloroethane		<5.0	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene		--	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichloropropane		--	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene		--	<5.0	<5.0	<5.0	<5.0
1,2,4-Trimethylbenzene		--	<5.0	<5.0	<5.0	<5.0
1,3,5-Trimethylbenzene		--	<5.0	<5.0	<5.0	<5.0
1,2-Dibromo-3-chloropropane		--	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane		**1.3 J**	**4.0 J**	**39**	<5.0	<5.0
1,1-Dichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloropropene		--	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane		--	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene		--	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane		<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane		<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene		--	<5.0	<5.0	<5.0	<5.0
1,3-Dichloropropane		--	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene		--	<5.0	<5.0	<5.0	<5.0
2-Chlorotoluene		--	<5.0	<5.0	<5.0	<5.0
2,2-Dichloropropane		--	<5.0	<5.0	<5.0	<5.0
4-Chlorotoluene		--	<5.0	<5.0	<5.0	<5.0
Benzene		<5.0	**2.4 J**	**1.4 J**	<5.0	<5.0
Bromobenzene		--	<5.0	<5.0	<5.0	<5.0
Bromochloromethane		--	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane		<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform		<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane		<5.0	<5.0	<5.0	<5.0	<5.0
n-Butylbenzene		--	<5.0	<5.0	<5.0	<5.0
Carbon Tetrachloride		<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene		<5.0	**6.7**	**14**	<5.0	<5.0
Chloroethane		<5.0	**92**	**27**	<5.0	<5.0
Chloroform		<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane		<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene		<5.0	**2.1 J**	**9.0**	<5.0	<5.0
cis-1,3-Dichloropropene		<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane		<5.0	<5.0	<5.0	<5.0	<5.0
Dibromomethane		--	<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane		--	<5.0	<5.0	<5.0	<5.0
Ethylbenzene		<5.0	<5.0	<5.0	<5.0	<5.0
Hexachlorobutadiene		--	<5.0	<5.0	<5.0	<5.0
Isopropylbenzene		--	<5.0	<5.0	<5.0	<5.0
p-Isopropyltoluene		--	<5.0	<5.0	<5.0	<5.0
Methylene chloride		<5.0	<5.0	<5.0	**0.80 J**	**1.6 JB**
Methyl tert-butyl ether		--	<5.0	<5.0	<5.0	<5.0
Naphthalene		--	<5.0	<5.0	<5.0	<5.0
o-Xylene		<5.0	<5.0	<5.0	<5.0	<5.0
m,p-Xylene		<5.0	<5.0	<5.0	<5.0	<5.0

See notes on next page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater and Surface Water, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	F-6 6/22/2010	TW-1 3/24/2010	TW-1 6/24/2010	TBV 240610 6/24/2010	FBV 240610 6/24/2010
n-Propylbenzene		--	<5.0	<5.0	<5.0	<5.0
sec-Butylbenzene		--	<5.0	<5.0	<5.0	<5.0
Styrene		<5.0	<5.0	<5.0	<5.0	<5.0
tert-Butylbenzene		--	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene		<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane		--	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene		<5.0	<5.0	<5.0	<5.0	<5.0
Toluene		<5.0	**3.5 J**	**3.1 J**	<5.0	<5.0
trans-1,2-Dichloroethene		<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene		<5.0	<5.0	**12**	<5.0	<5.0
Vinyl chloride		<5.0	**1.0 J**	**4.0 J**	<5.0	<5.0
Total VOCs		**1.3 J**	**111.7 J**	**111.1 J**	**0.80 J**	**1.6 J**

Bold constituent detected above method detection limit.

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
*	Field replicate.
B	Compound considered non-detect at the listed value due to associated blank contamination.
J	Estimated value.
R	Results rejected.
--	Not analyzed.

ARCADIS

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

Parameters	Sample ID: / Date:	GMMW-02 03/25/10	GMMW-02 06/24/10	GMMW-05 03/24/10	GMMW-05 06/24/10	GMMW-06 03/25/10	GMMW-06 06/24/10
	Units						
GENERAL CHEMISTRY							
Total Organic Carbon	mg/L	**1.6**	**1.2**	**7.5**	**4.1**	**4.9**	**3.5**
FIELD PARAMETERS							
pH	Standard units	**6.32**	**6.23**	**6.12**	**5.89**	**6.21**	**6.19**
Specific Conductance	mmhos/cm	**0.579**	**0.579**	**0.323**	**0.216**	**0.947**	**0.926**
Turbidity	NTU	--	--	--	--	--	--
Dissolved Oxygen	mg/L	--	--	--	--	--	--
Temperature	deg C	**10.2**	**16.7**	**11.7**	**16.2**	**10.9**	**16.4**
ORP	mV	--		--	--	--	
DISSOLVED GASES							
Carbon dioxide	mg/L	--	--	--	--	--	--
Carbon monoxide	mg/L	--	--	--	--	--	--
Ethane	ng/L	**960**	**1,300**	**47,000**	**28,000**	**14,000**	**11,000**
Ethene	ng/L	**11,000**	**9,500**	**710**	**1,800**	**34,000**	**34,000**
Methane	ug/L	**9,200**	**8,600**	**9,700**	**8,600**	**4,500**	**3,500**
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 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: / Date:	PW-04 03/25/10	PW-04 06/24/10	W-05 03/25/10	W-05 06/24/10	IW-03 03/25/10	IW-03 06/22/10
	Units						
GENERAL CHEMISTRY							
Total Organic Carbon	mg/L	<1.0	<1.0	**7.1**	**7.8**	**69.6**	**4,820**
FIELD PARAMETERS							
pH	Standard units	**5.42**	**5.56**	**6.04**	**6.00**	**5.82**	**3.76**
Specific Conductance	mmhos/cm	**1.79**	**1.89**	**0.855**	**0.838**	**0.543**	--
Turbidity	NTU	--	--	--	--	--	--
Dissolved Oxygen	mg/L	--	--	--	--	--	--
Temperature	deg C	**9.5**	**17.6**	**10.4**	**16.9**	**9.7**	--
ORP	mV	--	--	--	--	--	--
DISSOLVED GASES							
Carbon dioxide	mg/L	--	--	--	--	--	--
Carbon monoxide	mg/L	--	--	--	--	--	--
Ethane	ng/L	**20 J**	**15 J**	**860**	**16,000**	--	--
Ethene	ng/L	**120**	**66**	**2,700**	**1,500**	--	--
Methane	ug/L	**22**	**7.6**	**650**	**4,900**	--	--
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 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: / Date:	IW-08 03/25/10	IW-08 06/22/10	IW-13 03/25/10	IW-13 06/22/10	TW-1 03/24/10	TW-1 06/24/10
	Units						
GENERAL CHEMISTRY							
Total Organic Carbon	mg/L	**150**	**145**	**379**	**236**	**60.0**	**9.5**
FIELD PARAMETERS							
pH	Standard units	**6.06**	**5.92**	**5.31**	**5.46**	**6.35**	**6.05**
Specific Conductance	mmhos/cm	**1.41**	--	**0.835**	--	**0.577**	**0.527**
Turbidity	NTU	--	--	--	--	--	--
Dissolved Oxygen	mg/L	--	--	--	--	--	--
Temperature	deg C	**10.0**	--	**11.4**	--	**10.9**	**19.5**
ORP	mV	--	--	--	--	--	--
DISSOLVED GASES							
Carbon dioxide	mg/L	--	--	--	--	--	--
Carbon monoxide	mg/L	--	--	--	--	--	--
Ethane	ng/L	--	--	--	--	**3,000**	**2,100**
Ethene	ng/L	--	--	--	--	**410**	**2,300**
Methane	ug/L	--	--	--	--	**13,000**	**2,700**
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. Pump and Treat System Operating Parameters, Operational Year 8, Quarter Number 3, 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)
3/26/2010	12:11 PM	9.5	163	851,624.2	275,487.9	51,739.1	142,156.8	213,430.6
6/22/2010	6:20 PM	8.0	196	921,176.5	308,268.4	51,739.1	162,678.7	245,642.9
		Average Daily Flowrate (gpm) =		**0.55**	**0.26**	**0.00**	**0.16**	**0.25**
		Total Groundwater Recovered During Reporting Period (gallons) =		**69,552**	**32,781**	**0**	**20,522**	**32,212**

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 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the Pump and Treat System, Operational Year 8, Quarter Number 3, 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 6/23/2010	GMPW-5 INF 6/23/2010	COMBINED INF 6/23/2010	COMBINED EFF 6/23/2010
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		--	**3.3 J**	<5.0	**1.7 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		--	**40**	<5.0	**19**	<5.0
1,1-Dichloroethene	10		--	<5.0	<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		--	**2.1 J**	<5.0	**1.1 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		--	<5.0	<5.0	<5.0	<5.0
Chloroethane	NA		--	**18**	<5.0	**12**	<5.0

See notes on last page.

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Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the Pump and Treat System, Operational Year 8, Quarter Number 3, 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 6/23/2010	GMPW-5 INF 6/23/2010	COMBINED INF 6/23/2010	COMBINED EFF 6/23/2010
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		--	**20**	<5.0	**9.1**	<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		--	<5.0	<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		--	**27**	<5.0	**13**	<5.0
Vinyl Chloride	10-50		--	**2.7 J**	<5.0	**1.5 J**	<5.0
Total VOCs			--	**113.1 J**	<5.0	**57.4 J**	<5.0
Metals (units in mg/L)	Model Technology BPJ Limits[4,5] (mg/L)						
Total Iron	1.2 / 0.61		--	**1.62**	**1.43**	**2.41**	**0.0846 J**

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Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the Pump and Treat System, Operational Year 8, Quarter Number 3, 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 June 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 5. Pump and Treat System Mass Removal Rate of Volatile Organic Compounds, Operational Year 8, Quarter Number 3, 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)
3/26/2010	102.5	851,624	NA	NA	NA
6/22/2010	57.4	921,177	69,552	76.7	0.04
			Total Estimated Mass Removed During Operational Year 8, Quarter Number 3 (lbs) =		**0.04**
			Total Estimated Mass Removed During Operational Year 8 (lbs) =		**0.11**
			Total Estimated Mass Removed Since System Startup (lbs) =		**3.60**

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 6. Concentrations of Volatile Organic Compounds Detected in Pump and Treat System Air Stripper Effluent, Operational Year 8, Quarter Number 3, Groundwater Remediation System, Colesville Landfill, Broome County, New York[1].

Compounds (units in ppbv)	CAS Numbers	Sample ID: / Date Sampled:	Effluent 6/23/2010
1,1,2,2-Tetrachloroethane	108-38-3		<9.2
1,1,1-Trichloroethane (Methyl Chloroform)	71-55-6		<9.2
1,1,2-Trichloroethane	79-00-5		<9.2
1,2,4-Trimethylbenzene	95-63-6		<9.2
1,3,5-Trimethylbenzene	108-67-8		<9.2
1,1-Dichloroethane	75-34-3		<9.2
1,1-Dichloroethene (Vinylidene Chloride)	75-35-4		<9.2
1,2-Dibromoethane	106-93-4		<9.2
1,2 - Dichlorobenzene	95-50-1		<9.2
1,2-Dichloroethane	107-06-2		<9.2
1,2-Dichloropropane	78-87-5		<9.2
1,3-Dichlorobenzene	541-73-1		<9.2
1,4-Dichlorobenzene	106-46-7		<9.2
2-Propanol (Isopropyl alcohol)	67-63-0		<37
Benzene	71-43-2		<9.2
Bromomethane	74-83-9		<9.2
Carbon Tetrachloride	56-23-5		<9.2
Chlorobenzene	108-90-7		<9.2
Chloroethane (Ethyl Chloride)	75-00-3		<9.2
Chloromethane	74-87-3		<37
Chloroform	67-66-3		<9.2
cis-1,2-Dichloroethylene	156-59-2		<9.2
Dichlorodifluoromethane (Freon 12)	75-71-8		<9.2
Ethyl benzene	100-41-4		<9.2
Freon 113	76-13-1		<9.2
Freon 114	76-14-2		<9.2
Methylene Chloride (Dichloromethane)	75-09-2		<9.2
Methyl tert-butyl ether	1634-04-4		<9.2
o-Xylene	95-47-6		<9.2
m,p-Xylene	108-38-3/106-42-3		<9.2
Tetrachloroethene	127-18-4		<9.2
Toluene	108-88-3		<9.2
trans-1,2-dichloroethylene	156-60-5		<9.2
Trichloroethene	79-01-6		<9.2
Trichlorofluoromethane	75-69-4		<9.2
Vinyl Chloride	75-01-4		<9.2

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 7. Concentrations of Volatile Organic Compounds Detected in Aqueous Samples Collected from the SP-5 Spring Water Remediation System, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Model Technology BPJ Limits[1,2]	Sample ID:	SP-5 INF.	SP-5 EFF.
		Date:	6/24/2010	6/24/2010
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		**19**	**3.2 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		**1.3 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		**19**	<5.0
Chloroethane	10		<5.0	**9.6**
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 7. Concentrations of Volatile Organic Compounds Detected in Aqueous Samples Collected from the SP-5 Spring Water Remediation System, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Model Technology BPJ Limits[1,2]	Sample ID: / Date:	SP-5 INF. 6/24/2010	SP-5 EFF. 6/24/2010
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		**1.5 J**	<5.0
Vinyl Chloride	10		<5.0	<5.0
Total VOCs			**42.3 J**	**12.8 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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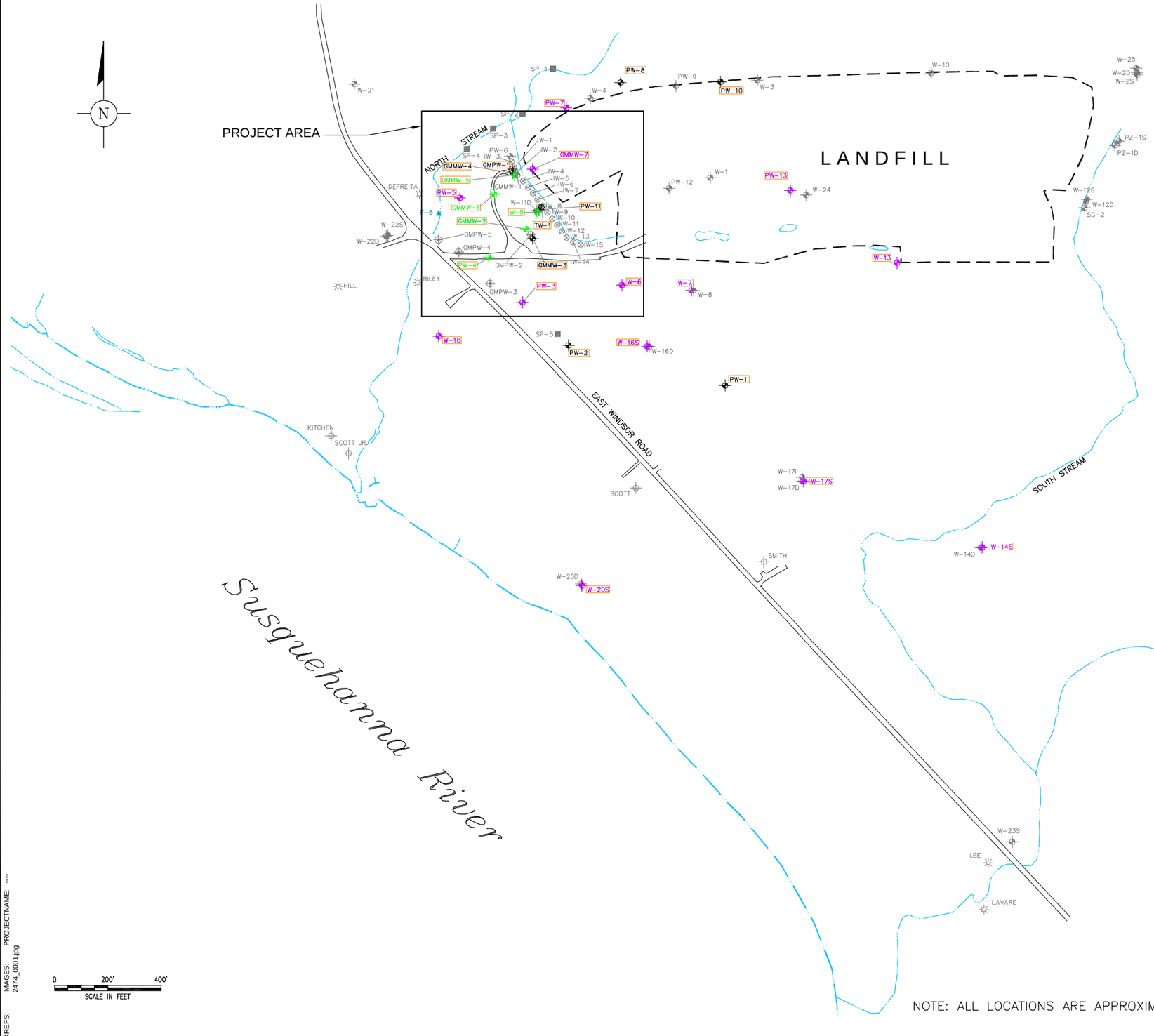
Table 8. Spring Water Remediation System Mass Removal Rate of Volatile Organic Compounds, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

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)
3/26/2010	69.2	2.5	0.00	NA	NA	NA
6/24/2010	42.3	1.4	NM	243,244	54.1	0.11
					Total Estimated Mass Removed During Current Quarter (lbs) =	**0.11**
					Total Estimated Mass Removed Since System Startup (lbs) =	**1.41**
					Total Effluent Treated Since System Startup (gallons) =	**2,239,608**

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).

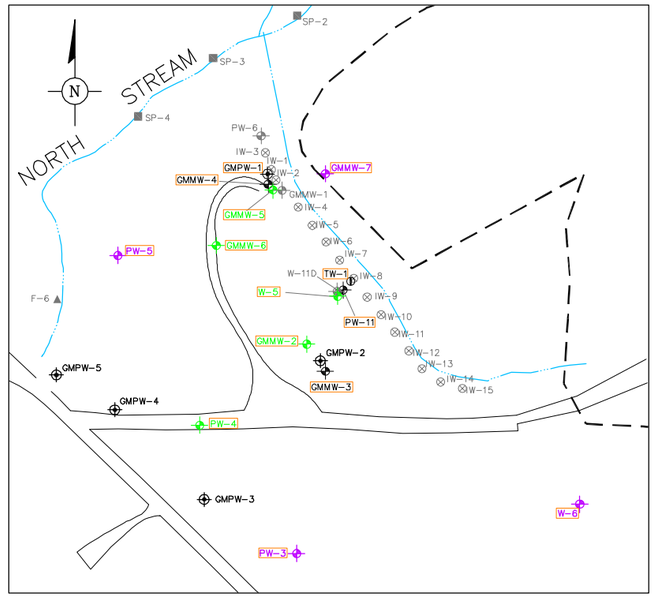
NA	Not applicable.
NM	Not measured.
ug/L	Micrograms per liter.
gpm	Gallons per minute.
btc	Below top of casing.
gal	Gallons.
lbs	Pounds.
VOC	Volatile organic compound.



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

Appendix A

Groundwater Sampling Logs

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/24/10
Site/Well No.	GMW-2	Replicate No.	—	Code No.	—
Weather	Sun 75°	Sampling Time: Begin	1005	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	Clear
Odor	
Appearance	Clear
pH (s.u.)	6.23
Conductivity (mS/cm)	0.579
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	16.65
Dissolved Oxygen (mg/L)	1.03
ORP	-30
Sampling Method	PDB/ Bailer
Remarks	Redeployed a PDB

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

Sampling Personnel: KB

Well Casing Volumes

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

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

ARCADIS

Water Sampling Log

Project: Colesville Landfill | Project No. NY000949.0023 | Page 1 of 1

Site Location: Colesville, NY | REPV 24 06 10 | Date 6/24/10

Site/Well No. GMW-5 | Replicate No. DUP-1 | Code No.

Weather Sun 75° Partly Cloudy | Sampling Time: Begin 11:00 End 11:08

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	Slight
Appearance	Tiny black particles
pH (s.u.)	5.87
Conductivity (mS/cm)	0.216
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	16.19
Dissolved Oxygen (mg/L)	0.87
ORP	-155
Sampling Method	PDB/ Bailer
Remarks	Deployed a BaTrap

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

Sampling Personnel: KB

Well Casing Volumes

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

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

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/24/10
Site/Well No.	GMMW-6	Replicate No.	MS/MSD	Code No.	
Weather	Sun 75°	Sampling Time: Begin	1020	End	1038

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	some particles Light brown in Bailer water
pH (s.u.)	6.19
Conductivity (mS/cm)	0.926
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	16.40
Dissolved Oxygen (mg/L)	1.20
ORP	-114
Sampling Method	PDB/ Bailer
Remarks	Redeployed a PDB

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

Sampling Personnel: KB

Well Casing Volumes

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

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

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/24/2010
Site/Well No.	PW-4	Replicate No.	—	Code No.	—
Weather	Sun 75°	Sampling Time: Begin	0942	End	0950

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.)	5.56
Conductivity (mS/cm)	1.89
(µmhos/cm)	
Turbidity (NTU)	—
Temperature (°C)	17.64
Dissolved Oxygen (mg/L)	2.28
ORP	-10
Sampling Method	PDB/ Bailer
Remarks	Redeployed a PDB

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

Sampling Personnel: KB

Well Casing Volumes

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

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

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/24/2010
Site/Well No.	WS-5	Replicate No.	—	Code No.	
Weather	Cloudy 75°	Sampling Time: Begin	1147	End	1153

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	Slight tint/clear
Odor	Very Slight
Appearance	Tiny Particles
pH (s.u.)	6.00
Conductivity (mS/cm)	0.838
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	16.94
Dissolved Oxygen (mg/L)	0.77
ORP	-90
Sampling Method	PDB/ Bailer
Remarks	Redeployed a PDB

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

Sampling Personnel: KB

Well Casing Volumes

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

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	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

ARCADIS

Surface Water Sampling Form

Project Colesville Landfill Project No. NY000949.0023 Page 1 of 1

Site Location Colesville, NY Date 6/22/10

Site/Well No. SP-4 (Spring) Replicate No. –

Weather Overcast 70 Sampling Time Begin 1320 End 1322

Site Conditions

Water Quality Meter: Quanta

Location Condition: –

Vegetation: –

Depth of Water: –

Estimated Flow Rate: –

Collection Method: Direct collection into a Bowl

Field Parameters

Color: Clear

Odor: None

Appearance: Clear (Tiny silt particles) Slightly cloudy

pH (s.u.): 6.06

Conductivity (mS/cm): 0.449

Temperature (°C): 18.59

DO (mg/L): 4.23

Turbidity (NTU): –

ORP: 26

Time: –

Remarks: Relocated 36' upstream to a little spring under Death the Rap Rap.

Constituents Sampled: See COC Sampling Personnel: KB

ARCADIS

Surface Water Sampling Form

Project: Colesville Landfill | Project No: NY000949.0023 | Page: 1 of 1

Site Location: Colesville, NY | Date: 6/22/2010

Site/Well No.: F-6 | Replicate No.: —

Weather: overcast 70° | Sampling Time: Begin 1120 End 1124

Site Conditions

Water Quality Meter: Quanta

Location Condition: Cobble to Stone

Vegetation: Some green/brown River algae

Depth of Water: 4"

Estimated Flow Rate: 5' / 5 Sec.

Collection Method: Direct collection

Field Parameters

Color	Clear
Odor	none
Appearance	Clear
pH (s.u.)	5.74
Conductivity (mS/cm)	0.172
Temperature (°C)	16.78
DO (mg/L)	6.60
Turbidity (NTU)	—
ORP	90
Time	—

Remarks: Some Orange Staining near River bank.
photos: 3

Constituents Sampled: See COC | Sampling Personnel: KB

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/24/10
Site/Well No.	TW-1	Replicate No.	—	Code No.	
Weather	Partly Cloudy 75°	Sampling Time: Begin	1130	End	1136

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 - Slight green Tint
Odor	Med
Appearance	Black Particles
pH (s.u.)	6.05
Conductivity (mS/cm)	0.527
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	19.54
Dissolved Oxygen (mg/L)	0.90
ORP	-135
Sampling Method	PDB/ Bailer
Remarks	deployed a Bio-Trap

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

Sampling Personnel: KB

Well Casing Volumes

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

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	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	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/22/10
Site/Well No.	IW-3	Replicate No.	—	Code No.	
Weather	Cloudy	Sampling Time:	Begin 1720	End	1725

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	Brown
Odor	Strong
Appearance	Brown
pH (s.u.)	3.76
Conductivity (mS/cm)	—
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	—
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	Bailer
Remarks	

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

Sampling Personnel: KB

Well Casing Volumes

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

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	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

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/22/10
Site/Well No.	IW-8	Replicate No.		Code No.	
Weather	Cloudy 70	Sampling Time: Begin	1745	End	1755

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	Brown - dark
Odor	Strong
Appearance	Dark Brown
pH (s.u.)	5.92
Conductivity (mS/cm)	
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	
Dissolved Oxygen (mg/L)	
ORP	
Sampling Method	Bailer
Remarks	

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

Sampling Personnel: KB

Well Casing Volumes

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

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	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	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/22/10
Site/Well No.	IW-13	Replicate No.		Code No.	
Weather		Sampling Time:	Begin 1805	End	1810

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	Brown
Odor	Strong
Appearance	Brown
pH (s.u.)	5.46
Conductivity (mS/cm)	
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	
Dissolved Oxygen (mg/L)	
ORP	
Sampling Method	Bailer
Remarks	

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

Sampling Personnel: KB

Well Casing Volumes

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

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

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/23/10
Site/Well No.	~~PW-4~~ GMPW-4	Replicate No.	—	Code No.	—
Weather	70°, cloudy	Sampling Time: Begin	9:00	End	9:10

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	Direct grab

Field Parameters

Color	None, clear.
Odor	None.
Appearance	Very slight solids.
pH (s.u.)	6.18
Conductivity (mS/cm)	—
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	—
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	Direct grab
Remarks	System sampling

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES ✓	40 ML VOA Vials		HCL
~~Ethene, Ethane, Methane~~	~~40 ML Vials~~		~~Na3PO4~~
~~TOC~~	~~40 ML Vials~~		~~H2SO4~~
Total Iron ✓	250 ml plastic		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

ARCADIS

Water Sampling Log

Project	Colesville Landfill	Project No.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/23/10
Site/Well No.	~~PW-5~~ GMPW-5	Replicate No.	—	Code No.	—
Weather	70°, cloudy	Sampling Time: Begin	9:10	End	9:20

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	Direct grab

Field Parameters

Color	None, clear.
Odor	None.
Appearance	Solids present.
pH (s.u.)	6.44
Conductivity (mS/cm)	—
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	—
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	Direct grab
Remarks	System sampling

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES ✓	40 ML VOA Vials		HCL
~~Ethene, Ethane, Methane~~	~~40 ML Vials~~		~~Na3PO4~~
~~TOC~~	~~40 ML Vials~~		~~H2SO4~~
Total Iron ✓	250 ml plastic		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.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/23/10
Site/Well No.	System Influent	Replicate No.	—	Code No.	
Weather	70°, cloudy	Sampling Time: Begin	9:20	End	9:25

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	Direct grab

Field Parameters

Color	Clear, no color.
Odor	None
Appearance	Light solids
pH (s.u.)	NM
Conductivity (mS/cm)	NM
(µmhos/cm)	—
Turbidity (NTU)	—
Temperature (°C)	—
Dissolved Oxygen (mg/L)	—
ORP	—
Sampling Method	Direct grab
Remarks	System sampling

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES YES	40 ML VOA Vials		HCL
~~Ethene, Ethane, Methane~~	~~40 ML Vials~~		~~Na3PO4~~
~~TOC~~	~~40 ML Vials~~		~~H2SO4~~
Total Iron YES	250 ml plastic		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.	NY000949.0023	Page	1 of 1
Site Location	Colesville, NY			Date	6/23/10
Site/Well No.	System Effluent	Replicate No.		Code No.	
Weather	70°, cloudy	Sampling Time: Begin	8:55	End	9:00

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	Direct grab

Field Parameters

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

Constituents Sampled	Container Description	Number	Preservative
8260B VOLATILES ✓	40 ML VOA Vials		HCL
~~Ethene, Ethane, Methane~~	~~40 ML Vials~~		~~Na3PO4~~
~~TOC~~	~~40 ML Vials~~		~~H2SO4~~
Total Iron ✓	250 ml plastic		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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Surface Water Sampling Form

Project: Colesville Landfill | Project No.: NY000949.0023 | Page: of

Site Location: Colesville, NY | Date: 6/24/10

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

Weather: Cloudy 75 | Sampling Time: Begin 1230 End 1234

Site Conditions

Water Quality Meter: Quanta

Location Condition: Orange buildup

Stream - orange in surrounding area - including drainage ditch by — Rd

Vegetation: Surrounding area heavy

Depth of Water: —

Estimated Flow Rate: 4.5 sec / 400 ML

Collection Method: Direct collection

Field Parameters

Color	Clear	
Odor		
Appearance	Trace orange particles	
pH (s.u.)	6.07	6.08
Conductivity (mS/cm)	0.470	0.443
Temperature (°C)	17.76 ~~0.47~~	16.88
DO (mg/L)	1.38	3.07
Turbidity (NTU)	—	—
ORP	-43	-12
Time	—	—

Remarks: 0.35 increment 1220 - 1223

4.10

3.75 = 0.60 1.80 - 3 volumes

Clear

none

some particles

Constituents Sampled: See COC | Sampling Personnel: KB

23 VOCs 9 - TOC

8 Iron

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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 3, Colesville Landfill, Broome County, New York.

Parameters for 6/23/2010 Sampling Event			
Discharge Temperature[1]	T	529	^{o}R
Ambient Temperature[2]	Ta	543	^{o}R
Stack Diameter	D	6	in
Stack Radius	R	0.25	ft
Stack Area	A	0.20	ft^2
Exit Velocity	V	16.7	fps
Exit Flow	Q	196	acfm
Exit Flow	Q	196	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 69 ^{o}F based on recorded parameters.
2. The ambient temperature is approximately 83 ^{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.

Calculation of the Short-Term Guideline Concentration (SGC) for Sampling Event on 6/23/2010

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	1,700[4]	9.2	*	40.60	5.70E-05	0.0097	0.63355	3.7E-02
1,1,1-Trichloroethane (Methyl Chloroform)	71-55-6	68,000	9.2	*	51.03	7.17E-05	0.0122	0.79623	1.2E-03
1,1,2-Trichloroethane	79-00-5	10,700[4]	9.2	*	51.03	7.17E-05	0.0122	0.79623	7.4E-03
1,2,4-Trimethylbenzene	95-63-6	NA	9.2	*	45.97	6.46E-05	0.0110	0.71728	NA
1,3,5-Trimethylbenzene	108-67-8	29,300[4]	9.2	*	45.97	6.46E-05	0.0110	0.71728	2.4E-03
1,1-Dichloroethane	75-34-3	NA	9.2	*	37.85	5.32E-05	0.0091	0.59064	NA
1,1-Dichloroethene (Vinylidene Chloride)	75-35-4	380[4]	9.2	*	37.08	5.21E-05	0.0089	0.57858	1.5E-01
1,2-Dibromoethane	106-93-4	70[4]	9.2	*	71.86	1.01E-04	0.0172	1.12124	1.6E+00
1,2-Dichlorobenzene	95-50-1	30,000	9.2	*	56.22	7.90E-05	0.0135	0.87733	2.9E-03
1,2-Dichloroethane	107-06-2	950[4]	9.2	*	37.85	5.32E-05	0.0091	0.59058	6.2E-02
1,2-Dichloropropane	78-87-5	83,300[4]	9.2	*	43.21	6.07E-05	0.0104	0.67431	8.1E-04
1,3-Dichlorobenzene	541-73-1	30,000	9.2	*	56.22	7.90E-05	0.0135	0.87733	2.9E-03
1,4-Dichlorobenzene	106-46-7	2,500[4]	9.2	*	56.22	7.90E-05	0.0135	0.87733	3.5E-02
2-Propanol (Isopropyl alcohol)	67-63-0	98,000	37	*	92.44	1.30E-04	0.0222	1.44247	1.5E-03
Benzene	71-43-2	1,300	9.2	*	29.87	4.20E-05	0.0072	0.46615	3.6E-02
Bromomethane	74-83-9	3,900	9.2	*	36.31	5.10E-05	0.0087	0.56665	1.5E-02
Carbon Tetrachloride	56-23-5	1,900	9.2	*	58.84	8.26E-05	0.0141	0.91809	4.8E-02
Chlorobenzene	108-90-7	10,900[4]	9.2	*	43.05	6.05E-05	0.0103	0.67174	6.2E-03
Chloroethane (Ethyl Chloride)	75-00-3	NA	9.2	*	24.68	3.47E-05	0.0059	0.38505	NA
Chloromethane	74-87-3	22,000	37	*	77.66	1.09E-04	0.0186	1.21182	5.5E-03
Chloroform	67-66-3	150	9.2	*	45.66	6.41E-05	0.0110	0.71250	4.8E-01
cis-1,2 - Dichloroethylene	156-59-2	190,000[4]	9.2	*	37.08	5.21E-05	0.0089	0.57858	3.0E-04
Dichlorofluoromethane (Freon 12)	75-71-8	NA	9.2	*	46.24	6.49E-05	0.0111	0.72151	NA
Ethyl benzene	100-41-4	54,000	9.2	*	40.60	5.70E-05	0.0097	0.63355	1.2E-03

See notes on last page.

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Table B-2. NYSDEC DAR-1 Air Modeling Data, Operational Year 8, Quarter Number 3, Colesville Landfill, Broome County, New York.

Calculation of the Short-Term Guideline Concentration (SGC) for Sampling Event on 6/23/2010

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	9.2	*	71.66	1.01E-04	0.0172	1.11826	1.2E-04
Freon 114	76-14-2	NA	9.2	*	65.37	9.18E-05	0.0157	1.02003	NA
Methylene Chloride (Dichloromethane)	75-09-2	14,000	9.2	*	32.49	4.56E-05	0.0078	0.50691	3.6E-03
Methyl tert-butyl ether	1634-04-4	34,500[4]	9.2	*	33.71	4.74E-05	0.0081	0.52607	1.5E-03
o-Xylene	95-47-6	4,300	9.2	*	40.60	5.70E-05	0.0097	0.63355	1.5E-02
m,p-Xylene	108-38-3/106-42-3	4,300	9.2	*	39.83	5.59E-05	0.0096	0.62149	1.4E-02
Tetrachloroethene	127-18-4	1,000	9.2	*	63.43	8.91E-05	0.0152	0.98977	9.9E-02
Toluene	108-88-3	37,000	9.2	*	35.24	4.95E-05	0.0085	0.54982	1.5E-03
trans-1,2-dichloroethylene	156-60-5	190,000[4]	9.2	*	37.10	5.21E-05	0.0089	0.57888	3.0E-04
Trichloroethene	79-01-6	14,000	9.2	*	50.25	7.06E-05	0.0121	0.78418	5.6E-03
Trichlorofluoromethane	75-69-4	68,000	9.2	*	52.54	7.38E-05	0.0126	0.81986	1.2E-03
Vinyl Chloride	75-01-4	180,000	9.2	*	23.90	3.36E-05	0.0057	0.37299	2.1E-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 Section IV.A.2.b.1 of the guidance provided in the New York State DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants, 1991 edition. For compounds which are defined as moderate-toxicity compounds, the interim SGC = (smaller of Time Weighted Average [TWA] - Threshold Limit Value or TWA - Recommended Exposure Limit)/4.2. An interim SGC was developed for these compounds because they have moderate-toxicity ratings, 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 3, Colesville Landfill, Broome County, New York.

Calculation of AGC based on 6/23/2010 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	9.2	*	40.60	2.98E-05	0.26109	**0.02**
1,1,1-Trichloroethane (Methyl Chloroform)	71-55-6	1,000	97,804.50	9.2	*	51.03	3.75E-05	0.32813	**0.00**
1,1,2-Trichloroethane	79-00-5	1.4	136.93	9.2	*	51.03	3.75E-05	0.32813	**0.24**
1,2,4-Trimethylbenzene	95-63-6	290	28,363.30	9.2	*	45.97	3.37E-05	0.29559	**0.00**
1,3,5-Trimethylbenzene	108-67-8	290	28,363.30	9.2	*	45.97	3.37E-05	0.29559	**0.00**
1,1-Dichloroethane	75-34-3	0.63	61.62	9.2	*	37.85	2.78E-05	0.24340	**0.40**
1,1-Dichloroethene (Vinylidene Chloride)	75-35-4	70	6,846.31	9.2	*	37.08	2.72E-05	0.23844	**0.00**
1,2-Dibromoethane[3]	106-93-4	0.0017	0.17	9.2	*	71.86	5.27E-05	0.46207	**277.91**
1,2-Dichlorobenzene	95-50-1	360	35,209.62	9.2	*	56.22	4.13E-05	0.36155	**0.00**
1,2-Dichloroethane	107-06-2	0.038	3.72	9.2	*	37.85	2.78E-05	0.24338	**6.55**
1,2-Dichloropropane	78-87-5	4	391.22	9.2	*	43.21	3.17E-05	0.27788	**0.07**
1,3-Dichlorobenzene	541-73-1	360	35,209.62	9.2	*	56.22	4.13E-05	0.36155	**0.00**
1,4-Dichlorobenzene	106-46-7	0.09	8.80	9.2	*	56.22	4.13E-05	0.36155	**4.11**
2-Propanol (Isopropyl alcohol)	67-63-0	7,000	684,631.48	37	*	92.44	6.79E-05	0.59445	**0.00**
Benzene	71-43-2	0.13	12.71	9.2	*	29.87	2.19E-05	0.19210	**1.51**
Bromomethane	74-83-9	5	489.02	9.2	*	36.31	2.67E-05	0.23352	**0.05**
Carbon Tetrachloride	56-23-5	0.067	6.55	9.2	*	58.84	4.32E-05	0.37835	**5.77**
Chlorobenzene	108-90-7	110	10,758.49	9.2	*	43.05	3.16E-05	0.27683	**0.00**
Chloroethane (Ethyl Chloride)	75-00-3	10,000	978,044.97	9.2	*	24.68	1.81E-05	0.15868	**0.00**
Chloromethane	74-87-3	90	8,802.40	37	*	77.66	5.70E-05	0.49939	**0.01**
Chloroform	67-66-3	0.043	4.21	9.2	*	45.66	3.35E-05	0.29362	**6.98**
cis-1,2 - Dichloroethylene	156-59-2	63	6,161.68	9.2	*	37.08	2.72E-05	0.23844	**0.00**
Dichlorofluoromethane (Freon 12)	75-71-8	12,000	1,173,653.96	9.2	*	46.24	3.39E-05	0.29734	**0.00**
Ethyl benzene	100-41-4	1,000	97,804.50	9.2	*	40.60	2.98E-05	0.26109	**0.00**
Freon 113	76-13-1	180,000	17,604,809.41	9.2	*	71.66	5.26E-05	0.46084	**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 3, Colesville Landfill, Broome County, New York.

Calculation of AGC based on 6/23/2010 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	9.2	*	65.37	4.80E-05	0.42036	**0.00**
Methylene Chloride (Dichloromethane)	75-09-2	2.1	205.39	9.2	*	32.49	2.38E-05	0.20890	**0.10**
Methyl tert-butyl ether	1634-04-4	3,000	293,413.49	9.2	*	33.71	2.47E-05	0.21679	**0.00**
o-Xylene	95-47-6	100	9,780.45	9.2	*	40.60	2.98E-05	0.26109	**0.00**
m,p-Xylene	108-38-3/106-42-3	100	9,780.45	9.2	*	39.83	2.92E-05	0.25612	**0.00**
Tetrachloroethene	127-18-4	1	97.80	9.2	*	63.43	4.66E-05	0.40789	**0.42**
Toluene	108-88-3	5,000	489,022.48	9.2	*	35.24	2.59E-05	0.22658	**0.00**
trans-1,2-dichloroethylene	156-60-5	63	6,161.68	9.2	*	37.10	2.72E-05	0.23856	**0.00**
Trichloroethene	79-01-6	0.50	48.90	9.2	*	50.25	3.69E-05	0.32316	**0.66**
Trichlorofluoromethane	75-69-4	1,000	97,804.50	9.2	*	52.54	3.86E-05	0.33787	**0.00**
Vinyl Chloride	75-01-4	0.11	10.76	9.2	*	23.90	1.75E-05	0.15371	**1.43**

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 3 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.)
6/23/2010	15,465	155	148
Quarter Totals (gal.) =	**15,465**	**155**	**148**
Totals for Operational Year 8 (gal.) =	**28,294**	**283**	**295**
Totals Since Startup (gal.) =	**237,179**	**9,674**	**9,448**

Notes:

gal. Gallons

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Table C-2. Automated Reagent Injection System, Operational Year 8, Quarter Number 3 Operating Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Injection Number 63

Injection Start Date =	4/8/2010		
Injection Completion Date =	6/23/2010		
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	27
IW-3	530	5	5.3	NM	27
IW-1	210	4	2.1	NM	28
IW-2	210	3	2.1	NM	24
GMMW-1	140	3	1.4	NM	NM[2]
IW-4	989	4	9.9	NM	29
IW-5	989	5	9.9	NM	27
IW-6	989	7	9.9	NM	29
IW-7	989	8	9.9	NM	29
IW-8[3]	0	0	0.0	NM	0
IW-9	1,230	11	12.3	NM	29
IW-10	1,230	12	12.3	NM	28
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	29
IW-14	989	18	9.9	NM	29
IW-15	989	19	9.9	NM	31
Totals (gal.) =	15,465	148	154.7	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. 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.