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April 12, 2010

Mr. John Nohrstedt U.S. Army Corps of Engineers Engineering and Support Center, Huntsville Attn: CEHNC-FS-IS 4820 University Square Huntsville, Alabama 35816-1822

# SUBJECT: Annual Report and Year Three Review – Ash Landfill Operable Unit at Seneca Army Depot Activity; W912DY-08-D-0003, Delivery Order 0001

Dear Mr. Nohrstedt:

Parsons Infrastructure & Technology Group, Inc. (Parsons) is pleased to submit the Annual Report and Year Three Review for the third year of monitoring at the Ash Landfill Operable Unit at Seneca Army Depot Activity (SEDA) in Romulus, New York. This work was performed in accordance with the Scope of Work for Delivery Order 0001 under Contract W912DY-08-D-0003. This Annual Report and Year Three Review provides a review of long-term groundwater monitoring for 2009 and provides recommendations for future long-term monitoring at the site. This document also provides an annual review of the effectiveness of the remedy implemented in 2006. This document recommends the continuation of monitoring on a semi-annual basis for the next year.

Parsons appreciates the opportunity to provide you with the Annual Report and Year Three Review for this work. Should you have any questions, please do not hesitate to call me at (617) 449-1405 to discuss them.

Sincerely,

Todd Heino, P.E. Program Manager

Enclosures

cc: S. Absolom, SEDA K. Hoddinott, USACHPPM R. Battaglia, USACE, NY





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Mr. Julio Vazquez USEPA Region II Superfund Federal Facilities Section 290 Broadway, 18<sup>th</sup> Floor New York, NY 10007-1866

Mr. Kuldeep K. Gupta, P.E. New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation Remedial Bureau A, Section C 625 Broadway Albany, NY 12233-7015

Mr. Mark Sergott Bureau of Environmental Exposure Investigation, Room 300 New York State Department of Health 547 River Street, Flanigan Square Troy, NY 12180

#### SUBJECT: Annual Report and Year Three Review – Ash Landfill Operable Unit at Seneca Army Depot Activity; EPA Site ID# NY0213820830 and NY Site ID# 8-50-006

Dear Mr. Vazquez/Mr. Gupta/Mr. Sergott:

Parsons Infrastructure & Technology Group, Inc. (Parsons) is pleased to submit the Annual Report and Year Three Review for the third year of annual monitoring at the Ash Landfill Operable Unit at Seneca Army Depot Activity (SEDA) in Romulus, New York (EPA Site ID# NY0213820830 and NY Site ID# 8-50-006). This Annual Report and Year Three Review provides a review of long-term groundwater monitoring for 2009 and recommendations for future long-term monitoring at the site. This document also provides an annual review of the effectiveness of the remedy implemented in 2006. This document recommends the continuation of monitoring on a semi-annual basis for the next year.

Parsons appreciates the opportunity to provide you with the Annual Report and Year Three Review for this work. Should you have any questions, please do not hesitate to call me at (617) 449-1405 to discuss them.

Sincerely,

Todd Heino, P.E. Program Manager

Enclosures cc: M. Heaney, TechLaw S. Absolom, SEDA R. Battaglia, USACE, NY

J. Nohrstedt, USACE, Huntsville K. Hoddinott, USACHPPM





August 2010

## FINAL ANNUAL REPORT AND YEAR 3 REVIEW FOR THE ASH LANDFILL OPERABLE UNIT SENECA ARMY DEPOT ACTIVITY, ROMULUS, NEW YORK

**Prepared for:** 

# U.S. ARMY CORPS OF ENGINEERS, ENGINEERING AND SUPPORT CENTER HUNTSVILLE, ALABAMA

and

## SENECA ARMY DEPOT ACTIVITY ROMULUS, NEW YORK

**Prepared by:** 

PARSONS 100 High Street Boston, MA 02110

Contract Number W912DY-08-D-0003 Task Order No. 0001 EPA Site ID# NY0213820830 NY Site ID# 8-50-006

August 2010

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#### 1.0 **INTRODUCTION**

This Annual Report is for the Ash Landfill Operable Unit (OU), located at the Seneca Army Depot Activity (SEDA or the Depot) in Romulus, New York (**Figure 1**). This report provides a review of the third year of long-term groundwater monitoring of the full-scale biowall system installed in 2006. This report also provides recommendations for future long-term monitoring at the site. This report is based on an annual review of the effectiveness of the remedy implemented in 2006, and includes the following:

- A comparison of the groundwater data to the long-term groundwater monitoring (LTM) objectives, listed below in **Section 1.1**;
- An evaluation of the need to recharge (i.e., add substrate) the biowalls, as outlined in the Remedial Design Report (RDR) (Parsons, 2006c) in **Section 3.4**; and
- An assessment of the remedy's compliance with the United States Environmental Protection Agency's (USEPA's) "Guidance for Evaluation of Federal Agency Demonstrations (Section 12(h)(s))."

A remedial action (RA) was completed in October and November 2006 in accordance with the Record of Decision (ROD) for the Ash Landfill OU (Parsons, 2004), the Remedial Design Work Plan (Parsons, 2006b), and the RDR (Parsons, 2006c), The RA involved the following:

- Installation of three dual biowall systems, A1/A2, B1/B2, and C1/C2, to address volatile organic compounds (VOCs) in groundwater that exceed New York State Department of Environmental Conservation's (NYSDEC's) Class GA groundwater standards;
- Construction and establishment of a 12-inch vegetative cover over the Ash Landfill and the Non-Combustible Fill Landfill (NCFL) to prevent ecological receptors from coming into direct contact with the underlying soils that are contaminated with metals and polycyclic aromatic hydrocarbons (PAHs);
- Excavation and disposal of Debris Piles A, B, and C; and
- Re-grading of the Incinerator Cooling Water Pond to promote positive drainage.

As part of the RA at the Ash Landfill OU, LTM is being performed as part of the post-closure operations. Groundwater monitoring is required as part of the remedial design, which was formulated to comply with the ROD. The first of four rounds of groundwater sampling in the first year of LTM was completed between January 3, 2007 and January 4, 2007; the second round was completed between June 5, 2007 and March 17, 2007; the third round was completed between June 5, 2007 and June 7, 2007; and the last round was completed between November 13, 2007 and November 15, 2007.

The analytical and geochemical results were presented in four letter reports, submitted April 12, 2007 (Quarter 1), June 5, 2007 (Quarter 2), September 19, 2007 (Quarter 3), and February 21, 2008 (Quarter 4). The results of the Year 1 LTM were reported and evaluated in the "Annual Report and One-Year Review for the Ash Landfill" (Parsons, 2008). As part of the Year 1 report, the Army recommended that the frequency of LTM events at the Ash Landfill OU be reduced from quarterly to semi-annually; this recommendation was approved by the USEPA and NYSDEC.

The first round of Year 2 semi-annual monitoring, referred to as Round 5, was completed between June 24, 2008 and June 26, 2008. Round 6 of the semi-annual monitoring was completed between December 11, 2008 and December 15, 2008. The results of Year 2 of the LTM program were presented in the "Annual Report and Year Two Review" (Parsons, 2009). The first round of Year 3 semi-annual monitoring, referred to as Round 7, was completed between June 1, 2009 and June 4, 2009. Round 8 of the semi-annual monitoring was completed between December 14, 2009 and December 18, 2009.

This Annual Report reviews the results of the third year of the LTM program as part of the ongoing evaluation of the remedy and provides conclusions and recommendations about the effectiveness of the remedial action, including the groundwater remedy and the vegetative landfill covers.

#### 1.1 Long-Term Groundwater Monitoring Objectives

Three types of long-term groundwater monitoring are being performed: 1) plume performance monitoring, 2) biowall process monitoring, and 3) off-site compliance monitoring. On-site performance monitoring is being conducted to measure groundwater contaminant concentrations and to evaluate the effectiveness of the biowall remedy for the Ash Landfill OU. The objectives of performance and compliance monitoring are as follows:

- Confirm that there are no exceedances of groundwater standards for contaminants of concern (COC) at the off-site compliance monitoring well MW-56;
- Document the effectiveness of the biowalls to remediate and attenuate the chlorinated ethene plume; and
- Confirm that groundwater concentrations throughout the plume are decreasing to eventually meet NYSDEC Class GA groundwater standards.

Biowall process monitoring is being conducted at two locations (shown in **Figure 2**) to determine if, and when, any biowall maintenance activities should be performed. The first location is within Biowalls B1/B2 in the segment that runs along the pilot-scale biowalls that were installed in July 2005. The second location is within Biowall C2, the furthest downgradient biowall. The objectives of biowall process monitoring for operations and maintenance (O&M) activities are as follows:

• Monitor the long-term performance and sustainability of the biowalls;

- Monitor substrate depletion and geochemical conditions under which the effectiveness of the biowalls may decline; and
- Determine if, and when, the biowalls need maintenance (i.e., need to be recharge with additional organic substrate).

#### 2.0 SITE BACKGROUND

2.1 Site Description

SEDA is a 10,587-acre former military facility located in Seneca County near Romulus, New York, that was owned by the United States Government and operated by the Department of the Army since 1941. SEDA is located between Seneca Lake and Cayuga Lake and is bordered by New York State Highway 96 to the east, New York State Highway 96A to the west, and sparsely populated farmland to the north and south.

The location of the Ash Landfill OU, also referred to as the Ash Landfill, is composed of five solid waste management units (SWMUs). As shown in **Figure 3**, the five SWMUs that comprise the Ash Landfill OU are the Incinerator Cooling Water Pond (SEAD-3), the Ash Landfill (SEAD-6), the NCFL (SEAD-8), the Debris Piles (SEAD-14), and the Abandoned Solid Waste Incinerator Building (SEAD-15).

Prior to the development of the Ash Landfill OU, the land in this area was used for farming. From 1941 (the date SEDA was constructed) to 1974, uncontaminated trash was burned in a series of burn pits near the abandoned incinerator building (Building 2207). According to the U.S. Army Environmental Hygiene Agency (USAEHA) Interim Final Report, Groundwater Contamination Survey No. 38-26-0868-88 (July 1987), the ash from the refuse burning pits was buried in the Ash Landfill (SEAD-6) from 1941 until the late 1950's or early 1960's.

The incinerator was built in 1974. Between 1974 and 1979, materials intended for disposal were transported to the incinerator. Each week the Depot generated approximately 18 tons of refuse, the majority of which was incinerated. The source for the refuse was domestic waste from Depot activities and family housing. Large items that could not be burned were disposed of at the NCFL (SEAD-8). The NCFL encompasses approximately three acres located southeast of the incinerator building, immediately south of a SEDA railroad line. The NCFL was used as a disposal site for non-combustible materials, including construction debris, from 1969 until 1977.

Ash and other residue from the incinerator were temporarily disposed in an unlined cooling pond immediately north of the incinerator building. The cooling pond consisted of an unlined depression approximately 50 feet in diameter and approximately 6 to 8 feet deep. When the pond filled, the fly ash and residues were removed, transported, and buried in the adjacent ash landfill east of the cooling pond. The refuse was dumped in piles and occasionally spread and compacted. No daily or final cover was applied during operation. According to an undated aerial photograph of the incinerator

during operation, the active area of the Ash Landfill extended at least 500 feet north of the incinerator building, near a bend in a dirt road. A fire destroyed the incinerator on May 8, 1979, and the landfill was subsequently closed. Post-closure the landfill was apparently covered with native soil of various thicknesses, but was not closed with an engineered cover or cap. Other areas at the site were used as a grease pit and for burning debris.

#### 2.2 Site Geology/Hydrogeology

The site is underlain by a broad north-to-south trending series of rock terraces covered by a mantle of glacial till. As part of the Appalachian Plateau, the region is underlain by a tectonically undisturbed sequence of Paleozoic rocks consisting of shales, sandstones, conglomerates, limestones and dolostones. At the Ash Landfill site, these rocks (the Ludlowville Formation) are characterized by gray, calcareous shales and mudstones and thin limestones with numerous zones of abundant invertebrate fossils. Locally, the shale is soft, gray, and fissile. The shale, which has a thin weathered zone at the top, is overlain by 2 to 3 feet of Pleistocene-age<sup>1</sup> till deposits. The till matrix varies locally, but generally consists of unsorted silt, clay, sand, and gravel.

The thickness of the till at the Ash Landfill OU generally ranges from 4 to 15 feet. At the location of the biowalls, the thickness of the till and weathered shale is approximately 10 to 15 feet. Groundwater is present in both the shallow till/weathered shale layer and in the deeper competent shale layer. In both water-bearing units, the predominant direction of groundwater flow is to the west, toward Seneca Lake. Based on the historical data, the wells at the Ash Landfill site exhibit rhythmic and seasonal fluctuations in the water table and the saturated thickness. Historic data at the Ash Landfill OU indicate that the saturated interval is thinnest (generally, between 1 and 3 feet thick) in the month of September and is thickest (generally, between 6 and 8.5 feet thick) between December and March.

The average linear velocity of the groundwater in the till/weathered shale layer was calculated during the Remedial Investigation (RI) in 1994 using the following parameters: 1) average hydraulic conductivity of 4.5 x  $10^{-4}$  centimeters per second (cm/sec) (1.28 feet per day [ft/day]), 2) estimated effective porosity of 15% to 20%, and 3) groundwater gradient of 1.95 x  $10^{-2}$  feet per foot (ft/ft) (Parsons Engineering Science, Inc., 1994). The average linear velocity was calculated to 0.166 ft/day or 60.7 feet per year (ft/yr) at 15% effective porosity and 0.125 ft/day or 45.5 ft/yr at 20% effective porosity. The actual velocity of on-site groundwater may be locally influenced by zones of higher-than-average permeability; these zones are possibly associated with variations in the porosity of the till/weathered shale.

<sup>&</sup>lt;sup>1</sup> The Pliestocene Age, also known as the Late Wisconsin Age, occurred 20,000 years before present.

#### 2.3 Soil and Groundwater Impacts

The nature and extent of the COCs at the Ash Landfill OU were evaluated through a comprehensive RI program. It was determined that surface water and sediment were not media of concern and did not require remediation. A groundwater contaminant plume that emanated from the northern end of the Ash Landfill was delineated during the RI. The primary COCs in groundwater at the Ash Landfill are VOCs; the primary COCs in soil at the Ash Landfill are chlorinated and aromatic compounds, semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and, to a lesser degree, metals. Release of the COCs is believed to have occurred during the former activities at the Ash Landfill OU (described above).

#### <u>Soil</u>

VOCs, specifically trichloroethene (TCE), were detected in the soil in the "Bend in the Road" area. Located northwest of the Ash Landfill, this area is believed to be the source of the groundwater plume. Between 1994 and 1995, the Army conducted a Non-Time Critical Removal Action (NTCRA), also known as an Interim Removal Measure (IRM), to address VOC and PAH contamination in soil near the "Bend in the Road." The excavation limits of the NTCRA are shown on **Figure 3**. The NTCRA successfully reduced the risk associated with potential exposure to contaminated soil, and prevented continued leaching of VOCs to groundwater. Since the NTCRA, concentrations of VOCs in groundwater near the original source area have decreased by two orders of magnitude. Further remediation for VOCs in the soil at the "Bend in the Road" was not required.

The other COCs detected in the soil were PAHs and metals. PAHs were detected at concentrations above NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) values in the NCFL and the Debris Piles present around the former Ash Landfill. In general, the highest PAH concentrations were detected in the NCFL and small Debris Pile surface soils. The metals that were detected at elevated concentrations (significantly above TAGMs) in soils were copper, lead, mercury, and zinc. These elevated concentrations were found in the Ash Landfill, the NCFL, and the Debris Piles, with the highest concentrations of metals detected at the surface of the Debris Piles. These piles are small, localized, surface features that are visibly discernable and do not extend into the subsurface.

#### <u>Groundwater</u>

The primary potential impact to human health and the environment is a groundwater contaminant plume containing dissolved chlorinated solvents, primarily TCE, isomers of dichloroethene (DCE), and vinyl chloride (VC). The plume originates in the "Bend in the Road" area near the northwestern edge of the Ash Landfill and is approximately 1,100 feet long by 625 feet wide. The nearest exposure points for groundwater are three farmhouse wells located approximately 1,250 feet from the leading edge of the plume near the farmhouse. The location of the farmhouse relative to the plume at the Ash Landfill is shown on **Figure 4**. Two of the farmhouse wells draw water from the till/weathered shale

aquifer and the remaining well draws water from the bedrock aquifer. As discussed in Section 4.4 of the RI (Parsons, 1994), plume profiles were constructed for geologic cross sections at the Ash Landfill; based on these profiles it was determined that the plume is vertically restricted to the upper till/weathered shale aquifer and is not present in the deeper competent shale aquifer. As noted above, the source area of the plume was removed by the NTCRA.

#### 2.4 Summary of the Remedial Action

#### 2.4.1 Biowalls

Three biowall pairs were installed to address groundwater contamination on-site, as documented in the Construction Completion Report (Parsons, 2007). The biowalls were constructed by excavating a linear trench to competent bedrock then backfilling the trench to the ground surface with a mixture of mulch and sand.

Biowalls A1/A2, B1/B2, and C1/C2 (as shown in **Figure 2**) were constructed perpendicular to the chlorinated solvent plume at the locations prescribed in the RDR. The entire length of Biowalls A1/A2 and the northern portion of B1/B2 were combined into a single double-width trench (minimum of 6 feet in width) due to unstable soil conditions that caused trench widening. Approximately 2,840 linear feet (lf) of biowalls were constructed in the areas downgradient of the Ash Landfill at depths ranging from 7 feet below ground surface (bgs) to 18.5 feet bgs.

A 12-inch soil cover was placed over the entire length of the biowalls to impede surface water from preferentially flowing into the biowall trenches. Trench spoils were used as the cover material and were compacted with a backhoe. A site visit in December 2009 confirmed that the mulch backfill in the trenches has settled to ground surface.

#### 2.4.2 Incinerator Cooling Water Pond

As specified in the RDR, the Incinerator Cooling Water Pond (ICWP) was re-graded to meet the surrounding grade to prevent the accumulation of water in this inactive pond. Prior to re-grading, the vegetation on the berms surrounding the ICWP was removed with an excavator. The soil berm was then regraded with a dozer to match the surrounding grade. The ICWP was seeded with a standard meadow mix to promote vegetation and to prevent erosion.

### 2.4.3 Ash Landfill and NCFL Vegetative Cover

A soil cover comprised of mulch, biowall trench spoils that met the site cleanup criteria, and off-site topsoil was placed over the 2.2 acres of the Ash Landfill. The Ash Landfill was covered with 4,380 cubic yards (cy) of fill to achieve a minimum cover thickness of 12 inches. Biowall trench spoils that met the site cleanup criteria and off-site topsoil were placed over the 3.4 acre NCFL. The NCFL was covered with 6,015 cy of fill to achieve a minimum cover thickness of 12 inches. The purpose of the

covers is to prevent terrestrial wildlife from directly contacting or incidentally ingesting metalimpacted soils.

#### 2.4.4 Debris Pile Removal

During the RA, approximately 200 cy of debris was removed from Debris Piles B and C. Approximately 1,000 cy of debris was removed from within and beyond the staked limits of Debris Pile A. The total volume of debris removed was approximately 1,200 cy (1,548 tons).

#### 2.5 Description of Technology Used in Biowalls

Reductive dechlorination is the most important process for natural biodegradation of highly chlorinated solvents (USEPA, 1998) (see **Figure 5**). Complete dechlorination of TCE and other chlorinated solvents is the goal of anaerobic biodegradation via mulch biowall technology.

Biodegradation causes measurable changes in groundwater geochemistry that can be used to evaluate the effectiveness of substrate addition in stimulating biodegradation. For anaerobic reductive dechlorination to be an effective process, generally groundwater must be sulfate-reducing or methanogenic. Thus, groundwater in which anaerobic reductive dechlorination is occurring should have the following geochemical signature:

- Depleted concentrations of dissolved oxygen (DO), nitrate, and sulfate;
- Elevated concentrations of methane, carbon dioxide, chloride, and alkalinity; and
- Reduced oxidation reduction potential (ORP).

Treatment of chlorinated ethenes in groundwater using a biowall relies on the flow of groundwater under a natural hydraulic gradient through the biowall to promote contact with slowly-soluble organic matter. As the groundwater flows through the organic matter in the biowall, an anaerobic treatment zone is established in the biowall. The treatment zone may also extend downgradient of the biowall as soluble organic matter migrates with groundwater and stimulates microbial processes.

Solid-phase organic substrates used to stimulate anaerobic biodegradation of chlorinated ethenes include plant mulch and compost. To enhance microbial activity, the mulch may be composted prior to emplacement to more readily degraded material, or mulch may be mixed with an outside source of compost. Mulch is primarily composed of cellulose and lignin, and contains "green" plant material that provides nitrogen and nutrients for microbial growth. These substrates are mixed with coarse sand and placed in a trench or excavation in a permeable reactive biowall configuration. Biodegradable vegetable oil may be added to the mulch mixture to increase the availability of soluble organic carbon.

Degradation of the organic substrate by microbial processes in the subsurface provides a number of breakdown products, including metabolic acids (e.g., butyric and acetic acids). The breakdown products and acids produced by degradation of mulch in a saturated subsurface environment provide secondary fermentable substrates for the generation of molecular hydrogen, which is the primary electron donor utilized in anaerobic reductive dechlorination of chlorinated ethenes. Thus, a mulch biowall has the potential to stimulate reductive dechlorination of chlorinated ethenes for many years. If necessary, mulch biowalls can be periodically recharged with liquid substrates (e.g., vegetable oils) to extend the life of the biowall. Vegetable oil is a substrate that is readily available to microorganisms as a carbon source that helps establish and continually develop the microbial population. Used in combination with mulch, vegetable oil has the potential to extend the duration of organic carbon release.

## 3.0 LONG-TERM MONITORING DATA ANALYSIS AND GROUNDWATER REMEDY EVALUATION

#### 3.1 Sample Collection

Four rounds of sampling were conducted during the first year of LTM, as follows:

- The first quarter, referred to as 1Q2007, was completed between January 3, 2007 and January 4, 2007;
- The second quarter, referred to as 2Q2007, was completed between March 15, 2007 and March 17, 2007;
- The third quarter, referred to as 3Q2007, was completed between June 5, 2007 and June 7, 2007; and
- The fourth quarter, referred to as 4Q2007, was completed between November 13, 2007 and November 15, 2007.

Two rounds of sampling were conducted during the second year of LTM, as follows:

- Round five, referred to as 5R2008, was completed between June 24, 2008 and June 26, 2008; and
- Round six, referred to as 6R2008, was completed between December 11, 2008 and December 15, 2008.

Two rounds of sampling were conducted during the third year of LTM, as follows:

• Round seven, referred to as 7R2009, was completed between June 1, 2009 and June 4, 2009; and

• Round eight, referred to as 8R2009, was completed between December 15, 2009 and December 18, 2009.

The first year of sampling was quarterly, and at that time, the sampling rounds were identified as xQyyyy, where "x" is the round number, and "yyyy" is the 4 digit year. After the first year, the sample frequency was modified to semiannual. An "R" was used to replace the "Q" to denote the round. The round number has been used sequentially since the first quarterly round.

Groundwater samples were collected using low flow sampling techniques during each of the 2009 sampling rounds. Bladder pumps were used to purge the wells and collect the samples during these rounds. Sampling procedures, sample handling and custody, holding times, and collection of field parameters were conducted in accordance with the "Final Sampling and Analysis Plan for Seneca Army Depot Activity (SAP)" (Parsons, 2006a). Field forms for 8R2009 are included on a CD in **Appendix A**.

Fourteen monitoring wells were sampled and classified into three groups (listed in **Table 1**): eleven on-site plume performance monitoring wells, one off-site compliance monitoring well, and five biowall process monitoring wells. The off-site performance monitoring well, MW-56, is monitored on a semi-annual basis, and was monitored in January 2007, June 2007, June 2008, December 2008, June 2009, and December 2009. The well locations are shown on **Figure 6**.

Three of the biowall process monitoring wells are also plume performance wells (MWT-23, MWT-28, and MWT-29). These five wells are either within or immediately upgradient or downgradient of the biowalls and are used to assess if, and when, the biowalls may require additional substrate. The Annual Report – Year 1 recommended that groundwater samples collected from monitoring wells PT-17 and MWT-7 be analyzed for additional geochemical parameters that are included for the process monitoring wells to better monitor the progress of the treatment zone.

As indicated in **Table 1**, samples from the wells in the biowall process monitoring group (MWT-23, MWT-26, MWT-27, MWT-28, and MWT-29) and from two wells from the on-site plume performance group (PT-17 and MWT-7) were submitted to Test America Laboratories, Inc. in Buffalo, New York to be analyzed for:

- VOCs by USEPA SW846 Method 8260B
- Total organic carbon (TOC) by USEPA SW846 Method 9060A
- Sulfate by USEPA Method 300.1

Samples from these wells were also submitted to Microseeps, Inc. located in Pittsburgh, Pennsylvania for analysis for methane, ethane, and ethene (MEE) by AM20GAX, Microseeps' version of Method RSK 175.

During sampling in the field, the following geochemical parameters were recorded for the duration of low-flow sampling for each groundwater sample:

- pH, ORP, conductivity, and temperature were measured with a Horiba U-22 multi-parameter instrument;
- DO was measured with a YSI 55 meter; and
- Turbidity was measured with a Lamotte 2020 turbidity meter.

In addition, a HACH<sup>®</sup> DR/850 Colorimeter was used in the field to measure manganese and ferrous iron at PT-17, MWT-7, MWT-23, MWT-26, MWT-27, MTW-28, and MWT-29. Manganese and ferrous iron were measured by USEPA Method 8034 and USEPA Method 8146, respectively. A summary of the samples collected is presented in **Table 1**.

#### 3.2 Groundwater Elevations

Historic groundwater elevations and groundwater elevations from the three years of LTM round are presented in **Figure 7** and **Table 2**. Groundwater contours and groundwater flow direction based on 8R2009 are provided in **Figure 8**; these data show that groundwater levels were relatively low during the eighth sampling event.

#### 3.3 Geochemical Data

Biodegradation causes measurable changes in groundwater geochemistry that can be used to evaluate the effectiveness of substrate addition in stimulating biodegradation. For anaerobic reductive dechlorination to be an effective process, typically groundwater will be sulfate-reducing or methanogenic. As mentioned above, geochemical parameters collected in the field that also serve as water quality indicators (i.e., pH, ORP, DO, conductivity, and temperature) were recorded for all the wells in the LTM program. Analysis for the additional geochemical parameters of TOC, sulfate, and MEE, and field tests for ferrous iron and manganese, were completed at PT-18A, MWT-7, MWT-23, MWT-26, MWT-27, MWT-28, and MWT-29. According to USEPA guidance on natural attenuation of chlorinated solvents (USEPA, 1998), analysis of these geochemical parameters may be used to as supporting evidence that anaerobic reductive dechlorination is occurring if the following geochemical conditions are observed:

- Depleted concentrations of DO and sulfate,
- Elevated concentrations of methane,
- Reduced ORP,
- Elevated concentrations of soluble organic substrate in groundwater (TOC), and
- An increase in the concentrations of ferrous iron and manganese relative to background conditions.

Geochemical parameter results are shown in **Table 3**, which is organized with the most upgradient well listed first and the most downgradient well listed last. A comparison of the geochemical parameters for wells MWT-26 (upgradient of Biowall B1) to MWT-28 (in Biowall B2) for Year 3, summarized below, demonstrates the change in geochemistry across the B1/B2 Biowalls.

#### Dissolved Oxygen

DO is the most favored electron acceptor (yields the most energy) used by microbes during biodegradation of organic carbon, and its presence can inhibit the anaerobic degradation of chlorinated ethenes. In the wells sampled within Biowalls B1/B2 and Biowall C2, DO levels are depleted (less than 1.0 milligrams per liter [mg/L]) in both Year 3 events (see **Table 3**). DO is depleted due to the presence of organic substrate in the biowalls. The depletion of DO enhances the potential for anaerobic degradation of chlorinated ethenes in groundwater. The data also show that historically DO concentrations are higher in winter than in summer; the increase in DO concentrations between the two Year 3 sampling events, 7R2009 and 8R2009, likely reflects seasonal variation and not a systemic increase in DO.

#### <u>Sulfate</u>

Sulfate is used as an electron acceptor during sulfate reduction, competing with anaerobic reductive dechlorination for available substrate/electron donor. Sulfate levels lower than 20 mg/L are desired to prevent inhibition of reductive dechlorination of chlorinated ethenes (USEPA, 1998). In Year 3, the sulfate levels detected within the biowalls (at MWT-27, MWT-28, and MWT-23) were orders of magnitude lower than the concentration of sulfate detected upgradient of Biowalls B1/B2 at MWT-26 (see **Table 3**). These conditions indicate that sulfate is being depleted and that sulfate should not inhibit anaerobic dechlorination within the biowalls.

#### <u>Methane</u>

The presence of methane in groundwater is indicative of strongly reducing methanogenic conditions. An increase in the concentrations of methane indicates that reducing conditions are optimal for anaerobic reductive dechlorination to occur. Methane was detected in the well upgradient of Biowall B1/B2 (MWT-26) at a concentration of 610 micrograms per liter ( $\mu$ g/L) in Round 8. Compared to this concentration, concentrations of methane increased by three orders of magnitude at all process wells located within biowalls, and by two orders of magnitude in the process well immediately downgradient of Biowall B2 (see **Table 3**). These data demonstrate that there is an increase in the level of methanogenic activity within the biowalls and in downgradient areas, compared to upgradient locations.

#### Oxidation-Reduction Potential

ORP indicates the level of electron activity in groundwater and the tendency of groundwater to accept or transfer electrons. Low ORP, less than -100 millivolts (mV), is conducive for anaerobic reductive

dechlorination to occur (USEPA, 1998). During Round 8, ORP values upgradient of Biowall A1/A2 were significantly higher than ORP values in the wells within the biowalls, which were less than or close to -100 mV (see **Table 3**). The ORP levels within Biowalls B1/B2 and C2 indicate that reducing conditions within the biowalls are sufficient to support sulfate reduction, methanogenesis, and anaerobic reductive dechlorination.

#### Total Organic Carbon

The presence of organic substrate is necessary to stimulate and sustain anaerobic degradation processes. In biowalls, organic carbon acts as an energy source for anaerobic bacteria and drives reductive dechlorination. Typically concentrations of TOC greater than 20 mg/L are sufficient to maintain sulfate reducing and methanogenic conditions (USEPA, 1998). As shown in **Table 3**, TOC concentrations in Biowalls B1/B2 were greater than the TOC concentrations upgradient of the biowalls. Downgradient of Biowall B2 (at MWT-29), the concentration of TOC decreased below the threshold value of 20 mg/L. There is a decrease in the concentration of TOC as readily degraded organics (i.e., vegetable oil and cellulose) in the mulch mixture are consumed; however, TOC concentrations on-site remain sufficiently high enough to serve as an energy source for anaerobic bacteria in the biowalls. As discussed below, the change in TOC concentrations appears to have little impact on the efficiency at which chlorinated organics are degraded within the biowalls and does not indicate that the biowalls need to be recharged at this time.

#### Ferrous Iron and Manganese

As described in USEPA (1998), iron III (ferric iron) is an electron acceptor used by iron-reducing bacteria under anaerobic conditions; Iron II (ferrous iron) is the product. Iron III is relatively insoluble in groundwater relative to Iron II. Therefore, an increase in concentrations of Iron II in groundwater is a clear indication that anaerobic iron reduction is occurring. Similarly, USEPA (1998) states that manganese (IV) is an electron acceptor used by manganese-reducing bacteria under anaerobic environments; soluble manganese (II) is the product. Under anaerobic conditions like those at the Ash Landfill, the presence of manganese and ferrous iron in groundwater at concentrations above the natural background concentrations demonstrates that manganese reduction and iron reduction are occurring at the site. These data support the conclusion that conditions within the biowalls are anaerobic and conducive to the degradation of chlorinated ethenes.

#### <u>Summary</u>

Monitoring data for wells within the biowalls during the third year of LTM indicate the following:

- DO remains below 1.0 mg/L at Biowalls B1/B2 and Biowall C2;
- Concentrations of TOC remain elevated, ranging from 15.6 mg/L to 81.7 mg/L;
- ORP remains low, ranging from -148 mV to -90 mV;

- Sulfate remains below 20 mg/L;
- Methane concentrations are 13 mg/L or higher; and
- Ferrous iron and manganese concentrations are increasing in the biowalls, indicating that conditions are conducive to the degradation of chlorinated ethenes.

A multiple lines-of-evidence approach that evaluates geochemical parameters together with the analytical data indicates that conditions in the biowalls are sufficient to support anaerobic degradation processes. Substrate in the biowalls has not been significantly depleted and biodegradation continues to occur within the biowalls. Highly anaerobic conditions persist within the biowalls and sufficient levels of organic carbon, ORP, sulfate, and methane are being sustained for effective anaerobic degradation of chlorinated ethenes.

#### 3.4 Chemical Data Analysis and Groundwater Remedy Evaluation

**Table 4** summarizes the concentrations of chlorinated ethenes detected in groundwater during the eight rounds of LTM. **Table 4** is organized with the most upgradient well listed first and the most downgradient well listed last. A complete presentation of the groundwater data is provided in **Appendix B**. **Figure 6** presents the chlorinated ethene data for the eight rounds. The discussion below focuses on data collected during Year 3 (Rounds 7 and 8) of the LTM program, and addresses how the remedial action objectives are being achieved.

#### Achievement of first performance monitoring objective:

• Confirm that there are no exceedances of groundwater standards for contaminants of concern (COC) at the off-site trigger monitoring well MW-56;

Concentrations of chlorinated ethenes at off-site well MW-56 remain low or non-detect, with concentrations of TCE, cis-DCE, and VC meeting regulatory standards. As shown in **Table 34**, VC and TCE were not detected in any of the rounds at MW-56; cis-DCE was detected at MW-56 below its Class GA groundwater standard (5  $\mu$ g/L) in Round 7. The third year of LTM confirmed that there were no exceedances of COC groundwater standards at MW-56.

#### Achievement of second performance monitoring objective:

• Document the effectiveness of the biowalls to remediate and attenuate the chlorinated ethene plume;

TCE remains above the Class GA groundwater standard (5  $\mu$ g/L) at PT-18A (upgradient of biowalls). Concentrations of TCE at PT-18A vary from 2,700  $\mu$ g/L in the fourth round to 220  $\mu$ g/L in the fifth round, rebounding to 2,100  $\mu$ g/L in the eighth round (see **Table 4**). Concentrations of TCE at well MWT-25 (upgradient of Biowall A) have consistently decreased from 50  $\mu$ g/L in the first quarter to below the Class GA groundwater standard at a concentration of 4.2  $\mu$ g/L in Round 8.

Concentrations of TCE within the biowalls at MWT-27 (in Biowall B1), MWT-28 (in Biowall B2), and MWT-23 (in Biowall C2) remain below detection limits, which is an expected performance measure, and concentrations of cis-DCE and VC are also not elevated within the biowalls. Cis-DCE was reported below detection limits in the biowalls in all rounds. Concentrations of VC remain below detection limits in all rounds in all biowall wells, with the exception of Round 8 when VC was reported above the detection limit at an estimated concentration of 3.1 J  $\mu$ g/L. Continued sampling is necessary to confirm that the concentration of VC at MWT-27 will remain below detection or below its Class GA standard in upcoming sampling events.

The reduction in concentrations of TCE to below detection, coupled with concentrations of cis-DCE and VC not being elevated within the biowalls, suggests that complete mineralization of chlorinated ethenes is occurring. Therefore, the biowalls are operating as expected with no loss of performance within the biowalls.

Ethene, a final product of reductive dechlorination, is only slightly elevated within the biowalls. This suggests that multiple anaerobic degradation processes may be occurring within in the biowalls. For example, ethene is not produced by anaerobic oxidation of cis-DCE or VC, nor by abiotic transformation of chlorinated ethenes by reduced iron sulfides. Alternatively, concentrations of ethene may be low since ethene can be further reduced under highly anaerobic conditions or can off-gas with carbon dioxide or methane since it is volatile.

The overall trend in the concentrations of TCE, cis-DCE, and VC at well MWT-26 (between Biowalls A1/A2 and Biowalls B1/B2) is decreasing over time. Concentrations of TCE, cis-DCE, and VC at this well increased during 2009. The area downgradient of MWT-26 is bounded by Biowalls B1/B2 in which the concentrations of TCE, cis-DCE, and VC remain non-detect or below their respective Class GA standards. The Army will continue to monitor well MWT-26 to see if an increasing trend in concentrations persists.

Concentrations at MWT-24 (downgradient of Biowall C2) show an overall decline over time, with some seasonal variation in cis-DCE (from 210  $\mu$ g/L in the first quarter to 32  $\mu$ g/L in the eighth round), and substantial decline in VC (from 45  $\mu$ g/L in the second quarter to 4  $\mu$ g/L in the eighth round). TCE has been below the Class GA groundwater standard (5  $\mu$ g/L) at MWT-24 in all rounds, with the exception of 6.0  $\mu$ g/L in Round 6 that was likely due to seasonal fluctuation (i.e., the effects of desorption during a period with frequent precipitation and subsequent high water levels).

The changes in groundwater concentrations of TCE, DCE, and VC as the groundwater passes through the biowalls are shown in **Figures 9A** through **9H** for Rounds 1 through 8, respectively. These figures show that the concentrations of TCE in groundwater within the biowalls are reduced to concentrations below detection limits. The concentration of TCE rebounds with distance downgradient of Biowalls C1/C2; this increase may be due to residual TCE that is desorbing from aquifer soils or diffusing out of low permeability soils. These results indicate that the biowalls treat the water within the biowalls and create a measurable, albeit slower, improvement in downgradient water quality, as well.

Anaerobic degradation of TCE may also occur in areas of the aquifer formation that are downgradient of the biowalls, where the presence of soluble organic carbon released from the biowalls enhances reductive dechlorination processes. In these downgradient areas, the concentrations of cis-DCE and VC are higher than they are within the biowalls. This suggests that sequential biotic reductive dechlorination of chlorinated organics is the primary degradation process in the downgradient reaction zones, with the presence of low concentrations of TCE being due to desorption from the aquifer matrix or from back diffusion of contaminated groundwater from low permeability soils. The elevated concentration of ethene (12  $\mu$ g/L) observed at MWT-29 in Round 8 , as compared to the upgradient concentration of 1.8  $\mu$ g/L at MWT-26, also indicates that downgradient biotic reductive dechlorination is occurring. Further downgradient, TCE was detected at MWT-7, which is 310 feet downgradient of Biowalls C1/C2 at a concentration of 350  $\mu$ g/L in Round 8. Additional rounds of data will be evaluated to determine long-term trends in this area.

#### Achievement of third performance monitoring objective:

• Confirm that groundwater concentrations throughout the plume are decreasing to eventually meet GA standards.

In general, concentrations of TCE, cis-DCE, and VC decreased over the eight sampling events at the wells within and downgradient of the biowalls. Time plots for monitoring wells MWT-25, MWT-26, MWT-27, MWT-28, MWT-29, MWT-22, PT-22, MWT-23, MWT-24, and PT-24 are presented in **Figures 10A** through **10J**, respectively. These plots show an overall decreasing trend for the COCs. **Figure 10B** shows an increase in concentrations at MWT-26 in Rounds 7 and 8, which may be due to desorption and back diffusion from low permeability soils. **Figures 10E**, **10F**, and **10G** show that the concentrations at MWT-29, MWT-22, and PT-22, respectively, which are located downgradient of Biowalls B1/B2, have decreased during Year 3 of LTM compared to the previous year. This confirms that the higher concentrations that were observed during 6R2008 were likely the result of desorption during periods of seasonal high water levels, and do not reflect an overall increasing concentration trend. The time plots of the downgradient wells (MWT-29, MWT-22, MWT-24, and PT-24) show that TCE concentrations in the wells in the vicinity and downgradient of the biowalls are decreasing over time.

An exponential regression, which models first-order decay typical in biological processes, has been calculated for each monitoring well. The regression serves as a means of estimating the time required for the concentrations of chlorinated organics to meet their respective GA groundwater standards. **Table 5** summarizes the trend for each contaminant in each well and provides an estimate of the date when the standards will be achieved as estimated by the exponential regressions. Time plots with regression lines are included as **Appendix C**.

**Table 5** shows that, with the exception of the PT-18A (source area well), PT-17 (downgradient of biowalls), and MWT-7 (immediately upgradient of the ZVI wall), all concentrations at the wells either comply with the Class GA groundwater standard or are expected to comply with their respective standards by 2051, with most reaching the standards by 2023. These dates are intended to provide an indication of the timeframe required for concentrations to reach acceptable levels and are not meant as a time commitment for the remedy.

There may be limiting factors in reaching the groundwater standards by the specified date, such as desorption and back diffusion from low permeability soils, that may drive the actual time required to reach compliance. As an example, the estimates of compliance dates for PT-22 in Year 3 have both increased and decreased as compared to Year 1 and Year 2 estimates, with increases likely due to the effect of desorption on the groundwater concentrations observed during Round 6 when groundwater levels were high.

Time plots of the concentration of TCE, cis-DCE, and VC for wells PT-18A, PT-17, and MWT-7 are provided in **Figures 11A**, **11B**, and **11C**, respectively; these plots include historic data prior to the installation of the biowalls. **Figures 11A**, **11B**, and **11C** indicate that there is an overall decreasing trend for TCE, an overall increasing trend for cis-DCE, and no trend for VC at PT-18A, PT-17, and MWT-7. Since PT-18A is located in the Ash Landfill source area upgradient of all biowalls, decreasing trends at this location reflect natural attenuation processes.

PT-17 and MWT-7 are located 150 ft and 310 ft from Biowalls C1/C2, respectively. As such, it is possible that treatment zones have not been established this far downgradient of the biowalls. Nevertheless, an increasing trend for DCE paired with a decreasing trend for TCE may indicate that reductive dechlorination is occurring at these locations. Dates to achieve compliance at these locations cannot be estimated due to the natural variation in concentrations over time and further monitoring is necessary to determine any trends in chlorinated ethene concentrations at these wells. To date, concentrations at these wells are within historic levels and the Army will continue to evaluate any impacts of the biowalls on this portion of the plume.

#### Other Compounds

Non-chlorinated organics were detected in the groundwater at the Ash Landfill OU, and the data are presented in **Appendix B**. Toluene and ethyl benzene were detected in the biowalls in the first four sampling events in Year 1. The maximum concentration of toluene was 580  $\mu$ g/L at MWT-23 in Quarter 4, and the maximum concentration of ethyl benzene was 1.3 J  $\mu$ g/L at MWT-23 in Quarter 3. The concentrations of toluene and ethyl benzene detected during Year 2 decreased significantly. Toluene was detected at a maximum concentration of 300  $\mu$ g/L at MWT-23 in Round 5, and ethyl benzene was detected with a maximum concentration of 0.85 J  $\mu$ g/L at MWT-23 in Round 5. In Year 3, concentrations of toluene and ethyl benzene in the biowalls were below their respective Class GA groundwater standards in Round 7, and were compounds were not detected in Round 8. Neither toluene nor ethyl benzene is a historic COC, nor are the detections of toluene and ethyl benzene

believed to be associated with historic site operations or degradation products of reductive dechlorination. The three years of data demonstrate that the concentrations of these compounds have decreased to levels below the detection and are no longer of any concern.

Ketones were detected in some monitoring wells at the site, with higher concentrations detected in the wells located within the biowalls (see **Appendix B**). The maximum detections of acetone and methyl ethyl ketone were observed at well MWT-28 (in Biowall B2) in Quarter 1 at concentrations of 2,600 J  $\mu$ g/L and 4,900 J  $\mu$ g/L, respectively. Concentrations of ketones decreased significantly in the Year 2 sampling events. The maximum concentration of acetone was 26 J  $\mu$ g/L at MWT-27 in Round 6 (the associated sample duplicate was below the detection limit), and the maximum concentration of methyl ethyl ketone was 12  $\mu$ g/L at MWT-23 in Round 5. Concentrations of ketones decreased even further in Year 3. The maximum concentration of acetone was 1.9 J  $\mu$ g/L in MWT-28, and methyl ethyl ketone was not detected in any of the biowall wells. Ketones were produced by fermentation reactions in the biowalls when concentrations of soluble organic carbon were high. However, ketones are readily degradable under aerobic conditions, have not persisted at the site, and were not detected within 100 feet of the site boundary.

#### 3.5 Biowall Recharge Evaluation

The RDR calls for a recharge evaluation at the end of each year of monitoring. The evaluations completed at the end of Year 1 and Year 2 concluded that recharge was not required and that a recharge evaluation would be performed again at the end of Year 3.

### Recharge Evaluation Process

A recharge evaluation, defined on Figure 7-3 of the RDR and described below, is the determination of the need to recharge a biowall segment. The evaluation consists of the following:

- Determining the need to recharge a biowall segment requires a review of chemical concentrations and geochemical parameters by an experienced professional. A specific, absolute set of conditions or parameter values are not appropriate to determine the need to recharge. Rather, a lines-of-evidence approach will be used that correlates a decrease in the efficiency of the system to degrade chloroethenes to geochemical evidence that indicates the cause is due to substrate depletion.
- The following parameters will be evaluated on an annual basis using at least two consecutive rounds of sampling data in order to determine if recharge of the biowalls is necessary:
  - COC concentrations in the biowalls (e.g., MWT-27, MWT-28, and MWT-23). If COC concentrations have rebounded by greater than 50% for any single sampling event, this will indicate that recharge should be considered. Concentrations within the biowalls, not at downgradient locations, will be used to make this evaluation so that the effectiveness

of the wall itself is being measured without the interference of effects such as desorption and mixing.

- Geochemical parameters, specifically ORP, TOC, and DO, in the biowalls (e.g., at MWT-27, MWT-28, and MWT-23). Benchmark values will be used initially to evaluate anaerobic conditions in the groundwater. The benchmarks are:
  - ORP < -100 mV
  - TOC > 20 mg/L
  - DO < 1.0 mg/L

Parameters described in the bullets above are intended to be used as guidelines and will be considered in evaluating if, and when, a depletion of bioavailable organic substrate results in a rebound in geochemical redox conditions under which effective anaerobic degradation of chlorinated ethenes does not occur.

#### Recharge Evaluation for Year 3

The recharge evaluation for Year 3 indicates that recharging the biowalls is not necessary at this time.

Section 3.2 presents the geochemical data for Year 3. The values of geochemical parameters measured in Year 3 support the interpretation that reductive dechlorination is occurring in Biowalls A1/A2, B1/B2, and C1/C2. The tables below show that the geochemical parameters for the wells within the biowalls meet the benchmark values and that groundwater conditions remain highly reducing.

Parameter	Benchmark Value	MWT-27 (Qs 1, 2, 3, 4, Rs 5, 6, 7, 8)
ORP (mV)	< -100	-158, -145, -141, -166, -133, -126, -128, -102
TOC (mg/L)	> 20	2050, 1350, 755, 167, 89, 54, 81.7, 50
DO (mg/L)	< 1.0	0.25, 0.08, 0, 0.06, 0.18, 0.13, 0.06, 0.15

Parameter	Benchmark Value	MWT-28 (Qs 1, 2, 3, 4, Rs 5, 6, 7, 8)
ORP (mV)	< -100	-150, -113, -131, -151, -91, -95, -135, -148
TOC (mg/L)	> 20	1775, 171, 309, 92, 49, 28, 28.2, 25.5
DO (mg/L)	< 1.0	0.16, 0.09, 0, 0.08, 0.15, 0.10, 0.18, 0.29

Parameter	Benchmark Value	MWT-23 (Qs 1, 2, 3, 4, Rs 5, 6, 7, 8)
ORP (mV)	< -100	-122, -109, -87, -144, -129, -104, -117, -90
TOC (mg/L)	> 20	260, 210, 303, 151, 29, 20, 15.6, 17.4
DO (mg/L)	< 1.0	0.26, 0.35, 0, 0.12, 0.15, 0.20, 0.07, 0.63

**Section 3.3** presents the analytical data for Year 3. As shown in the table below, concentrations of TCE, cis-DCE, and VC in the biowalls remain low and have not rebounded by greater than 50% for any sampling event. Further, the ability of the biowalls to sustain a high degree of reductive dechlorination is well established.

		TCE	cis-DCE	VC
		(µg/L)	(µg/L)	(µg/L)
	Q1	ND	ND	ND
	Q2	ND	ND	ND
	Q3	ND	ND	ND
MWT_27	Q4	ND	ND	ND
101 00 1-27	R5	ND	ND	ND
	R6	ND	ND	ND
	R7	ND	ND	ND
	R8	ND	ND	3.1 J
	Q1	ND	ND	ND
	Q2	ND	ND	ND
	Q3	ND	ND	ND
MWT 28	Q4	ND	ND	ND
WI W 1-20	R5	ND	ND	ND
	R6	ND	ND	ND
	R7	ND	ND	ND
	R8	ND	ND	ND
	Q1	ND	60	23
	Q2	ND	11	4.8
	Q3	ND	3.1	ND
MWT-23	Q4	ND	3.6 J	3.65
101001 23	R5	ND	ND	ND
	R6	0.4	2.4	2.8
	R7	ND	ND	ND
	R8	ND	0.47	ND

The analytical data show that concentrations of TCE, cis DCE, and VC at MWT-28 remain below detections limits. At MWT-23 concentrations of the COCs have decreased since the first quarterly sampling event to levels generally below detection limits. As noted above, at MWT-27 the concentrations of TCE and cis-DCE have remained below detection limits and there was an isolated detection of VC above the Class GA groundwater standard at an estimated 3.1 J  $\mu$ g/L in Round 8. This detection was the first instance in which VC was detected at MWT-27, and it is not possible to determine an accurate percent increase with prior concentrations below detection. The Army will

continue to monitor MWT-27 in subsequent monitoring events to determine any trend for VC at this well.

Based on the review of the analytical and geochemical data, the biowalls do not need to be recharged and the biowall system continues to meet the long-term monitoring objectives established in the RDR (Parsons, 2006c).

### 3.6 Soil Remedy Evaluation

Part of the remedial action was installing a 12-inch vegetative cover over the Ash Landfill and the NCFL. The covers have been inspected and field observations from Year 3 note that the landfills are vegetated with grass and clover. At the NCFL, visual observations noted a small amount of soil erosion and the presence of rodent trails; however, the erosion and the trails cut less than 6 inches into the cover. Therefore, underlying soil has not been exposed to the environment and corrective action is not required. The Army will continue to monitor the integrity of the covers and ensure that the vegetative covers have not been breached and that the underlying soil is not exposed.

## 3.7 Land Use Controls (LUCs)

The remedy for the Ash Landfill OU requires the implementation and maintenance of land use controls (LUCs). The LUC requirements are detailed in the "Land Use Control Remedial Design for SEAD-27, 66, and 64A, *Final*" (2006d). The selected LUCs for the Ash Landfill OU are as follows:

- Prevent access to or use of the groundwater until cleanup levels are met;
- Maintain the integrity of any current or future remedial or monitoring system, such as monitoring wells and impermeable reactive barriers;
- Prohibit excavation of the soil or construction of inhabitable structures (temporary or permanent) above the area of the existing groundwater plume; and
- Maintain the vegetative soil layer over the ash fill areas and the NCFL to limit ecological contact.

As part of the LTM program, the Army inspected the site to determine that the LUCs are being maintained. While performing the groundwater sampling, it was confirmed that no prohibited facilities have been constructed and no access to or use of groundwater was evident. As discussed in **Section 3.5**, the vegetative covers are limiting ecological contact with the underlying soil.

During 7R2009 and 8R2009, groundwater monitoring wells were inspected by field personnel. The integrity of all wells at the Ash Landfill is intact and each well is viable for groundwater elevation readings and groundwater sampling, where appropriate.

#### 3.8 Operating Properly and Successfully

The implemented design has met the requirements for "operating properly and successfully" (OPS) as outlined in Section 12(h)(s) of the USEPA "Guidance for Evaluation of Federal Agency Demonstrations" (USEPA, 1996). Parsons submitted a letter on behalf of the Army to USEPA, dated June 6, 2008, declaring that the Army has determined that the remedy meets the OPS requirements. The Army submitted a letter under separate cover on February 26, 2009 further certifying that the "information, data and analysis provided in Parsons' June 6, 2008 letter was true and accurate." On March 11, 2009, the USEPA transmitted a letter to the Army approving the Army's OPS demonstration. The data for Year 3 of the LTM program are consistent with the data for Year 1 and Year 2 and demonstrate that the remedy is OPS, as described below.

#### The remedial action is operating "properly."

The USEPA guidance describes that "a remedial action is operating 'properly' if it is operating as designed." The Construction Completion Report (CCR) (Parsons, 2007) details that the vegetative covers were installed as designed, meeting or exceeding the 12-inch of soil cover requirement. **Section 3.5** describes that the covers are intact and effectively prevent ecological contact with the underlying soil; therefore, the vegetative covers are operating properly.

The CCR also details the construction of the biowalls. Deviation from the intended design resulted in wider-than-intended biowalls that required the emplacement of additional mulch; since this is an enhancement of the design, it is fair to say that the biowalls were constructed as designed. The geochemical data presented and discussed in **Section 3.1** indicate that conditions that are favorable to anaerobic reductive dechlorination have been established within and near the biowalls, which was the expectation of the design of the biowall system.

#### The remedial action is operating "successfully."

A remedial action may receive the USEPA's designation of "operating successfully" (1) if "a system will achieve the cleanup levels or performance goals delineated in the decision document" and (2) if the remedy is protective of human health and the environment. The data presented in **Section 3.3** demonstrate that concentrations of VOCs are decreasing and will eventually meet the Class GA groundwater standards. The time plots presented in **Figures 10A** through **10J** show a decreasing trend for the COCs at the Ash Landfill OU; **Table 5** summarizes the trends in concentrations of the time plots. The time estimates for compliance based on exponential regressions of the time plots. The time estimates do not provide exact dates that Class GA groundwater standards will be achieved; rather they demonstrate that the concentrations in groundwater will eventually meet the groundwater standards.

Recent inspection of the vegetative covers at the Ash Landfill and the NCFL indicate that the covers are preventing ecological receptors from contacting the underlying soil; therefore, there is no threat to

the environment. The LUCs have been maintained and no one is accessing the groundwater; therefore, there is no threat to human health. Based on a review of the site data, an inspection of the condition of the vegetative covers, and a confirmation that the LUCs are being maintained, the Army believes that the remedial action is operating successfully.

Based on an assessment of the design and construction of the remedial action, as well as an evaluation of the geochemical and analytical data from the three years of groundwater monitoring, the Army believes that the remedial action at the Ash Landfill meets the requirements to be designated as "operating properly and successfully".

### 4.0 LONG-TERM MONITORING CONCLUSIONS AND RECOMMENDATIONS

#### 4.1 Conclusions

Based on the results of the long-term monitoring at the Ash Landfill since the installation of the fullscale biowalls, the Army has made the following conclusions:

- TCE within the biowalls remains below or close to detection limits;
- TCE, cis-DCE, and VC are present in the groundwater at the site at concentrations above respective Class GA groundwater standards;
- Chemical results indicate that the concentrations of chlorinated ethenes are decreasing as they pass through the biowall systems;
- Geochemical parameters indicate that anaerobic treatment zones have been established within and downgradient of the biowalls, and that conditions suitable for reductive dechlorination to occur have been sustained;
- Concentrations of chlorinated ethenes at off-site well MW-56 are below Class GA groundwater standards;
- Continued monitoring is required to determine trends in concentrations of COCs at PT-18A, PT-17, and MWT-7;
- Recharge of the biowalls is not necessary at this time; and
- The remedial action continues to meets the requirements of the USEPA's "operating properly and successfully" designation.

#### 4.2 Recommendations

Based on the first three years of long-term monitoring at the Ash Landfill OU, the Army recommends continuing the semi-annual frequency of monitoring based on the process shown in **Figure 12** (which

is also Figure 7-3 of the RDR). The recommendations for LTM during year three of monitoring are as follows:

- Biowall process monitoring wells (MWT-26, MWT-27, MWT-28, MWT-29, and MWT-23) will be monitored on a semi-annual basis. Each year a recharge evaluation will be completed. As stated in the RDR (Parsons, 2006b), if a recharge is conducted, MWT-26, MWT-27, and MWT-29 would be excluded from the LTM program, as detailed in Figure 12. MWT-28 and MWT-23 will continue to be monitored as part of the performance monitoring wells to supplement data that will be used to determine whether additional biowall recharge is required. The recharge evaluation(s) conducted each year after the first biowall recharge would review the chemical and geochemical data at MWT-28 and MWT-23, and determine if the contaminant increase is a result of poor biowall performance or due to other issues such as seasonal variations in groundwater levels, unusual precipitation events, or desorption and back diffusion.
- Performance monitoring wells (PT-17, PT-18A, PT-22, PT-24, MWT-7, MWT-22, MWT-24, and MWT-25) will continue to be monitored on a semi-annual basis in a manner consistent with the Year 3 LTM program. In the three years of LTM events at the Ash Landfill OU, the concentrations of COCs, specifically TCE, in the wells downgradient of the source area (near PT-18A) have decreased.
- The off-site performance monitoring well (MW-56) will continue to be monitored on a semiannual basis.
- The vegetative covers at the Ash Landfill and the NCFL will be inspected annually to ensure that they remain intact and protective of ecological receptors.
- The frequency of monitoring and the need to recharge the biowalls will be reviewed in the annual report submitted after the completion of the fourth year of LTM, based on the process outlined in **Figure 12**.

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## TABLES

- Table 1
   Groundwater Sample Collection
- Table 2Groundwater Elevations
- Table 3Groundwater Geochemical Data
- Table 4Chlorinated Organics in Groundwater
- Table 5Groundwater Trends

#### Table 1 Groundwater Sample Collection Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

	Мо	nitoring Well G	roup	Laboratory Analysis							roup Laboratory Analysis							
Monitoring	On-Site	Biowall	Off-Site	VOC	TOC	MEE	Sulfate											
Wells	Plume	Process	Performance	8260B	9060A	RSK-175	EPA 300.1											
PT-18A	X (all)			X (all)														
MWT-25	X (all)			X (all)														
MWT-26		X (all)		X (all)	X (all)	X (all)	X (all)											
MWT-27		X (all)		X (all)	X (all)	X (all)	X (all)											
MWT-28	X (all)	X (all)		X (all)	X (all)	X (all)	X (all)											
MWT-29	X (all)	X (all)		X (all)	X (all)	X (all)	X (all)											
MWT-22	X (all)			X (all)														
PT-22	X (all)			X (all)														
MWT-23	X (all)	X (all)		X (all)	X (all)	X (all)	X (all)											
MWT-24	X (all)			X (all)														
PT-17	X (all)			X (all)	X (5,6,7,8)	X (5,6,7,8)	X (5,6,7,8)											
MWT-7	X (all)			X (all)	X (5,6,7,8)	X (5,6,7,8)	X (5,6,7,8)											
PT-24	X (all)			X (all)	X (7)	X (7)	X (7)											
MW-56			X (1,3,5,6,7,8)	X (all)														

Notes:

1. All samples were analyzed for field parameters including pH, ORP, dissolved oxygen, conductivity, temperature, and turbidity.

(all) - This well was sampled in all rounds of the LTM program.

(7) - This well was sampled in Round 7 of the LTM program.

(1,3,5,6,7,8) - This well was sampled in Quarters 1 and 3, and Rounds 5 - 8 of the LTM program.

(5,6,7,8) - These wells were sampled in Rounds 5 - 8 of the LTM program.

#### Table 2 Groundwater Elevation Data Round 8 - December 2009 Ash Landfill Long-Term Monitoring Seneca Army Depot Activity

			LTM	R8 - December	2009		Historical Data				
Monitoring	Top of Riser	Well Depth	Saturated Thickness	Depth to Groundwater	Water Level Elevation	Groundwater Elevation (ft)		Well			
Well	Elevation (ft)	(rel. TOC) (ft)	(ft)	(ft)	(ft)	Maximum	Minimum	Range	Depth (ft)		
PT-17	640.14	11.65	7.48	4.17	635.97	636.67	629.05	7.11	11.65		
PT-18A	659.05	12.85	3.48	9.37	649.68	651.39	649.85	1.54	12.85		
PT-22	648.61	11.81	2.95	8.86	639.75	644.30	637.47	6.83	11.81		
PT-24	636.40	11.88	6.55	5.33	631.07	632.76	627.80	4.96	11.88		
MW-56	630.51	6.88	3.18	3.7	626.81	627.58	621.66	5.92	6.88		
MWT-7	638.34	13.64	7.41	6.23	632.11	633.50	628.07	6.92	13.64		
MWT-22	650.663	14.9	7.28	7.62	643.04	648.13	642.83	5.30	14.90		
MWT-23	646.772	13.7	4.81	8.89	637.88	640.45	637.33	2.89	13.70		
MWT-24	641.564	13	5.16	7.84	633.72	635.84	633.70	2.12	13.00		
MWT-25	654.507	13.25	7.01	6.24	648.27	648.87	646.79	2.08	13.25		
MWT-26	652.191	13.22	6.55	6.67	645.52	647.48	645.23	2.25	13.22		
MWT-27	652.993	12.9	5.46	7.44	645.55	647.58	645.23	2.35	12.90		
MWT-28	652.685	12.85	5.43	7.42	645.27	646.63	644.89	1.74	12.85		
MWT-29	651.816	13.1	5.54	7.56	644.26	645.43	643.86	1.57	13.10		

#### Table 3 Groundwater Geochemical Data Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

	Well ID	Location Description	Sample ID	Sample Round	рН	Turbidity (NTU)	Specific Conductance	DO (mg/L)	ORP (mV)	TOC (mg/L)	Sulfate (mg/L)	Ethane (ug/L)	Ethene (ug/L)	Methane (ug/L)	Manganese (ug/L)	Ferrous Iron
Upgradient	PT-18A	upgradient of biowalls	ALBW20059	1Q2007	6.63	141	1.69	1.33	93							(ug/L)
			ALBW20074 ALBW20088	2Q2007 3Q2007	6.44 6.71	5	1.66	0.76	-177 -23							
Upgradient P			ALBW20103 ALBW20117	4Q2007 5R2008	6.41 6.36	0 1.9	1.25 1.75	0.04 0.22	-5 -10						8.2	> 3.3
			ALBW20132 ALBW20147	6R2008 7R2009	6.58 6.77	0.56 0.45	2.04 2.01	1.76 0.12	83 66							
	MWT-25	upgradient of Biowall A	ALBW20162 ALBW20064	8R2009	6.71 8	0	2.04	0.62	154 63							
			ALBW20079	2Q2007	7.27	14	2.2	2.8	52 100							
			ALBW20093 ALBW20108	3Q2007 4Q2007	6.9	0.2	1.2	4.14 0.21	65							
			ALBW20123 ALBW20138	5R2008 6R2008	6.91 6.69	0.52 1.32	1.47 1.36	0.15 2.91	-41 90						1.4	0.75
			ALBW20153 ALBW20168	7R2009 8R2009	7.03 7.21	1.6 0	1.46 0.792	0.1 3.35	-31 98							
	MWT-26	upgradient of Biowalls B1/B2	ALBW20066 ALBW20081	1Q2007 2Q2007	6.89 7.26	10 9	2.01 1.9	1.84 0.48	-3 -135	3.9 J 15 2	958 738	ND 0.4	ND 7.8	ND 210	21	>33
			ALBW20095	3Q2007	6.89	2.2	1.94	0.21	-170	10.2	473	1	13	390	3.1	> 3.3
			ALBW20111 ALBW20126	402007 5R2008	7.08	0.67	1.88	0.89	-40 -71	5.6	600	0.16	2.9	210	1.3	0.81
			ALBW20141 ALBW20156	6R2008 7R2009	7.01 6.95	28.7	1.58 1.75	3.54 0.34	60 -11	4.4 6.9	541 570	0.05 3.2	0.03 2.7	10 1,100	0.6	0.22 0.71
	MWT-27	in Biowall B1	ALBW20171 ALBW20067	8R2009 1Q2007	7.01 6.34	10 120	2.45 5.31	4.66 0.25	71 -158	5.6 2,050 J	912 ND	2.2 ND	1.8 ND	610	0.7	0.18
			ALBW20082 ALBW20096	2Q2007 3Q2007	6.65 6.59	87 154	4.37 3.35	0.08 0	-145 -141	1,350 755	ND 1.9 J	0.15 0.08	2.7 0.33	15,000 13,500	> 22 > 22	> 3.3 > 3.3
			ALBW20112	4Q2007	6.43	58	5.76	0.06	-166	167	31.7	ND 2.2	0.01	13,000	> 22	2.19
			ALBW20127 ALBW20142	6R2008	5.95	24.5	2.59	0.13	-126	53.5	24	1.6	0.13	15,000	> 22	3.05
			ALBW20157 ALBW20172/73	7R2009 8R2009	6.68 6.32	38 5.1	2.99 2.38	0.06	-128 -102	81.7 50.0	0.93 J 14.0	5.1 4.4	0.15 1.2	14,000	9	1.88
	MWT-28	in Biowall B2	ALBW20068 ALBW20083	1Q2007 2Q2007	7.5 6.6	163 21	0.61 2.3	0.16 0.09	-150 -113	1,775 J 171	1.7 ND	ND 0.67	ND 0.48	12,500 J 19,000	7.5	> 3.3
			ALBW20098 ALBW20113	3Q2007 4Q2007	6.56 6.48	100 10	2.74 1.72	0 0.08	-131 -151	309 92	ND ND	0.01 J 0.01	0.06 ND	11,000 11,000	> 22 > 22	> 3.3 2.15
			ALBW20128	5R2008	6.31	14	2.16	0.15	-91	49.2	ND 49.2	0.65	0.04	12,000	> 22	> 3.3
			ALBW20158/59	7R2009	6.49	8.5	1.73	0.10	-135	28.2	ND	1.8	0.06	13,000	20.8	2.87
	MWT-29	downgradient of Biowall B2	ALBW20174 ALBW20070	1Q2009	6.4 6.49	10.8 7.2	1.88 2.1	0.29	-148 -76	25.5 25.1 J	3.16 113	1.6 ND	0.12 ND	15,000 ND	6.5	2.15
			ALBW20084/5 ALBW20099	2Q2007 3Q2007	6.8 6.64	1.7 1.8	2.21 1.68	0.39 0.11	-53 -79	36.7 15.7	173 151	25 13	150 160	8,100 2,800	7.5 8.1	> 3.3 2.84
			ALBW20114 ALBW20129/30	4Q2007 5R2008	7.04 6.44	12.2 2.7	1.88 1.85	0.21 0.17	-101 -115	20.9 14.1	289 174	19 14.5	200 140	2,600 3,100	8.6 0.0	> 3.3 > 3.3
			ALBW20145	6R2008	6.57	3.69	1.58	1.32	67	13.6	312 300	14 10	19 47	2,700	3.3	0.20
		demonstration ( Discust DO	ALBW20100 ALBW20175	8R2009	6.87	0	2.05	0.13	-75	8.2	644	6.7	12	1,500	6.3	0.96
	WW I-22	downgradient of Biowali B2	ALBW20071 ALBW20075	1Q2007 2Q2007	6.72	4.5 41	0.13 2.16	0.09	-80 -65							
			ALBW20100 ALBW20115	3Q2007 4Q2007	6.45 6.53	2.7 7.5	2.03 1.81	0.05 0.18	-107 -132							
			ALBW20121 ALBW20136	5R2008 6R2008	6.38 6.44	14 8.17	2.21 1.86	0.3 0.57	-34 -19						18.2	> 3.3
			ALBW20151	7R2009	6.59	13	2.14	0.31	-91 -65							
	PT-22	between Biowalls B and C	ALBW20060	1Q2007	7.70	4.5	0.13	0.09	-80							
			ALBW20086 ALBW20089	2Q2007 3Q2007	6.78 6.67	0	1.18 1.44	0.78	-54 -97							
			ALBW20104 ALBW20118	4Q2007 5R2008	6.73 6.69	5.1 7.4	1.26 1.38	0.17 0.29	-166 -119						0.3	1.38
			ALBW20133 ALBW20148	6R2008 7R2009	6.79 6.76	1.96 11	1.20 1.53	0.69	-37 -123							
	MWT-23	in Biowall C2	ALBW20163	8R2009	6.74	6.3 5	1.45	1.0	-73 -122	260.1	ND	ND	ND	12 000		
	1111-23		ALBW20000	2Q2007	6.51	30	1.8	0.35	-109	210	ND	45	5.9	23,000	5.4	2.73
			ALBW20094 ALBW20109	4Q2007	6.32	21	2.21	0.12	-87	303 151	2.8	4.1 0.58	0.28	16,000	> 22	2.99
			ALBW20125 ALBW20140	5R2008 6R2008	6.27 6.44	29 32	1.54 1.86	0.15 0.20	-129 -104	28.4 20.1	ND 6.3	0.53 4.6	0.05 1.2	18,000 19,000	> 22 > 22	> 3.3 2.75
			ALBW20155 ALBW20170	7R2009 8R2009	7.72 6.78	16 10	1.5 2.1	0.07 0.63	-117 -90	15.6 17.4	ND ND	1.6 1	0.16 0.06	21,000 18,000	22 7	2.08 3.3
	MWT-24	downgradient of Biowalls C1/C2	ALBW20063 ALBW20078	1Q2007 2Q2007	7.02 6.91	10 59	0.762	0.27	-160 -146							
			ALBW20092	3Q2007	6.8	5.4	1.48	0.03	-115							
			ALBW20107	5R2008	6.65	45	1.21	0.35	-43						9.1	1.54
			ALBW20137 ALBW20152	7R2009	6.40 6.81	6.7	1.31	0.09	40 -20							
	PT-17 <sup>1</sup>	downgradient of biowalls	ALBW20164 ALBW20058	8R2009 1Q2007	6.61 8	23 3.8	0.558 92	1.31 0.23	59 -111							
			ALBW20073 ALBW20087	2Q2007 3Q2007	7.1 6.99	14 0.4	0.729 0.732	0.76 0.9	-151 -157							
			ALBW20102	4Q2007 5R2008	7.12	8.7 70	2	NS 0.24	-24	6	15.2	98	66	5700		
			ALBW20131	6R2008	6.68	0.85	0.796	0.30	26	2.6	45.8	6.9	6.6	380	2.8	0.43
			ALBW20146 ALBW20161	8R2009	6.75	4	0.345	0.58	-20 -52	4.9 2.4	46.2	9.9	5	1,500	2.1	0.07
	MIVV I -7	immed. upgradient of ZVI wall	ALBW20062 ALBW20077	1Q2007 2Q2007	6.8 6.95	19.6 8	0.581 0.763	0.01 0.76	62 52							
			ALBW20091 ABLW20106	3Q2007 4Q2007	6.91 6.88	4 0	0.586 0.9	0.19 0.16	22 14							
			ALBW20120 ALBW20135	5R2008 6R2008	6.85 6.85	15 7,37	0.974 0.859	0.43 0.28	37 66	2.3 29.1	29.1 3	6.7 11	2 0.27	400 670	0.2 0.8	0.09 0.16
			ALBW20150	7R2009	7.61	2.6	0.786	0.05	16 32	3.1	27 29.3	7.8 17	0.76	1100	0	0.05
	PT-24	downgradient of ZVI wall	ALBW20061	1Q2007	8.1	10	70	0.37	-59	U.T	20.0		0.02	2,000	0.01	5.17
			ALBW20076 ALBW20090	2Q2007 3Q2007	7.58 7.22	1.3	0.464 0.557	0.13	-59 -80							
			ALBW20105 ALBW20119	4Q2007 5R2008	7.35 6.99	9.7 4.3	2.38 0.9	0.19 0.16	-46 -104						0.5	0.55
			ALBW20134 ALBW20149	6R2008 7R2009	6.84 7.14	5.8 4.1	0.656 0.679	0.11 0.05	-10 -101							
	MW-56	off-site well	ALBW20164	8R2009	7.32	1	0.41	0.34	-192 -102						1.9	0.2
			ALBW20101	3Q2007	6.9	0	0.603	NS	-65						0.4	4 40
Ļ			ALBW20124 ALBW20139	6R2008	6.85	6	0.545	0.10	-125						0.4	1.10
Downgradient			ALBW20154 ALBW20169	7R2009 8R2009	7.01 6.59	0.1 7.3	0.623 0.311	0.23 1.86	-186 -149							

#### Notes:

Notes:
 Empty cells indicate that the specified analysis was not completed for that well.
 Analysis of TOC, sulfate, methane, ethane, and ethene were completed for the biowall process wells only.
 During the 5R2008 event the water level in PT-17 was extremely low and water quality readings were not collected.
 Wells in bold are the biowall process monitoring wells.

4. Wells in bold are the biowall process monitoring wells.
ND = Non-detect.
NS = Not sampled; water level was below the indicator probe.
> = The concentration exceeded the range of the Hach DR/850 Colorimeter field kit.
1Q2007 - First quarter of LTM (January 2007)
2Q2007 - Second quarter of LTM (March 2007)
3Q2007 - Third quarter of LTM (June 2007)

4Q2007 - Fourth quarter of LTM (November 2007) 5R2008 - Fifth Round of LTM (June 2008) 6R2008 - Sixth Round of LTM (December 2008)

7R2009 - Seventh round of LTM (June 2009) 8R2009 - Eighth Round of LTM (December 2009)

#### Table 4 Chlorinated Organics in Groundwater Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

Sample		Sample Date	PCE (ug/L)	TCE (ua/L)	1,1-DCE (ug/L)	cis-DCE (ua/L)	DCE (ug/L)	VC (ua/L)	1,1-DCA (ug/L)
Identification	Class GA St	andard (ug/L)	5	5	5	5	(~ <i>9</i> ,=, 5	2	5
PT-18A	upgradient of walls	3-Jan-07	1 U	2000	0.64 J	220	1.6	2.4	1 U
		5-Jun-07	1 U	1100	0.73 J 1 4	430	3.3	2.9	10
		15-Nov-07	1 U	2700	2.1	720	3.4	8.2	1 U
		24-Jun-08	1 U	220	1 U	200	0.9 J	1.4	1 U
		12-Dec-08	0.36 U	1400	1.3	510	2.4	4.6	0.75 U
		4-Jun-09 17-Dec-09	0.36 U 1.5 U	2100	0.8 J 1.5 U	630	1.0 3.5 J	2.0	0.75 U 2 J
MWT-25	upgradient of Biowall A	3-Jan-07	1 U	50	1 U	41	0.56 J	1.6	1 U
		17-Mar-07	1 U	55	1 U	84	1.2	9.6	1 U
		6-Jun-07	1 U	28	1 U	36	0.5 J	2.1	1 U
		15-NOV-07	10	26	1 U	17	10	0.64 J	10
		15-Dec-08	0.36 U	3.2	0.29 U	0.63 J	0.13 U	0.24 U	0.75 U
		3-Jun-09	0.36 U	12	0.29 U	10	0.13 U	0.24 U	0.75 U
		17-Dec-09	0.36 U	4.2	0.38 U	3.3	0.42 U	0.24 U	0.29 U
MWT-26	upgradient of Biowalls B1/B2	3-Jan-07	1 U	10	10	19	0.6 J 1	2	1 U
		5-Jun-07	1 U	3.2	10	11	0.7 J	4.4	1 U
		15-Nov-07	1 U	2.8	1 U	2.8	1 U	1 U	1 U
		24-Jun-08	1 U	1.7	1 U	3.3	1 U	1 U	1 U
		15-Dec-08	0.36 U	1.9	0.29 U	1	0.13 U	0.24 U	0.75 U
		17-Dec-09	0.36 U	5.8	0.29 U	8.1	0.13 U 0.42 U	4.2	0.75 U 0.29 U
MWT-27	in Biowall B1	3-Jan-07	20 U	20 UJ	20 U.	J 49 J	20 UJ	20 U.	20 UJ
		16-Mar-07	20 U	20 U	20 U	20 U	20 U	20 U	20 U
		5-Jun-07	20 U	20 U	20 U	20 U	20 U	20 U	20 U
		24-Jun-08	4 U	4 U	4 U	4 U	4 U	4 LI	4 U
		15-Dec-08	3.6 U	1.8 U	2.9 U	1.6 U	1.3 U	2.4 U	7.5 U
		3-Jun-09	3.6 U	1.8 U	2.9 U	1.6 U	1.3 U	2.4 U	7.5 U
MWT-28	in Biowall B2	16-Dec-09	1.8 U	2.3 U	1.9 U	1.9 U	2.1 U	3.1 J	1.5 U
WIW 1-20	III BIOWAII B2	16-Mar-07	20 U	20 UJ 20 U	20 U	20 U	20 U	20 U	20 UJ
		5-Jun-07	20 U	20 U	20 U	20 U	20 U	20 U	20 U
		15-Nov-07	5 U	5 U	5 U	5 U	5 U	5 U	5 U
		25-Jun-08	4 U 2 6 U	4 U	4 U 2 0 U	4 U	4 U	4 U	4 U 7 5 U
		3-Jun-09	0.36 U	0.18 U	2.9 U 0 29 U	0.16 U	0 13 U	2.4 U 0.24 U	7.5 U 0.75 U
		18-Dec-09	1.8 U	2.3 U	1.9 U	1.9 U	2.1 U	1.2 U	1.5 U
MWT-29	downgradient of Biowall B2	3-Jan-07	2 U	22	2 U	280	6.5	140	2 U
		16-Mar-07	4 U	19	4.5 U	220	7.75	165	4.5 U
		5-Jun-07 14-Nov-07	20	7.6 4.4	20	100	2.1	81 74	20
		25-Jun-08	1 U	3.3	1 U	84	0.65 J	74	1 U
		15-Dec-08	0.36 U	6.6	0.29 U	91	0.6 J	80	0.75 U
		3-Jun-09	0.36 U	4.5	0.29 U	61	0.67 J	43	0.75 U
M\\/T-22	downgradient of Biowall B2	16-Dec-09 3- Jan-07	0.36 U	5.2	0.38 U	130	0.65 J 2 7	29	0.29 0
		17-Mar-07	4 U	3.8 J	4 U	90	4 U	64	4 U
		6-Jun-07	1 U	6.5	1 U	120	3.2	81	1 U
		14-Nov-07	1 U 5 U	2.6	10	99	0.85 J	180	1 U
		15-Dec-08	1.8 U	5.9	1.4 U	160	0.65 U	140	3.8 U
		3-Jun-09	0.36 U	2.2	0.29 U	66	0.77 J	89	0.75 U
		16-Dec-09	1.8 U	2.3 U	1.9 U	57	2.1 U	52	1.5 U
P1-22	between Biowalls B and C	3-Jan-07 15-Mar-07	1 U	11	1 U	57	0.86 J	22	1 U
		5-Jun-07	1 U	8.5	1 U	61	0.37 J	32	1 U
		14-Nov-07	1 U	9.7	1 U	30	0.67 J	11	1 U
		26-Jun-08	1 U	4.1	1 U	26	0.57 J	13	1 U
		15-Dec-08 2lun-00	0.36 U	35	0.29 U 0.29 U	52 41	0.41 J 0.81 I	1.3	0.75 U 0.75 U
		16-Dec-09	0.36 U	8.7	0.38 U	29	0.42 U	9.5	0.29 U
MWT-23	in Biowall C2	3-Jan-07	4 U	4 U	4 U	60	4 U	23	4 U
		16-Mar-07	4 U	4 U	4 U	11	4 U	4.8	4 U
		6-JUN-07 16-Nov-07	2 U	2 U 7 I I	2 U 2 6 U	3.1 3.6 I	2 U 7 U	2 U 3 7 I	2 U 7 I I
		25-Jun-08	1 U	7 U	2.0 U 1 U	3.0 J 1 U	7 U 1 U	3.7 J 1 U	7 U
		12-Dec-08	0.36 U	0.41 J	0.29 U	2.4	0.13 U	2.8	0.75 U
		2-Jun-09	0.36 U	0.18 U	0.29 U	0.42 U	0.13 U	0.24 U	0.75 U
M\\\/T_24	downgradient of Piowelle C1/C2	15-Dec-09	0.36 U	0.46 U	0.38 U	0.47 J	0.42 U	0.24 U	0.29 U
1VI V I -24		15-Mar-07	1 U	0.94 J 1 U	1 U	68	∠.1 0.88 J	45	0.81 J
		5-Jun-07	2 Ū	2 Ū	2 U	19	2 U	22	1.1 J
		13-Nov-07	1 U	1.6	1 U	6.7	1 U	3.8	1 U
		26-Jun-08	5 U	5 U	5 U	31	5 U	5 U	5 U
		2-Jun-09	0.36 U	4.8	0.29 0	52 38	0.13 U	3.0 7.3	0.75 U
		15-Dec-09	0.36 U	4.7	0.7 J	32	0.42 U	4	0.29 U
PT-17	downgradient of biowalls	2-Jan-07	1 U	6	1 U	62	1 U	21	1 U
		15-Mar-07	2 U	11	2 U	26	2 U	21	2 U
		5-JUN-07 13-Nov-07	1 U 1 I I	3.4	1 U 1 II	43	0.77 J 0.54 I	9.9	1 U 1 I I
		26-Jun-08	1 U	8.5	1 U	21	1 U	23	1 U
		11-Dec-08	0.36 U	9.2	0.29 U	24	0.46 J	10	0.75 U
		2-Jun-09	0.36 U	8	0.29 U	56	1.1	55	0.75 U
MW/T-7	immed upgradient of 7\/Lwoll	15-Dec-09 4lan-07	0.36 U	7.8	0.38 U	65	1.8	0.51	0.29 U
1111111111		15-Mar-07	1	490	1	42	1	0.51 J 9 7	1

			10-IVIAI-07	10	440	10	42	10	3.1	10
			5-Jun-07	1 U	410	1 U	61	1 U	18	1 U
			13-Nov-07	1 U	510	1 U	90	1 U	24	1 U
			25-Jun-08	1 U	440	1 U	90	1 U	12	1 U
			15-Dec-08	0.36 U	410	0.29 U	79	0.13 U	13	0.75 U
			2-Jun-09	0.36 U	330	0.29 U	68	0.13 U	9.3	0.75 U
			15-Dec-09	0.36 U	350	0.38 U	140	0.55 J	21	0.48 J
	PT-24	downgradient of ZVI wall	2-Jan-07	1 U	4	1 U	54	0.86 J	0.6 J	0.68 J
			15-Mar-07	1 U	2.8	1 U	38	0.81 J	1 U	1 U
			5-Jun-07	1 U	3.1	1 U	60	1.6	2.6	0.75 J
			13-Nov-07	1 U	3.8	1 U	39	1 U	1 U	0.56 J
			26-Jun-08	1 U	2.4	1 U	48	1.1	1.9	0.69 J
			12-Dec-08	0.36 U	2.2	0.29 U	34	0.36 J	0.26 J	0.75 U
			2-Jun-09	0.36 U	1.7	0.29 U	32	0.83 J	2	0.75 U
			15-Dec-09	0.36 U	1.7	0.38 U	28	0.61 J	1.6	0.29 U
	MW-56	off-site well	4-Jan-07	1 U	1 U	1 U	1.2	1 U	1 U	1 U
			6-Jun-07	1 U	1 U	1 U	1.7	1 U	1 U	1 U
			26-Jun-08	1 U	1 U	1 U	1.3	1 U	1 U	1 U
			11-Dec-08	0.36 U	0.33 J	0.29 U	0.4 J	0.13 U	0.24 U	0.75 U
↓ I			4-Jun-09	0.36 U	0.18 U	0.29 U	1	0.13 U	0.24 U	0.75 U
Downgradient			18-Dec-09	0.36 U	0.46 U	0.38 U	0.56 J	0.42 U	0.24 U	0.29 U

Notes:

1. Sample duplicate pairs were collected at MWT-28 in Jan-07; MWT-29 in MAR-07 and Jun-08; MWT-27 in Jun-07, Dec-08, and Dec-09; and MWT-23 in Nove-07.

If an analyte was detected in the sample but not detected in the duplicate (or vice versa) the non-detect value was taken at half and average with the detect value.

2. Wells in bold are the biowall process monitoring wells.

Grey shading indicates that the concentration was detected above its Class GA groundwater standard. The Class GA Groundwater standard for TCE and cis-DCE is 5 ug/L; for VC the Class GA standard is 2 ug/L.

U = compound was not detected.

J = the reported value is an estimated concentration.
#### Table 5 Groundwater Trends Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

Sampled Wells	Location			TCE	cis-1,2-DCE	VC
PT-18A <sup>1</sup>	upgradient of walls	Sample Date:	17-Dec-09	2100	630	7.1
			Trend:	Decreasing	Increasing	No Trend
		Est. Date <sup>2</sup> :				
MWT-25	upgradient of Biowall A	Sample Date:	17-Dec-09	4.2	3.3	0.24 U
			Trend:	Compliant	Compliant	Compliant
		Est. Date <sup>2</sup> :				
MWT-26	upgradient of Biowalls B1/B2	Sample Date:	17-Dec-09	5.8	8.1	4.2
		4	Trend:	Decreasing	Decreasing	Decreasing
		Est. Date <sup>-</sup> :				
MWT-27°	in Biowall B1	Sample Date:	16-Dec-09	2.3 U	1.9 U	3.1 J
		2	Trend:	Compliant	Compliant	No Trend
N#4/T 00		Est. Date <sup>2</sup> :	10 0 00	0.0.11	4.0.11	4.0.11
MW 1-28	in Biowall B2	Sample Date:	18-Dec-09	2.3 U	1.9 U	1.2 U
		<b>F</b> ( <b>D</b> ( 2	Trend:	Compliant	Compliant	Compliant
	daver and diant of Discus II DO	Est. Date-:	10 Dec 00	0.5	07	00
101001-29	downgradient of Biowali B2	Sample Date:	Trond	3.5 Compliant	37 Decreasing	29 Decreasing
		Eat Data <sup>2</sup>	rrenu.	Compliant	Decreasing	Decreasing
M\\\/T-22	downgradient of Biowall B2	Sample Date	16-Dec-09	2311	20-Juli-2013 57	20-101ay-2010
		Gampie Date.	Trend <sup>.</sup>	Compliant	Decreasing	Decreasing
		Est Date <sup>2.</sup>	frond.	Compliant	23-Jan-2024	14-Sep-2051
PT-22	between Biowalls B and C	Sample Date:	16-Dec-09	8.7	29	9.5
			Trend:	Decreasing	Decreasing	Decreasing
		Est. Date <sup>2</sup> :		16-Oct-2020	15-Aug-2023	30-Jan-2012
MWT-23	in Biowall C2	Sample Date:	15-Dec-09	0.46 U	0.47 J	0.24 U
			Trend:	Compliant	Compliant	Compliant
		Est. Date <sup>2</sup> :				
MWT-24	downgradient of Biowalls C1/C2	Sample Date:	15-Dec-09	4.7	32	4
			Trend:	Compliant	Decreasing	Decreasing
		Est. Date <sup>2</sup> :			13-Sep-2018	6-Aug-2010
PT-17 <sup>1</sup>	downgradient of biowalls	Sample Date:	15-Dec-09	7.8	65	20
			Trend:	Decreasing	Increasing	No Trend
		Est. Date <sup>2</sup> :				
MWT-7 <sup>1</sup>	immed. Upgradient of ZVI wall	Sample Date:	15-Dec-09	350	140	21
			Trend:	Decreasing	Increasing	No Trend
		Est. Date <sup>2</sup> :				
PT-24	downgradient of ZVI wall	Sample Date:	15-Dec-09	1.7	28	1.6
		2	Trend:	Compliant	Decreasing	Compliant
		Est. Date <sup>2</sup> :			28-Apr-2019	
MW-56	off-site well	Sample Date:	18-Dec-09	0.46 U	0.56 J	0.24 U
		2	Trend:	Compliant	Compliant	Compliant
		Est. Date <sup>∠</sup> :				

Notes:

1. The concentration of TCE at these wells has not been impacted by the biowall system and dates to achieve compliance cannot be estimated at this time due to the natural variation in concentrations over time.

2. The date that the groundwater standard will be achieved is estimated based on an exponential regression of the time plots for each well. The dates are rough estimates that indicate that the groundwater concentrations will eventually reach the GA standard and are not intended to represent a definitive timeframe in which the GA standards will be achieved.

3. The concentrations presented were an average of the sample duplicate pair.

4. Overall concentrations follow a decreasing trend; however further monitoring is needed to elucidate the dates at which compounds can be expected to reach groundwater standards.

U = compound was not detected.

J = the reported value is an estimated concentration.

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Figure 12	Decision Diagram









Figure 5 Reductive Dechlorination of Chlorinated Ethenes Ash Landfill Annual Report Seneca Army Depot Activity



(USEPA, 1998)



		DA PROPERTY BOUNDARY		Jun-07         3.1           Nov-07         3.8           Jun-08         2.4           Dec-08         2.2           Jun-09         1.7           Dec-09         1.7	60         2.6           33         ND           48         1.9           34         0.26 J           32         2           28         1.6		MW−36 ∯ 🔮 )	WW-35D
++++				Date         TCE ug/L           Jan-07         ND           Jun-08         ND           Dec-08         0.33         J           Jun-09         ND         Dec-09         ND	cis-DCE ug/L         VC ug/L           1.2         ND           1.7         ND           1.3         ND           0.4         J           1         ND           0.56         J	NOTE: ND = NON-DETEC	T 25 0 50 SCALE (FT.)	100
	PAVED ROAD DIRT ROAD	<u>LE(</u>	GEND: BRUSH		PILOT STUDY BIOWALL (2005) SINGLE BIOWALL (2006)	PA	RSONS	Ini
650 W-B	GROUND CONTOUR AND ELEVATION TREE WETLAND & DESIGNATION	¢ ¢ ¢ C=D	UTILITY POLE APPROXIMATE LOCATION OF FIRE HYDRANT FUEL OR UNDERGROUND STORAGE TANK	10	DOUBLE-WIDE BIOWALL (2006) ZERO VALENT IRON WALL (1998) GROUNDWATER TOTAL CHLORINATED ETHENE ISOCONTOUR (UG/L) BASED ON AUGUST 2004 DATA	CLIENT/PROJECT TITLE SENECA ASI ASH LANDI	ARMY DEP H LANDFILL FILL ANNUAL REPORT	ОТ
● PT-22	MONITORING WELL AND DESIGNATION	SEAD-1 EL.630.90'	SURVEY MONUMENT	(MW-56)	OFF-SITE PERFORMANCE MONITORING WELL IN L.T.M. PROGRAM	environmental engi F]	INEERING Dwg. No. IGURE 6	
+++++++++	RAILROAD TRACKS	O MWT-16	ABANDONED MONITORING WELL APPROXIMATE LOCATION OF WATER MAIN	WT-26	MONITORING WELL IN L.T.M. PROGRAM BIOWALL PROCESS MONITORING WELL IN L.T.M. PROGRAM	CHLORINATED ET IN GI	HENES CONCENTRA ROUNDWATER	ATIONS
FILE: P:\PIT\PROJECTS	HUNTSVILLE CONT W912DY-08-D-0003\TO#01	- LTM ASH LANDFILL\ANNUAL	REPORT Y3\FINAL\FIGURES\FIGURE 6.DWG, DATE: 08/	/06/2010 05:52:04PM, p	0018397	1" = 100'	AUGUST 2010	- -

### Figure 7 Groundwater Elevations Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Note: Groundwater levels were measured on: December 12-15, 2006; June 4, 2007; November 7, 2007; June 23, 2008; December 23, 2008; and December 14, 2009. Groundwater elevations were not measured at well MW-56 during 3Q2007, 4Q2007, 6R2008, and 8R2009; at PT-17 during 1Q2007 and 8R2008; and at PT-18A during 4Q2007. Groundwater levels were not recorded during 2Q2007.



Figure 9A Concentrations of VOCs Along the Biowalls - Quarter 1, 2007 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Figure 9B Concentrations of VOCs Along the Biowalls - Quarter 2, 2007 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Figure 9C Concentrations of VOCs Along the Biowalls - Quarter 3, 2007 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Figure 9D Concentrations of VOCs Along the Biowalls - Quarter 4, 2007 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Figure 9E Concentrations of VOCs Along the Biowalls - Round 5, 2008 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Seneca Army Depot Activity 1500 (concentration [ug/L]) cis-DCE (concentration [ug/L]) TCE - cis-DCE - Rnd 6, 2008 (concentration [ug/L]) VC MWT-28 MWT-27 A1/A2 Note: ND = Not Detected B2 Biowall Biowall B1 Biowall 1250 1000 Concentration (ug/L) **MWT-27** MWT-28 (ND) (ND) 750 Downgradient PT-18A 500 MWT-29 250 (91) MWT-25 MWT-26 (6.6) (0.63) (3.2) (1) (80) (1.9) (ND) (ND) 0 20 40 60 80 100 120 140 200 220 260 0 160 180 240 **Distance from PT-18A (feet)** 

Figure 9F Concentrations of VOCs Along the Biowalls - Round 6, 2008 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

Figure 9G Concentrations of VOCs Along the Biowalls - Round 7, 2009 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity





Figure 9H Concentrations of VOCs Along the Biowalls - Round 8, 2009 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Figure 10A Concentrations of Chlorinated Organics Over Time at MWT-25 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

### Figure 10B Concentrations of Chlorinated Organics Over Time at MWT-26 Ash Landfill Annual Report, Year 2 Seneca Army Depot Activity



ND = not detected.



Figure 10C Concentrations of Chlorinated Organics Over Time at MWT-27

Note: Round 3 and Round 6 data is the average of the sample and its duplicate. ND = not detected.

8/6/2010



Figure 10D

Concentrations of Chlorinated Organics Over Time at MWT-28 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity Quarter 4th Quarter Round 5 Round 6

Note: Round 3 and Round 6 data is the average of the sample and its duplicate. ND = not detected.



Figure 10E Concentrations of Chlorinated Organics Over Time at MWT-29 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

Note: Round 2 and Round 5 data is the average of the sample and its duplicate.









Figure 10H Concentrations of Chlorinated Organics Over Time at MWT-23 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Note: Round 4 data is the average of the sample and its duplicate. ND = not detected.



Figure 10I Concentrations of Chlorinated Organics Over Time at MWT-24 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Figure 10J

Figure 11A Historic Concentrations of Chlorinated Organics at PT-18A Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Figure 11B Historic Concentrations of Chlorinated Organics at PT-17 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Figure 11C Historic Concentrations of Chlorinated Organics at MWT-7 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity





#### NOTES:

1. Achieving GA Stds: The condition of achieving GA standards applies to achieving groundwater standards for all COCs in all of the On-Site Plume Wells. If GA standards are achieved in the On-Site Plume Wells for two successive monitoring events, then the remedy is complete and no further monitoring is required at the site.

2. Decreasing Trend: After each year of sampling, the Army will review the results to determine if the chemical concentrations of the COCs are increasing, decreasing, or are unchanged. Graphical and statistical analyses will be used as the basis for this determination. For example, data points will be plotted and a best fit line (linear regression) will be graphed. The slope of the best fit line is representative of the trend in concentration; a negative slope indicates a decreasing trend in COC concentrations. A decreasing COC trend indicates that the potential for contaminants to migrate and negatively impact groundwater further downgradient is decreasing, and that the plume is being effectively managed by the remedy. Any evaluation of trends in contaminant concentrations will take into account that historic data at the Ash Landfill shows that there are seasonal fluctuations in contaminant concentrations. Semi-annual monitoring during wet and dry seasons is appropriate until it is established in which season maximum concentrations are observed. Annual monitoring would occur in the season of maximum concentrations.

#### 3. Recharge Evaluation:

• Determining the need to recharge a biowall segment requires a review of chemical concentrations and geochemical parameters by an experienced professional. A specific, absolute set of conditions or parameter values are not appropriate to determine the need to recharge. Rather, a lines-of-evidence approach will be used that correlates a decrease in the efficiency of the system to degrade chloroethenes to geochemical evidence that indicates the cause is due to substrate depletion.

• The following parameters will be evaluated on an annual basis using at least two consecutive rounds of sampling data in order to determine if recharge of the biowalls is necessary:

a. COC concentrations in the wall. If COC concentrations have rebounded by greater than 50% for any single sampling event, this will indicate that recharge should be considered. Concentrations within the biowalls, not at downgradient locations, will be used to make this evaluation so that the effectiveness of the wall itself is being measured without the interference of effects such as desorption and mixing.

b. Geochemical parameters, specifically ORP, TOC, and DO, in the wall. Benchmark values will be used initially to evaluate anaerobic conditions in the groundwater. These benchmarks are:

- ORP < -100 Mv - TOC > 20 mg/L
- DO < 1.0 mg/L

Parameters described in a and b above are intended to be used as guidelines and will be considered in the evaluation if, and when, a depletion of bioavailable organic substrate results in a rebound in geochemical redox conditions under which effective biodegradation does not occur.

4. Indirect Recharge Evaluation: Once the biowalls are recharged the first time, an indirect recharge evaluation will be conducted if an increasing trend in COC concentrations is observed in the plume performance monitoring wells. An increasing trend is a positive slope on the best-fit line, described in *Note 2* above. Two biowall monitoring wells, MWT-15 and MWT-23, will be added to the Plume Performance Monitoring program after the first recharge is completed. The evaluation will review the chemical and geochemical data and determine if the contaminant increase is a result of poor biowall performance or due to other issues, such as seasonal variations, recent precipitation events, desorption, etc. As stated in Note 2, a rebound in concentrations of COCs of 50% in MWT-15 and MWT-23 in two consecutive monitoring rounds is a major indication that recharge is needed. Once this COC rebound is observed, the geochemical parameter concentrations at MWT-15 and MWT-23 will be reviewed. In addition, conditions at the other plume performance wells will be reviewed and compared to the conditions observed at those wells at the time that the initial recharge was required. The Army will determine if similar conditions in the well provide further proof that carbon source recharge is needed again.

## APPENDICES

- Appendix A Field Forms for 8R2009 (CD)
- Appendix B Complete Groundwater Data
- Appendix C Regression Plots
- Appendix D Response to Comments

## APPENDIX A

FIELD FORMS FOR 8R2009 (CD)

Ash GW	SAMPL	ING.	RECORD	(2)
--------	-------	------	--------	-----

			SAM	PLING F	E	COR	D -	GR	OU	<b>IND</b>	WATE	R		
,		ENEC	CA ARMY	DEPOT ACTIVITY	7		PAR	150h	15		WELL #: PT-17			
·	PROJECT: Ash Landfill ) LOCATION:					TM Groundwater Sampling - Round 8 ROMULUS, NY				-	DATE: 12/15/01 INSPECTORS: GDL			
	W	/EATH	ER / FIELD	CONDITIONS CHEC	KLIS	Ť	(RECORD	MAJOR	CHAN	GES)	PUMP #: SAMPLE ID	#: AL	BW2016	
	-	D (D		WEATHER HUM (APPRX) (G		REL. WIND (FR RUMIDITY VELOCITY DIREC (GEN) (APPRX) (0-3		ROM) GROUND / SITE						
	(24	1 MIE. 4 HR)	(APPRX					RECTION 1 - 360)	- 360) CONDITIONS		MONITO INSTRUMENT		UNG DETECTOR	1
	6	920	40	overcast			15mph				OVM-	80	PID	1
	DIA G	METER ALLONS LITERS	WELL VO (INCHES): / FOOT: /FOOT	LUME CALCULATION EAC 0.25 1 2 0.0026 0.041 0.163 0.010 0.151 0.017	CTORS 3 0,367 1,389	4 0.654 1. 2.475 5.5	17 64	WELL VO	LUME (GA X' - 4-	11) - KPOW - WELL DIAMI 15) ( -	STABILIZED WATT		bo got rans	*3:
		HISTORIC	C DATA	OF WELL (TOC)		TOP OF SCREEN (TO	DEPTH TO SCREEN TOP OF LENGTH SCREEN (TOC) (FT)		WELL DEVELOPMENT TURBIDITY		WELL DEVELOPMENT 		WELL DEVELOPMENT SPEC. COND	1.02
	DATA COLLECTED AT		キ・クラ PID READING (OPENING WELL)	PID READING		TH TO ATIC EVEL (TOC)				DEPTH TO PUMI INTAKE	DEPTH TO PUMP I INTAKE		18	
					(OTENING HELD)		4.15'		WATER LEVEL (TOC)		= 7.55-1		0923	1
	RAD	IATION S DAT	CREENING A	PUMP FRIOR TO SAMPLING (cps)				F SA	FUMP AFTER SAMPLING (cps)				5	
			MON	ITORING DATA	CO	LLECTE	D DUR	NG P	URGI	NG OPI	ERATIONS			
6	TIME (min)	WATER LEVEL	PUMPING RATE (mi/min)	CUMULATIVE VOL	0)	DISSOLVED	TEMP (C)	SPEC.	COND bos)	Bq	(m.V)		TURBIDITY (NTU)	
1	7	(64)	100	1000-0		<u>YSI</u>	VA WOR	200	ight t	//5		<u>&gt;</u>	LaMoffe	2020
	09:05	4.25		~ (000 mm		0.11	9.6	0+3	2 50	10 +1		13	10	
ł	A 013	4.2	100 3		5	10.11	91	6.2	<u>5 57</u>	1 40	111 5	An an	10	
ł	0948	4.21	100		1 4	0.13	9.8	0.3	54	1.2	2 - 14		6	
ł	0453	4.21	100	~ 3000	1.	6.88	9.7	0.0	352	6.74	3	101	8.9	
Ī	0958	4.21	100 .3			6.77	9.8	0.	348	6:70		3.9	5.7	
	1008	4.2	100	~ 4000		0.71	9.8	0.2	345	6.7	1 - ⊂	2	6.3	
	1012	4.21	100			0.67	9.9	0.3	347	6.74	5 -C	: 11	3.4	
	013	4.21	100			0.63	9.9	0.1	347	6.7	5 -5	D	3,3	
	1020	4.21	106			060	10	24	15	6.7	4 _ (	51	4.6	
┟	073	9.21				.58	a.q	6.3	345	6.73	5 - 5	2	4.0	
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12/10/2009
### Ash GW SAMPLING RECORD (2)

ORDER     COUNT VOLUME     TTP     NUMBER     D       1     VOC 8260B $4 \frac{6}{6} \frac{c}{c}$ HC $3/40 \text{ ml}$ VOA       2     MEE (AM20GAX) $4 \frac{6}{6} \frac{c}{c}$ HC $2/40 \text{ ml}$ VOA       3     TOC (9060A) $4 \frac{6}{6} \frac{c}{c}$ HC $2/40 \text{ ml}$ VOA       4     Sulfate (BPA 300.1) $4 \frac{6}{6} \frac{c}{c}$ $1 \times 250 \text{ mL}$ HDPE       5     Pet (HACH)     Field     Image: Count of the co	AVQC?) $AVQC??$ $AVQC?$
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\frac{4 e_{B} c}{4 e_{B} c} \frac{Hc}{Hc} \frac{3/40 \text{ ml}}{2/40 \text{ ml}} \frac{VOA}{VOA}$ $\frac{4 e_{B} c}{4 e_{B} c} \frac{1/20 \text{ ml}}{Hc} \frac{VOA}{VOA}$ $\frac{4 e_{B} c}{4 e_{B} c} \frac{1/20 \text{ ml}}{Hc} \frac{VOA}{HDPE}$ $\frac{1}{16 \text{ ml}} \frac{1}{16  ml$
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\frac{468 \text{ c}}{468 \text{ c}} \frac{\text{HCL}}{\text{HCL}} \frac{2/40 \text{ ml}}{\text{VOA}} \frac{\text{VOA}}{\text{VOA}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{Held}} \frac{\text{HOPE}}{\text{Held}} \frac{\text{HOPE}}{\text{Held}} \frac{\text{HOPE}}{\text{Held}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{Held}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{HACH}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{HACH}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{HACH}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{HACH}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{HOPE}} \frac{\text{HOPE}}{\text{HOPE}} \frac{1}{\text{HOPE}} \frac$
3 TOC (9060A) $4e_{BC}$ HC. 2/40 ml VOA 4 Sulfale (EPA 300.1) $4e_{BC}$ 1 x 250 mL HDPE 5 Fet (HACH) field fiel	$\frac{1}{4 e_{B} c} = \frac{1 \times 250 \text{ ml}}{1 \times 250 \text{ ml}} + \frac{1}{\text{BDPE}} = \frac{1}{1 \times 250 \text{ ml}} + \frac{1}{\text{BDPE}} = \frac{1}{1 \times 250 \text{ ml}} + \frac{1}{1 \times 250 \text{ ml}} + \frac{1}{1 \times 250 \text{ ml}} + \frac{1}{1 \times 150 \text{ ml}} + 1$
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\frac{1 \times 250 \text{ mL}}{\text{field}} = \frac{1 \times 250 \text{ mL}}{\text{field}} = 1 $
$\frac{S}{6} \xrightarrow{\text{Fet}(HACH)} \qquad \qquad$	$\frac{1}{100}$
6 Mar (HACH) 100 Mar (HACH) 101 Mar (HACH) 102 Mar (HACH)	A/QC?) 
COMMENTS: $(QA/QC?)$ $\rightarrow 0$ $A \downarrow QC$ $G \downarrow 12/15$ $2 \rightarrow ip$ $b \downarrow ahk's sent b test America g \downarrow 12/151) VOC (B2698) q^{0} HCL 3/25 m \downarrow 100 Å2) HEE (ALDORM) q^{0}C HEL 2/25 m \downarrow3) ToC (QOBDA) " " 2/25 m \downarrow"4) 8 ulfak (EpA 300.1) " " 1/250 m \downarrow HDPE5) Mn + (HACH)$ $freld6) Fe^{+} (HACH) freld$	$\frac{A/QC?}{,} = (gk 12/15)$ $\frac{A/QC}{,} = (gk 12/15)$ $\frac{A/QC}$
COMMENTS: $(QA/QC?)$ NO $QA/QC$ $(Qd 12/15$ 2 + np blanks sent to test America $Qd 12/151) VOC (B2686) q^{0} ACL 3/25 mL VOA2) MEE (ALDOM) q^{0}C HeL 2/25 mL "3) TOC (Q060A) " " 2/25 mL "4) Sulfake (EPA 300.1) " 1/250mL HDPE5) M_{H} + (HACH) field6) Fe^{+} (HACH) fieldTOW INFORMATION:$	A/QC?) A/QC?)
COMMENTS: $(QA/QC?)$ $\rightarrow 0$ $A \mid QC$ $G \mid 12/15$ $2 \rightarrow p \mid dah \mid S  sent \rightarrow test \mid Menich  Gd \mid 12/15i)  Voc  (B2668)  q^{o}  HeL  3/25  mL  m  NOA.2)  MEE  (ALDORM)  q^{o}C  HeL  2/25  mL  m  3)  Toc  (Q060A)  m  m  2/25  mL  m  1/250  mL  1/25$	A/QC?) 
COMMENTS: $(QA/QC?)$ NO QA $\int QC$ $GX$ $12/15$ 2-trip $\int IAHKS$ sent to test AMENICA $GX$ $12/15$ 1) VOC (B266B) q° HCL $3/25$ mL $10A$ 2) MEE (ALDOGHA) q°C HEL $2/25$ mL $10A$ 3) TOC (QOGOA) $10$ $10$ $11$ $2/25$ mL $11$ 4) Sulfak (EPA 300.1) $11$ $11$ $2/25$ mL $11$ 5) Ma + (HACH) field 6) Fe <sup>+</sup> (HACH) field 1DW INFORMATION:	A/QC?) 
COMMENTS: $(QA/QC?)$ NO $QA   QC$ $Q'  2/15$ 2 + np   Janks sent to test Anno $Q'   2/151) VOC (B2426) q^{o} + CL 3/25 mL 3/25 mL 3)2) MEE (ALDOGEN) q^{o} C + HeL 2/25 mL 3)3) TOC (QOGOA) " 2/25 mL 3)4) Sulfake (EPA 300.1) " 2/25 mL 4DPE 5) Mn + (HACH) field f$	A/QC?) 
COMMENTS: $(QA/QC?)$ NO $QA/QC$ $QZ/12/15$ 2 + np - planks sent to Test America $QZ/12/151) VOC (B262B) qo ACL 3/25 mL \cdots VOA2) MEE (ALDOGN) qoc HeL 2/25 mL3) TOC (QOBOA) "" 2/25 mL " 4) 8ulfak (EPA 300.1) "" 1/250mL HDPE 5) Mn + (HACH) field field6) Fet (HACH) field$	A/QC?) 
COMMENTS: $(QA/QC?)$ NO QA   QC - QX  2/15 2 + np   blank's sent to test America - QX  2/15 $1) VOC (B260B) qo ACL 3/25 mL VOA 2) MEE (ANDORNA) qoc HeL 2/25 mL 3) TOC (QOBOA) 2/25 mL 4) 8ulfak (EpA 300.1) 1/250mL HDPE 5) M_n + (HACH) field field 6) Fet (HACH) field field$	A/QC?) 
T / SultAK (CPASSOD-1) " 1/250ml $(DPE)$ 5) $M_{H} + (HACH)$ field 6) $Fe^+ (HACH)$ field IDW INFORMATION:	(HACH) field (HACH) field (HACH) field
5) Mn + (HACH) 6) Fet (HACH) IDWINFORMATION:	(HACH) field (HACH) freld
6) Fet (HACH) IDWINFORMATION:	(HACH ) freld
IDW INFORMATION:	ION:

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-			ILLING .	KE			<b>J</b> ., <b>—</b>	GK			VATER	
2	SENE	CA ARMY	DEPOT ACTIVITY	[	(	CONS	ULTA	NT: PA	RSON	SES	WELL #: P	T-18A
PI LO	ROJEC DCATIC	T:	QUART	ERLY	SAMPL ROMUI	ING -A JUS, N	SH LA Y	NDFILL		_	DATE: INSPECTORS:	12/17- BJM
			CONDETIONS				11000				PUMP #:	0 40177
	V Kark II I		COMDITIONS CHISC	R	EL.	WI	ND	(FROM)	GROU	IGES)	SAMPLE ID #: P	MUDOC
П	IME	TEMP	WEATHER	HUN	IDITY	VELO	TTY I	RECTION	SUF	FACE	MONII	ORING
(24	HR)	(APPRX	) (APPRX)	<u>(G</u>	EN)	(APP	RX)	(0 - 360)	CONI	DITIONS	INSTRUMENT	DETECTOR
14	120	14-	- Mow My	14	ed	0-9		IYW	Su	ou	OVM-580	PID
	· · · · · · · · · · · · · · · · · · ·	WELL VO	LUME CALCULATION FAC	TORS				T WELL VOI	TIME (CA		Ø	<u>Ø</u>
DIAI G/	METER ALLONS LITERS	(INCHES): /FOOT: FOOT	0,25 1 2 0,0026 0,041 0,163 0,010 0,151 0,017	3 0.367 1.389	4 0.654 2.475	6 1.47 5,564		(12.80-	9.3	4)(. /63	THE PACTOR (GAL/FT) 3)(3) = 1.6	9
ŀ	HISTURI	DATA .	DEPTH TO POINT OF WHIL (TUC)		DEPT TUP SCREEP	H TO UF (IUC)	SCREE LENGT (FT)	H D	WELL EVELOPM TURBIDI	ENT.	WELL, DEVELUPMENT pH	WELL DEVELOPMENT SPEC. COND
			12-80									
DAT	A COLL	SUTED AT SITE	PID READING (UPENING WELL)		WATI	DEPTH I STAILC	0 L (100)	WAT	DEPTH TO STABILIZA ER LEVEI	0 ມ (TUC)	DEPTH TO PUMP INTAKE (IOC)	PUMPING START
			 		_	1.34						1435
RADI	DAT	CREENING A	FUMP PRIOR TO SAMPLING (cps)		•			· · · P SA	UMP AFT	ER. (qps)	1	12
		MC	NITORING DATA	A CO	LLÉC	TED	DUR	ING PU	RGIN	G OPER	ATIONS	
TIME (min)	WATER LEVEL	PUMPING BATE (mi/mis)	CUMULATIVE VOL (GALLONS)		ISSOLVE YGEN (m		TEMP (C)	SPEC,		лH	Oke	TURBIDITY
1500	10.2	150	140/long		1.63		11.5	++21	BA	6.70	14	LAND
505	10.2	150		1	. 49		11.6	2.1		6.69	145	9.7
SLD	15.4	150			.14		11.8	2.	10	6.71	1/4	20
515	104	150		- C	0.91	1	11.8	1.9.1		6.76	15/	0.0
500	10.4	150 MVZ		.C	1.80	-	11.8	2.1	1	6.74	15Z	
(25 I	10-4	ISOM	1- 2 allows: a	C	.75		11.8	7.11		671	150	01
530 1	10.4	150		1	).6A		1.8	1:04	2	6 327 - 2	154	
535	10,4	150 ml			. 69	<u>(</u>		1.01		6.71.	1.50	10.0
540	10-4	150 M "	the seed?	1	.63	1	11.0	1.05		171	164	. 0.0
545	104	1 50 ml		<u>ر</u>	.61		11.15	2.64		( 11-3	150	
550	104	190ml	: · Beal	 	.62	-	11.9	1.04		6.71	154	0.0
								5.5	<u> </u>	<u> </u>	101 1	1
			713-	5	im /	E	colle	de l'	550	ALBU	20162	
								1	1			E C
					3	VΫ	<u>A 3</u>					
					3	VO	<u>A 3</u>					
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					3		<u>A</u> 3					

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SENELA-ARMITULEUI				AL		•••			
	ACTIV	III	BOTTL	S	SAMPLE	/ TIN	Æ I	CHECKEI	D BY
SAMPLING	PRESE	RYALIYES	COUNT/ VOLUME	TYPE	NUMBER			DATE	1
URDER .	<u> </u>			NO.					
VOC-GLP(Low Level) or 524.2	4 dag. C	HCL-	<u> </u>	YUA					
DOC	4 4mg. G	H_50,	<u></u>	-VOA-	OK 0/15				
Nitrate/Nitrogen 352.1	id dea. C				0		4	. 71	
			5.A. 2.	- + jg+			. *. *	5.	•
-Earous Iren	Fle	a yeahyeis	<u> </u>	<u></u>				.,	
Sulfide	Fie	ld Analysia							
Alkalinity/Sulfate/Chloridgs	44.0.			HDPE		·	·		
								<u> </u>	
······································	<u> </u>				50 15				
DOC	i		1 x 500 mL with						
Hardness 130.2	4 deg. C	HNOJ	#4	HDPE	421415				
TAR History Solids 160.1		4 des. C	1 x 1L \>.	- HDPE				 	
			1 50 T with #T		<u></u>				
Chemical Oxygen Demand 410.1	4 deg. C	H2SO4	T X SU HLL WILL #7	IIDI D					
et.	110	<u>1874 - 1923 -</u>	1.183 JAN 61.			  -		• i :	30
Att a star	1	418 11 12				•	<u></u>	l	 58 T
MMENTS: (QA/QC?)	6.16	11 <sup>1</sup> 11		nga ka Puntu ka	tar est		्यः स्ट्रियः		- FLZ
A. (3.	****** •=	سوفية. جوالية	, (j. 1) 						- 17
	and and a second se	لية ي <sup>0</sup> مراجع	and the second	1.217	Smi	voA		, t. ,	•
1 100 0200	( <b>18</b> 7)	. 4	F UMPL	- 1	- 141 -		11 NG21	8.	
2) MEE CAMID	062)	<u> </u>		2/2	5 m Land	- H		• • • • •	71
3) TOL 100	eren Arte	1.12 6.00 B	. <u>`</u>						(R)
A THE WAR ( COUR	ORI	tin in the second s	<u>с 3</u> -и	212	LSml	u –			ج ب
-9) Sullates (opp	300	) ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~ <u>8</u> 4	204 - 1 204 -	Some	HDPI	্যাল প্রথম হার্টার চার্টা		
5) Mn + 11 (44	(1) ( (45)	(* <b>5</b>	x inti t s =.	• ¥ *			Tues 1.1	Lat	
19-17 12-1 (man	- 14γ (Ω) - 1 (1)	، ب ایر ایر		i i serti Non sono so		tial		Test.	
"6) fe + "	M . 1 . G		فالأرا شوا		1.00	FIER	И ( <sup></sup> ) И		• ,
a than to	, н. <u>(</u> *					field	!		
and the second second	Carl and Bay	C	و الشاد م واليو	A 21134	•				
									المعادية والترزية
VINFORMATION:				5					
	VOC-GLP(Low Level) ur 524.2 VOC-GLP(Low Level) ur 524.2 DOC Nitrete/Nitrogen 352.1 Earrous Iren Sulfide Alkalinity/Sulfgle/Chloridge DOC Hardnese 130.2 Total Dissolved Solids I60.1 Chemical Oxygen Demand 410.1 Chemical Oxygen Demand 410.1 (AA MIMIENTS: (QA/QC?) () VOC 2) MEE (AMI2 3) Toc (aol 4) Sulfale (bPh 5) Mn f (HAA 6) Fe f	VOC-GLP(Low Level) or 524.2 Mag C Nitrata/Nitrogen 352.1 Adag C Nitrata/Nitrogen 352.1 Adag C Learnous Iron FE Sulfide Pre Alkalinity/Sulfate/Chloridge Hag O DOC Hardness 130.2 4 deg C Todar Dissolved Solids 160.1 Chemical Oxygen Demand 410.1 4 deg C 1) VOC (24008:) 2) MEE (AMI20GA) 3) TOC (26008:) 2) MEE (AMI20GA) 3) TOC (26008:) 5) Mn f (HACHE) 6) Fe t Hardness (AMI20GA) 5) Mn f (HACHE)	VOC       GLP(Low Level) tr 524.2 $4d_{ep}$ C       BT         AN       DOC $4d_{ep}$ C       BT         AN       DOC $4d_{ep}$ C       BT         Loc $4d_{ep}$ C       H4007         Nitesta/Nitrogen 352 L $4d_{ep}$ C       H4007         Statistic       Freezensistic       Freezensistic         Alkalinity/Sulfista/Caleridges $4d_{ep}$ C       HN03         DOC       Hardneee 130.2       4 dep C       HN03         DOC       Lardneee 130.2       4 dep C       HESON         DOC       Chemical Orygen Demand 410.1       4 dep C       HESON         () VOC       C26078:)       G       G         () VOC       (26078:)       G       G         () MEC       (AM12064)       H       H         () MEC       (AM12064)	SRDER       COUNTY VOLLAGE         VOC-GEP(Low Level) or 524.2       deg C       31/40 ml         DOC       deg C       31/40 ml         Nitwate/Nitrogen 352.1       deg C       31/40 ml         Jerrous Iron       Pressympts       1.x 500 ml         SUIDAE       Pressympts       1.x 500 ml         SUIDAE       Pressympts       1.x 500 ml         DOC       1.x 500 ml.with       1.x 11         DOC       1.x 500 ml.with       1.x 11         DOC       1.x 500 ml.with       1.44         DOC       1.44       1.44       1.44         DOC       1.45       1.45       1.44         DOC	ORDERCOUNTY VOLLAGETYPEVOCGLAPGEOW LONG) UN 524.2440 C3/ 40 mlVOAMADOC440 C140 mlVOANitesta Nitrogen 352.1440 C1 $\pi$ 500 mlHBPE-Janceus IronFastynin1 $\pi$ 500 mlHBPE-Janceus IronFastynin1 $\pi$ HIHDPEJanceus IronFastynin1 $\pi$ HIHDPEJanceus IronFastynin1 $\pi$ HIHDPEDOC1 $\pi$ 500 mL withHDPELandausee 130.2440 C1 $\pi$ HIHDPEChemical Oxygen Demund 410.1440 C1 $\pi$ 500 mL with HDPEChemical Oxygen Demund 410.1440 C1 $\pi$ 500 mL with HDPE1)VOC\$260 45.340 F1)VOC\$260 45.340 F2)MEC(AM(206 4-))114)Sulfactor(app - 3bord)N5)Mn f(HACHE)3.415)Mn f(HACHE)3.416)Fe t11	ORDER       COUPRY VOLLAGE       TYPE       NUMBER         VOC       CAP(Eow Level) or 5242 $seg c$ $3/40 \text{ ml}$ VOA         Minestal/Kittogen 352 L $seg c$ $3/40 \text{ ml}$ VOA       QR, 2/15         Nitestal/Kittogen 352 L $seg c$ $1x 500 \text{ ml}$ HDPE       IBDER         Suffice       Part Analysis $1x 500 \text{ ml}$ HDPE       Q. 12/15         Alkating/Sufge/Chierdege $seg c$ $1 \times 100 \text{ mL with}$ HDPE       Q. 12/15         DOC       Issue c       Provide       HDPE       Q. 12/15       Issue c         DOC       Issue c       Provide       HDPE       Q. 12/15       Issue c         DOC       Issue c       Provide       HDPE       Q. 12/15       Issue c         DOC       Issue c       Provide       HDPE       Q. 12/15       Issue c         Identified Organ Demond 410.1       Issue c       Provide c       Issue	ORDERCOUNT VOLLAGETYPENUMBERVOC-CLP(Low LowL) w 5242Hz $2/40 \text{ ml}$ VOAMinetabilitagen 3571Lap cHz $2/40 \text{ ml}$ VOAMinetabilitagen 3571Lap cHz $1/40 \text{ ml}$ VOABareves IranTranspireHzHDPESUISCETranspireHzHDPEMinetabilitagen 3571Lap cHzBareves IranTranspireHzSUISCETranspireHzBOCLap cHzLap chases 1302Ang cHoHartheese 1302Ang cHzBOCLap chases 1302Ang cLap chases 1302Ang cHzBOCLap chases 1302Ang cLap chases 1302Ang cHzBORHDPELap chases 1302Lap chases 1302Ang cHzLap chases 1302HzHz </td <td>Image: State in the state</td> <td>TORDERCOURT VOLUMETYPENUMBERDATVOCCP (Low Level) un 524.2HoJ. 40 mlVOAVOAMargen StatusLow CHo 200 J. 40 mlVOAVOAMinede Nitrogen 132 LLow CHo 500 mlHDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CHo 500 mlHDPEJamous Nitrogen 132 LLow CHo 14 HDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CHo 14 HDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CHo 14 HDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CHo 14 HDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CNot Nitrogen 132 LImpact Nitrogen 132 LJocLaw Sea CNot Nitrogen 132 LNot Nitrogen 132 LJocLaw Sea CNot Nitrogen 132 LNot Nitrogen 132 LJocLaw Sea CNitrogen 132 LNitrogen 132 L</td>	Image: State in the state	TORDERCOURT VOLUMETYPENUMBERDATVOCCP (Low Level) un 524.2HoJ. 40 mlVOAVOAMargen StatusLow CHo 200 J. 40 mlVOAVOAMinede Nitrogen 132 LLow CHo 500 mlHDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CHo 500 mlHDPEJamous Nitrogen 132 LLow CHo 14 HDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CHo 14 HDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CHo 14 HDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CHo 14 HDPEImpact Nitrogen 132 LJamous Nitrogen 132 LLow CNot Nitrogen 132 LImpact Nitrogen 132 LJocLaw Sea CNot Nitrogen 132 LNot Nitrogen 132 LJocLaw Sea CNot Nitrogen 132 LNot Nitrogen 132 LJocLaw Sea CNitrogen 132 LNitrogen 132 L

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Form # \_\_\_\_\_

Form	⊭	

		SAN	PLING F	RECO	RD	- GR	OUI	NDW	ATER	
	SENE	CA ARMY I	DEPOT ACTIVITY		CONSULA	ANT: PA	RSONS	ES	WELL #: PT	.22
P) LC	ROJEC	T:	QUARTE	RLY SAMPL ROMU	ING -ASH I LUS, NY	ANDFILL		I	DATE: NSPECTORS:	12/16 BTM
Y	WEATE	ER/ FIELD	CONDITIONS CHECK	LIST	(RECO	RD MAJO	R CHANG	ES) S	AMPLE ID #:	20 163
				REL.	WIND	(FROM)	GROUN	DISTE	-	
T (24	IME 4 HR)	TEMP (APPRX)	(APPRY)	HUMIDITY	VELOCITY	DIRECTION	SURF	TIONS	MONIT	DETECTO
10	45	22'	Sim	100	5-15	NW	Sh	HU I	OVM-580	PID
									d	ø
DIA G	METER ALLONS LITERS	WELL VO (INCHES): / FOOT: /FOUT	UME CALCULATION FACT 0.25 1 2 0.0026 0.041 0.163 0.010 0.151 0.611	<b>TORS</b> <b>3</b> 4 0.367 0.654 1.389 2.475	6 1.47 5.504	ONE WELL VO	163 =	- KNOW-STA	ER FACTOR (GAL/FT)	el.) 5 <b>4</b>
	HISTORIC	, DATA .	DEPTH TO POINT OF WELL (TUC)	TUS SCREE	TH TO SCA PURY LEN N (TOC) (P	EEN Unit 1)	WELL DEVELOPMEN TURBIDITY	nr 🔤	WELL DEVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
DA:	TA CULL	CIND AT	PID RHADING		DEPTH TO STATIC		DEPTH TO STABILIZED		DEPTH TO PUMP INTAKE	FUMPING STAN
	VV Jislais	iin. P	(UPENING WELL)	WAI	BB1	) WA	TERC LEVEL (1		10.95	1100
RAD	DATION S	CREENING	PUMP PRIOR TO SAMPLING (cos)				PUMP AFTER	a)	<u>, 1- (0 )</u>	
		MO	NITORING DATA	COLLEC	TED DU	RING P	URGING	OPERA	ATIONS	
TIME (min)	WATER	FUMPING BATE (m/min)	CUMULATIVE VOL (GALLONS)	DISSOLVI OXYGEN (m		AP SPEC	COND	A nH		TURBIDIT
11:15	9.05			2.69	12.	5 1.5	5.5	L.7A	1/2	44.
11:20	9.07	80 ml		2.68	12.	6 1.4	19	6.7A	20	66
11:25	4.15	Roml -	Jen Ti	1.59	12.	6 1. 5	0	6.80:	30	\$4.4
1130			Do is 4.68	3 Rep	Jacob	n h	110	Libre :		
145	936	BOM	(3n 2)	1.23	12.	3 1.2	4	L.80	40	35
156	1.80	Bom .		1.67	- 12-	5 1.3	4	6:76	19	57
200	9.80	Paul		1.32	12.	6 1.5	4 1	6.14.	10.0	49
216	9.90	Round	() ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	1.10	12	6 1.2	54	6.74	3	45
220	990	BOM.		1.05	12.	Z   +!	15	6:74	-41	16
2.5/	9.90	Porul !!		1.00	12.	8 1.2	5	6.74	-6[ 3]	. 8.3
275.	9.90	Bourl		1.01	12.8	3 1.4	5	6.721	- 70	7.6
240	9.90	90ml		1.00	, 12.8	5 1.2	5	6.74	-73	6.3
			Sample	Collect	led	ALL	3W R	0163	@ 12A	0
			3 VOA'S							, / (1) *
					· · · · · · · · · · · · · · · · · · ·					

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							Form #_	
	SAMPL	ING I	RE	CORD	- GR	OUND	WATER	) L
	SENECA ARMY DEPOT	ACTIVITY		CONSULT	ANT: PAI	SONS ES	WELL #:	
	SAMPLING	PRESERVATI	VES	BOITL	ES	SAMPLE	TIME	CHECKED BY
	o , Sorder			COUNT/ VOLUME	TYPE	NUMBER		DATE
1	VOC-CLP(Low Level) or 524.2	4 deg. C	HCL		-AOY	Qd 12/	16	
	*3. U.S. DOC	A day C	H-SO.	· 3/40 ml	VOA	U.		
2	Nitrate/Nitrogen 352.1	4 det C		1 x 500 ml	HDPE		1	
	Formula		-	a				2.9.01
3		Cest Antiya	3	14-6-6-				
4	Sunde	Field Analyzi	3			-		1
5	Alkalinity/Sulfate/Ghlorides	41868 C	1.2	-I x IL	HDPE	· · · ·		171 - 181 - 2 -
6				W			:	and a second
<u> </u>		<u>_l</u>		<u>,                                     </u>				
7	DOC	1		- 1-x 500 mL with -				<u> </u>
8	Hardness 130.2	4 deg. C	HN03	#4	HDPE	QX 12/	/b	
9	Total Dissolved Smith 160.1-	4 deg. C		IxIL S	HDPE			
10			10201	L x S(1 m) with #7	HUPE			
10	Chemical Object Demand 410.1	A Beg. C	<u>hish</u>	T X SO ILL WILL #7	IBID			
-		1112 1082	· (*	1. 1957 528 - 4317 1. 1957 - 1988 - 4317				1.3 4.7
		AN STAR		1 (1) 			·	
CO	MMENTS: (QA/QC?)			Crar No	6.4			i dengi serik Kengan ter
	LUS	an a	40	or bilan. Silan	38- AL		رند بردار ا	a territoria. Alterrativo de la constante de
**		Artista S	1 <b>- 1</b> - 1	C . HCL	୍ର ବା	zsml	VOH RU	ግር በ2421 ዓምም ሲኖር
	2) HEE [M1121	Kere ):	S-H	i di sana	(99)	₹ुंचो" क <b>?िला</b>	L	12/12
	-3) TOL JANK	N	en e		8 0 <b>.81</b> 1		±	
- -			11	<u> </u>	2/	25 mL	(	ad 12/1°
	r P) Sulfale (SP	4.300.1)		<u></u>	1/2	Some	HORE	0
	S) Mn+ At	<del>cH-)</del>		<u>ل</u> د و ۲	2." <b>/</b> "		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	Gd 12/11
	2 AL R T 1	हरान्छ	151	کیٹی دی۔ م س	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		field	10-1 15/1
4			दीई नि २ भारत				field	
i	n na ser en	nerse statistici	6 }~~ • 11 -				ديدور ⊌ تيديدا	92 12/16
	1990 - 1994 - 1994 - 1995 -	₩# 【* BJ	ي منطق کي 1 ( 111 - 1	1 6-51		Anna 1	14	ŋ
	y or crew	$G(1, Y) = \mathbb{R}^{2}$		1. **	9 1942 E F	SUMAN		
Ŋ٨	INFURMATION:					5. <u>1</u> 850 1	C	
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SENEC	CA ARMY I	DEPOT ACTIVITY		CONSULT	'ANT: PAR	SONS ES	WELL #: f	1-24	
PROJEC	Г:	QUART	ERLY SAMPL	ING -ASH I	ANDFILL		DATE:	12!15	-
LOCATIC	•N:	- <b>4</b> 45 - 5 - 4	ROMUL	US, NY			INSPECTORS:	<u>BTM</u>	1
WEATE	ER/ FIELD	CONDITIONS CHEC	KLIST	(RECC	RD MAJOR	CHANGES)	SAMPLE ID #:	MD 0:0164	1
			REL	WIND	(FROM)	GROUND / SITT	anna An anna ann an an an an	to be a susself model.	-
TIME	TEMP	WEATHER	HUMÍDITY	VELOCITY	DIRECTION	SURFACE	MON	ITORING	
1700	APPRA)	(APPRX)	(GEN)	(APPRA)	(U-300)	LUR	OVM-58		
1099	· · · · · · · · · · · · · · · · · · ·	Orecal	- mun	0 10		wei	Ø	6	1
DIAMETER	WELL VOL	UME CALCULATION EA	CTORS	6	ONE WELL VOL	UME (GAL) = [(POW	- STABILIZED WATER L	EVEL)	-
GALLONS	/ FOOT: FUUI	0.0026 0.041 (0.163	0.367 0.654	1,47 5.564	(12.0-5.2	5)(./23)/2	)=1.1 6.60	9 - 1.08x3=	31
509		DEPTH TO POINT OF WELL	DEPT	HTO SCR	GEN GIH DE	WELL	WELL WELL	WELL DEVELOPMENT	.~
HISTORIC	DATA	(100)	SCREET	N (TOC) (F	1)	IURBIDITY	pti.	SPEC. COND	-
11-1 X-1		12.00		DEPTUTO		DEPTH TO			
DATA COLLI WELL	CIED AT ,	PID READING (UPENING WELL)	WAD	STATIC ER LEVEL (TOO	) WAT	STABILIZED SK LEVEL (TOC)	INTAKE (TUC)	TIME	
				5.25			a ang <b>angang ka kina</b> ana a	1210	Ĩ.
RADIATION S	CREENING	PUMP PRIOR TO SAMPLING (gps)	- 47		P	UMP AFTER MPLING (qps)			
	MO	NITORING DAT	A COLLEC	TED DU	RING PU	RGING OP	ERATIONS	and and and	
ME WATER	PUMPING	CUMULATIVE YOL	DISSOLVE	JASI-	MP SPEC.	COND + HAR		TORBIDITY	••
20 5.4	1.50	(Construction of the second	0.62	. 12.	0 .42	5 7.0	2 -200	22	
25 54	1.50	1901	1 0.49	1	A	0 7.2	6 - 716	162	
30 6.4	250		0.46	. 12	0.4	7.2	3 -210	14.7	1
\$5 5.4	150		0.47	112.	0 .41	0 7.3	0 -209	5 11-8	* ****
40 5.4	2.50		0.40	11-	9 . 41	0 7.3	0 -202	- 3.6	1
45 3.4	2.50	290	0.36	11-	9.41	0 7.3	0 - 200	7.3	
50 5.4	150		0.34	11	9.4	11 7.3	0 - 201	10.1	
55 5.4	250		0.33	11-1	9 .40	9 7.3	1 -198	5-3	' ;
00 5.4	150	• • • • • • • • •	0.32	- 11-	9 .41	0 7.3	1 -196	4-3	20
1554	250		0.53	11-	9.4	09 7.3	2 -194	3-2	20
10 5.4	250		0.34	l   -	9.4	10 7.3	2 - 192	1.0	2
5		Sample	ALBI	N20	164 00	lecter		·	
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4			:						Y
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		4.4 . 1.4	11	0	A . D .	المسيوسول و	. 7		

Form # \_\_\_\_\_

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$\begin{array}{c c c c c c c c c c c c c c c c c c c $		SENECA ARMY DEPOT	ACTIVITY	CONSULT	FANT: PA	RSONS ES	WELL #:	
ORDER     COUNTY VOLAGE     TYPE     NUMBER     DATE       1 $vodd=Ctp(Low Lead) ar 5242 + 4g C     HCI     3/40 \text{ ml}     VOA     God [2]/15       1     vodd=Ctp(Low Lead) ar 5242 + 4g C     HCI     3/40 \text{ ml}     VOA     God [2]/15       2     Niteate/Niteagen 3521     44g C     HCI     3/40 \text{ ml}     VOA       2     Niteate/Niteagen 3521     44g C     HDPE       3     Ferrow Lean     Edd Anghet       4     Sall56     Fed Anghet       5     Allocatinhy/Sallface/Chiorides     HCI       6     Hardness 1302     Hag C     HX HDPE       9     Total-Hibbson/Hallow Sallfas/Chiorides     HEI     HDPE       9     Total-Hibbson/Hallow Sallfas/Chiorides     HEI       10     Chemist 0xygen Heinen 410 - Heine     HEI     HDPE       10     Chemist 0xygen Heinen 410 - Heine     HEI     HIPE       10     Chemist 0xygen Heinen 410 - Heine     HEI     HIPE       10     Chemist 0xygen Heinen 410 - Heine     HEI     HIPE       10     Chemist 0xygen Heinen 410 - Heine     HEINE     HIPE       10     Chemist 0xygen Heinen 410 - Heine     HIPE     HIPE       2)     NEE (AM 20) (GAX)     HE     HE     HIPE   $		SAMPLING	PRESERVATIVES	BOTTL	ES	SAMPLE	TIME	CHECKED BY
1 VOL 21 P(Low Level) or 5242 test c Hot 3/40 ml VOA $GOL [2]/15$ 1 $$		ORDER	ada kara a	COUNT/ VOLUME	TYPE	NUMBER		DATE
$\frac{1}{2} + \frac{1}{2} + \frac{1}$	1	VOO CLP(Low Level) or 524.2	4 deg. C HCL	3/ 40 ml	VOA	Igd 12/15	4 AVII	1
$\frac{2}{3} \xrightarrow{\text{Historic/Nitrogen 3521}} 4 \frac{462 \text{ I } 450 \text{ min}}{14000 \text{ I } 4500 \text{ min}} \xrightarrow{\text{Historic/Nitrogen 3521}} 4 \frac{462 \text{ I } 4500 \text{ min}}{14000 \text{ I } 4500 \text{ min}} \xrightarrow{\text{Historic/Nitrogen 3521}} 4 \frac{1}{12000 \text{ I } 1000 \text{ I } 10000 \text{ I } 100000 \text{ I } 1000000 \text{ I } 10000000000000000000000000000000000$	1	Contraction of the second seco	tdeg.C H.SO.	<u>3/40 ml</u>	VOA		l 	
3 Percent from Edd Angres 4 Sulfac Field Angres 5 Allealinity. Sulface Hardenses 6 7 DOC 8 Hardness 130.2 Harden Hardenses 9 Total Dissolved Solfies 100.1 Harden Hore 10 Cheminal System Lement 810.1 Harden Harden Hore 10 Cheminal System Lement 810.1 Harden Harden Hore 10 Cheminal System Lement 810.1 Harden Harden Harden Harden 10 Cheminal System Lement 810.1 Harden Harden Harden Harden 10 Cheminal System Lement 810.1 Harden Har	2	Nitrate/Nitragen 352_1	Adeg C	<u>1 x 500 ml</u>	HOPE			
4 Suffice read August 5 Albedinty/Substat/Chlorides range $1 \times 10$ HDPE 6 7 DOC 8 Hardness 130.2 range $1 \times 500$ mL with 9 Total-Disselved Solids 160.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 10 Cheminal Coxygen Densend 410.1 range $1 \times 50$ mL with $47$ HDPE 2) NOC (Stabled A) 2) NOC (Stabled A) 3) TOC (Stabled A) 4) Fe + (HACH) 5) Min + (	3	-Ferrous Iron	Field Analysis		1 	i Tanata	ar engantenti Tar	
$\frac{5}{12} \text{Alcalinity/Subject/Chorides age constrainty/Subject/Chorides age constrainty/Subject/Subject/Chorides age constrainty/Subject/Chorides age constrainty$	: 4	Sulfide	Field Agglynis	N/, MA		·	• • • • • • • • • • • • • • • • • • •	_
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	5	Alkalinity/Sulfate/Chlorides-	4 dag. C	I X IL	HDPE		) 	
7 DOC 1 x 500 mL with 8 Hardness 130.2 tag to 11 x 10 m with # HDPE $G \times 127/15$ 9 Total Dissolved Solids 160.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 10 Chemical Oxygen Demaid 410.1 tag to 1 x 10 m with # HDPE 2) MEE (AM 20 GAA) 4 % Hdt 2 25 m VOA 3) TDC (GOULDA) 4 % Hdt 2 25 m VOA 4) SUI Halts (EPA 300 m) 4 % Hdt 2 25 m VOA 4) SUI Halts (EPA 300 m) 4 % Hdt 2 7550 m HDPE 5) Mn + (HACH) 50 % Hdt 2 7550 m HDPE 5) Mn + (HACH) 50 % Hdt 2 750 m HDPE 5) Mn + (HACH) 50 % Hdt 2 750 m HDPE 5) Mn + (HACH) 50 % Hdt 2 750 m HDPE	17 a 6	14 10 10 10 10 10 10 10 10 10 10 10 10 10	-9. (E4) (/ (A3) (-9)	12.0				
8 Hardness 130.2 $1 \times 500 \text{ mL with}$ 9 Total Hissolved Solfds 160.1 $4 \oplus \mathbb{C}$ 1 X IL HIPPE 10 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 10 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 11 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 12 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 12 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 13 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 13 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 14 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 15 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 15 Chemical Oxygen Demand 410.1 $1 \oplus \mathbb{C}$ 15 Chemical O	7	DOC						
9 Total Dissolved Solids 160.1 (44 c 1811, 1910) 10 Chestical CANSER Description 410.1 (44 c) 1810 (1820) COMMENTS: (QA/QC?) V NOC (S2) 60 B) (18 50 ml With #7 HOPE 2) NEED: (AAM 20 (GAX)) (47 c) (42 2) (25 ml VOA 3) TOC (MOLEO A) (48 c) (47 c) (40 c) (40 c) (40 c) (40 c) (40 c) (50 c) (10	8	Hardness 130.2	4 deg. C HINOT	1 x 500 mL with	HUPE	and 12/11	5	
10 Chemical Oxygen Demand 410.1 ray c 1250 1250 ml with #7 HDPE COMIMENTS: (QAVQC?) V NOC (SDBOB) 40° HUL 3/25ml VDA 2) NEED GAM 20 GAX) 4° HUL 2/25ml VOA 3) TOC (GIDEOA) 4°C HUL 2/25ml VOA 3) TOC (GIDEOA) 4°C HUL 2/25ml VOA 4) Sulfate (EPA 3000) 4°C HUL 2/25ml VOA 4) Sulfate (EPA 3000) 4°C HUL 2/25ml VOA 4) Sulfate (EPA 3000) 4°C (Areld) (Areld) (Areld)	9	Total-Dissolved Softed Lot	Adre C		HOPF	0		
COMMENTS: (QAVQC?) V. VOC (SOBOB) 2) NEES (AM 20 GAX) APE HELL 2/25ml VOA 3) TOC (GOBOA) 4) SULAR (EPA 3000) 42 5) Mn + (HACH) (Areld) (Areld)	10	Charlest Charlest Control 100.1	T ung. V	1 v 50 ml u 44 47	HUBE	ł		
COMMENTS: (QA/QC?) V NOC (SDGOB) ADD B ADD B AD	10	Cheshcal Oxygen Demand 410,1			<u> </u>	a day in a principal programme		ter A de sumpr
COMMENTS: (QAVQC?) V) VOC (8060B) A) MEE: (AM 20GAX) APE. HUL 2/25ml VOA 3) TOC (9060A) 4) Sulfate (EPA 300.1) 46. HUL 2/25ml VOA 4) Sulfate (EPA 300.1) 46. HUL 2/25ml VOA 4) Sulfate (EPA 300.1) 46. HUL 2/25ml VOA (A) EDA 300.1) 46. HUL 2/25ml VOA	;	et - 310			·			néré El
UNC (8060B) 2) MEES (AM 20GAX) ATC. HELL 2/25ml VOA 3) TOC (9060A) 4) Sulface (EPA 300.1) 4C. HELL 2/25ml VOA 4) Sulface (EPA 300.1) 4C. HELL 2/25ml VOA 4) Sulface (EPA 300.1) 4C. HELL 2/25ml VOA 4) Sulface (EPA 300.1) 4C. HELL 2/25ml VOA (Areld) (Areld)	CO	MINIENTES, MAAVOCA	Tels Tarts	1967	-		و المراجعة الم	1. 2.74 . 19
2) MEED (AM 20 GAX) 4PE HELL 2 25ml VOA 3) TOC (90000A) 4PE HELL 2 25ml VOA 4) Sultais (EPA 300.1) 4CE HELL 2 25ml VOA 4) Sultais (EPA 300.1) 4CE HELL 2 25ml VOA 5) Mn + (HACH) (Field)		NIMENTS: (QAVQC!)		a total	alint		nA 3	25 KL 4
2) MEED (AHM 20 (AX) 42. HCL 2/25ml VOR 3) TOC (9000A) 42. HCL 2/25ml VOA 4) Sulface (EPA 20001) 40. HCL 2/25ml VOA (Areld)	)	NOC 183708	Sing And	Her	3 15	MUL 11		
3) TOC (90,60A) 40. Hill 2/25ml VOA 4) Sulfak (EPA 300.1) 40 HILL 19250ml HDPE 5) Min + (HACH) (Areld)		2) MEES (AM 20)	GAX) 4P2	· Hel	2 25	imi V	oR se	5 5 6 C
4) Sulfate (EPA 300.1) 40 (Areld)		- (ADION)	ALC 7-51	HEL	21-5	$ml : \sqrt{D}$	A in	ېلې څېلې لړ
4) Sultate (EPA 300-1) 4 c (Aveld)		3/3 JUL (SIUSULA)		- Hilotal	E P			2 448 36 5 5.5 58
Greld) Fe+ (HACH)	, 4	4) Sulfake (EPA	300.1) 90	1714 1914	1750	omi hi		54 4 1
G) Fe+ (HACH) SEA SILL STATES (Freld) SEA STATES	5	Esta Lifella				(A)	11 33	ing interview Di kantering
Fiet (HACH) see all the well have been here the here here here here here here	a. <u>l</u>	5) Mn T. LITAC	4) 002	1.31	53.3		ra )	2 4810
WINDER AND	έ. ι	ATTO + PHAME	416 154		\$4. Q	. 17	reld) Se	2 546 2
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	İÔV	VINFORMATION.	185+31	the sh	170	Test A	mma	- Goc !
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ar 18, 4	SENE	CA ARMY	DEPOT ACTIVITY		CONSULT	ANT: PAR	<b>ISONS ES</b>		WELL #: M	w1.7	1 
P	ROJEC	T:	QUARTE	RLY SAMPL	ING -ASH I	ANDFILL		į	DATE:	12/15	5
L	OCATIO	DN:		ROMU	LUS, NY	-		1	INSPECTORS:	BJM	
۰.	WEATE	TER / FIFI P	CONDITIONS OPPOR				CHANCES		PUMP #:	ALQUI 20	ile
	VI LATE I I	ANT FIELD	COMPTIONS CREUN	REL.	WIND	(FROM)	GROUND / S	SITE (	SAMELE ID #:	<u>A-100-20</u>	C.d
1	TME	TEMP	WEATHER	HUMIDITY	VELOCITY	DIRECTION	SURFAC	E	MONI	FORING	n de la
(2	4 HR)	(APPRX	). (APPRX)	(GEN)	(APPRX)	(0 - 360)	CONDITIC	ONS	INSTRUMENT	DETECTOR	
4	>0	400	overar	60	10.13	94	wer		OVM-580	PID	
	-	WELL VO	LUME CALCULATION FAC	TORS	an i callar calco da calco	ONE WELL YOL	UME (GAL) = 1(	POW -	STABILIZED WATER LE	VEL)	
DI/ G	METER	(INCHES); / FOOT:	0.25 1 2 0.0026 0.041 0.1d3	3 4 0.367 0.654	6 1,47	252×1	12-XWELL	DIAM	ETER FACTOR (GAL/FT)	1	6 70
	LILERS	NUOT Marinese	0.010 0.151 DEPTH TO POINT	1.389 2.475 DEP	5.564 TH TO SCR	EEN CAL	WELL	3 *	) - 3.68 WELL	WELL	-
	нізтоню	DATA	(TUC)	SCREE	POF LEN N (JOC) (F	UIN DI T) ;	TURBIOITY	; 	DEVELOPMENT pH	DEVELOPMENT SPEC. COND	
			12/15 61 - 13.7		5	i	0.40				1
DA		KETED AT			DEPTH TO		DEPTH TO	••••••	DEPTH TO FUMP	PUMPING START	1
24	WELL	SIL	(UPENING WELL)	WAL	ER LEVEL (TOC	WAT	ER LEVEL (TOC)	)	(TUC)		-
					•14		6.2 B	į	(2.7	600	2
KAI	DATION S	AL REPORTED AND A STATE OF A STAT	PUMP PRIOR TO SAMPLING (cps)	1 	17 T 14556-58 6	A P SA	MPLING (cps)	1	دو است <del>ا</del> م را در ا	գրություն աներ անություն չեններ	- marine a
4		MC	DNITORING DATA	COLLEC	CTED DU	RING PU	RGING	OPE	RATIONS		
rime (min)	WATER	PUMPING RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISSOLVI OXYGEN (n	ED YSI-TEL	MP SPEC.	COND - H	pHI 1		TURBIDITY	
10	638	150	and the second	1.48	12.	2 .64	1	1.06	57	8	
015	6.38	150		0.92	12.	6 .71	4 7	.10	47	5.3	3
120	•			0.80	12	7 .6	89 7	.10	42	4./	· •: •
25	6.38	150	150 llon	0.68	12.	8 .61	33	2.11	35	3.6	1
30	6.3R	150		0.66	12.	9 .63	0	Tall.	34	2.1	
35	6.79	150		0.64	11	9 .6	14 7		33	. 1.4	
40	6.38	150	17	0.66	11.	9 11	19 1		74	1.0	
45	1.38	190		0.60	12	a Li	01 7	-14	ZI	1.0	• }
50	138	141	2 A. 11-14	A.41	12.		67 7	+11 .11	20	1.0	- 1
55	1.26	150	~7# H045	n Sr	1.5	13		117	75	1 7	10
101	1 20	100	·····	.0.00	- 13.		10 1	-14	54	!: f	27
00	120	150	· · · · · · · · · · · · · · · · · · ·	0.48	13-		104 f	12	53	1.8	30
(1)	6.00	150	1	0141		<b>د</b> ، ט	09 7	-12	33	1.>	- June
15	6.00 :	150		0.47	13.	D • )	68 9	17	52	1.2	9
57.	6.20	150		0.48	13.	• . 5	29 7	.12	35	1.1	120
μ.	6.38	150		0.47	13.	0.55	57 7	-[2	33	1.0	84
15	6-38	150	3 gallons	0.46	13.	0.55	55 7.	12	32	0.9	14
	3 		S	ample	ALBW	10165	colled o	at 1	1130		1.4.
							i				1
; ; ;			MA= .01	3 Vot	ts for W	oc and	alusis		3		
Ì	1		Felt= 0.14	2 VO	As for 1	LEE	<u>II</u>			1	
1	1		Sull = 0.05	2. 11		TOC.	11			Nan - Marin Jacobin - An Inc. And Anno - An Inc.	

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Form # \_\_\_\_\_

	SENECA AR	MY DEPOT	ACTIVI	TY	CONSULT	ANT: PAL	RSONS ES	WELL #:	a la la la		
	SAMPLIN	G	PRESE	WATIVES	BOTTL	ES	SAMPLE	TIME	Č	HECKEI	D B
	ORDER	and a real state of the second state of the		47 1 2000 1000	COUNT/ VOLUME	TYPE	NUMBER	e			1. N
¥	VOC CLP(Low I	_evel) or 524.2	4 deg C	HCL	3/40 ml	VOA	QR 121	15			
NE	t teathan	a			2/10 ml	VOA	0				
-	12 3 47 CILY, DUC		1008-6			, on	,				
ž	Nitrate/Nitro	gen 352.1	4 deg. C		1 x 500 ml	HDPE					
1	Ferrous	Iron	Field	Analysis		5.5		te de			-pi
Y	C	le th	Field	Analysis						N	*
4	A lizability	W blondos	1	-	1 = 11	HUDDE	t t				
4.	Alkalulty/Sulla	ite/Chilorides	14 deg U		C. C.	IIDIE			— <u>-</u> !.—		1.4
. 1			h				618 12/15				
1	DOC							Orto 1	ł	_	
	Hardness	130.2	4 des. C	HENOJ	<del>-1 x 300 m</del> L with ' #4	HDPE	110-1212	Silvi			
- 14 - 4-4		•	-						3		
	FOOD Dissorved	Solids 160.1	41	degC		N HDFE	~		. 1	2 - 2	
40	Chemical Oxygen I	Demand 410.1	4 deg. C	H2SO4	1 x 50 mL with #7	HDPE	s an inician communications f		d. a. a.		
4	VOC 8	260B)	4°C	HCL	_3/25ml	VOA	1	and a state fragment		-	
2	MEE (	AM2064	7402	HOL	2195ml	VIDA					
CO	MMENTS: (C	(A/QC?)	1	14			HERE BY			138	1
3	1. For. 191	TOA)	4.0	HEE	2/25ml	.NO₽			÷ĉ.	25.4	2
		412	31.7	035.	5123	98.9				4 - 4 - 4	5
4	Shifat	õ (IBPA 3	60FJ)	4000	1=1250m	LawHer	HE noticest				1
r	- NAME 1	in at	ja in	. 5.30	P.11	1212-1-		τ.		왕군대	С 
	S. ININ . (	(חטרינה)	1.5	집은		4		í.	10 a	ំ (ភ្លៃដឹង) សតិការ	1
	E-Fet	THAY H	$)$ $\mathbb{H}_{1}^{2}$	49 <sup>5</sup> 12 4 5	P.S. K	eta :		<u>ث</u>	ធិរ	85°0.	1
	or it is	ac i		144	1.4	गवसु, ० लघ		h.)	5.	No. 1	Ċ
	4.2	and the		537	- D-21		्रमारः कहेव			tite t	ુ છે. આ ગામ
				0723 . 0123		2 E				84.14 84 1	N. 1
			AFF -	1993, 4 1933	19 a (* 19	- <u>Sala</u> - C			691	<ul> <li>€\6*€</li> <li>€</li> </ul>	- G B
	€_ v .		Alsig	्रदेखी क कर्णा		- 4-24-6 (J. 15-24			n an r	613 38 s	10
	NO GA	Inpo		1,6 (a)	Ar a chan		- 1 0		03.	u <sup>e</sup> rty Alfred	
ΠV	INFORMAT	TON:	2.11	I DIAT	INDS SON	I AD H	TSY MM	Mens	9	× 12	-//
	a la frances de la constante de La constante de la constante de	₩.₩.₩.₩. 	19 19 19 19	ر میں ایک کی اور اور اور میں ور	a 1945. Se 1991	e me . Na e se		<del>.</del>		4 - 1 1991	در
	· "a. '	14 <u>1</u> 1911	litet. Navis		n andre en state viter. Na sen en state viter viter en state		1)** 45548		V*401, 1	1 -	4
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	and the second	ere - cor e tamp	- 197 - 19	ه ر در مود در	halialirin ayali vayaddonilli il, Yuo 175, - 47 Schillariji / A	) ( 	A start of the start of the start	• • • • •	P. 4 1 1	1. <b>5. 1</b>	-
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Form #

	S	SENEC	A ARN	IY I	DEPOT ACTIVITY	7 45	2 1	-st ě	<b>PA</b>	RSON	<b>1</b> 5		WI	ELL #: M	WT-22
4		ROJEC CATIO	ľ: N:	_	Ash Landfill	LTM ( R	Ground OMUL	water i US, N	Sampli Y	ng - Roun	ď 8		INS	DATE: PECTORS:	12/16/09
	W	EATH	R/ FIF	LD	CONDITIONS CHEC	KLIS	r	(R	ECOR	NAJOR	CHAN	GES)	SAN	APLE ID #:	ALBW2016
	т	IME	TE	AD	WEATUFD	R	EL.	WI	ND TITTL	(FROM)	GROUN	D/SITE		MONIT	OPINC
	(24	4 HR)	(API	RX)	(APPRX)	(G	EN)	(APP	RX)	(0 - 360)	COND	ITIONS	INS	TRUMENT	DETECTOR
	2	,20	20	2	overcast	201	wph.							OVM-580	PID
	DIA G.	METER (	WELI INCHES): FOOT:	VOL	UME CALCULATION FAI 0.25 1 0.0026 0.041 0.163 0.010 0.151 0.6172	CTORS 3 0,367	4 0.654	6 1.47	0	NE WELL VO		L) = I(POW-	- STABI	LIZED WATER L FACTOR (GAL/FT	EVEL) = 3.56 ml
		HISTORIC	DATA		DEPTH TO POINT OF WELL (TOC)	1,369	DEP TO SCREE	3,364 TH TO P OF N (TOC)	SCREE LENGT (FT)	N D	WELL EVELOPME TURBIDIT		DE	WELL EVELOPMENT pH	WELL DEVELOPMENT SPEC. COND
	DAT	TA COLLE	CIED AT		PID READING			DEPTH T	ro		DEPTH TO STABILIZE	D	DEP	TH TO PUMP INTAKE	PUMPING START TIME
		WELL S	пе	ł	(OPENING WELL)		WAT	ER LEVE	L (TOC)	WA1	TER LEVEL	(TOC)	_	(TOC)	1325
	RAD	IATION SC Data	REENING	Í	PUMP PRIOR TO SAMPLING (cps)					S.	pump afti Ampling (	CR aps)			
			M	ON	ITORING DATA	CO	LLEC	TED	DUI	UNG P	URGIN	G OP	ERA	TIONS	
	TIME (mín)	WATER LEVEL	PUMPI) RATE (ml	G mba)	CUMULATIVE VOL	OX	NSSOLVI	ED ng/L)	темі (C)	SPEC.	COND abos)	.pH		ORP (ca\')	TURBIDITY (NTU)
e) F		5	irt]	14	Mp11- 1335	Ì	<u> </u> स्		VS1	Hor	101-		+	$\rightarrow$	Loino
	1345	16.0		_	10	C	28	2	41.	0.9	108	6.5	9-	-34	110.0
$\mathbf{F}$	352	102					), 31	B	11.		143	6.5	6	-32	87.0
ł	1200	10.3	w150	+			1 4	2	11.7	-0.	141	6.5	2	- 34	+24
ł	400	10.2		-			<u>2.5</u> 3.3	1	11 3		121	15	<u></u>		530
	416	11.0		╋			0.2	2.	ιA	- 0.0	161	6.5	2	-61	20,6
ĺ	425	11.3		+			0.3	33	11.5	6.0	260	6.5	$\frac{3}{2}$	-62	15.0
Ī	4.33	11.8	N90			0	.30	>	11.6	0.4	133	6.4	9	-62	18.0
	441	1.15				C	.3	3	11.6	0.	819	6.4	9	-63	140
	497	11.80		_	~ 3.0gal	0	.34	-	1.6	0.6	398	6.50	>	-65	15.0
H	450	11.8	co	<u>ll</u> #	of 3 VOA	╞╶╡	er .	VC	C	Anal	تعد	5			
┢				$\downarrow$	ALBW 20	66					4				
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#### Ash GW SAMPLING RECORD (2)

	SAMPLING	P	RESERVATIVES	BOTTL	ES	SAMPLE	TIME	CHECKED BY/
	ORDER			COUNT/ VOLUME	TYPE	NUMBER		DATE
	Trochtop			25 5	12/16			
1	VOC 8260B	4 deg.	C HCL	3/ <b>40</b> ml	VUA			
<u>-</u>	MEE (AM20GAX)		с нсі	<u>2/40 ml</u>	_voa_	lad in		
	TOC (9969A)		<u> </u>	2/ (1) (5)		Jan 19 16		
				24 10 101	TON -			
4	Sulfate (EPA 300.1)	4 deg	c	1 x 250 mL	- HDPE-			
5	Fer (HACH)	╉╾╍╋╼╸			field	(gr 12/10		
					- e ( D.)			
6	Mn+ (HACH)				neid	* t		· · ·
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2	2.6.4			. <del>.</del>	-			
			8- F.		27. 7. (1) 8. (2) 9. (2)	191 (*843) - 241	basi pi <sup>t</sup> p	<ul> <li>(1)</li> <li>(1)</li> <li>(2)</li> /ul>
4		• •	and the second		5 f 25			3 5,2
	• 1,1 7						97. 1	
							5°.	
							<b>9</b> 7.	
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#### Ash GW SAMPLING RECORD (2)

	SAMPLING		PRES	SERVATIVES	BOTTL	ES	SAMPLE	TIME	CHECKED	ВУ/
	ORDER				COUNT/ VOLUME	TYPE	NUMBER		DATE	_
1	VOC 8260B		4 deg. C	HCL	3/ 40 ml	VOA				Ľ.
X	MEE (AM20GAX)		4 dag. G			VUA				
<b>X</b> -			406g. L		<u>2/40 ml</u>					
X	Suitate (EPA 300.1)		4 deg. U		1 X 250 mL	HDPE				
	Formacin									
2						field			<u> </u>	
<del>بر</del> ک						neux				
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#### Ash GW SAMPLING RECORD (2)

SAN	APLING	PRESERVATIVES	BOTTL	ES	SAMPLE	1 IMLE	CHECKED D
0 			COUNT/ VOLUME	TYPE	NUMBER		DATE
1.,	8260B	4 deg C HCL	3/ 40 ml	VOA			1
2 MEEKA	120GAX)		<u>2/40 ml</u>		igd 12/17	L	
	9050AT	A deg G NO.		VUA	an 12/12	1	
4 Sulfate (I	<u>PA 300.1)</u>	140g. 0	<u>1 × 250 mL-</u>		071414	<u> </u>	+
5	HACH)			field	-01-12/17	र जन्म स्टबंग	1145133
6	HACH)		- 12 <u>19</u> 98-14	neia	(and 12/17	44X - 1864 4	· · · · · · · · · · · · · · · · · · ·
7					Ų ľ		
			7.21	r. '			
COMMEN	TS: (QA/QC	?)	2		2442		A
COMMEN	<b>FS: (QA/QC</b>	?)	2: 		3935. 		
COMMEN	TS: (QA/QC	?)	2			2111 - 4 	
COMMEN	TS: (QA/QC	?)	2				
COMMEN	TS: (QA/QC	?)					
COMMEN	TS: (QA/QC	<b>?)</b>				241 - 14 	
COMMEN	TS: (QA/QC	?)				2.1 (1) - 4  	
COMMEN	TS: (QA/QC	?)				24 14 1 1 4 	
COMMEN	TS: (QA/QC	?)					
COMMEN	TS: (QA/QC	?)					
COMMEN'	rs: (QA/QC	?)					
COMMEN	TS: (QA/QC	?)					
COMMEN'	rs: (QA/QC	?)					A 1
COMMEN	rs: (QA/QC	?)					
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COMMEN'	rs: (QA/QC	?)					

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Form	#		_	
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_	SENE	CA ARMY I	DEPOT ACTIVITY	[		CONS	ULTA	NT: PAF	RSONS	ES	WELL #: /	NW+56
1	PROJE	CT:	QUART	ERLY	SAMPL	JNG -A	SH LAI	DFILL			DATE:	12/18
L	OCATI	ON:			ROMUI	US, NY	1				INSPECTORS:	BTM
					-						PUMP #:	
	WEAT	HER / FIELD	CONDITIONS CHEC			(R	(RECORD MAJOR		CHANC	JES)	SAMPLE ID #:	20169
	TIME	TEMP	WEATHER !!		della Minitty	VELOC		FROM)	GROUN	D/SITE	MONT	TOPING
C	24 HR)	(APPRX)	(APPRX)	(0	EN)	(APPI		0 - <b>360</b> )	COND	TIONS	INSTRUMENT	DETECTOR
0	20	180	Showy	10	W	0-5		LIW	Suc	• 6	OVM-58	
DI	AMETER GALLON LITER	WELL VOL (INCHES); S/FOOT: WUUT	UME CALCULATION CONTROL CONTRO	CTORS 3 0.367 1.369	.4 0,654 2,475	6 1.47 5.564	ONG	WELL VOL	UME (GAL	) = I(POW - VELL DIAM	STABILIZED WATER LI ETER FACTOR (GAL/FI 4075 x 3 z	(VIEL) 1.23 7a(
	HISTOR	C DATA	DEPTH TO POINT OF WELL, (TOC)		DEPT TOP SCREEN	H TO UF (TUC)	SCREEN LENGTH	DE	WELL WELL	NI.	WELL DEVELOPMENT	WELL DEVELOPMENT
			6.5.									order CURD
DA	ATA COLL WELL	STE	PID READING (OPENING WELL)		WAT	DEPTH TO STATIC STATIC	) , (TUC)	WATE	DEPTH TO TABILIZED	TUC)	DEPTH TO PUMP INTAKE (TOC)	PUMPING START TIME
						3.95					(Arra 2 - 6	940
RA	DIATION : DAT	SCRUGENTING FA	PUMP PRIOR TO SAMPLING (cps)		·			PI SAJ	MPLING (c	R ps)		·
		MOR	NITORING DATA	CO	LLEC	TED	DURI	NG PU	RGING	G OPE	RATIONS	an a
TIME (min)	WATER LEVEL	PUMPING BATE (m/min)	CUMULATIVE VOL (GALLONS)		VGEN (m	"Y <b>si</b>	TEMP	SPBC. (		- +12	184 - ORP	TURBIDITY
145	4.2	300			1.79		<u>A.I</u>	61	11	6.31	- 63	
150	4.3	300		-	2.40	5	40	.16		6-19	- 179	-74
55	4.4	280	Lagular		3 2 3	)	3.0		G .	6.67	-137	<u> </u>
00	41	150	1 20000		$\frac{1}{2}$	10- 4	2 0	1350	0	6.03 1 21	13/	30
005	44	250		1	75		40	- 354	<u></u>	6.04	-100	17
010	421	156			51		10	300	<u>,  </u>	6.00	144	25
615	44	150	2001/000		.63		4.7	200		110	= 151	- 13
610	44	250		1	al		Git.	, 400		0.60	-174	12
515	4.1	260			-17 B/		4.4	2		LED	- 152	
13k	14	150			.06		4.0	1 00		6.24	-152	13-1
000	1.7	150	······		100		4.5	131		6.29	-151	9.8
25	4-4	1 Cn			04		400	• 51	2	6.59	-150	78
140	4,4	10			06	•	44	+31		6.59	-14.9	7-5
45				<u> </u>	imple	C	cilled	ed	ALE	3W 2	0169 O	1045
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Form	Ħ	
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		ADMY DEDOT	ACTIVITY		CONSULT	ANT: PAI	SONS ES	WELL	#:	
	SENECA	ARMY DEPUT	ACTIVIT	TUES	BOTTL	S	SAMPLE	. TIM	Æ	CHECKED ]
	SAM	PLING	TRESERVE	ALL Y LO	COUNT/ VOLUME	TYPE	NUMBER		مندر هر بدر زمی برد.	DATE
				HUT		-VOA -	Igr i	2/18		
1	VUG-crart		+ ug. c		2/401	VOA				
1		DOC	4 deg. C	H <sub>2</sub> SO <sub>4</sub>		UDDE	191 12	110		10
2	< Nitrate/	Nitrogen 352:1	4 dep. C		1 x 500 m	, use	0000			
3		TOUS DOM	Field Au	alym	<u> </u>	<u></u>	<u> </u>			
4		Sulfide	Field An	alymia		<u> </u>			,	
5	Alkalinity	Sulfate/Chlorides	4 30g. C	· · · · ·	1 x 1L	HDPE				
6					`	- D-		·		
7	DOC			and a second second		1				
9	Ha	Jacs 1302	deg C	HN03	1 x 500 mL with #4	HDPE	19/2 4	18		
<u> </u>	T-tal Dian	alund Solide 160 1	- 4 des	. C	Lx 1L	HDPE				
9	Total Diss	Olved Solids Tool		11000	1 v 50 mL with #7	HDPE				
10	Chemical	Kygen Demand 410.1	4 deg. C	<u> 12304</u>			- 00 -			
		4.5 • • • • • • • • • • • • • • • • • • •		4	4		· · ·	1		1.15
70	MARNIT	S. (0A/0C?)		۰۳۰ در در						
.0		S. (QINQC.)	•	•	- K			-		
	i) voc	(8260 3)	40	c - H	L 3/25	ml ve		<u>45</u>		
	-			_						-
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ver. 2/11/12/2009 SEE/MASTER ACRONYM LIST. FOR COMPLETE LISTING OF ABBREVIATIONS Gwseniprd.xls/TYPE1

			DECC		<u> </u>		<u>21 (41) - 41</u>	
)	SAN	IPLING	RECO	RD -	GR	OUND	WATER	
SENE	CA ARMY I	DEPOT ACTIVITY	Y (	CONSULT	ANT: PAI	RSONS ES	WELL #: 1/	MWT-23
PROJEC	T:	QUART	TERLY SAMPL	ING -ASH L	ANDFILL		DATE:	12/15
LOCATIO	DN:	**************************************	ROMUI	LUS, NY			INSPECTORS:	BJM
WEATE	ED / FIFT D	CONDITIONS CHE	THE IST	(0)7(0)				M A 170
TT LAN I L			REL.	WIND	(FROM)	GROUND / SITE	SAMPLE ID #:	oll o leo
TIMÈ	TEMP	WEATHER	HUMIDITY	VELOCITY	DIRECTION	SURFACE	MONI	TORING
(24 HR)	(APPRX)	(APPRX)	(GEN)	(APPRX)	(0 - 360)	CONDITIONS	INSTRUMENT	DETECTOR
1400	450	Overast	434	5-10	NW	wet	OVM-58	0 PID
	WELL VOI	THE CALCULATIONS	(TTO)DE				P	9
DIAMETER GALLONS LITERS/	(INCHES): / FOOT: FOUT	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	3 4 0.367 0.654 1.389 2.475	6 1,47 5,564	A-69	4.163 = 0.	$\frac{1}{76+3} = 2$	·29
<u>`</u>		DEPTH TO POENT	DEPT	H TO SCRE		WELL, EVELOPMENT	WELL	WELL DEVELOPMENT
HISTORIC	DATA .	(TUC)	SURGE	N (IUC) (M		TURBIDITY	pH	SPEC. CUND
		21212-74						
DATA COLLI	CIRD AT	PID READING		DEPTH TO STATIC		DEPTH TO STABILIZED	DEPTH TO PUMP	PUMPING START
WERT'S		(UNDANG WELL)	WA'II		WAT	HK LEVEL (TOC)	(TOC)	1350
RADIATION S	CREENING	FUMP PRIOR TO		1.00	. · P	UMP AFTER	1 2 3 Jac	1330
DAT	A	SAMPLING (qps)			SA	MPLING (cps)		
IME WATER	MO.	CUMULATIVE VOL	A COLLEC	TED DUI	UNG PU	RGING OPH	RATIONS	TIDURITY
ania) LEVEL	BATE (mi/min)	(GALLON8)	OXYGEN (m	σL) ΥΥ (C)	(100		(mV)	(0170)
100 9.9	200		0.87	(3.3	2.1	1 6-71	-102	200.
05 9.5	200		0.79	13.3	12.0	9 6.74	-105	196
10 9.7	200		0.11	0 18-	1 2.0	9 6.76	-101	. 98
15 9.5	200	Igallon	0.68	8 13-4	208	3 6.7	7 -100	89
26 9.5	200		0.67	13-4	2.1	0 6.80	- 96	70
25 9.5	200		0.67	13.4	2.1	1 6.80	) -94	63-2
136 1.5	200		0.65	15.4	2.1	6.8	0 - 93	53-7
35 9.5	200	2 gullon	0.64	13.5	5 2.10	5 6.8	0 -92	44.6
40 9.5	200		0.63	13.5	1 2.1	0 6.80	- 91	49.4
45 9.5	200		0.63	13.5	2.1	6.70	1 -90	42.9
50 9.5	200		0.62	13.	2.1	L.74	-91	501
55 9-5	200		0.62	13-5	2.10	6.79	.90	16.9
00 9-5	200	Seallone	0.63	13.5	1.10	6.79	-90	11.4
05-9.5.	200	<u>v<u>g</u>/</u>	0.63	13 4	2.10	) 1.70		100
510		gauste	Collocial	Δ1	RIAL	20170		R
			Conscience.	76				
		Fe e	3.30	over L.	unit.	3 VOAK -	FOR VOC. A	nalucis
		MM =	7.20	mall		2 VOAC J	A MPE	11 3
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		SOL =		1		<u> </u>		10 I I I I I I I I I I I I I I I I I I I

ver. 2 / 11/12/2009 SEE MASTER ACRONYM LIST FOR COMPLETE LISTING OF ABBREVIATIONS Gwsamprd.xis/TYPE1

	SENECA ARMY DEPOT	ACTIVITY	CONSULT	ANT: PAR	SONS ÉS	WELL #:		
	SAMPLING	PRESERVATIVES	BOTTL	IS,	SAMPLE	, TIME	CHECKED I	
	Z. CORDER		COUNT/ VOLUME	TYPE	NUMBER		DATE	
1	VOC -CLP(Low Level) or 524.2	Adap C HET			an 12	115		
	VIN NON		3/40 ml	VOA				
		4 deg, C H <sub>2</sub> SU <sub>4</sub>	37 40 mi	TOA				
2	Nitrale/Nitrogen 352.1	4 deg. C	1 x 500 ml	HDPE		at i	<u>, n.</u>	
3	Ferrous Iron	-Field Analysis	1. IC		<u> </u>	n <u>isa</u> t	- <u> </u>	
4	Sulfide	Field Analysis		~ ~				
		A CARLES AND A CARL		HDPE		* .*	eller e	
<u> </u>	Anchingy/Surgic/Culorices	d deg. C	TX1D		2			
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7	DOC	i	1 x x x x x x x x x x x x x x x x x x x	[	Q12 12	15		
8	Hardiness 130.2	Targ L HINOS		HDPE	J			
	A W. C. Disselved Solids 160.1	44-0	Lyffan (	HDPE				
19	1 J HOLEN PISSOIVED SOUDS 100.1							
10	Chemical Oxygen Demand 410.1	4 deg. C B2504	1 x 50 mL with #7	HDPE				
		CO COLORE	21.185 248 6514					
	1		- Kr		•			
CO	MMENTS: (QA/QC?)	1.5	C.C.	3616.0				
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\	身(00(82:00年)	sale bod	r c - HC	200 × 3/1	5ml	VU FLIC	a da a da a	
	NATE PAN 2DG	E C	or tottel	22	5ml .	VOR		
		30-94 31.1		1 0.7	5-1	A Date	19 G (2)	
2	ADDA ADDA	3.	PC HCL	10.22	5 MI	VOIR	2.8	
			n a salich	1	Ethinil .	HODE	tina da Angla	
	3. SN. Hate JETA	90001) 09	CUCHEN	7	D' MAR C	I LA TON	6.4.6	
77 101	Jun + 14Arde		2.71	2010   2010		Indate	5.9.5	
	SPANN BANKLAR	300 M	2.84 2.84	12.6			25.0	
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ver. 2/11/12/2009 SEE MASTER ACRONYM LIST. FOR COMPLETE LISTING OF ABBREVIATIONS Gwsampid x1s/TYPE1.

SENECA ARMY DEPOT ACTIVITY         SENECA ARMY DEPOT ACTIVITY         SENECA ARMY DEPOT ACTIVITY         PARSONS       WELL #: MWT-2 4         PROJECT:       Ash Landfeld LTM1       TIME         LOCATION:       TIME       Ash Landfeld LTM1       Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"       WELL #: MWT-2 4         MATHER / FIELD CONDITIONS CHECKLIST _ CRECORD MAJOR CHANGES)       SAMPLE ID #: MCB/22A         WEATHER / FIELD CONDITIONS CHECKLIST _ CRECORD MAJOR CHANGES)       SAMPLE ID #: MCB/22A         TIME TEMP       WEATHER HEVEL ID #: MCB/22A         TIME TEMP       CONDITIONS CHECKLIST _ CRECORD MAJOR CHANGES)       SAMPLE ID #: MCB/22A         TIME TEMP       WEATHER / FIELD CONDITIONS CHECKLIST _ CRECORD MAJOR CHANGES)       SAMPLE ID #: MCB/22A         TIME TEMP VEATHER       MONITORING CONDITIONS CHECKLIST _ CRECORD MAJOR CHANGES)       SAMPLE ID #: MCB/22A         WEATHER / FIELD CONDITIONS CHECKLIST _ CRECORD MAJOR CHANGES)       SAMPLE ID #: MCB/22A         MONITORING CALCULATIONSACTIONS         WELL VOLIME CALCULATIONSACTIONS <th>SENEC PROJEC LOCATIO WEATH TIME (24 HR) 110 4 DIAMETER GALLONS LITERS HISTORIC DATA COLL WELL</th> <th>CA ARMY D CT: ON: HER / FIELD ( TEMP (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX</th> <th>EPOT ACTIVITY           CONDITIONS CHEC           WEATHER (APPRX)           SMANY           UME CALCULATION SIC 0.025           0.025           0.010           0.011           0.010           0.010           0.011           0.010           0.011           0.010           0.011           0.012           0.010           0.011           0.012           0.013           0.014           0.015           0.010           0.012           0.013           0.014           0.015           0.017           0.018           0.019           0.19           0.19           0.19           0.19</th> <th>Ash I Ash I KLIST , REE HUMIDI (GEN TORS 3 0 367 0 1 389 2</th> <th>And fill L I I (R (R WIN ITY VELOC (APP) 25 4654 147 475 5564</th> <th>PAR L L L L L L L L L L L L L</th> <th>MAJOR TROM) ECTION - 360)</th> <th>CHANGI GROUND SURF/ CONDIT</th> <th>ES) / SITE ACE TONS</th> <th>WELL #: M DATE: INSPECTORS: PUMP #: SAMPLE ID #: MONIT INSTRUMENT OVM-580</th> <th>WT-2 12/17 BJM ACBV TORING DETE</th> <th></th>	SENEC PROJEC LOCATIO WEATH TIME (24 HR) 110 4 DIAMETER GALLONS LITERS HISTORIC DATA COLL WELL	CA ARMY D CT: ON: HER / FIELD ( TEMP (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX	EPOT ACTIVITY           CONDITIONS CHEC           WEATHER (APPRX)           SMANY           UME CALCULATION SIC 0.025           0.025           0.010           0.011           0.010           0.010           0.011           0.010           0.011           0.010           0.011           0.012           0.010           0.011           0.012           0.013           0.014           0.015           0.010           0.012           0.013           0.014           0.015           0.017           0.018           0.019           0.19           0.19           0.19           0.19	Ash I Ash I KLIST , REE HUMIDI (GEN TORS 3 0 367 0 1 389 2	And fill L I I (R (R WIN ITY VELOC (APP) 25 4654 147 475 5564	PAR L L L L L L L L L L L L L	MAJOR TROM) ECTION - 360)	CHANGI GROUND SURF/ CONDIT	ES) / SITE ACE TONS	WELL #: M DATE: INSPECTORS: PUMP #: SAMPLE ID #: MONIT INSTRUMENT OVM-580	WT-2 12/17 BJM ACBV TORING DETE	
PROJECT:       Ash Land@ULTEL,       DATE:       12/17         LOCATION:	PROJEC LOCATIO WEATH TIME (24 HR) 110 4 DIAMETER GALLONS LITERS HISTORIO DATA COLL WELL	CT: ON: HER / FIELD ( TEMP (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (AP	CONDITIONS CHEC WEATHER (APPRX) STANY UME CALCULATION SIC 0.25 1 2 0.0025 0.041 0.163 0.010 0.151 0.047 DEPTH TO POINT OF WELL (TOC) 12.19	Ash I KLIST , REE HUMIDI (GEN TORS 3 0 367 0 1 389 2	And fill LTV (RI WYN ITV VELOC (APP) A 6 1654 147 475 5 564	ECORD DATE OR TTY DIR RX) (0 DNE	MAJOR ROM) ECTION - 360)	CHANG GROUND SURFA CONDIT	ES) / SITE ACE TIONS	DATE: INSPECTORS: PUMP #: SAMPLE ID #: <u>MONIT</u> INSTRUMENT OVM-580	12/17 BJM ACBW TORING DETE	
LOCATION: WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES) WEATHER / FIELD CONDITIONS CHECKLIST (RECORD MAJOR CHANGES) TIME TEMP WEATHER REE: (MUNITORING COUND / SITE (24 HR) (APPRX) (APPRX) (APPRX) (APPRX) (0 - 360) CONDITIONS INSTRUMENT DETECTO (24 HR) (APPRX) (APPRX) (APPRX) (0 - 360) CONDITIONS INSTRUMENT DETECTO (24 HR) (APPRX) (APPRX) (0 - 360) CONDITIONS INSTRUMENT DETECTO (24 HR) (APPRX) (APPRX) (0 - 360) CONDITIONS INSTRUMENT DETECTO (24 HR) (APPRX) (APPRX) (0 - 360) CONDITIONS INSTRUMENT DETECTO (24 HR) (APPRX) (APPRX) (0 - 360) CONDITIONS INSTRUMENT DETECTO (24 HR) (APPRX) (0 - 360) CONDITIONS INSTRUMENT DETECTO (35 O 001 0 010 0017 0 005 0 054 147 (36 O 000 001 0 010 0017 1380 2475 5544 DEPTHTO 25 5544 DEPTHTO 1380 2475 5544 DEPTHTO 0 SCREEN WELL WELL WELL WELL WELL WELL WELL ORAMETER ACTOR (GALFFT)] (4.73 × .163 × 3 - 3.2 7 DEPTHTO DETECTOC) 0 0 0 WELL OPPHTO PUMP NUMPER ACTOR (GALFFT)] (37 O 0010 0 010 0017 0 0010 010 0017 0 000 0 WELL OPPHTO PUMP NUMPER ACTOR (GALFFT)] DATA COLLECTED AT PID READING USAGE USAGE LEVEL (TOC) WATER LEVEL (TOC) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	LOCATIO WEATH TIME (24 HR) 110 4 DIAMETER GALLONS LITERS HISTORIO DATA COLL WELL	ON: HER / FIELD ( TEMP (APPRX) K ? WELL VOLT (INCHES): S/FOOT IC DATA	CONDITIONS CHEC WEATHER (APPRX) SMAY UME CALCULATION SIC 0.25 1 2 0.0026 0.041 0.163 0.010 0.151 0.617 DEPTH TO POINT OF WELL (TOC)	KLIST , REL HUMIDI (GEN TORS 3 0 367 0 1 389 2	(RI (RI (WYN) (APP) (APP) (APP) (A54 (654 147 5564	ECORD TITY DIR RX) (0 N ONE	MAJOR ROM) ECTION - 360)	CHANG GROUND SURFA CONDIT	ES) /SITE ACE TIONS	INSPECTORS: PUMP #: SAMPLE ID #: MONIT INSTRUMENT OVM-580	BJM ACBW TORING DETE	
Provide State       Provide State         WEATHER / FIELD CONDITIONS CHECKLIST       (RECORD MAJOR CHANGES)       SAMPLE ID #: MSN220         TIME       TEMP       WEATHER       REL:       (RECORD MAJOR CHANGES)       SAMPLE ID #: MSN220         (24 HR)       (APPRX)       (APPRX)       (GEN)       (APPRX)       (GOUND / SITE         (24 HR)       (APPRX)       (APPRX)       (GEN)       (APPRX)       (0 - 360)       CONDITIONS         (10 4       (19       Smarly       mid       4.5       NW       Smarly       OVM-580       PID         MELL VOLUME CALCULATION SACTORS       0.025       1       2.5       1       0.025       1       0.025       1       0.025       1       0.025       1.6       0.73 & 3.2       0.7       0.73 & 3.2       0.7       0.73 & 3.2       0.7       0.73 & 3.2       0.7       0.73 & 3.2       0.7       0.73 & 3.2       0.7       0.73 & 3.2       0.7       0.73 & 3.2       7       0.73 & 3.2       7       0.73 & 3.2       7       0.73 & 3.2       7       0.73 & 3.2       7       0.73 & 3.2       7       1.7       1.6       7.7 & 1.6 & 3.3 & 3.2       7       1.7       1.7       1.7       1.7       1.7       1.7	WEATH TIME (24 HR) 110 4 DIAMETER GALLONS LITERS HISTORIC DATA COLL WELL	HER / FIELD ( TEMP (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (APPRX) (AP	CONDITIONS CHEC WEATHER (APPRX) STANY UME CALCULATION SIC 0.25 1 0 163 0.010 0.151 0.163 0.010 0.151 0.163 0.010 0.151 0.017 DEPTH TO POINT OF WELL (TOC)	KLIST , REE HUMIDI (GEN 70R5 3 0 367 0 1 389 2	(RI WIN VELOC V) (APP) 0.5 (654 147 475 5 564	ECORD DITY DIR RX) (0 N ONE	MAJOR ROM) ECTION - 360)	CHANG GROUND SURFA CONDIT	ES) /SITE ACE TIONS	PUMP #: SAMPLE ID #: <u>MONIT</u> INSTRUMENT OVM-580	TORING DETE	CTOR
(ILCOME TABLE CONDITIONS CITEERING T2         (ILCOME TABLE CONDITIONS CITEERING T2         TIME TEMP       WEATHER       (ILCOME TABLE CONDITIONS       GRUND / SITE         TIME TEMP       WEATHER       (ILCOME TABLE CONDITIONS       SURFACE       MONITORING         (24 HR)       (APPRX)       (APPRX)       (0.360       CONDITIONS       SURFACE       MONITORING         (24 HR)       (APPRX)       (APPRX)       (0.360       CONDITIONS       SURFACE       MONITORING         (24 HR)       (APPRX)       (APPRX)       (0.360       CONDITIONS         WELL VOLUME CALCULATIONS (CTORS         WELL VOLUME CALCULATIONS (CTORS         WELL VOLUME CALCULATIONS (CTORS         WELL VOLUME CALCULATIONS (CTORS         WELL VOLUME CALCULATIONS (CTOR         WELL VOLUME CALCULATIONS (CTORS         WELL VOLUME CALCULATIONS (CTOR         WELL TO CONSTICUTE       WELL WELL WELL WELL WELL WELL WELL WELL	TIME (24 HR) (24 HR) (10 4 DIAMETER GALLONS LITERS HISTORIC DATA COLL WELL	TEMP (APPRX) (APPRX) (APPRX) (INCHES): (INCHES): (S/FOOT: S/FOOT: IC DATA	WEATHER (APPRX) STANY UME CALCULATION OF 0.25 1 0163 0.0026 0.041 0.163 0.0026 0.041 0.163 0.0151 0.151 DEPTH TO POINT OF WELL (TOC) 13.19	TORS 3 0 367 0 1 389 2	4 6 (654 147 475 5 564	TITY DIR RX) (0 N	ROM) ECTION - 360)	GROUND SURFA CONDIT	ACE TIONS	MONIT INSTRUMENT OVM-580	ORING	CTOR
TIME         TEMP         WEATHER         HUMIDITY         VELOCITY         DIRECTION         SURFACE         MONITORING           (24 HR)         (APPRX)         (APPRX)         (GEN)         (APPRX)         (0 - 360)         CONDITIONS         INSTRUMENT         DETECTO           10 4         (10         SMOLY         Mid         2.5         N/V         Smoly         OVM-580         PID           WELL VOLUME CALCULATIONS CTORS         0.0025         0.011         0.137         0.011         1.1380         2.475         5.544         0.4.73 × .163 × 3 - 3.2.9         VELD DIAMETER FACTOR (6AL/TT)         SWELD DIAMETER FACTOR (6AL/TT)         0.0020         0.011         1.1380         2.475         5.544         0.73 × .163 × 3 - 3.2.9         VELD DIAMETER FACTOR (6AL/TT)         SWELD DIAMETER FACTOR (6AL/TT)         SWELD DIAMETER FACTOR (6AL/TT)         UPVELOPMENT         DEVELOPMENT	TIME (24 HR) 110 4 DIAMETER GALLONS LITERS HISTORIC DATA COLL WELL	TEMP (APPRX) (APPRX) WELL VOLI A (INCHES): S/FOOT: S/FOOT: IC DATA	WEATHER (APPRX) STORY UME CALCULATION SIC 0.25 1 0 163 0.000 0.151 0.617 DEPTH TO POINT OF WELL (TOC) 13.19	HUMIDI (GEN TORS 3 0 367 0 1 389 2	ITY         VELOC           (APP)         0.5           0.54         0.54           1.654         1.47           475         5.564	TITY DIR RX) (0 N	ECTION - 360) V	SURFA CONDIT	ACE TIONS	MONIT INSTRUMENT OVM-580	ORING DETE	CTOR_
(24 HR)       (APPRX)       (APPRX)       (GEN)       (APPRX)       (0 - 360)       CONDITIONS       INSTRUMENT       DETECTO         110 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10 4       10	(24 HR) 110 4 DIAMETER GALLONS LITERS HISTORIO DATA COLL WELL	(APPRX) WELL VOLI (INCHES): (S/FOOT: S/FOOT IC DATA	(APPRX) STANY UME CALCULATION OF 0,25 1 0 163 0 010 0 151 0 617 DEPTH TO POINT OF WELL (TOC) 13,19	(GEN 70R5 3 0 367 0 1 389 2	4 6 1654 147 475 5 564	RX) (0	- 360) W	CONDIT	NONS C	INSTRUMENT OVM-580	DETE	CTOR
III 0 4         No.         Stratu         MMA         A.S.         No.         Stratu         OVM-580         PID           WELL VOLUME CALCULATION SECTORS         0.025         1         2         3         4         6           GALLONS/FOOT:         0.025         1         2         3         4         6           UTRESSFOOT:         0.002         0.041         0.163         0.37         0.654         1.47           LTERSSFOOT:         0.010         0.151         0.67         0.654         1.47         1.435         3.2.9           LTERSSFOOT:         0.010         0.151         0.67         0.654         1.47         1.435         3.2.9           LTERSSFOOT:         0.010         0.151         0.67         0.554         1.47         1.435         3.2.9           LTERSSFOOT:         0.010         0.151         0.67         0.544         1.47         1.435         3.2.9           MISTORIC DATA         DEPTH TO RUNT         SCREEN TOC)         SCREEN TOC)         WELL         DEVELOPMENT         DE	DIAMETER GALLONS LITERS HISTORIA DATA COLL WELL	WELL VOLI A (INCHES): IS / FOOT: S/FOOT IC DATA	SYMMY           UME CALCULATION SIC           0.25         1           0.0025         0.041           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.151           0.010         0.017           0.010         0.017           0.010         0.017           0.010         0.017           0.010         0.017           0.010         0.017           0.010         0.017           0.010         0.017           0.010         0.017           0.010         0.017           0.010         0.017           0.010         0.017	TOR5 3 0367 0 1389 2	4 6 1654 1 47 1475 5 564	ONE		Sh (A	<b>∾</b>	OVM-580		DID -
WELL VOLUME CALCULATION SUCTORS           ONE WELL VOLUME (GAL) = [(POW - STABILIZED WATER LEVEL)           DIAMETER INCHES:         0.25         1         0.25         0.25         0.25         0.25         0.25         0.25         0.00         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01	DIAMETER GALLONS LITERS HISTORIO DATA COLL WELL	WELL VOLI A (INCHES): S/FOOT: S/FOOT IC DATA	UME CALCULATION Stor 0.25 1 2 0.0026 0.041 0.163 0.010 0.151 0.617 DEPTH TO POINT OF WELL (TOC)	TORS 3 0 367 0 1 389 2	4 6 654 1 47 475 5 564	ONE						UD.
DIAMETER (INCHES): GALLONS / FOOT: LITERS/FOOT:         0.25 0.010         1 0.151         3 0.102         4 0.163         6 0.163         1 0.017         3 0.017         4 0.018         6 1.013         1 0.017         3 0.017         4 0.018         6 1.013         1 0.017         1 0.010         1 0.017         1 0.010         1 0.017         1 0.017         3 0.017         4 0.018         6 1.017         1 0.017         1 0.017         1 0.017         3 0.017         4 0.018         6 1.017         1 0.017         1 0.017 <th1 0.017         1 0.017         1 0.01</th1 	DIAMETER GALLONS LITERS HISTORIA DATA COLL WELL	A (INCHES): (S / FOOT: (S / FOOT) (C DATA	0.25 1 0 163 0.0026 0.041 0.163 0.010 0.151 0.017 DEPTH TO POINT OF WELL (TOC)	3 0 367 0 1 389 2	4 6 654 1.47 475 5.564		METE AOF	UME (GAL)	= ((POW -	STABILIZED WATER	LEVEL)	
LITERS/FOOT       0.010       0.151       0.017       1.389       2.475       5.544         DEPTH TO POIST       DEPTH TO POIST       DEPTH TO       SCREEN       WELL       WELL       WELL       DEVELOPMENT         HISTORIC DATA       DEPTH TO POIST       DEPTH TO       SCREEN (TOC)       (FT)       TURBIDITY       PH       DEVELOPMENT         DATA       COLLECTED AT WELL.SITE       PID READING (OPENING WELL)       DEPTH TO STATIC       DEPTH TO STATIC       DEPTH TO STABILIZED       DEPTH TO PUMP INTAKE       PUMPING STATIC         RADIATION SCREENING DATA       PUMP PRIOR TO SAMPLING (cps)       DESCLOPEN       PUMP AFTER SAMPLING (cps)       PUMP AFTER         MONITORING DATA       COLLECTED       DURING PURGING OPERATIONS       TURBIDIT (min)       PUMPING       CUMULATIVE VOL       DISSOLVED VIC       SPEC. (OND SAMPLING (cps)       ORP       TURBIDIT         TIME       WATER       PUMPING       CUMULATIVE VOL       DISSOLVED VIC       SPEC. (OND (C)       ORP       TURBIDIT         I130       7.3       Sto       5.3.5       9.8       2.4.7       1.0L       1.2.5       24.4         I130       7.4       Sto       5.5.1       9.8       2.4.7       1.0L       1.2.4       1.5.8	LITERS HISTORIO DATA COLL WELL	IC DATA	0010 0151 0017 DEPTH TO POINT OF WELL (TOC) 12.19	1 389 2	475 5 564		6.77		R R R R	<b>STER FACTOR (GAL/FI</b>	01	
OF WELL     TOP OF     LENGTH     DEVELOPMENT     DEVELOPMENT     DEVELOPMENT       HISTORIC DATA     (TOC)     SCREEN (TOC)     (FT)     TURBIDITY     pH     SPEC COND       I3.19     I3.19     DEPTH TO     SCREEN (TOC)     (FT)     TURBIDITY     pH     SPEC COND       DATA COLLECTED AT WELL SITE     PID READING (OPENING WELL)     DEPTH TO STATIC     DEPTH TO STABILIZED     DEPTH TO NTAKE     PUMPING STATIME       RADIATION SCREENING DATA     PUMP PRIOR TO SAMPLING (cps)     DEPTH TO WATER LEVEL (TOC)     DEPTH TO UICC)     IIIOO       RADIATION SCREENING DATA     PUMP PRIOR TO SAMPLING (cps)     SAMPLING (cps)     SAMPLING (cps)     IIIOO       TIME     WATER     PUMPING     CUNULATIVE VOL     DISSOLVED VS ONYGEN (mgL)     SEC. COND     PI       I130     7.3     SD     S-3.5     9.5     IIION     IIION       I135     7.3     SD     S-3.5     9.5     IIION     IIION       I140     7.4     SD     S-5.5     1.9     2.4     1.0     12.4     10.5	HISTORI DATA COLL WELL	IC DATA		5	DEPTH TO	SCREEN		WELL		WELL	W	ELL
Image: Non-state of the state of the sta	DATA COLL WELL		13.19		TOP OF CREEN (TOC)	LENGTH (FT)	DE 1	VELOPMEN IURBIDITY	T	DEVELOPMENT pH	DEVEL	OPMENT COND
DATA COLLECTED AT WELL SITE     PID READING (OPENING WFLL)     DEPTH TO STATIC WATER LEVEL (TOC)     DEPTH TO STABILIZED WATER LEVEL (TOC)     DEPTH TO PUMP INTAKE (TOC)     PUMPING STATIC INTAKE (TOC)       RADIATION SCREENING DATA     PUMP PRIOR TO SAMPLING (cps)     C.4     I2./9     I100       RADIATION SCREENING DATA     PUMP PRIOR TO SAMPLING (cps)     PUMP AFTER SAMPLING (cps)     PUMP AFTER SAMPLING (cps)     PUMP AFTER SAMPLING (cps)       TIME     WATER     PUMPING (min)     CUNIULATIVE VOL (GALLONS)     DISSOLVED VS OXYGEN (mg/L)     TEMP (C)     SPEC, COND (unohos)     ORP PII     TURBIDITI (mV)       135     7.3     So     5.35     9.8     1.00     12.5     24.4       1135     7.3     So     5.35     9.8     2.41     1.00     12.4     12.5       1140     7.4     Sto     S.55     1.6     7.4     12.4     12.4     12.5	DATA COLL WELL											
DATA COLLECTED AT WELL SITE     PID READING (OPENING WELL)     STAIL (OPENING WELL)     STAIL WATER LEVEL (TOC)     STABLLED WATER LEVEL (TOC)     (MARE UTARE       RADIATION SCREENING DATA     PUMP PRIOR TO SAMPLING (cps)     PUMP AFTER SAMPLING (cps)     PUMP AFTER SAMPLING (cps)     PUMP AFTER SAMPLING (cps)     PUMP AFTER SAMPLING (cps)       MONITORING DATA     COLLECTED USSOLVED VSI (min)     DURING PURGING OPERATIONS       TIME     WATER (MARE)     PUMPING (GALLONS)     CUNIULATIVE VOL OXYGEN (mg/L)     DISSOLVED VSI (C)     FEMP (unohos)     ORP (III (mV)     TURBIDIT (mV)       I130     7.3     80     5.35     9.8     1.44     1.04     12.4     23.5       I140     7.4     80     5.55     7.8     7.8     2.47     7.10     12.4     14.8	WELL				DEPTHI	0		DEPTH TO	-	DEPTH TO PUMP	PUMPIN	G START
Image: Constraint of the state of		LECTED AT	(OPENING WFLL)		WATER LEVE	EL (TOC)	WATI	R LEVIL (1	00)	(TOC)		ME
RADIATION SCREENING DATA       PUMP PRIOR TO SAMPLING (cps)       PUMP AFTER SAMPLING (cps)         MONITORING DATA       COLLECTED       DURING       PURGING       OPERATIONS         TIME       WATER       PUMPING       CUNIULATIVE VOL (GALLONS)       DISSOLVED VSI OXYGEN (mg/L)       JENE       SPEC. COND (unohos)       ORP       TURBIDIT (mV)         1130       7.3       80       5.35       9.8       1.44       1.04       125       24.4         1135       7.3       80       5.35       9.8       2.44       1.04       124       23.7         1140       7.4       80       5.51       7.8       9.8       2.44       7.07       124       12.4       1.8         1140       7.4       80       5.51       7.8       7.8       7.10       124       14.8					6.4	6				12.19		<i>N</i> U
MONITORING DATA COLLECTED DURING PURGING OPERATIONS           TIME         WATER         PUMPING         CUMULATIVE VOL         DISSOLVED VSI         TEMP         SPEC. COND         ORP         TURBIDIT           (min)         LEVEL         RATE (ml/min)         (GALLONS)         ONYGEN (mg/L)         (C)         (unnhos)         plt         (mV)         (NTU)           1130         7.3         80         5.35         9.8         243         1.06         125         24.4           1135         7.3         80         5.35         9.8         243         1.06         124         23.7           1140         7.4         8b         5.51         9.8         2.43         1.0         124         123.7           1140         7.4         8b         5.51         9.8         2.43         1.0         124         10.8	RADIATION S	SCREENING ATA	PUMP PRIOR TO SAMPLING (cps)				PI SA	JMP AFTER MPLING (cp	s)			
TIME         WATER         PUMPING         CUMULATIVE VOL (GALLONS)         DISSOLVED VS OXYGEN (mg/L)         JENIP (C)         SPEC. COND (umbos)         ORP (mV)         TURBIDIT (mV)           1130         7.3         80         5.35         9.8         144         1.06         125         24.4           1135         7.3         80         5.35         9.8         244         1.06         125         24.4           1137         7.3         80         5.35         9.8         244         1.06         124         23.7           1140         7.4         80         5.51         9.8         243         7.10         124         10.8           1140         7.4         80         5.51         9.8         243         7.10         124         10.8		MONI	ITORING DATA	COLI	LECTED	DURI	NG PI	URGIN	G OP	ERATIONS		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	TIME WATER (min) LEVEL	R PUMPING L RATE (ml/min)	CUMULATIVE VOL (GALLONS)	DISS	SOLVED YSI	TEMP (C)	SPEC. (um)	COND	pli	ORP (mV)	τι	RBIDITY (NTU)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1130 7.3	86		5.	.33	9.8	2.47	18A	1.0	6 7 12	5 2	4.4
1140 7.4 8b 5.51 9.8 247 7.10 124 16.8	135 1.3	86		5	35	9.8	2.4	7	7.07	124	2	3.7
	1140 7.4	80		5.	.51	1.8	24	7	7.10	124	1	8
$ (   4)  _{1} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _{2} +   _$	1145 7.4	80		5	.21	10.1	7.4	8	7.10	126	1	1.2
1150 7.4 80 5.27 10.8 247 7.10 129 15.1	1150 7.4	t 80		5	:27	10.3	24	7	7.10	129	1	5.1
1155 1.45 80 5.13 10.8 247 7.11 131 13.6	1155 1.45	5 80		5	:13	10.3	24	7	7.11	131	1	5.6
1200 7.5 50   gal 5.03 10.2 2.47 7.11 133 11.4	1200 7.5	80	aal	5	: 03	10.2	21	7	7.8	133	1	.+
1205 7.5 80 5.13 10.1 2.48 7.11 134 8.1	1205 7.5	80		5	-13	(0.1	2.4	F	7.11	134	3	
1210 7.55 80 5.13 10.1 248 7.11 136 8.7	1210 7.55	5 80		5	.15	10.1	20	18	7.11	136	. 2	:7
125 Bull pure & replace all D rings to make sure air is not leaking	125 3	Jull pun	o h replace	all	D rin	is to	mak	L SU	<b>H</b> 0	it is not	- Kank	ina
into the well.	in	to the w	ell.									2
1295 Reassemble & remove ice from Line.	1295 Rea	assemble	\$ romare ice	from	. line.							
1250 7.6 86 2001 5.09 2.96 7.02 54 50.0	1250 7.6	85	20al	5.0	99		2.9	6	7.02	54	4	0.0
1255 5.09 10.1 246 7.03 59	1255		0-	5.0	01	10.1	7.4	6	7.03	59		
1300 77 80 5.10 10.1 2.46 7.04 61 30.0	1300 77	80		5.	10	10.1	2.4	6	7.01	- 61	3	4.0
BOS 9.82 10.1 2.46 7.03 70 20.0				4.8	12	(0.1	2.	46	7.03	70	2	0.0
1310 7.8 80 4.72 2.45 7.02 71	1305	0		4.	72		2.4	5	7.02	71		
355 7.9 80 3aal 4.66 2.45 7.01 91 10.0	1305	80	3aal	4.	66		2.4	-5	7.01	91	10	1.0
1900 Sample ALBW20171	1305 1310 7.8 1355 7.9	80								1		
Fezt = 0.18 mg/L Mnt= 0.7 mg/L	1305 1310 7.8 1355 7.9 (900 Sai	80 mole A	LBW20171									

SAM	IPLING	PRESERVA	TIVES	BOTTI	LES	SAMPLE	TIME	CHECKED	BY/
OF	RDER			COUNT/ VOLUME	TYPE	NUMBER		DATI.	
VOC -CLP	(Low Level)			25 Grd 1	12/17				
	* DB	4 deg C	IICL.	3/ 30 ml	VOA		-		$\neg$
2	20.	4 deg C	HCI	2 x 49 mL	VOA				
3 MATEM	BEA	4 dec. C	нст.	25ml	VOA				
	1			250mL	A 0/17				
4 Sulfate/	Chloride	4 deg C	HCL	1 x <del>4 ez</del>	HDPE				
5 F0	e+	Field							_
6 M	n+	i sa <sup>d</sup>	1264	2.1		u # 16	3,54, 52	같 문	-
			1 15	1					-
	• • · · ·	11 0 4 d es	1 - U P	1 • n					
COMMENT	rs: (QA/QC	?)							
						5.	\$2.+		
						1.12 1.14 1.14			
00	2.1.2	- # 9-1		2	\$				
				-	ion.				
S			- 4183-22	• • • • • • • •	445			.e	
4-31. •. •	5	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			12.1	2		48	44
37.00	44 G L	■ 1 + 5	10	4 <u>3</u> .2	l de d			김규 관각한	91
2 - E		ସା ମିଳ ଲୁଏ	- 115		61.4			1	1
- No 1	22	9 <u>4</u> , 51	19 ja	1.5.	ا بر ما ا ا			32 P.S.	군년
[∎ <b>2</b> 5	No. 12	3]나주	21 P P	7 F.S.	0573			<b>等在 勤</b>	- 63
	RMATION	<u> </u>	45, g 1 <sup>-1</sup>	<u>. 8</u>	1			10 10 10 10 10 10 10 10 10 10 10 10 10 1	
4 .4	S.S.	+†	\$ 5.	S 2.11	88.4		E , C.,	38 8.8	-243
4.5	5.51	ić r	90	0 1.01	11. J		هي :	- P.p.	$\mathbb{C}_{2}$
17.19		1	25.	5 1.85	31.73		P	22 33.5	ĎB
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										Form #_	
		SAN	<b>IPLING</b>	RE	COF	2D	GR	OU	NDV	VATER	
	SENI	CA ARMY	DEPOT ACTIVIT	Y	СО	NSULTA	NT: PA	RSONS	ES	WELL #: /	101-22
P	ROJE	СТ:	QUAR	TERLY	SAMPLIN	G -ASH LA	NDFILL			DATE:	12/16
L	DCAT	ION:			ROMULUS	5, NY	· · · · · ·			INSPECTORS:	BTM
	WEAT	HER / FIFT D	CONDITIONS CHE			(BECOD	DALLON	OTTANIO		PUMP #:	
					EL.	WIND	(FROM)	GROUN	ES) D/SITE	SAMPLE ID #:#	all FL
T	IME	TEMP	WEATHER	HÙA		LOCITY I	DIRECTION	SURF	ACE	MONI	FORING
	4 HR) 2000	(APPRX)	(APPRX)	6	TEN) (A	PPRX)	(0 - 360)	CONDI	TIONS	INSTRUMENT	DETECTOR
40	00		Overast		w e	010	NW	รห	ou	OVM-580	• PID
		WELL VOI	UME CALCULATION P	CEIDRS			TE WELL YOI	LUME (GAL)	- 102074 - 1	TABULIZED WATER LE	
DIA G	METER	(INCHES): IS / FOOT:	0.25 1 2 0.0026 0.041 0.163	0.367	.4 0.654 1.	6 47	5.40	- XW	ELL DIAM	TER FACTOR (GAL/FT)	1
· <u> </u>	LITER	SIFOUT	DEPTH TO POINT	1.189	2.475 5_	X64 SCREE	NI	WELL	.10.2 %	) = 2.64 WELL	WEI
	HISTOR	IC DATA .	(TUC)		TOP OF SUREEN (TI	JC) (P1)	H D	EVELOPMEN TURBIDITY	n'	DEVELOPMENT pH	DEVELOPMENT SPEC. COND
			17.7								
DAT	A COL	LECTED AT	PID READING		DEP	TH TO		DEPTH TO		DEPTH TO PUMP	PUMPING START
	WELL	SIL	(OPENING WELL)		WATER L	EVEL (TUC)	WAT	ER LEVEL (I	UC)	(IUC)	TIMB
RADI	IATION	SCREENING			F.	51					13:15
	DA	ТА	SAMPLING (cps)				SIA SIA	MPLING (cp.	1)	***	- 4
TTO-	Sect a second	MO	NITORING DAT	A CO	LLECTE	D DUR	ING PU	RGING	OPER	ATIONS	
(min)	LEVEL	RATE (m/min)	(GALLONS)	I RO	NISSOLVED IYGEN (mg/L)	YS1-7(C)	SPIC.	COND box)	_ 배인		TURDIDITY
1448	71	200	580	0	2.79	13-2	2.3	8	6.30	-104-	10
452	29	200		C	7.78	B.2	2.3	9	6.32	-105	9
457	29	200		0	.92	13.2	2.2	79	6.32	-105	1 g
502	29	200	a	0	98	13:7	2:2	10	6.32	-106	A
			Change	but	De	D'W	uchen		14.4	14	1 1
007	7-9	200	6 ADI	6.7	3.2.4	10.7	2.3	9	6.32	-107	87
5 12 1	TA	200	d		1.1.3	10.7	2.3	E	1.52	109	2.3
517 -	7-9	200		0	1.19	10.9	2.3	G .	6:31	104.	31. 1-2
523	7.9	200	3776 12	11:03	3:115	10.8	2.3	8	6.37	1/2	
528	7.9	200	Zaral	0	15	11.8	9.2	é	6.37	107	- C /
531	20	200	Sample Cin	lect	d.	112	6,111	5,117		<u>*** ~ (이스 ) *</u> 가(~	1.24
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			10AG								
			VUAS I	100	-1 - 20	4y _	x				
	+										

ver. 2 / 11/12/2009. SEE MASTER ACRONYM LIST FOR COMPLETE LISTING OF ABBREVIATIONS Gwsamprd.xis/TYPE1 

SERVECA ACT I DER OF A CLIVER         CONCURS         PROSERVATIVES         BOITLES           SAMPLING         PRESERVATIVES         BOITLES         COUNT VELDER         PRESERVATIVES           1         MS         DOC         Tag C         140 ml         VOA           1         MS         DOC         Tag C         1450, 3740 ml         VOA           2         MERGENVERVER         Tag C         1450, 3740 ml         VOA           3         PERTORS TON         1992 Ausyle         140 ml         VOA           4         Salida         Fat design         140 ml         VOA           5         AthenheityrSubageChientigs 2 2 4g C         1 x 112         TOPE           6         Fat design         1 x 112         TOPE           6         Fat design         1 x 112         TOPE           6         Fat design         1 x 112         TOPE           7         DOC         Fat design         1 x 112         TOPE           6         Fat design         Fat design         1 x 112         TOPE           7         DOC         Fat design         Fat design         1 x 112         TOPE           10         Comemod Oryper Demine 410.1         deg C			
SAMPLING         PRESERVATIVES         DOC           0RDER	SAMPLE	, TIME	CHECKED I
OKDER         OKDER           1         VOC CLP(LOW Lovel) or 5242         reg. c         3740 ml         VOA           1         DOC         reg. c         3740 ml         VOA           2         Nitrate/Nitrogen 352.1         reg. c         349.0         3740 ml         VOA           2         Nitrate/Nitrogen 352.1         reg. c         1.2500 ml         HDPE           3	NUMBER		DATE
1       VOC CLP(LOW Level) or $524.2$ (see $-702$ $-3740 \text{ mt}$ $40A$ 1       DOC $44g_{10}C$ $4554.3740 \text{ mt}$ $VOA$ 2			
$\frac{1}{2} \frac{1}{2} \frac{1}$			
$\frac{1}{2} - \frac{100}{1 \times 500} \frac{100}{1 \times 100} $	•	T R	
2 MREADINFORMATION: 3 Perrors from			
$\frac{3}{4} = \frac{1}{2} $			
$\frac{3}{4} = \frac{1}{2} $			
$\frac{4}{3} = \frac{5}{3} = \frac{5}$	1.		
$\frac{5}{6} \xrightarrow{\text{All all high strategy chieded by } 2 \text{ set } C} = 1 \times 1L = 107E$ $\frac{6}{7} \text{ DOC}$ $\frac{8}{8} \xrightarrow{\text{Hardness 130.2}} \xrightarrow{\text{deg C}} \text{ ison } \frac{1 \times 500 \text{ mL with }}{\text{#4}} = \text{HDPE}$ $\frac{9}{8} \xrightarrow{\text{Well Dissolved Softms 160.1}} \xrightarrow{\text{deg C}} \text{ ison } \frac{1 \times 1L}{\text{#4}} = \text{HDPE}$ $\frac{10}{10} \xrightarrow{\text{elsendod Oxygen Dembed 410.1}} \xrightarrow{\text{deg C}} \text{ ison } \frac{1 \times 50 \text{ mL with }}{1 \times 50 \text{ mL with }} = \text{HDPE}$ $\frac{10}{10} \xrightarrow{\text{elsendod Oxygen Dembed 410.1}} \xrightarrow{\text{deg C}} \text{ ison } \frac{1 \times 50 \text{ mL with }}{1 \times 50 \text{ mL with }} = \frac{10}{10} \xrightarrow{\text{elsendod Oxygen Dembed 410.1}} \xrightarrow{\text{deg C}} \text{ ison } \frac{1 \times 50 \text{ mL with }}{1 \times 50 \text{ mL with }} = \frac{10}{10} \xrightarrow{\text{elsendod Oxygen Dembed 410.1}} \xrightarrow{\text{deg C}} \text{ ison } \frac{1 \times 50 \text{ mL with }}{1 \times 11} = \frac{10}{10} \xrightarrow{\text{elsendod Oxygen Dembed 410.1}} \xrightarrow{\text{deg C}} \text{ ison } \frac{1 \times 50 \text{ mL with }}{1 \times 11} = \frac{10}{10} \xrightarrow{\text{elsendod Oxygen Dembed 410.1}} \xrightarrow{\text{deg C}} \text{ ison } \frac{1 \times 50 \text{ mL with }}{1 \times 11} = \frac{10}{10} \xrightarrow{\text{elsendod Oxygen Dembed 410.1}} \xrightarrow{\text{deg C}} \xrightarrow{\text{deg C}} \text{ ison } \frac{1 \times 50 \text{ mL with }}{1 \times 11} = \frac{10}{10} \xrightarrow{\text{elsendod Oxygen Dembed 410.1}} \xrightarrow{\text{deg C}} \text{de$		4 12 11	
$\frac{6}{7} DOC$ $\frac{8}{8} \frac{Hardness 130.2}{Hardness 130.2} \frac{4 day C}{4 day C} \frac{1 \times 500 \text{ mL with }}{4 HDPE}$ $\frac{9}{8} \frac{14 \text{ mDPE}}{10} \frac{1 \times 10.1}{10} \frac{4 day C}{100} \frac{1 \times 50 \text{ mL with }}{10} \frac{1 \times 11}{10} 1000000000000000000000000000000000000$			
$ \frac{6}{7} DOC $ $ \frac{8}{8} Harchoss 130.2 Adap C HOOD #44 HDPE $ $ \frac{9}{7} Feb 20105 150.1 Adap C HOOD #44 HDPE $ $ \frac{9}{7} Feb 20105 150.1 Adap C HOOD #44 HDPE $ $ \frac{9}{7} Feb 20105 150.1 Adap C HOOD HOUD HOUSE 100.1 Adap C HOOD HUNCH #7 HDPE $ $ \frac{10}{7} Feb 20105 160.1 Adap C HOOD HUNCH #7 HDPE $ $ \frac{10}{7} COMMENTS: (QA/QC?) $ $ \frac{9}{7} C (8260 B) (9) (9) C HCL $ $ \frac{9}{7} C (8260 B) (9) (9) C HCL $ $ \frac{9}{7} C (9000 A) $ $ \frac{11}{7} 1 (1200 A) (1200 A) $ $ \frac{11}{7} 2125 m $ $ \frac{11}{7} 250 m $ $ \frac{11}{7} 2125 m $ $ \frac{11}{7} 250 m $ $ \frac{11}{7} 2125 m $ $ \frac{11}{7} 250 m $ $ \frac{11}{7} 2125 m $ $ \frac{11}{7} 250 m $ $ \frac{11}{7} 2125 m $ $ \frac{11}{7} 250 m $ $ \frac{11}{7} 2125 m $ $ \frac{11}{7} 250 m $ $ \frac{11}{7} 2125 m $ $ \frac{11}{7} 250 m $ $ \frac{11}{7} 2125 m $ $ \frac{11}{7}$			
7       DOC       1 x 500 mL with         8       Hartness 130.2 $4deg.C$ 1 x 100 $#4$ HDPE         9 $Februard Dissolved Solling 160.1$ $4deg.C$ 1 x 11       HDPE         10       Chemical Oxygen Deminin 410.1 $4deg.C$ 1 x 11       HDPE         10       Common Oxygen Deminin 410.1 $4deg.C$ 1 x 50 mL with #7       HDPE         10       Common Oxygen Deminin 410.1 $4deg.C$ H x 50 mL with #7       HDPE         10       Common Oxygen Deminin 410.1 $4deg.C$ H x 50 mL with #7       HDPE         10       Common Oxygen Deminin 410.1 $4deg.C$ H x 50 mL with #7       HDPE         11 $4deg.C$ $4deg.C$ H x 50 mL with #7       HDPE         11 $4deg.C$ $4deg.C$ H x 50 mL with #7       HDPE         12       COMMMENTS: $(QA/QC?)$ $4deg.C$ $HCL$ $B125$ m         12       M = (AH20 GAX) $11$ $2125$ m $11$ $2125$ m         13       ToC $(GA/QC?)$ $11$ $2125$ m $11$ $2125$ m         13 $10$ $10$ $10$ $10$	15		•
8       Hartness 130.2       1x 500 mL with         9 $3440^{\circ}$ C       1x 1L         10 $3460^{\circ}$ C       1x 1L         10 $3460^{\circ}$ C       1x 50 mL with #7         11 $3125^{\circ}$ C $3125^{\circ}$ C         12 $3125^{\circ}$ C $3125^{\circ}$ C         13 $10^{\circ}$ C $8260^{\circ}$ S         14 $11^{\circ}$ C $11^{\circ}$ C         15 $10^{\circ}$ C $11^{\circ}$ C         16 $10^{\circ}$ C $11^{\circ}$ C         17 $11^{\circ}$ C $11^{\circ}$ C         18 $11^{\circ}$ C $11^{\circ}$ C         19 $11^{\circ}$ C $11^{\circ}$ C         10 $11^{\circ}$ C $11^{\circ}$ C         11 $11^{\circ}$ C $11^{\circ}$ C	<u> </u>		
8       Hardness L3U2       Advert C       House       House       House         9 $3446^{\circ}$ C       1 × 11       HDPE         10       Chemical Oxygen Demand ATOT       4 deg C       1 × 11       HDPE         10       Chemical Oxygen Demand ATOT       4 deg C       1 × 11       HDPE         10       Chemical Oxygen Demand ATOT       4 deg C       1 × 50 mL with #7       HDPE         10       Chemical Oxygen Demand ATOT       4 deg C       1 × 50 mL with #7       HDPE         10       Chemical Oxygen Demand ATOT       4 deg C       1 × 50 mL with #7       HDPE         10       COMMENTS:       (QA/QC?)       1 × 12       1 × 12       1 × 12         11       VOC       COMMENTS:       (QA/QC?)       1 × 12       3 × 12         11       VOC       COMEE       (AM20GAx)       1 × 12       3 × 12         12       DMEE       (AM20GAx)       1 × 12       2 × 125 ml       1 × 12       2 × 125 ml         13       Un t       (HACH)       1 × 12       2 × 10       1 × 12       2 × 10         10       House       (HACH)       1 × 10       1 × 10       1 × 10       1 × 10         10       INFORMATION:			
9 $\frac{1}{24}$ $\frac{1}{24$			
10 Cheminal Oxygen Deminist 410.1 $4 \log C$ $HEROW 1 \times 50 \text{ mL with } #7$ HDPE COMIMENTS: (QA/QC?) 1) VOC $C$ (\$260 B 1 $Q^{0}C$ HCL $3/25 \text{ m}$ 2) MEE (AM20GAX) 1) $QOC$ ( $QOOA$ ) 1) $QOC$ ( $QOCA$ )	·		
10 CHARMENTS: $(QA/QC?)$ 1) VOC $2 \odot (8260 B)$ $9 ° C$ $HCL$ $3/25 m$ 2) MEE $(AM20GAX)$ 1) ZI25m 3) TOC $(9060A)$ 1) $2/25m$ 4) $3UHa/c$ $(EPA = 300.1)$ 5) $Mn + (HACH)$ 6) Fe + (HACH) 10 INFORMATION:			
COMIMENTS: $(QA/QC?)$ i) VOC $20$ (8260 B) $9^{\circ}$ HCL $3 25 m$ 2) MEE (AM20GAX) 5) TOC (9060A) 4) Sulfale (EPA 500.1) 5) Int (HACH) 6) Fet (HACH) 10W INFORMATION:			
COMMENTS: $(QA/QC?)$ i) voc $20$ (8260 B) $9^{\circ}$ c HCL $3/25$ m 2) MEE (AM20GAX) 3) TOC (9060 A) 4) Sulfale (EPA \$00.1) 5) Un + (HACH) 6) Fe + (HACH) 10W INFORMATION:			101
COMMENTS: $(QA/QC?)$ i) $VOC = (8260 B)$ 2) $MEE = (AM20GAX)$ 5) $TOC = (9060A)$ 11 11 1225 m 1225 m		•	
1) $VOC = \frac{20}{826081}$ 2) $MEE = (AH20GAX)$ 3) $TOC = (a060A)$ 4) $8ultale: (EPA = 300.1)$ 5) $Un + (HACH)$ 6) $Fe + (HACH)$ 10W INFORMATION:	14 C	۱۰	
1) VOC 20 (8260 B 1 9°C HCL 3155 m 2) MEE (AM20GAX) 3) TOC (9060A) 4) Sulfale (EPA 300 1) 4) Sulfale (EPA 300 1) 5) Un + (HACH) 6) Fe + (HACH) 10W INFORMATION: 100, MCR JOT		G	
$(1 \vee 0C + 66200 B 1 + 4 \circ C + HCL - 3125 m)$ $(2) MEE (AM20 GAX) + 2/25 m)$ $(3) TOC (9060 A) + 11 + 2/25 m)$ $(4) Sulfale (EPA = 300 \cdot 1) + 1/250 m)$ $(3) Ha + (HACH) + (HACH) + 1/250 m)$ $(4) Fe + (HACH) + 1/250 m)$ $(5) Fe + (HACH) + 1/250 m)$ $(4) Fe + (HACH) + 1/250 m)$ $(5) Fe + (HACH) + 1/250 m)$ $(6) Fe + (HACH) + 1/250 m)$ $(100 \text{ INFORMATION:} + 1/250 m)$		(	10. 201
2) MEE $(AM20GAX)$ 3) TOC $(9000A)$ 4) Sulfale: $(ePA = 300.1)$ 5) Mn + $(HACH)$ 6) Fe + $(HACH)$ 10W INFORMATION:	V N	OA O	14
5) TOC (9060A) 1) Sulfale: (EPA 300.1) 1) Sulfale: (EPA 300.1) 1/250m 6) Fe + (HACH) 10W INFORMATION:	1 - 13 4 A	σA	
$\frac{1}{2} = \frac{1}{2} = \frac{1}$	16 0	1+ - C	100 100
9) Sulfale: (EPA 300.1) 5) Inn + (HACH) 6) Fe + (HACH) 10W INFORMATION: 10. 10. 10. 10. 10. 10. 10. 10. 10. 10.	1 10	<b>N</b> 5	and here
id un t (HACH) G) Fe t (HACH) IDW INFORMATION: DOI: NO. 2017	•	í.	007 P.T.
G) FE + (HACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH) CHACH)	1L H	ppe (	3 7.9 2.01
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TOC, SC4, 1:00	;	54	
7.0C, SC4, 7.0C			
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Ash (	GW	SAMPL	ING	RECORD	(2)
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- Moderate organic odor coming from well.

#### Ash GW SAMPLING RECORD (2)

SAMPLING PRESER		ERVATIVES	BOTTL	E.5	SAMFLE	I HALL	CHECKED		
	ORDER				COUNT/ VOLUME	түре 12 /г <b>f</b>	NUMBER		DATE
1		10	eg. C	HCL	3/ 40 ml	VOA			_
2	MEE (AM20GAX)	4 4	leg. C	HQ.	<b>25 12</b> 2/ <b>4</b> 0 ml	VOA			
					25 12	8			
35	(9060A)		leg. C	HCL.	2/ 440 mi	VUA		<u> </u>	-
_4	Sulfate (EPA 300.1)	16	leg, C		1 x 2 <u>50 mL</u>	HDPE			
5	Fe+ (HACH)					field			
6	Mn+ (HACH)		ទៅ ភ្នៃ។	en 🦉 🔡	5 - 1 - 17	field			3.5
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	4 T T T				. 문영.	<u>.</u>			
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12/10/2009

	FNF	SAM	PLING I	KE(		RD	-	GR		<u>IND</u>	W	ATE	<b>र</b>	5.20
<u> </u>				<u></u>			AF	ISUN	3		W	ELL #: M	W	1-07
`Pi	ROJEC	T:	Ash Landfill	LTM	Foundw	ater Sam	pling	g <u>-</u> Roun	d 8			DATE:	12	1609
ro	JUATI			H	OMULI	S, NY				-	IN:	SPECTORS: MP #-	6	
W	/EATH	ER / FIELD	CONDITIONS CHE	CKLIS	T	(RECC	)RD	MAJOR	CHAN	GES)	SA	MPLE ID #:	اسلم	3W20175
				R	EL.	WIND	()	FROM)	GROUN	ND / SITE				
T	IME	ТЕМР	WEATHER	HUN	IDITY 7	ELOCITY	DIR	RECTION	SUR	FACE		MONIT	OR	ING
(24	4 HR)	(APPRX)	(APPRX)	(6	EN)	(APPRX)	(0	- 360)	COND	ITIONS	IN	STRUMENT	D	ETECTOR
	00	125	Sunny; wray	2	2mph		-					OVM-580		PID
	. <u> </u>	WELLVON		CTORS			Iovi						-	
DIA	METER	(INCHES):		3	4	6	UNE	WELL VO	LUME (GA X '	WELL DIAM	- STAI	FACTOR (GAL/FI	JEVEL 7 J	) A
G	LITERS	FOOT	0.010 0.151 0.617	1.389	2.475	1.47 5,564	11	2.83.	7.5	o)(0,	(6	3) = 0	.2	58 x 39
			DEPTH TO POINT	<u>.</u>	DEPTH	TO SCF	REEN		WELL			WELL		WELL
1	HISTORIO	) DATA	(TOC)		SCREEN		FT)		TURBIDIT	Y	D	pH_	Ľ	SPEC. COND
			12.83											
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			SAMPLING (qps)					IL SA	MUPLING (	<u>(qu)</u>				
TIME	WATER	PUMPING	CUMULATIVE VOL	<u>_ CO</u>	LLECT	ED DU	URI	NG P		NG OP	OPERATIONS			
(ala)	LEVEL	RATE (ml/min)	CALLONOY-(ML	) 02	YGEN (mg/	L) ((	TEMP SPEC. COND (C) (umbor) pl			рH		(a)V)		(NTU)
00	Sto	rt Pun	iping		<u>Sí</u>	Y	5	Ho	rib	a				Lamothe
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11	7.70				3.35	8	9	9	13	6.7		-45		74.5
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201	0.45		<u></u>	<u> </u>	1.95	- 19,	0	2.	00	6.9	1	-47		0.0
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#### Ash GW SAMPLING RECORD (2)

	SAMPLING		PRES	ERVATIVES	BOTTI	JES	SAMPLE	TIME	CHECKED BY
	ORDER				COUNT/ VOLUME	TYPE	NUMBER		DATE
L	VQC 8260B		4 deg. C	HCL	3/40 ml	VOA			
; 2	MÉE (AM20GAX)		4 deg C	HCL	25 4 2/40 ml	VOA			
21	5 · TOC (9060A)		1 4 2 2		25 4	VOA			
910			4 OCB C	nce		VON			
4	Sulfate (EPA 300.1)		4 deg. C		1 x 250 mL	HDPE			
5	Fe+ (HACH)					field		NER IN	200 200 L
6	Mn+(HACH)					field			
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O	MMENTS: (QA	/QC?)					(446)		위 A. Y. (12) (전), (12) (전), (12) (14), (12) (24), (12)
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### **APPENDIX B**

### COMPLETE GROUNDWATER DATA

Facility Location ID Matrix Sample ID Sample Date QC Code								ASH LANDFILL PT-18A GW ALBW20059 1/3/2007 SA	ASH LANDFILL PT-18A GW ALBW20074 3/17/2007 SA	ASH LANDFILL PT-18A GW ALBW20088 6/5/2007 SA	ASH LANDFILL PT-18A GW ALBW20103 11/15/2007 SA	ASH LANDFILL PT-18A GW ALBW20117 6/24/2008 SA	ASH LANDFILL PT-18A GW ALBW20132 12/12/2008 SA
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	1	2	3	4	5	6
<b>_</b>		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds		0.70	20/	-	0	4	440	4.11	4.11	4.11	4.11	4.11	0.00 111
1,1,2,2 Totrophoroothono	UG/L	0.76	3%	5	0	4	110	1 U	10	10	10	10	0.26 UJ
1,1,2,2-Tetrachioroethane	UG/L	0	0%	5	0	0	118	1 1	10	1 1 1 1	10	1 111	0.21 0
1 1 2-Trichloroethane		0	0%	1	0	0	118	1 1	1 11	1 00	1 11	1 00	0.23 11
1 1-Dichloroethane	UG/L	11	7%	5	0	8	118	1 U	1 U	1 U	1 U	1 U	0.25 U
1 1-Dichloroethene	UG/L	21	7%	5	0	8	118	0.64.1	0.73.1	14	21	1.0	13
1.2.4-Trichlorobenzene	UG/L	0	0%	5	Ō	õ	118	1 U	1 U	1 U	1 U	10	0.41 U
1.2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	1 U	1 Ū	1 Ū	1 U	1 UJ	1 UJ
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	1 Ū	1 Ū	1 Ū	1 Ū	1 U	0.17 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	1 U	1 U	1 U	0.2 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	1 U	1 U	1 U	1 U	1 U	0.21 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	1 U	1 U	1 U	1 U	1 U	0.14 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	1 U	1 U	1 U	0.16 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	1 U	1 U	1 U	0.16 U
Acetone	UG/L	2600	29%		0	34	118	5 U	2 J	7	5 U	5 U	1.3 U
Benzene	UG/L	0	0%	1	0	0	118	1 U	1 U	1 U	1 U	1 U	0.16 U
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	1 U	1 U	1 U	0.38 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	1 U	1 U	1 U	0.26 U
Carbon disulfide	UG/L	0	0%		0	0	118	1 U	1 U	1 U	1 U	1 U	0.19 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 U	0.27 UJ
Chlorobenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 U	0.18 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	1 U	1 U	1 U	0.32 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	1 U	1 U	1 U	1 U	1 UJ	0.32 U
Chloroform	UG/L	27	5%	7	4	6	118	27	13 U	14	8.7	1 U	2.2
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	220	170	430	720	200	510
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1 U	1 U	1 U	1 U	1 U	0.36 U
Cyclohexane	UG/L	0	0%		0	0	118	1 U	1 U	1 U	1 U	1 U	0.22 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 U	0.28 UJ
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	1 U	1 U	1 U	1 U	1 U	0.18 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 U	0.19 U
Methyl Acetate	UG/L	6	2%		0	2	118	1 U	1 UJ	1 U	1 UJ	1 UJ	0.17 U
Methyl Tertbutyl Ether	UG/L	0	0%		0	0	118	1 U	1 U	1 U	1 U	1 U	0.16 U
Methyl bromide	UG/L	0	0%	5	0	0	117	1 U	1 U	1 U	1 U	1 UJ	0.28 U
Methyl butyl ketone	UG/L	0	0%		0	0	118	5 U	5 U	5 U	5 UJ	5 UJ	1.2 U
Methyl chloride	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 UJ	0.34 U
Methyl cyclohexane	UG/L	0	0%		0	0	118	1 U	10	10	10	10	0.22 U
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	5 U	5 U	5 U	5 U	5 UJ	1.3 U
Methyl isobutyl ketone	UG/L	0	0%	_	0	0	118	50	50	50	50	5 UJ	0.91 U
Methylene chloride	UG/L	18	10%	5	/	12	118	1 UJ	10	10	10	10	0.44 UJ
Styrene	UG/L	0	0%	5	0	0	118	10	10	10	10	10	0.18 U
Teluere	UG/L	500	0%	5	0	0	118	10	10	10	10	10	0.36 U
I oluene	UG/L	590	19%	5	16	23	118	10	10	10	10	10	0.51 0
Trans-1 2 Dichloroothana	UG/L	U	U%	о Е	U	0	118	3 U 1 G	3 U 1 A	3 U 2 2	30	30	0.93 0
Trans-1,2-Dichloropropopo	UG/L	Ö	4∠% 0º/	о 0 4	3	00	110	1.0	1.4	3.3	3.4	0.9 J	2.4
Trichloroothono	UG/L	2700	0%	0.4	U 49	80	110	2000	1000	1100	2700	220	0.37 0
Trichlorofluoromethano	UG/L	2700	00%	5	40 0	00	110	2000	1 11	1100	2/00	1 1 1	0.15.111
Vinyl chloride	UG/L	180	66%	2	67	78	118	2.4	2.0	33	82	10	46
	00/2	100	0070	-		10	110	2.4	2.7	5.5	0.2	1.4	

	Facility								ASH LANDFILL					
	Location ID								PT-18A	PT-18A	PT-18A	PT-18A	PT-18A	PT-18A
	Matrix								GW	GW	GW	GW	GW	GW
	Sample ID								ALBW20059	ALBW20074	ALBW20088	ALBW20103	ALBW20117	ALBW20132
	Sample Date								1/3/2007	3/17/2007	6/5/2007	11/15/2007	6/24/2008	12/12/2008
	QC Code								SA	SA	SA	SA	SA	SA
	Study ID								LTM	LTM	LTM	LTM	LTM	LTM
	Sampling Round			Frequency		Number	Number	Number	1	2	3	4	5	6
			M		01	- 1	of Times	of Samples						
			Maximum	of	Cleanup	or	or rimes	or Samples						
Parameter		Units	Value	of Detection	Goals <sup>1</sup>	of Exceedances	Detected	Analyzed	Value (Q)					
Parameter Other		Units	Value	of Detection	Goals <sup>1</sup>	or Exceedances	Detected	Analyzed	Value (Q)					
Parameter Other Iron		Units UG/L	Value 296000	of Detection 100%	Goals <sup>1</sup>	Exceedances	Detected 12	Analyzed 12	Value (Q)					
Parameter Other Iron Iron+Manganese		Units UG/L UG/L	Value 296000 352900	of Detection 100% 100%	Goals <sup>1</sup>	or Exceedances 11 12	Detected 12 12	Analyzed 12 12	Value (Q)					
Parameter Other Iron Iron+Manganese Manganese		Units UG/L UG/L UG/L	Value 296000 352900 56900	of Detection 100% 100% 100%	Goals <sup>1</sup>	or Exceedances 11 12 12	12 12 12 12	12 12 12 12	Value (Q)					
Parameter Other Iron Iron+Manganese Manganese Ethane		Units UG/L UG/L UG/L UG/L	Value 296000 352900 56900 98	of Detection 100% 100% 88%	Goals <sup>1</sup>	or Exceedances 11 12 12 0	12 12 12 12 12 49	12 12 12 12 56	Value (Q)					

56 56 56

53 39 56

0

0

0

Notes:

Methane

Total Organic Carbon

Sulfate

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

23000

1060

2050

95%

70%

100%

UG/L

MG/L

MG/L

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

UJ= the compound was not detected; the associated reporting limit is approximate.

Facility Location ID Matrix Sample ID Sample Date QC Code								ASH LANDFILL PT-18A GW ALBW20147 6/4/2009 SA	ASH LANDFILL PT-18A GW ALBW20162 12/17/2009 SA	ASH LANDFILL MWT-25 GW ALBW20064 1/3/2007 SA	ASH LANDFILL MWT-25 GW ALBW20079 3/17/2007 SA	ASH LANDFILL MWT-25 GW ALBW20093 6/6/2007 SA	ASH LANDFILL MWT-25 GW ALBW20108 11/15/2007 SA
Sampling Round			Frequency		Number	Number	Number	L I M	2111/1	1	2	2	L I WI 4
Samping Round		Maximum	of	Cleanup	of	of Times	of Samples	I	0	I	2	5	-
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	0.26 U	1.1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	0.21 U	0.85 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	0.31 U	1.2 UJ	1 U	10	1 UJ	1 U
1,1,2-I richloroethane	UG/L	0	0%	1	0	0	118	0.23 U	0.92 U	10	10	10	10
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	0.75 U	1.5 U	10	10	10	10
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	0.8 J	2 J 1 G U	10	10	10	10
1,2,4-Thermonological		0	0%	0.04	0	0	110	0.41 0	1.6 U	10	10	10	10
1,2-Dibromoethane		0	0%	0.04	0	0	118	0 17 11	0.66 11	10	10	10	1 1
1.2-Dichlorobenzene		0	0%	3	0	0	118	0.17 0	0.81	10	1 11	111	1 11
1 2-Dichloroethane	UG/L	56	11%	0.6	11	13	118	0.2 0	0.86 U	1 U	1.0	1 U	1 U
1.2-Dichloropropane	UG/L	0	0%	1	0	0	118	0.14 U	1.3 U	1 U	1 U	1 U	1 U
1.3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.16 U	1.4 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	UG/L	Ō	0%	3	0	Ō	118	0.16 U	1.6 U	1 U	1 U	1 U	1 U
Acetone	UG/L	2600	29%		0	34	118	1.3 UJ	5.4 U	5 U	5 U	4.5 J	5 U
Benzene	UG/L	0	0%	1	0	0	118	0.16 U	1.6 U	1 U	1 U	1 U	1 U
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.39 U	1.5 U	1 U	1 U	1 U	1 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.26 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	UG/L	0	0%		0	0	118	0.19 U	0.78 U	1 Ū	1 U	1 U	1 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	0.27 U	1.1 U	1 U	1 U	1 U	1 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	0.32 U	1.3 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.32 U	1.3 U	1 U	1 U	1 U	1 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	0.32 U	1.3 UJ	1 U	1 U	1 U	1 U
Chloroform	UG/L	27	5%	7	4	6	118	9	3.1 J	1 U	. 1 U	1 U	1 U
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	260	630	41	84	36	17
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	0.36 U	1.4 U	1 U	1 U	1 U	1 U
Cyclohexane	UG/L	0	0%		0	0	118	0.53 U	2.1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	0.29 U	1.1 U	1 U	1 U	1 U	1 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	0.18 U	0.74 U	1 U	1 U	1 U	1 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	0.19 U	0.77 U	10	10	10	10
Methyl Acetate	UG/L	6	2%		0	2	118	0.17 U	20	10	1 UJ	10	1 UJ
Methyl Fertbutyl Ether	UG/L	0	0%	-	0	0	118	0.16 U	0.64 0	10	10	10	10
Methyl butyl ketene	UG/L	0	0%	5	0	0	117	0.28 0	1.1 UJ	10	10	10	10
Methyl obleride		0	0%	E	0	0	110	0.25 11	30	50	30	50	5 UJ
Methyl cyclohexane	UG/L	0	0%	5	0	0	118	0.55 0	2	1 1	111	1 11	1 11
Methyl ethyl ketone	UG/L	4900	18%		ů 0	21	118	1311	5311	511	511	511	511
Methyl isobutyl ketone	UG/L	-300	0%		0	0	118	0.91 U	3.6 U	5 U	5 U	50	50
Methylene chloride	UG/L	18	10%	5	7	12	118	0.44 []	18 U	1 U	1 U	1 U	1 U
Styrene	UG/L	0	0%	5	0	0	118	0.18 U	0.74 U	1 U	1 U	1 U	1 Ü
Tetrachloroethene	UG/L	0	0%	5	0	Ō	118	0.36 U	1.5 U	1 U	1 U	1 U	1 U
Toluene	UG/L	590	19%	5	16	23	118	0.51 U	2 U	1 U	1 U	4.6	1 U
Total Xylenes	UG/L	0	0%	5	0	0	118	0.66 U	2.6 U	3 U	3 U	3 U	3 U
Trans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	1.8	3.5 J	0.56 J	1.2	0.5 J	1 U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	0.37 U	1.5 U	1 U	. 1 U	1 U	1 U
Trichloroethene	UG/L	2700	68%	5	48	80	118	810 J	2100	50	55	28	26
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	0.15 U	0.61 UJ	1 U	1 U	1 UJ	1 U
Vinyl chloride	UG/L	180	66%	2	67	78	118	2.6	7.1	1.6	9.6	2.1	0.64 J

	Facility Location ID Matrix Sample ID Sample Date QC Code Study ID Sampling Round		Maximum	Frequency	Cleanun	Number	Number	Number of Samples	ASH LANDFILL PT-18A GW ALBW20147 6/4/2009 SA LTM 7	ASH LANDFILL PT-18A GW ALBW20162 12/17/2009 SA LTM 8	ASH LANDFILL MWT-25 GW ALBW20064 1/3/2007 SA LTM 1	ASH LANDFILL MWT-25 GW ALBW20079 3/17/2007 SA LTM 2	ASH LANDFILL MWT-25 GW ALBW20093 6/6/2007 SA LTM 3	ASH LANDFILL MWT-25 GW ALBW20108 11/15/2007 SA LTM 4
Parameter		Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other														
Iron		UG/L	296000	100%		11	12	12						
Iron+Manganese		UG/L	352900	100%		12	12	12						
Manganese		UG/L	56900	100%		12	12	12						
Ethane		UG/L	98	88%		0	49	56						

Ethene	UG/L	200	88%	0	49	56
Methane	UG/L	23000	95%	0	53	56
Sulfate	MG/L	1060	70%	0	39	56
Total Organic Carbon	MG/L	2050	100%	0	56	56

#### Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

UJ= the compound was not detected; the associated reporting limit is approximate.

#### Table B-1 Complete Groundwater Data for Ash Landfill Long Term Monitoring Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

Facility Location ID Matrix Sample ID Sample Date								ASH LANDFILL MWT-25 GW ALBW20123 6/24/2008	ASH LANDFILL MWT-25 GW ALBW20138 12/15/2008	ASH LANDFILL MWT-25 GW ALBW20153 6/3/2009	ASH LANDFILL MWT-25 GW ALBW20168 12/17/2009	ASH LANDFILL MWT-26 GW ALBW20066 1/3/2007	ASH LANDFILL MWT-26 GW ALBW20081 3/17/2007
QC Code								SA	SA	SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	5	6	7	8	1	2
<b>-</b>		Maximum	of	Cleanup	10	of limes	of Samples						
Parameter	Units	value	Detection	Goals	Exceedances	Detected	Analyzed	value (Q)	value (Q)	value (Q)	value (Q)	value (Q)	value (Q)
1 1 1-Trichloroethane	LIG/I	0.76	3%	5	0	4	118	1.11	0.26.11	0.26.11	0.26.11	1.11	1
1 1 2 2-Tetrachloroethane	UG/L	0.70	0%	5	0	0	118	1 U	0.20 0	0.20 0	0.20 0	10	1 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0 0	0%	5	0	ő	118	1 UJ	0.31 U	0.31 U	0.31 U	1 U	1 U
1.1.2-Trichloroethane	UG/L	0	0%	1	0	0	118	1 U	0.23 U	0.23 U	0.23 U	1 U	1 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	1 Ū	0.75 U	0.75 U	0.38 U	1 U	1 Ū
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	1 U	0.29 U	0.29 U	0.29 U	1 U	1 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	1 U	0.41 U	0.41 U	0.41 U	1 U	1 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	1 UJ	1 UJ	1 UJ	0.39 U	1 U	1 U
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	1 U	0.17 U	0.17 U	0.17 U	1 U	1 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	1 U	0.21 U	0.21 U	0.21 U	1 U	1 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	1 U	0.14 U	0.14 U	0.32 U	1 U	1 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	0.16 U	0.16 U	0.36 U	1 U	1 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	10	0.16 U	0.16 U	0.39 U	10	10
Acetone	UG/L	2600	29%		0	34	118	5 0	1.3 U	1.3 U	1.3 U	50	1/
Benzene	UG/L	0	0%	1 OO b	0	0	118	10	0.16 U	0.16 U	0.41 0	10	10
Bromodichloromethane	UG/L	0	0%	80 -	0	0	118	10	0.38 U	0.39 U	0.39 U	10	10
Bromoform	UG/L	0	0%	80 5	0	0	118	1 U	0.26 U	0.26 UJ	0.26 U	10	10
Carbon disulfide	UG/L	0	0%	~	0	0	118	10	0.19 U	0.19 UJ	0.19 U	10	10
Carbon tetrachioride	UG/L	0	0%	5	0	0	118	10	0.27 U	0.27 U	0.27 0	10	10
Chlorobenzene Oblass dibeses and these a	UG/L	0	0%	oo b	0	0	118	10	0.18 U	0.32 0	0.32 0	10	10
Chlorodibromomethane	UG/L	0	0%	80	0	0	118	10	0.32 U	0.32 U	0.32 U	10	10
Chloroform	UG/L	1.1	6% E9/	5 7	0	6	110	1 UJ	0.32 0	0.32 0	0.32 0	10	10
Cis-1 2-Dichloroethene	UG/L	720	3% 81%	5	4 80	96	118	17	0.34 0	0.34 0	0.34 0	10	17
Cis-1 3-Dichloropropene		120	0%	0.4	0	0	118	111	0.36 11	0.36 11	0.3611	111	111
Cyclohexane	UG/L	0	0%	0.4	0	0	118	1 11	0.30 0	0.53 U	0.53 U	1 1	1 []
Dichlorodifluoromethane	UG/L	0	0%	5	0	Ő	118	1 U	0.28 U	0.29 U	0.00 0	1 U	1 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	1 U	0.18 U	0.18 U	0.18 U	1 U	1 U
Isopropylbenzene	UG/L	0	0%	5	Ő	0	118	1 U	0.19 U	0.19 U	0.19 U	1 U	1 U
Methyl Acetate	UG/L	6	2%		0	2	118	1 UJ	0.17 U	0.17 UJ	0.5 U	1 U	1 UJ
Methyl Tertbutyl Ether	UG/L	0	0%		0	0	118	1 U	0.16 U	0.16 U	0.16 U	1 U	1 U
Methyl bromide	UG/L	0	0%	5	0	0	117	1 UJ	0.28 U	0.28 U	0.28 UR	1 U	1 U
Methyl butyl ketone	UG/L	0	0%		0	0	118	5 UJ	1.2 U	1.2 U	1.2 U	5 U	5 U
Methyl chloride	UG/L	0	0%	5	0	0	118	1 UJ	0.34 U	0.35 U	0.35 U	1 U	1 U
Methyl cyclohexane	UG/L	0	0%		0	0	118	1 U	0.22 U	0.5 U	0.5 U	1 U	1 U
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	5 UJ	1.3 U	1.3 U	1.3 U	5 U	15
Methyl isobutyl ketone	UG/L	0	0%		0	0	118	5 UJ	0.91 U	0.91 U	0.91 U	5 U	5 U
Methylene chloride	UG/L	18	10%	5	7	12	118	1 U	0.44 UJ	0.44 U	0.44 U	10	10
Styrene	UG/L	0	0%	5	0	0	118	1 U	0.18 U	0.18 U	0.18 U	10	10
I etrachloroethene	UG/L	0	0%	5	0	0	118	10	0.36 U	0.36 U	0.36 U	10	10
I oluene	UG/L	590	19%	5	16	23	118	10	0.51 0	0.51 0	0.51 0	10	10
Trans-1 2 Dichloroothono		U e	U%	5 5	0	50	110	3 U 1 U	0.93 U	0.00 U	0.00 U	30	3 U 1
Trans-1,2-Dichloropropene		0	42%	0.4	3	0	110	1 1	0.13 0	0.13 0	0.42 0	0.0 J 1 I I	111
Trichloroethene	UG/L	2700	68%	5	48	80	118	10	3.2	12	4.2	10	11
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	1111	0 15 11	0.15 U	0 15 111	111	111
Vinyl chloride	UG/L	180	66%	2	67	78	118	1 U	0.24 U	0.24 U	0.24 U	2	6.1

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Facil	ty							ASH LANDFILL					
Location	iD ibr							101001-25	101001-25	101001-25	101001-25	101001-20	IVIVV I -20
Mai													
Sample								ALBW20123	ALBW20138	ALBW20153	ALBW20168	ALBW20066	ALBW20081
Sample Da	le							6/24/2008	12/15/2008	6/3/2009	12/17/2009	1/3/2007	3/17/2007
QC Co	de							SA	SA	SA	SA	SA	SA
Study	ID							LTM	LTM	LTM	LTM	LTM	LTM
Sampling Rou	nd		Frequency		Number	Number	Number	5	6	7	8	1	2
		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)					
Other													
Iron	UG/L	296000	100%		11	12	12					275 J	844
Iron+Manganese	UG/L	352900	100%		12	12	12					1043 J	2464
Manganese	UG/L	56900	100%		12	12	12					768	1620
Ethane	UG/L	98	88%		0	49	56					2 U	0.4
Ethene	UG/L	200	88%		0	49	56					2 U	7.8
Methane	UG/L	23000	95%		0	53	56					2 U	210
Sulfate	MG/L	1060	70%		0	39	56					958	738
Total Organic Carbon	MG/L	2050	100%		0	56	56					3.9 J	15.2

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

UJ= the compound was not detected; the associated reporting limit is approximate.

Facility Location ID Matrix Sample ID								ASH LANDFILL MWT-26 GW ALBW20095	ASH LANDFILL MWT-26 GW ALBW20111	ASH LANDFILL MWT-26 GW ALBW20126	ASH LANDFILL MWT-26 GW ALBW20141	ASH LANDFILL MWT-26 GW ALBW20156	ASH LANDFILL MWT-26 GW ALBW20171
Sample Date								6/5/2007	11/15/2007	6/24/2008 SA	12/15/2008	6/3/2009	12/17/2009
Study ID								I TM					
Sampling Round			Frequency		Number	Number	Number	3	4	5	6	7	8
Company Round		Maximum	of	Cleanup	of	of Times	of Samples	0	·	•	Ŭ		0
Parameter	Units	Value	Detection	Goals <sup>i</sup>	Exceedances	Detected	Analyzed	Value (Q)					
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	1 U	1 U	1 U	0.26 U	0.26 U	0.26 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.21 U	0.21 U	0.21 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	1 UJ	1 U	1 U	0.31 U	0.31 U	0.31 UJ
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	1 U	1 U	1 U	0.23 U	0.23 U	0.23 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	1 U	1 U	1 U	0.75 U	0.75 U	0.38 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	1 U	1 U	1 U	0.29 U	0.29 U	0.29 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.41 U	0.41 U	0.41 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	1 U	1 U	1 U	1 UJ	1 UJ	0.39 U
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	1 U	1 U	1 U	0.17 U	0.17 U	0.17 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	1 U	1 U	1 U	0.21 U	0.21 U	0.21 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	1 U	1 U	1 U	0.14 U	0.14 U	0.32 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	1 U	0.16 U	0.16 U	0.36 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	1 U	0.16 U	0.16 U	0.39 U
Acetone	UG/L	2600	29%		0	34	118	5 U	5 U	5 U	1.3 U	1.3 U	1.3 U
Benzene	UG/L	0	0%	1	0	0	118	1 U	1 U	1 U	0.16 U	0.16 U	0.41 U
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	1 U	0.38 U	0.39 U	0.39 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	1 U	0.26 U	0.26 UJ	0.26 U
Carbon disulfide	UG/L	0	0%		0	0	118	1 U	1 U	1 U	0.19 U	0.19 UJ	0.19 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.27 U	0.27 U	0.27 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.18 U	0.32 U	0.32 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	1 U	0.32 U	0.32 U	0.32 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	1 U	1 U	1 UJ	0.32 U	0.32 U	0.32 UJ
Chloroform	UG/L	27	5%	7	4	6	118	1 U	1 U	1 U	0.34 U	0.34 U	0.34 U
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	11	2.8	3.3	1	6	8.1
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1 U	1 U	1 U	0.36 U	0.36 U	0.36 U
Cyclohexane	UG/L	0	0%		0	0	118	1 U	1 U	1 U	0.22 U	0.53 U	0.53 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.28 U	0.29 U	0.29 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	1 U	1 U	1 U	0.18 U	0.18 U	0.18 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.19 U	0.19 U	0.19 U
Methyl Acetate	UG/L	6	2%		0	2	118	1 U	1 UJ	1 UJ	0.17 U	0.17 UJ	0.5 U
Methyl Tertbutyl Ether	UG/L	0	0%		0	0	118	1 U	1 U	1 U	0.16 U	0.16 U	0.16 U
Methyl bromide	UG/L	0	0%	5	0	0	117	1 U	1 U	1 UJ	0.28 U	0.28 U	0.28 UJ
Methyl butyl ketone	UG/L	0	0%		0	0	118	5 U	5 UJ	5 UJ	1.2 U	1.2 U	1.2 U
Methyl chloride	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.34 U	0.35 U	0.35 U
Methyl cyclohexane	UG/L	0	0%		0	0	118	1 U	1 U	1 U	0.22 U	0.5 U	0.5 U
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	5 U	5 U	5 U	1.3 U	1.3 U	1.3 U
Methyl isobutyl ketone	UG/L	0	0%		0	0	118	5 U	5 U	5 U	0.91 U	0.91 U	0.91 U
Methylene chloride	UG/L	18	10%	5	7	12	118	1 U	1 U	1 U	0.44 UJ	0.44 U	0.44 U
Styrene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.18 U	0.18 U	0.18 U
Tetrachloroethene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.36 U	0.36 U	0.36 U
Toluene	UG/L	590	19%	5	16	23	118	1 U	1 U	1 U	0.51 U	0.51 U	0.51 U
Total Xylenes	UG/L	0	0%	5	0	0	118	3 U	3 U	3 U	0.93 U	0.66 U	0.66 U
Trans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	0.7 J	1 U	1 U	0.13 U	0.13 U	0.42 U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1 U	1 U	1 U	0.37 U	0.37 U	0.37 U
Trichloroethene	UG/L	2700	68%	5	48	80	118	3.2	2.8	1.7	1.9	3.6	5.8
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	<u> </u>	1 U	1 UJ	0.15 U	0.15 U	0.15 UJ
Vinyl chloride	UG/L	180	66%	2	67	78	118	4.4	1 U	1 U	0.24 U	3.5	4.2

	Facility Location ID Matrix Sample ID Sample Date QC Code Study ID Sampling Round			Frequency		Number	Number	Number	ASH LANDFILL MWT-26 GW ALBW20095 6/5/2007 SA LTM 3	ASH LANDFILL MWT-26 GW ALBW20111 11/15/2007 SA LTM 4	ASH LANDFILL MWT-26 GW ALBW20126 6/24/2008 SA LTM 5	ASH LANDFILL MWT-26 GW ALBW20141 12/15/2008 SA LTM 6	ASH LANDFILL MWT-26 GW ALBW20156 6/3/2009 SA LTM 7	ASH LANDFILL MWT-26 GW ALBW20171 12/17/2009 SA LTM 8
Bananatan		11-14-	Maximum	of	Cleanup	of	of Times	of Samples	Value (O)				V(-)	V(-)
Parameter		Units	value	Detection	Goals	Exceedances	Detected	Analyzed	value (Q)	value (Q)	value (Q)	value (Q)	value (Q)	value (Q)
Other		110/	000000	4000/			10	40						
Iron		UG/L	296000	100%		11	12	12						
Iron+Manganese		UG/L	352900	100%		12	12	12						
Manganese		UG/L	56900	100%		12	12	12						
Ethane		UG/L	98	88%		0	49	56	1	0.16	0.82	0.046	3.2	2.2
Ethene		UG/L	200	88%		0	49	56	13	0.4	2.9	0.028	2.7	1.8
Methane		UG/L	23000	95%		0	53	56	390	44	210	10	1100	610
Sulfate		MG/L	1060	70%		0	39	56	473	1060	600	541	570	912
Total Organic Carbon	n	MG/L	2050	100%		0	56	56	10.3	6.1	5.6	4.4	6.9	5.6

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

UJ= the compound was not detected; the associated reporting limit is approximate.
Facility Location ID Matrix								ASH LANDFILL MWT-27 GW					
Sample ID Sample Date								ALBW20067 1/3/2007	ALBW20082 3/16/2007	ALBW20097 6/5/2007	ALBW20096 6/5/2007	ALBW20112 11/15/2007	ALBW20127 6/24/2008
QC Code								SA	SA	DU	SA	SA	5/24/2000 SA
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	1	2	3	3	4	5
		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals 1	Exceedances	Detected	Analyzed	Value (Q)					
Volatile Organic Compounds	110/	0.70	00/	-	0		110	00.111	00.11	00.11	00.11	40.11	
1,1,1-1 richloroethane	UG/L	0.76	3%	5	0	4	118	20 UJ	20 U	20 U	20 U	10 U	4 U
1, 1, 2, 2-1 etrachioroethane	UG/L	0	0%	5	0	0	110	20 UJ 20 UJ	20 0	20 U	20 0	10 U	40
1 1 2-Trichloroethane		0	0%	1	0	0	118	20 03	20 0	20 00	20 00	10 U	40
1 1-Dichloroethane	UG/L	11	7%	5	0	8	118	20 00	20 0	20 0	20 0	10 U	4 11
1 1-Dichloroethene	UG/L	21	7%	5	õ	8	118	20 00	20 U	20 U	20 U	10 U	4 U
1.2.4-Trichlorobenzene	UG/L	0	0%	5	õ	Ő	118	20 UJ	20 U	20 U	20 U	10 U	4 U
1.2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
1.2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	20 UJ	20 U	20 U	20 U	10 U	4 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Acetone	UG/L	2600	29%		0	34	118	2000 J	1300	1300	1300	30 J	20 U
Benzene	UG/L	0	0%	1	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Carbon disulfide	UG/L	0	0%		0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Chlorodibromomethane	UG/L	0	0%	80 5	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	20 UJ	20 U	20 U	20 U	10 U	4 UJ
Chloroform	UG/L	27	5%	7	4	6	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	49 J	20 U	20 U	20 U	10 U	40
Cis-1,3-Dicnioropropene	UG/L	0	0%	0.4	0	0	118	20 UJ	20 0	20 0	20 U	10 U	40
Dichlorodifluoromothano	UG/L	0	0%	5	0	0	110	20 UJ 20 UJ	20 0	20 U	20 U	10 U	40
Ethyl bonzono		13	39/	5	0	4	110	20 00	20 0	20 0	20 0	10 U	40
Isopropylbenzene	UG/L	0	0%	5	0	4	118	20 03	20 0	20 0	20 0	10 U	40
Methyl Acetate	UG/L	6	2%	0	õ	2	118	20 00	20 0	20 U	20 U	10 U.I	4 U.I
Methyl Tertbutyl Ether	UG/L	õ	0%		õ	ō	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Methyl bromide	UG/L	0	0%	5	0	0	117	20 UJ	20 U	20 U	20 U	10 U	4 UJ
Methyl butyl ketone	UG/L	0	0%		0	0	118	100 UJ	100 U	100 U	100 U	50 UJ	20 UJ
Methyl chloride	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Methyl cyclohexane	UG/L	0	0%		0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	4100 J	2200	1700	1800	50 U	20 U
Methyl isobutyl ketone	UG/L	0	0%		0	0	118	100 UJ	100 U	100 U	100 U	50 U	20 U
Methylene chloride	UG/L	18	10%	5	7	12	118	18 J	20 U	13 J	J	10 U	4 U
Styrene	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Tetrachloroethene	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 U	20 U	10 U	4 U
Toluene	UG/L	590	19%	5	16	23	118	20 UJ	20 U	20 U	20 U	7.3 J	5.9
I otal Xylenes	UG/L	U	0%	5	0	0	118	60 UJ	60 U	60 U	60 U	30 U	12 U
	UG/L	8	42%	5	3	50	118	20 UJ	20 U	20.0	20 U	10 U	4 U
Trans-1,3-Dicnioropropene	UG/L	2700	0%	0.4 F	U 49	0	118	20 UJ	20 0	20 U	20 0	10 U	4 U 4 U
Trichlorofluoromothano	UG/L	2100	00%	э 5	40	00	110	20 UJ	20 0	20.0	20 0	10 0	4 U 4 U
Vinvl chloride	UG/L	180	66%	2	67	78	118	20 00	20 0	20 00	20 00	10 0	4 03
	00/2	100	0070	-	01	10	110	20 00	20 0	20 0	20 0	10 0	÷ 0

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Facility Location IE Matrix Sample Dat QC Code Study IE Sampling Round		Maximum	Frequency	Cleanun	Number	Number	Number of Samples	ASH LANDFILL MWT-27 GW ALBW20067 1/3/2007 SA LTM 1	ASH LANDFILL MWT-27 GW ALBW20082 3/16/2007 SA LTM 2	ASH LANDFILL MWT-27 GW ALBW20097 6/5/2007 DU LTM 3	ASH LANDFILL MWT-27 GW ALBW20096 6/5/2007 SA LTM 3	ASH LANDFILL MWT-27 GW ALBW20112 11/15/2007 SA LTM 4	ASH LANDFILL MWT-27 GW ALBW20127 6/24/2008 SA LTM 5
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other													
Iron	UG/L	296000	100%		11	12	12	296000 J	229000				
Iron+Manganese	UG/L	352900	100%		12	12	12	352900 J	273500				
Manganese	UG/L	56900	100%		12	12	12	56900	44500				
Ethane	UG/L	98	88%		0	49	56	10000 UJ	0.15	0.079	0.082	0.025 U	2.3
Ethene	UG/L	200	88%		0	49	56	10000 UJ	2.7	0.32	0.34	0.014 J	0.049
Methane	UG/L	23000	95%		0	53	56	10000 UJ	15000	13000	14000	13000	13000
Sulfate	MG/L	1060	70%		0	39	56	10 U	10 U	2.7	2 U	31.7	2 U
Total Organic Carbon	MG/L	2050	100%		0	56	56	2050 J	1350	771	738	167	88.9

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

#### Table B-1 Complete Groundwater Data for Ash Landfill Long Term Monitoring Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

Facility Location ID Matrix Sample ID Sample Date								ASH LANDFILL MWT-27 GW ALBW20143 12/15/2008	ASH LANDFILL MWT-27 GW ALBW20142 12/15/2008	ASH LANDFILL MWT-27 GW ALBW20157 6/3/2009	ASH LANDFILL MWT-27 GW ALBW20173 12/16/2009	ASH LANDFILL MWT-27 GW ALBW20172 12/16/2009	ASH LANDFILL MWT-28 GW ALBW20069 1/3/2007
QC Code								DU	SA	SA	DU	SA	DU
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	6	6	7	8	8	1
		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	2.6 UJ	2.6 UJ	2.6 U	1.3 U	1.3 U	20 UJ
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	2.1 UJ	2.1 UJ	2.1 U	1.1 U	1.1 U	20 UJ
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	3.1 UJ	3.1 UJ	3.1 U	1.5 U	1.5 U	20 UJ
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	2.3 UJ	2.3 UJ	2.3 U	1.2 U	1.2 U	20 UJ
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	7.5 U	7.5 U	7.5 U	1.9 U	1.9 U	20 UJ
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	2.9 U	2.9 U	2.9 U	1.5 U	1.5 U	20 UJ
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	4.1 UJ	4.1 UJ	4.1 U	2 U	2 U	20 UJ
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	10 UJ	10 UJ	10 UJ	2 U	2 U	20 UJ
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	1.7 UJ	1.7 UJ	1.7 U	0.83 U	0.83 U	20 UJ
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	2 U	2 U	2 U	1 U	1 U	20 UJ
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	2.1 U	2.1 U	2.1 U	1.1 U	1.1 U	20 UJ
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	1.4 U	1.4 U	1.4 U	1.6 U	1.6 U	20 UJ
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1.6 U	1.6 U	1.6 U	1.8 U	1.8 U	20 UJ
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1.6 U	1.6 U	1.6 U	2 U	2 U	20 UJ
Acetone	UG/L	2600	29%		0	34	118	13 UJ	26 J	13 U	6.7 U	6.7 U	2600 J
Benzene	UG/L	0	0%	1	0	0	118	1.6 U	1.6 U	1.6 U	2 U	2 U	20 UJ
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	3.8 U	3.8 U	3.9 U	1.9 U	1.9 U	20 UJ
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	2.6 UJ	2.6 UJ	2.6 UJ	1.3 U	1.3 U	20 UJ
Carbon disulfide	UG/L	0	0%		0	0	118	1.9 U	1.9 U	1.9 UJ	0.97 U	0.97 U	20 UJ
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	2.7 UJ	2.7 UJ	2.7 U	1.3 U	1.3 U	20 UJ
Chlorobenzene	UG/L	0	0%	5	0	0	118	1.8 U	1.8 U	3.2 U	1.6 U	1.6 U	20 UJ
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	3.2 U	3.2 U	3.2 U	1.6 U	1.6 U	20 UJ
Chloroethane	UG/L	1.1	6%	5	0	7	118	3.2 U	3.2 U	3.2 U	1.6 U	1.6 U	20 UJ
Chloroform	UG/L	27	5%	7	4	6	118	3.4 U	3.4 U	3.4 U	1.7 U	1.7 U	20 UJ
Cis-1.2-Dichloroethene	UG/L	720	81%	5	80	96	118	1.6 U	1.6 U	1.6 U	1.9 U	1.9 U	20 UJ
Cis-1.3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	3.6 U	3.6 U	3.6 U	1.8 U	1.8 U	20 UJ
Cvclohexane	UG/L	0	0%		0	0	118	2.2 UJ	2.2 UJ	5.3 U	2.7 U	2.7 U	20 UJ
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	2.8 U	2.8 U	2.9 U	1.4 U	1.4 U	20 UJ
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	1.8 U	1.8 U	1.8 U	0.92 U	0.92 U	20 UJ
Isopropylbenzene	UG/L	0	0%	5	0	0	118	1.9 U	1.9 U	1.9 U	0.96 U	0.96 U	20 UJ
Methyl Acetate	UG/L	6	2%		0	2	118	1.7 UJ	1.7 UJ	1.7 UJ	2.5 U	2.5 U	20 UJ
Methyl Tertbutyl Ether	UG/L	0	0%		0	0	118	1.6 UJ	1.6 UJ	1.6 U	0.8 U	0.8 U	20 UJ
Methyl bromide	UG/L	0	0%	5	0	0	117	2.8 U	2.8 U	2.8 U	1.4 U	1.4 U	20 UJ
Methyl butyl ketone	UG/L	0	0%		0	0	118	12 U	12 U	12 U	6.2 U	6.2 U	100 UJ
Methyl chloride	UG/L	0	0%	5	0	0	118	3.4 U	3.4 U	3.5 U	1.7 U	1.7 U	20 UJ
Methyl cyclohexane	UG/L	0	0%		0	0	118	2.2 UJ	2.2 UJ	5 U	2.5 U	2.5 U	20 UJ
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	13 UJ	13 UJ	13 U	6.6 U	6.6 U	4900 J
Methyl isobutyl ketone	UG/L	0	0%		0	0	118	9.1 UJ	9.1 UJ	9.1 U	4.5 U	4.5 U	100 UJ
Methylene chloride	UG/L	18	10%	5	7	12	118	4.4 UJ	4.4 UJ	4.4 U	2.2 U	2.2 U	14 J
Styrene	UG/L	0	0%	5	0	0	118	1.8 U	1.8 U	1.8 U	0.92 U	0.92 U	20 UJ
Tetrachloroethene	UG/L	0	0%	5	0	0	118	3.6 U	<u>3.6</u> U	3.6 U	1.8 U	1.8 U	<u>20</u> UJ
Toluene	UG/L	590	19%	5	16	23	118	7.2 J	6.9 J	5.1 U	2.6 U	2.6 U	350 J
Total Xylenes	UG/L	0	0%	5	0	0	118	9.3 U	9.3 U	6.6 U	3.3 U	3.3 U	60 UJ
Trans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	1.3 U	1.3 U	1.3 U	2.1 U	2.1 U	20 UJ
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	3.7 U	3.7 U	3.7 U	1.8 U	1.8 U	20 UJ
Trichloroethene	UG/L	2700	68%	5	48	80	118	1.8 U	1.8 U	1.8 U	2.3 U	2.3 U	20 UJ
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	1.5 UJ	1.5 UJ	1.5 U	0.76 U	0.76 U	20 UJ
Vinyl chloride	UG/L	180	66%	2	67	78	118	2.4 U	2.4 U	2.4 U	2.9 J	3.2 J	20 UJ

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	Facility Location ID Matrix Sample ID Sample Date QC Code Study ID								ASH LANDFILL MWT-27 GW ALBW20143 12/15/2008 DU LTM	ASH LANDFILL MWT-27 GW ALBW20142 12/15/2008 SA LTM	ASH LANDFILL MWT-27 GW ALBW20157 6/3/2009 SA LTM	ASH LANDFILL MWT-27 GW ALBW20173 12/16/2009 DU LTM	ASH LANDFILL MWT-27 GW ALBW20172 12/16/2009 SA LTM	ASH LANDFILL MWT-28 GW ALBW20069 1/3/2007 DU LTM
5	Sampling Round		Maximum	Frequency	Cleanup	Number of	Number of Times	Number of Samples	6	6	7	8	8	1
Parameter		Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other														
Iron		UG/L	296000	100%		11	12	12						271000 J
Iron+Manganese		UG/L	352900	100%		12	12	12						301800 J
Manganese		UG/L	56900	100%		12	12	12						30800
Ethane		UG/L	98	88%		0	49	56	1.6	1.6	5.1	4.3	4.4	10000 UJ
Ethene		UG/L	200	88%		0	49	56	0.12	0.13	0.15	1.1	1.2	10000 UJ
Methane		UG/L	23000	95%		0	53	56	15000	15000	14000	16000	15000	13000 J
Sulfate		MG/L	1060	70%		0	39	56	23.8	24.2	0.93 J	14 J	13.9 J	2.3
Total Organic Carbon		MG/L	2050	100%		0	56	56	53.1	53.8	81.7	50.9	49	1730 J

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID								ASH LANDFILL MWT-28	ASH LANDFILL MWT-28	ASH LANDFILL MWT-28	ASH LANDFILL MWT-28	ASH LANDFILL MWT-28	ASH LANDFILL MWT-28
Sample ID Sample Date								ALBW20068 1/3/2007	ALBW20083 3/16/2007	ALBW20098 6/5/2007	ALBW20113 11/15/2007	ALBW20128 6/25/2008	ALBW20144 12/15/2008
QC Code								SA	SA	SA	SA	5/20/2000 SA	SA
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	1	2	3	4	5	6
		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals '	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds	110/	0.70	00/	~	0		110	00.111	00.11	00.11	<b>5</b> 11		0.0.11
1,1,1-1 richloroethane	UG/L	0.76	3%	5	0	4	118	20 UJ	20 U	20 0	50	40	2.6 U
1 1 2-Trichloro-1 2 2-Trifluoroethane	UG/L	0	0%	5	0	0	118	20 00	20 0	20 0	50	40	2.1 0
1 1 2-Trichloroethane	UG/L	0	0%	1	0	0	118	20 00	20 U	20 03	5 U	4 U	231
1.1-Dichloroethane	UG/L	1.1	7%	5	õ	8	118	20 UJ	20 U	20 U	5 U	4 U	7.5 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	20 UJ	20 U	20 U	5 U	4 U	2.9 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 U	5 U	4 U	4.1 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	20 UJ	20 U	20 U	5 U	4 U	10 UJ
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	20 UJ	20 U	20 U	5 U	4 U	1.7 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	20 UJ	20 U	20 U	5 U	4 U	2 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	20 UJ	20 U	20 U	5 U	4 U	2.1 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	20 UJ	20 U	20 U	5 U	4 U	1.4 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	20 UJ	20 U	20 U	5 U	4 U	1.6 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	20 UJ	20 U	20 U	5 U	4 U	1.6 U
Acetone	UG/L	2600	29%	4	0	34	118	2500 J	170	520	25 U	20 U	13 U
Benzene	UG/L	0	0%	1 oo b	0	0	118	20 UJ	20 0	20 0	50	40	1.6 U
Bromodichloromethane	UG/L	0	0%	80 -	0	0	118	20 UJ	20 U	20 0	50	40	3.8 U
Bromotorm	UG/L	0	0%	80 -	0	0	118	20 UJ	20 U	20 U	5 U	4 U	2.6 U
Carbon disulfide	UG/L	0	0%	~	0	0	118	20 UJ	20 U	20 U	50	40	1.9 U
Carbon tetrachioride	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 0	50	40	2.7 U
Chlorodihrememethene		0	0%	00 <sup>b</sup>	0	0	110	20 UJ	20 0	20 0	50	40	1.0 U
Chloroothano	UG/L	1 1	0%	5	0	0	110	20 UJ 20 UJ	20 U	20 0	5 U	40	3.2 0
Chloroform		27	5%	7	4	6	118	20 00	20 0	20 0	50	4 03	3.2 0
Cis-1 2-Dichloroethene	UG/L	720	81%	5	80	96	118	20 00	20 U	20 U	5 U	4 U	1.4 U
Cis-1.3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	20 UJ	20 U	20 U	5 U	4 U	3.6 U
Cvclohexane	UG/L	0	0%		0	0	118	20 UJ	20 U	20 U	5 U	4 U	2.2 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 U	5 U	4 U	2.8 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	20 UJ	20 U	20 U	5 U	4 U	1.8 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 U	5 U	4 U	1.9 U
Methyl Acetate	UG/L	6	2%		0	2	118	20 UJ	20 UJ	20 U	5 UJ	4 UJ	1.7 U
Methyl Tertbutyl Ether	UG/L	0	0%		0	0	118	20 UJ	20 U	20 U	5 U	4 U	1.6 U
Methyl bromide	UG/L	0	0%	5	0	0	117	20 UJ	20 U	20 U	5 U	4 UJ	2.8 U
Methyl butyl ketone	UG/L	0	0%	_	0	0	118	100 UJ	100 U	100 U	25 UJ	20 UJ	12 U
Methyl chloride	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 U	5 U	4 U	3.4 U
Methyl cyclonexane	UG/L	0	0%		0	0	118	20 UJ	20 0	20 0	5 U	40	2.2 U
Methyl iechutyl ketone	UG/L	4900	18%		0	21	118	4900 J	180	510	25 U 25 U	20 U	13 U
Methylopo chlorido		19	10%	5	7	12	110	12	20 11	0.3	23 0	20 0	9.1 0
Styrene	UG/L	0	0%	5	0	0	118	20 111	20 0	20 11	50	40	4.4 05
Tetrachloroethene	UG/L	0	0%	5	õ	Ő	118	20 00	20 U	20 U	5.0	4 U	36U
Toluene	UG/L	590	19%	5	16	23	118	330 J	160	500	210	53	5.1 U
Total Xylenes	UG/L	0	0%	5	0	0	118	60 UJ	60 U	60 U	 15 U	12 U	9.3 U
Trans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	20 UJ	20 U	20 U	5 U	4 U	1.3 U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	20 UJ	20 U	20 U	5 U	4 U	3.7 U
Trichloroethene	UG/L	2700	68%	5	48	80	118	20 UJ	20 U	20 U	5 U	4 U	1.8 U
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	20 UJ	20 U	20 UJ	5 U	4 UJ	1.5 U
Vinvl chloride	UG/L	180	66%	2	67	78	118	20 UJ	20 U	20 U	5 U	4 U	2.4 U

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Faci Location Ma Sample D QC Cc Study Sampling Rou Sampling Rou	ility ID trix ID ate ode ID und		Frequency		Number	Number	Number	ASH LANDFILL MWT-28 GW ALBW20068 1/3/2007 SA LTM 1	ASH LANDFILL MWT-28 GW ALBW20083 3/16/2007 SA LTM 2	ASH LANDFILL MWT-28 GW ALBW20098 6/5/2007 SA LTM 3	ASH LANDFILL MWT-28 GW ALBW20113 11/15/2007 SA LTM 4	ASH LANDFILL MWT-28 GW ALBW20128 6/25/2008 SA LTM 5	ASH LANDFILL MWT-28 GW ALBW20144 12/15/2008 SA LTM 6
Sampling Kot	Ind	Maximum	of	Cleanup	of	of Times	of Samples	I	2	3	4	5	0
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other													
Iron	UG/L	296000	100%		11	12	12	278000 J	33000				
Iron+Manganese	UG/L	352900	100%		12	12	12	309800 J	37450				
Manganese	UG/L	56900	100%		12	12	12	31800	4450				
Ethane	UG/L	98	88%		0	49	56	10000 UJ	0.67	0.01 J	0.014 J	0.65	2
Ethene	UG/L	200	88%		0	49	56	10000 UJ	0.48	0.057	0.025 U	0.044	0.12
Methane	UG/L	23000	95%		0	53	56	12000 J	19000	11000	11000	12000	19000
Sulfate	MG/L	1060	70%		0	39	56	2 U	2 U	2 U	2 U	2 U	48.3
Total Organic Carbon	MG/L	2050	100%		0	56	56	1820 J	171	309	92	49.2	27.9

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID Matrix Sample ID Sample Date OC Code								ASH LANDFILL MWT-28 GW ALBW20159 6/3/2009	ASH LANDFILL MWT-28 GW ALBW20158 6/3/2009 SA	ASH LANDFILL MWT-28 GW ALBW20174 12/18/2009 SA	ASH LANDFILL MWT-29 GW ALBW20070 1/3/2007 SA	ASH LANDFILL MWT-29 GW ALBW20085 3/16/2007	ASH LANDFILL MWT-29 GW ALBW20084 3/16/2007 SA
Study ID								I TM	I TM	I TM	I TM	I TM	I TM
Sampling Round			Frequency		Number	Number	Number	7	7		1	2	2
g		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	0.26 U	0.26 U	1.3 U	2 U	4 U	5 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	0.21 U	0.21 U	1.1 U	2 U	4 U	5 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	0.31 U	0.31 U	1.5 UJ	2 U	4 U	5 U
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	0.23 U	0.23 U	1.2 U	2 U	4 U	5 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	0.75 U	0.75 U	1.9 U	2 U	4 U	5 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	0.29 U	0.29 U	1.5 U	2 U	4 U	5 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	0.41 U	0.41 U	2 U	2 U	4 U	5 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	1 UJ	1 UJ	2 U	2 U	4 U	5 U
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	0.17 U	0.17 U	0.83 U	2 U	4 U	5 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.2 U	0.2 U	1 U	2 U	4 U	5 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	0.21 U	0.21 U	1.1 U	2 U	4 U	5 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	0.14 U	0.14 U	1.6 U	2 U	4 U	5 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.16 U	0.16 U	1.8 U	2 U	4 U	5 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.16 U	0.16 U	2 U	2 U	4 U	5 U
Acetone	UG/L	2600	29%		0	34	118	1.9 J	1.9 J	6.7 U	10 U	14 J	15 J
Benzene	UG/L	0	0%	1	0	0	118	0.16 U	0.16 U	2 U	2 U	4 U	5 U
Bromodichloromethane	UG/L	0	0%	80 <sup>°</sup>	0	0	118	0.39 U	0.39 U	1.9 U	2 U	4 U	5 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.26 UJ	0.26 UJ	1.3 U	2 U	4 U	5 U
Carbon disulfide	UG/L	0	0%		0	0	118	0.19 UJ	0.19 UJ	0.97 U	2 U	4 U	5 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	0.27 U	0.27 U	1.3 U	2 U	4 U	5 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	0.32 U	0.32 U	1.6 U	2 U	4 U	5 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.32 U	0.32 U	1.6 U	2 U	4 U	5 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	0.32 U	0.32 U	1.6 UJ	2 U	4 U	5 U
Chloroform	UG/L	27	5%	7	4	6	118	0.34 U	0.34 U	1.7 U	<u> </u>	<u>4</u> U	<u> </u>
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	0.16 U	0.16 U	1.9 U	280	220	220
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	0.36 U	0.36 U	1.8 U	2 U	4 U	5 U
Cyclohexane	UG/L	0	0%		0	0	118	0.53 U	0.53 U	2.7 U	2 U	4 U	5 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	0.29 U	0.29 U	1.4 U	2 U	4 U	5 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	0.18 U	0.18 U	0.92 U	2 U	4 U	5 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	0.19 U	0.19 U	0.96 U	2 U	4 U	5 U
Methyl Acetate	UG/L	6	2%		0	2	118	0.17 UJ	0.17 UJ	2.5 U	2 U	4 UJ	5 UJ
Methyl Tertbutyl Ether	UG/L	0	0%		0	0	118	0.16 U	0.16 U	0.8 U	2 U	4 U	5 U
Methyl bromide	UG/L	0	0%	5	0	0	117	0.28 U	0.28 U	1.4 UJ	2 U	4 U	5 U
Methyl butyl ketone	UG/L	0	0%		0	0	118	1.2 U	1.2 U	6.2 U	10 U	20 U	25 U
Methyl chloride	UG/L	0	0%	5	0	0	118	0.35 U	0.35 U	1.7 U	2 U	4 U	5 U
Methyl cyclohexane	UG/L	0	0%		0	0	118	0.5 U	0.5 U	2.5 U	20	4 U	5 U
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	1.3 U	1.3 U	6.6 U	10 U	20 U	25 U
Methyl isobutyl ketone	UG/L	0	0%	-	0	0	118	0.91 U	0.91 U	4.5 U	10 U	20 0	25 U
Methylene chloride	UG/L	18	10%	5	/	12	118	0.44 U	0.44 U	2.2 U	20	40	2.5 J
Styrene	UG/L	0	0%	5	0	0	118	0.18 U	0.18 U	0.92 0	20	40	50
Tetrachioroethene	UG/L	500	0%	5	0	0	118	0.36 0	0.36 U	1.8 U	20	40	50
Total Vulance	UG/L	590	19%	5	10	23	110	0.0 J	0.57 J	2.6 U	2.0	2.2 J	50
Trans 1.2 Disbloresthere	UG/L	U	U%	5	0	0	118	U.66 U	0.66 U	3.3 U	60	12 0	15 U
		0	4∠% 0%	5	3	50	110	0.13 U	0.13 U	2.1 U	0.5	8	1.5
Trichloroothono	UG/L	2700	0%	0.4	19	90	110	0.37 U	0.37 U	1.0 U	20	4 0	5 U
Trichlorofluoromothano		2700	00%	ວ 5	40	00	110	0.16 U	0.16 U	2.3 U	24	19	5
Vinyl chloride	UG/L	180	66%	2	67	78	118	0.15 U 0.24 U	0.13 U 0.24 U	1.2 U	140	170	160

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Facil Location Mat Sample Sample Da QC Co Study Sampling Rou	ity ID ID ID de ID nd		Frequency		Number	Number	Number	ASH LANDFILL MWT-28 GW ALBW20159 6/3/2009 DU LTM 7	ASH LANDFILL MWT-28 GW ALBW20158 6/3/2009 SA LTM 7	ASH LANDFILL MWT-28 GW ALBW20174 12/18/2009 SA LTM 8	ASH LANDFILL MWT-29 GW ALBW20070 1/3/2007 SA LTM 1	ASH LANDFILL MWT-29 GW ALBW20085 3/16/2007 DU LTM 2	ASH LANDFILL MWT-29 GW ALBW20084 3/16/2007 SA LTM 2
Parameter	Unito	Maximum	of	Cleanup	of Exceedences	of Times	of Samples	Value (O)	Value (O)				Value (O)
Paralleler	Units	Value	Detection	Goals	Exceedances	Delected	Analyzeu	Value (Q)	value (Q)	value (Q)	value (Q)	Value (Q)	value (Q)
Other	110/	000000	1000/			10	40				1070	2550	2450
Iron	UG/L	296000	100%		11	12	12				1370 J	2550	2470
Iron+Manganese	UG/L	352900	100%		12	12	12				8620 J	9050	8750
Manganese	UG/L	56900	100%		12	12	12				7250	6500	6280
Ethane	UG/L	98	88%		0	49	56	1.7	1.9	1.6	2000 U	25	20
Ethene	UG/L	200	88%		0	49	56	0.066	0.062	0.12	2000 U	150	120
Methane	UG/L	23000	95%		0	53	56	12000	14000	15000	2000 U	8100	6500
Sulfate	MG/L	1060	70%		0	39	56	0.35 U	0.35 U	3.16	113	173	179
Total Organic Carbon	MG/L	2050	100%		0	56	56	27.6	28.7	25.5	25.1 J	36.7	35

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID Matrix Sample ID Sample Date QC Code								ASH LANDFILL MWT-29 GW ALBW20099 6/5/2007 SA	ASH LANDFILL MWT-29 GW ALBW20114 11/14/2007 SA	ASH LANDFILL MWT-29 GW ALBW20130 6/25/2008 DU	ASH LANDFILL MWT-29 GW ALBW20129 6/25/2008 SA	ASH LANDFILL MWT-29 GW ALBW20145 12/15/2008 SA	ASH LANDFILL MWT-29 GW ALBW20160 6/3/2009 SA
Study ID			<b>F</b>		Normalian	Manual an	N.	LIM	LIM	LIM	LIM	LIM	LIM
Sampling Round		Maximum	Frequency	Cloanun	Number	of Times	of Samples	3	4	5	5	6	/
Parameter	Units	Value	Detection	Goals 1	Exceedances	Detected	Analvzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds										( )		( )	
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	2 U	1 U	1 U	1 U	0.26 UJ	0.26 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	2 U	1 U	1 U	1 U	0.21 UJ	0.21 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	2 UJ	1 U	1 U	1 U	0.31 UJ	0.31 U
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	2 U	1 U	1 U	1 U	0.23 UJ	0.23 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	2 U	1 U	1 U	1 U	0.75 U	0.75 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	2 U	1 U	1 U	1 U	0.29 U	0.29 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	2 U	1 U	1 U	1 U	0.41 UJ	0.41 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	2 U	1 U	1 U	1 U	1 UJ	1 UJ
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	2 U	1 U	1 U	1 U	0.17 UJ	0.17 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	2 U	1 U	1 U	1 U	0.2 U	0.2 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	2 U	1 U	1 U	1 U	0.21 U	0.21 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	2 U	1 U	1 U	1 U	0.14 U	0.14 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	2 U	1 U	1 U	1 U	0.16 U	0.16 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	2 U	1 U	1 U	1 U	0.16 U	0.16 U
Acetone	UG/L	2600	29%		0	34	118	5.7 J	5 U	5 U	5 U	1.3 UJ	1.3 U
Benzene	UG/L	0	0%	1	0	0	118	2 U	1 U	1 U	1 U	0.16 U	0.16 U
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	2 U	1 U	1 U	1 U	0.38 U	0.39 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	2 U	1 U	1 U	1 U	0.26 UJ	0.26 UJ
Carbon disulfide	UG/L	0	0%		0	0	118	2 U	1 U	1 U	1 U	0.19 U	0.19 UJ
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	2 U	1 U	1 U	1 U	0.27 UJ	0.27 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	2 U	1 U	1 U	1 U	0.18 U	0.32 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	2 U	1 U	1 U	1 U	0.32 U	0.32 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	2 U	1 U	1 UJ	1 UJ	0.32 U	0.32 U
Chloroform	UG/L	27	5%	7	4	6	118	2 U	. 1 U	. 1 U	1 U	0.34 U	0.34 U
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	100	96	85	83	91	61
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	2 U	1 U	1 U	1 U	0.36 U	0.36 U
Cyclohexane	UG/L	0	0%		0	0	118	2 U	1 U	1 U	1 U	0.22 UJ	0.53 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	2 U	1 U	1 U	1 U	0.28 U	0.29 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	2 U	1 U	1 U	1 U	0.18 U	0.18 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	2 U	1 U	1 U	1 U	0.19 U	0.19 U
Methyl Acetate	UG/L	6	2%		0	2	118	2 U	1 UJ	1 UJ	1 UJ	0.17 UJ	0.17 UJ
Methyl Tertbutyl Ether	UG/L	0	0%		0	0	118	2 U	1 U	1 U	1 U	0.16 UJ	0.16 U
Methyl bromide	UG/L	0	0%	5	0	0	117	2 U	1 U	1 UJ	1 UJ	0.28 U	0.28 U
Methyl butyl ketone	UG/L	0	0%		0	0	118	10 U	5 UJ	5 UJ	5 UJ	1.2 U	1.2 U
Methyl chloride	UG/L	0	0%	5	0	0	118	2 U	1 U	1 U	1 U	0.34 U	0.35 U
Methyl cyclohexane	UG/L	0	0%		0	0	118	2 U	1 U	1 U	1 U	0.22 UJ	0.5 U
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	10 U	5 U	5 U	5 U	1.3 UJ	1.3 U
Methyl isobutyl ketone	UG/L	0	0%		0	0	118	10 U	5 U	5 U	5 U	0.91 UJ	0.91 U
Methylene chloride	UG/L	18	10%	5	7	12	118	2 U	1 U	1 U	1 U	0.44 UJ	0.44 U
Styrene	UG/L	0	0%	5	0	0	118	2 U	1 U	1 U	1 U	0.18 U	0.18 U
Tetrachloroethene	UG/L	0	0%	5	0	0	118	2 U	10	1 U	1 U	0.36 U	0.36 U
loluene	UG/L	590	19%	5	16	23	118	2 U	2.1	10	10	0.51 U	0.51 U
I otal Xylenes	UG/L	0	0%	5	0	0	118	6 U	3 U	3 U	3 U	0.93 U	0.66 U
I rans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	2.1	0.83 J	0.68 J	0.62 J	0.6 J	0.67 J
I rans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	20	10	10	10	0.37 U	0.37 U
I richloroethene	UG/L	2700	68%	5	48	80	118	7.6	4.4	3.3	3.2	6.6	4.5
I richlorotluoromethane	UG/L	0	0%	5	0	0	118	2 UJ	10	1 UJ	1 UJ	0.15 UJ	0.15 U
vinyi chloride	UG/L	180	66%	2	67	78	118	81	74	74	73	80	43

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Faci Location Ma Sample Sample D QC CC Study Sampling Rou Sampling Rou	lity ID trix ID ate ode ID und		Frequency		Number	Number	Number	ASH LANDFILL MWT-29 GW ALBW20099 6/5/2007 SA LTM 3	ASH LANDFILL MWT-29 GW ALBW20114 11/14/2007 SA LTM 4	ASH LANDFILL MWT-29 GW ALBW20130 6/25/2008 DU LTM 5	ASH LANDFILL MWT-29 GW ALBW20129 6/25/2008 SA LTM 5	ASH LANDFILL MWT-29 GW ALBW20145 12/15/2008 SA LTM 6	ASH LANDFILL MWT-29 GW ALBW20160 6/3/2009 SA LTM 7
		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals '	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other													
Iron	UG/L	296000	100%		11	12	12						
Iron+Manganese	UG/L	352900	100%		12	12	12						
Manganese	UG/L	56900	100%		12	12	12						
Ethane	UG/L	98	88%		0	49	56	13	19	14	15	14	10
Ethene	UG/L	200	88%		0	49	56	160	200	140	140	19	47
Methane	UG/L	23000	95%		0	53	56	2800	2600	3000	3200	2700	3000
Sulfate	MG/L	1060	70%		0	39	56	151	289	174	173	312	300
Total Organic Carbon	MG/L	2050	100%		0	56	56	15.7	20.9	14	14.2	13.6	11.8

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID Matrix Sample ID Sample Date QC Code								ASH LANDFILL MWT-29 GW ALBW20175 12/16/2009 SA	ASH LANDFILL MWT-22 GW ALBW20071 1/4/2007 SA	ASH LANDFILL MWT-22 GW ALBW20075 3/17/2007 SA	ASH LANDFILL MWT-22 GW ALBW20100 6/6/2007 SA	ASH LANDFILL MWT-22 GW ALBW20115 11/14/2007 SA	ASH LANDFILL MWT-22 GW ALBW20121 6/25/2008 SA
Sampling Round			Frequency		Number	Number	Number	21101	L I IVI 1	2	2	L I M 4	L I MI
Camping Round		Maximum	of	Cleanup	of	of Times	of Samples	0		2	5	-	5
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds								· • • • • • (4)					
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	0.26 U	2 U	4 U	1 U	1 U	5 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	0.21 U	2 U	4 U	1 U	1 U	5 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	0.31 U	2 U	4 U	1 UJ	1 U	5 UJ
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	0.23 U	2 U	4 U	1 U	1 U	5 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	0.38 U	2 U	4 U	1 U	1 U	5 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	0.29 U	2 U	4 U	1 U	1 U	5 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	0.41 U	2 U	4 U	1 U	1 U	5 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	0.39 U	2 U	4 U	1 U	1 U	5 UJ
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	0.17 U	2 U	4 U	1 U	1 U	5 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.2 U	2 U	4 U	1 U	1 U	5 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	0.21 U	2 U	4 U	1 U	1 U	5 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	0.32 U	2 U	4 U	1 U	1 U	5 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.36 U	2 U	4 U	1 U	1 U	5 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.39 U	2 U	4 U	1 U	1 U	5 U
Acetone	UG/L	2600	29%		0	34	118	1.3 U	10 U	18 J	38	5 U	25 U
Benzene	UG/L	0	0%	1	0	0	118	0.41 U	2 U	4 U	1 U	1 U	5 U
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.39 U	2 U	4 U	1 U	1 U	5 U
Bromoform	UG/I	0	0%	80 <sup>b</sup>	0	0	118	0.26 []	211	4 []	1 U	1 U	5.0
Carbon disulfide	UG/L	Ő	0%		0 0	Ő	118	0.19 U	211	4 11	1.0	1.0	50
Carbon tetrachloride	UG/L	Ő	0%	5	0	Ő	118	0.27 U	211	4 U	1.0	1.0	5.0
Chlorobenzene	UG/L	0	0%	5	0	0	118	0.32 U	211	4 U	1 U	1 U	5.0
Chlorodibromomothano		0	0%	80 p	0	0	119	0.32 11	2 11	4.11	1.1	1.1	511
Chloroethane		11	6%	5	0	7	118	0.32 U	2 0	40	10	10	5 11
Chloroform		27	5%	7	4	6	110	0.32 0	2 00	40	1 11	1 11	5 00
Cis-1 2-Dichloroethene		720	81%	5	80	96	118	37	130	90	120	00	68
Cis-1 3-Dichloropropopo		120	01%	0.4	0	90	110	0.36 11	211	30	120	111	5.11
Cycloboxopo		0	0%	0.4	0	0	110	0.50 0	2.0	40	1.1	1.1	50
Dichlorodifluoromothano		0	0%	5	0	0	110	0.00 U	20	40	10	10	50
Ethyl bonzono		1.2	20/	5	0	4	110	0.29 0	2.0	40	1.1	1.1	50
	UG/L	1.3	3%	5	0	4	110	0.18 0	20	40	10	10	50
Mothyl Apototo		0	0%	5	0	0	110	0.19 0	20	4 0	10	1 111	50
Methyl Torthutul Ethor		0	270		0	2	110	0.5 0	20	4 UJ	10	1 00	5 UJ
Methyl bromide		0	0%	F	0	0	110	0.10 0	20	40	10	10	50
Methyl butyl ketene		0	0%	5	0	0	110	0.20 0	20	40	5.0	5.00	3 UJ
Methyl obleride		0	0%	F	0	0	110	0.25 11	10 0	20 0	50	5 05	23 UJ
Methyl cycloboxopo	UG/L	0	0%	Э	0	0	110	0.35 U	20	40	10	10	5 UJ
Method atbod keters	UG/L	4000	0%		0	0	110	0.5 0	20	40	10	10	30
Methyl iachutyl ketono	UG/L	4900	18%		0	21	110	1.3 U	6 J	20 0	50	50	25 UJ
Methylana ablarida	UG/L	10	0%	-	0	10	110	0.91 0	10 0	20 0	30	30	23 UJ
Nietnylene chloride	UG/L	18	10%	5	1	12	110	0.44 U	1.2 J	40	10	10	50
Stylelle	UG/L	0	0%	5	0	0	110	0.16 U	20	40	10	10	50
Teluere	UG/L	500	0%	5	0	0	118	0.36 U	20	40	10	10	50
	UG/L	590	19%	5	ai o	23	110	U.SI U	20	4 0			5 U
Tropo 1.2 Dioblorocthere	UG/L	U	0%	5	U	0	118	U.66 U	6 U	12 U	30	30	15 U
	UG/L	ō	42%	5	3	50	110		2.7	40	3.2	L 60.0	5 U
Trans-1,3-Dicnioropropene	UG/L	0	0%	0.4 F	0	0	118	0.37 U	20	40	10	10	50
Trichlorofluoromothono	UG/L	2700	68%	5	48	80	118	3.5	5.2	3.8 J	0.5	2.0	3 J
	UG/L	0	0%	5	0	0	118	0.15 U	20	40	1 UJ	10	5 UJ
viriyi chionde	UG/L	160	00%	2	07	/0	110	29	98	04	16	190	42

	Facility								ASH LANDFILL	ASH LANDFILL	ASH LANDFILL	ASH LANDFILL	ASH LANDFILL	ASH LANDFILL
	Location ID								MWT-29	MWT-22	MWT-22	MWT-22	MWT-22	MWT-22
	Matrix								GW	GW	GW	GW	GW	GW
	Sample ID								ALBW20175	ALBW20071	ALBW20075	ALBW20100	ALBW20115	ALBW20121
	Sample Date								12/16/2009	1/4/2007	3/17/2007	6/6/2007	11/14/2007	6/25/2008
	QC Code								SA	SA	SA	SA	SA	SA
	Study ID								LTM	LTM	LTM	LTM	LTM	LTM
	Sampling Round			Frequency		Number	Number	Number	8	1	2	3	4	5
			Maximum	of	Cleanup	of	of Times	of Samples						
Demonster				<b>B</b> ( )	<b>a</b> 1		<b>.</b>							$\lambda = 1 + 1 + 1 = 1$
Parameter		Units	value	Detection	Goals	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	value (Q)
Other		Units	Value	Detection	Goals	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	value (Q)
Other Iron		Units UG/L	296000	100%	Goals	11	12	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	value (Q)
Other Iron Iron+Manganese		Units UG/L UG/L	296000 352900	100%	Goals	11 12	12 12	12 12	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other Iron Iron+Manganese Manganese		UG/L UG/L UG/L UG/L	296000 352900 56900	100% 100% 100%	Goals	11 12 12	12 12 12 12	12 12 12 12	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other Iron Iron+Manganese Manganese Ethane		Units UG/L UG/L UG/L UG/L	296000 352900 56900 98	100% 100% 100% 88%	Goals	11 12 12 0	12 12 12 12 49	12 12 12 12 56	6.7	Value (Q)				
Parameter Other Iron Iron+Manganese Manganese Ethane Ethene		Units UG/L UG/L UG/L UG/L UG/L	Value 296000 352900 56900 98 200	Detection   100%   100%   88%   88%	Goals	11 12 12 0 0	12 12 12 12 49 49	12 12 12 12 56 56	6.7 12	Value (Q)				
Parameter Other Iron Iron+Manganese Manganese Ethane Ethene Methane		Units UG/L UG/L UG/L UG/L UG/L UG/L	296000 352900 56900 98 200 23000	100% 100% 100% 88% 88% 95%	Goals	11 12 12 0 0 0	12 12 12 12 49 49 53	Analyzed 12 12 12 56 56 56	6.7 12 1500	Value (Q)				

8.2

Notes:

Total Organic Carbon

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

2050

100%

0

56

56

MG/L

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID Matrix Sample ID Sample Date QC Code								ASH LANDFILL MWT-22 GW ALBW20136 12/15/2008 SA	ASH LANDFILL MWT-22 GW ALBW20151 6/3/2009 SA	ASH LANDFILL MWT-22 GW ALBW20166 12/16/2009 SA	ASH LANDFILL PT-22 GW ALBW20060 1/3/2007 SA	ASH LANDFILL PT-22 GW ALBW20086 3/15/2007 SA	ASH LANDFILL PT-22 GW ALBW20089 6/5/2007 SA
Study ID			-					LTM	LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency	0	Number	Number	Number	6	7	8	1	2	3
Paramotor	Unite	Valuo	Dotoction	Goals 1	UI Excoodancos	Dotoctod	Analyzod	$\lambda = 0$	$\lambda = 0$	$\lambda = (0)$	$\lambda = 0$	$\lambda = 0$	$\lambda = 0$
Volatile Organic Compounds	Units	value	Detection	Guais	LACEEUAIICES	Delected	Analyzeu	value (Q)	value (Q)	value (Q)	Value (Q)	Value (Q)	value (Q)
1 1 1-Trichloroethane	UG/I	0.76	3%	5	0	4	118	13 UJ	0.26 U	13.U	1 U	1 U	1.U
1.1.2.2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	1 UJ	0.21 U	1.1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	1.6 UJ	0.31 U	1.5 U	1 Ū	1 U	1 U
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	1.2 UJ	0.23 U	1.2 U	1 U	1 U	1 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	3.8 U	0.75 U	1.9 U	1 U	1 U	1 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	1.4 U	0.29 U	1.5 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	2 UJ	0.41 U	2 U	1 U	1 U	1 UJ
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	5 UJ	1 UJ	2 U	1 U	1 U	1 U
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	0.85 UJ	0.17 U	0.83 U	1 U	1 U	1 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	0.2 U	10	10	10	1 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	10	0.21 U	1.1 U	3.3	2.4	5.6
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	0.7 U	0.14 U	1.6 U	10	10	10
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.8 0	0.16 U	1.8 U	10	10	10
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	110	0.8 0	0.16 0	20	10		
Bonzono	UG/L	2600	29%	1	0	34	110	0.5 UJ	2.5 J	0.7 U	50	50	3.8 J
Bromodiobloromothono		0	0%	00 b	0	0	110	1011	0.10 0	1011	1 1	1.1	1.0
Bromotorm	UG/L	0	0%	00 b	0	0	110	1.9 0	0.39 0	1.9 0	10	10	10
Bromotorm Carbon digulfida	UG/L	0	0%	80	0	0	118	1.3 UJ	0.26 UJ	1.3 U	10	10	10
Carbon totrachlorido	UG/L	0	0%	5	0	0	110	1 4 1 1	0.19 00	1.2 1	10	10	10
Chlorobenzene	UG/L	0	0%	5	0	0	118	0.4 05	0.27 0	1.5 0	10	1 1	1
Chlorodibromomethane		Ő	0%	80 b	0	0	118	1611	0.32 U	1.0 0	1 1	1 1	1.0
Chloroethane	UG/L	1 1	6%	5	0	7	118	1.0 0	0.32 U	1.0 0	1 111	1	11.1
Chloroform	UG/L	27	5%	7	4	6	118	17 []	0.34 U	1.00	1 U	1 U	1.0
Cis-1.2-Dichloroethene	UG/L	720	81%	5	80	96	118	160	66	57	57	41	61
Cis-1.3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1.8 U	0.36 U	1.8 U	1 U	<u>1</u> U	1 U
Cyclohexane	UG/L	0	0%		0	0	118	1.1 UJ	0.53 U	2.7 U	1 U	1 U	1 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	1.4 U	0.29 U	1.4 U	1 Ū	1 U	1 UJ
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	0.9 U	0.18 U	0.92 U	1 U	1 U	1 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	0.95 U	0.19 U	0.96 U	1 U	1 U	1 U
Methyl Acetate	UG/L	6	2%		0	2	118	0.85 UJ	0.17 UJ	2.5 U	1 U	1 UJ	1 UJ
Methyl Tertbutyl Ether	UG/L	0	0%		0	0	118	0.8 UJ	0.16 U	0.8 U	1 U	1 U	1 U
Methyl bromide	UG/L	0	0%	5	0	0	117	1.4 U	0.28 U	1.4 U	1 U	1 U	1 UJ
Methyl butyl ketone	UG/L	0	0%	_	0	0	118	6 U	1.2 U	6.2 U	5 U	5 U	5 U
Methyl chloride	UG/L	0	0%	5	0	0	118	1.7 U	0.35 U	1.7 U	10	1 U	1 U
Methyl cyclonexane	UG/L	0	0%		0	0	118	1.1 UJ	0.5 U	2.5 U	10	10	1 UJ
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	6.5 UJ	1.3 U	6.6 U	50	50	50
Methylene ebleride	UG/L	10	0%	-	0	12	110	4.0 UJ	0.91 0	4.5 U	50	50	50
Styropo		10	0%	5	7	12	110	2.2 UJ	0.44 0	2.2 0	1 UJ	10	111
Tetrachloroethene		0	0%	5	0	0	118	1811	0.18 0	181	10	10	111
Toluene	UG/L	590	19%	5	16	23	118	2611	0.50 0	2611	1 11	1	1
Total Xylenes	UG/L	0	0%	5	0	0	118	46 U	0.66 U	331	3 U	3.0	311
Trans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	0.65 U	0.77 J	2.1 U	0.86 J	0.51 J	0.72 J
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1.8 U	0.37 U	1.8 U	1 U	1 U	1 U
Trichloroethene	UG/L	2700	68%	5	48	80	118	5.9	2.2	2.3 U	11	16	8.5
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	0.75 UJ	0.15 U	0.76 U	1 U	1U	1U
Vinyl chloride	UG/L	180	66%	2	67	78	118	140	89	52	22	13	32

#### Table B-1 Complete Groundwater Data for Ash Landfill Long Term Monitoring Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

Fac Locatio M Sample I QC C Stud Sampling Rc	cility n ID atrix le ID Date Code ly ID Dound		Frequency		Number	Number	Number	ASH LANDFILL MWT-22 GW ALBW20136 12/15/2008 SA LTM 6	ASH LANDFILL MWT-22 GW ALBW20151 6/3/2009 SA LTM 7	ASH LANDFILL MWT-22 GW ALBW20166 12/16/2009 SA LTM 8	ASH LANDFILL PT-22 GW ALBW20060 1/3/2007 SA LTM 1	ASH LANDFILL PT-22 GW ALBW20086 3/15/2007 SA LTM 2	ASH LANDFILL PT-22 GW ALBW20089 6/5/2007 SA LTM 3
Paramotor	Unite	Maximum	of Dotoction	Cleanup	of	of Times	of Samples	$\lambda = 0$	$V_{alua}(0)$	$V_{alua}(0)$	$\lambda$	$V_{alua}(0)$	$\lambda = (0)$
Other	Units	value	Detection	Guais	LACEEdances	Delected	Analyzeu	Value (Q)	value (Q)	value (Q)	value (Q)	value (Q)	Value (Q)
Iron	UG/L	296000	100%		11	12	12						
Iron+Manganese	UG/L	352900	100%		12	12	12						
Manganese	UG/L	56900	100%		12	12	12						
Ethane	UG/L	98	88%		0	49	56						
Ethene	UG/L	200	88%		0	49	56						
Methane	UG/L	23000	95%		0	53	56						
Sulfate	MG/L	1060	70%		0	39	56						
Total Organic Carbon	MG/L	2050	100%		0	56	56						

Ethene	UG/L	200	0070	0	49	
Methane	UG/L	23000	95%	0	53	
Sulfate	MG/L	1060	70%	0	39	
Total Organic Carbon	MG/L	2050	100%	0	56	

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID								ASH LANDFILL PT-22	ASH LANDFILL MWT-23				
Sample ID								ALBW20104	ALBW20118	ALBW20133	ALBW20148	ALBW20163	ALBW20065
Sample Date								11/14/2007	6/26/2008	12/15/2008	6/2/2009	12/16/2009	1/3/2007
Study ID								I TM				5A I TM	
Sampling Round			Frequency		Number	Number	Number	L I WI 4	5	6	7	8	1
Camping Round		Maximum	of	Cleanup	of	of Times	of Samples	4	5	0	1	0	1
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)					
Volatile Organic Compounds	•	, and o	2010011011	eeulo		20100104	/		Value (u)	raido (d)	raido (d)	(u)	raido (d)
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	1 U	1 U	0.26 U	0.26 U	0.26 U	4 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	1 U	1 U	0.21 U	0.21 U	0.21 U	4 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	1 U	1 UJ	0.31 U	0.31 U	0.31 U	4 U
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	1 U	1 U	0.23 U	0.23 U	0.23 U	4 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	1 U	1 U	0.75 U	0.75 U	0.38 U	4 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	1 U	1 U	0.29 U	0.29 U	0.29 U	4 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	0.41 U	0.41 U	0.41 U	4 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	1 U	1 UJ	1 UJ	1 UJ	0.39 U	4 U
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	1 U	1 U	0.17 U	0.17 U	0.17 U	4 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	<u> </u>	<u> </u>	0.2 U	0.2 U	0.2 U	4 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	5	3.9	2.8	4	3	2.3 J
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	1 U	1 U	0.14 U	0.14 U	0.32 U	4 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	0.16 U	0.16 U	0.36 U	4 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	0.16 U	0.16 U	0.39 U	4 U
Acetone	UG/L	2600	29%		0	34	118	5.3	5 U	1.3 U	1.3 U	1.3 U	180
Benzene	UG/L	0	0%	1	0	0	118	1 U	1 U	0.16 U	0.16 U	0.41 U	4 U
Bromodichloromethane	UG/L	0	0%	80 <sup>°</sup>	0	0	118	1 U	1 U	0.38 U	0.39 U	0.39 U	4 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	0.26 U	0.26 UJ	0.26 U	4 U
Carbon disulfide	UG/L	0	0%		0	0	118	1 U	1 U	0.19 U	0.19 UJ	0.19 U	4 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	1 U	1 U	0.27 U	0.27 U	0.27 U	4 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	0.18 U	0.32 U	0.32 U	4 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	0.32 U	0.32 U	0.32 U	4 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	0.82 J	1 UJ	0.32 U	0.32 U	0.32 U	4 U
Chloroform	UG/L	27	5%	7	4	6	118	1 U	1 U	0.34 U	0.34 U	0.34 U	4 U
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	30	26	52	41	29	60
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	10	1 U	0.36 U	0.36 U	0.36 U	40
	UG/L	0	0%	-	0	0	118	10	10	0.22 U	0.53 U	0.53 U	40
Dichlorodifiuoromethane	UG/L	0	0%	5	0	0	118	10	10	0.28 0	0.29 U	0.29 0	40
Etnyi benzene	UG/L	1.3	3%	5	0	4	118	10	10	0.18 U	0.18 U	0.18 U	40
Mothyl Apototo		6	0%	5	0	0	110	10	1 U	0.19 0	0.19 0	0.19 0	40
Mothyl Torthutyl Ethor	UG/L	0	270		0	2	110	1 U	1 UJ	0.17 0	0.17 UJ	0.5 0	40
Methyl bromide		0	0%	5	0	0	117	1 11	1 111	0.10 0	0.10 0	0.10 0	40
Methyl butyl ketone	UG/L	0	0%	5	0	0	118	511	5 111	121	1211	121	20 11
Methyl chloride	UG/L	Ő	0%	5	0	0	118	1 11	1 111	0 34 11	0 35 11	0 35 11	4 11
Methyl cyclohexane	UG/L	Ő	0%	0	0	0	118	1 U	1 U	0.22 U	0.500	0.5 U	4 U
Methyl ethyl ketone	UG/L	4900	18%		0 0	21	118	5.0	5 0.1	13 U	13 U	13 U	250
Methyl isobutyl ketone	UG/L	0	0%		Ő	0	118	5 U	5 UJ	0.91 U	0.91 U	0.91 U	20 U
Methylene chloride	UG/L	18	10%	5	7	12	118	1 U	1 U	0.44 UJ	0.44 U	0.44 U	2.8 J
Styrene	UG/L	0	0%	5	0	0	118	1 Ū	1 Ū	0.18 U	0.18 U	0.18 U	4 U
Tetrachloroethene	UG/L	0	0%	5	0	0	118	1 U	1 U	0.36 U	0.36 U	0.36 U	4 U
Toluene	UG/L	590	19%	5	16	23	118	1 U	1 U	0.51 U	0.51 U	0.51 U	4 U
Total Xylenes	UG/L	0	0%	5	0	0	118	3 U	3 U	0.93 U	0.66 U	0.66 U	12 U
Trans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	0.67 J	0.57 J	0.41 J	0.81 J	0.42 U	4 U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1 U	1 U	0.37 U	0.37 U	0.37 U	4 U
Trichloroethene	UG/L	2700	68%	5	48	80	118	9.7	4.1	35	6.9	8.7	4 U
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	<u>1</u> U	<u> </u>	0.15 U	0.15 U	0.15 U	<u> </u>
Vinyl chloride	UG/L	180	66%	2	67	78	118	11	13	1.3	11	9.5	23

Loc Sa Sami Q S	Facility cation ID Matrix ample ID ple Date QC Code Study ID							ASH LANDFILL PT-22 GW ALBW20104 11/14/2007 SA LTM	ASH LANDFILL PT-22 GW ALBW20118 6/26/2008 SA LTM	ASH LANDFILL PT-22 GW ALBW20133 12/15/2008 SA LTM	ASH LANDFILL PT-22 GW ALBW20148 6/2/2009 SA LTM	ASH LANDFILL PT-22 GW ALBW20163 12/16/2009 SA LTM	ASH LANDFILL MWT-23 GW ALBW20065 1/3/2007 SA LTM
Sampling	g Round	Maximum	Frequency of	Cleanup	Number of	Number of Times	Number of Samples	4	5	6	7	8	1
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other													
Iron	UG/L	296000	100%		11	12	12						122000 J
Iron+Manganese	UG/L	352900	100%		12	12	12						141500 J
Manganese	UG/L	56900	100%		12	12	12						19500
Ethane	UG/L	98	88%		0	49	56						10000 U
Ethene	UG/L	200	88%		0	49	56						10000 U
Methane	UG/L	23000	95%		0	53	56						12000
Sulfate	MG/L	1060	70%		0	39	56						2 U
Total Organic Carbon	MG/L	2050	100%		0	56	56						260 J

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID Matrix Sample ID Sample Date OC Code								ASH LANDFILL MWT-23 GW ALBW20080 3/16/2007 SA	ASH LANDFILL MWT-23 GW ALBW20094 6/6/2007 SA	ASH LANDFILL MWT-23 GW ALBW20110 11/16/2007	ASH LANDFILL MWT-23 GW ALBW20109 11/16/2007 SA	ASH LANDFILL MWT-23 GW ALBW20125 6/25/2008 SA	ASH LANDFILL MWT-23 GW ALBW20140 12/12/2008 SA
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	2	3	4	4	5	6
		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	4 U	2 U	4 U	10 U	1 U	0.26 UJ
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	4 U	2 U	4 U	10 U	1 U	0.21 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	4 U	2 UJ	4 U	10 U	1 U	0.31 U
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	4 U	2 U	4 U	10 U	1 U	0.23 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	4 U	2 U	4 U	10 U	1 U	0.75 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	4 U	2 U	4 U	10 U	1 U	0.29 U
1,2,4-Irichlorobenzene	UG/L	0	0%	5	0	0	118	4 U	20	4 U	10 U	10	0.41 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	4 U	20	4 U	10 U	10	1 UJ
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	4 U	20	4 U	10 U	10	0.17 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	4 U	20	4 U	10 U	10	0.2 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	4 U	1.6 J	40	10 U	0.6 J	0.6 J
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	4 U	20	40	10 U	10	0.14 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	4 U	20	40	10 U	10	0.16 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	4 U	20	40	10 0	10	0.16 U
Acetone	UG/L	2600	29%	4	0	34	118	190	190	62	64	4 J	1.3 U
Benzene	UG/L	0	0%	I oo b	0	0	110	40	20	4 0	10 0	10	0.16 0
Bromodichloromethane	UG/L	0	0%	80-	0	0	118	4 U	2 0	4 U	10 U	10	0.38 U
Bromoform	UG/L	0	0%	80 °	0	0	118	4 U	2 U	4 U	10 U	1 U	0.26 U
Carbon disulfide	UG/L	0	0%	_	0	0	118	4 U	20	4 U	10 U	10	0.19 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	4 U	20	4 U	10 U	10	0.27 UJ
Chlorobenzene	UG/L	0	0%	5	0	0	118	4 U	2 0	4 U	10 U	10	0.18 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>0</sup>	0	0	118	4 U	2 U	4 U	10 U	1 U	0.32 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	4 U	2 U	4 U	10 U	1 UJ	0.32 U
Chloroform	UG/L	27	5%	7	4	6	118	4 U	2 U	4 U	10 U	1 U	0.34 U
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	11	3.1	2.1 J	10 U	1 U	2.4
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	4 U	2 U	4 U	10 U	1 U	0.36 U
Cyclohexane	UG/L	0	0%	_	0	0	118	4 U	2 U	4 U	10 U	1 U	0.22 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	4 U	20	4 U	10 U	10	0.28 UJ
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	4 U	1.3 J	4 U	10 U	0.85 J	0.71 J
Isopropylbenzene	UG/L	0	0%	5	0	0	118	4 U	20	4 U	10 U	10	0.19 U
Methyl Acetate	UG/L	6	2%		0	2	118	4 UJ	5.1	4 UJ	10 U	1 UJ	0.17 U
Methyl Fertbutyl Ether	UG/L	0	0%	-	0	0	118	4 U	20	40	10 0	10	0.16 U
Methyl butul ketere	UG/L	0	0%	5	0	0	117	4 U	20	4 U	10 0	1 UJ	0.28 0
Methyl ebleride	UG/L	0	0%	-	0	0	110	20 0	10 0	20 UJ	50 0	5 UJ	1.2 U
Methyl evelobovono	UG/L	0	0%	э	0	0	110	40	20	4 U	10 0	10	0.34 0
Methyl ethyl ketone		4000	10%		0	21	110	40	20	40	10 0	10	0.22 0
Methyl isobutyl ketopo		4900	0%		0	21	110	20 11	10 11	20	20 J 50 U	5.11	0.01.11
Methylopo chlorido		19	1.0%	5	7	12	110	20 0	211	20 0	12	111	0.91 0
Styrene		0	0%	5	0	0	118	40	2 0	40	10	1 11	0.44 03
Tetrachloroethene		0	0%	5	0	0	118	40	2 0	40	10 0	1 11	0.10 0
Toluene	UG/L	590	19%	5	16	23	118	74	37	590	570	300	43
Total Xylenes	UG/L	0	0%	5	0	0	118	12	611	12	30 11	3	0.93.11
Trans-1.2-Dichloroethene	UG/L	8	42%	5	3	50	118	4 11	211	4 11	10 U	111	0.13 U
Trans-1.3-Dichloropropene	UG/I	ñ	0%	04	ő	0	118	4 []	211	4 11	10 U	1 11	0.37 U
Trichloroethene	UG/L	2700	68%	5	48	80	118	4 11	211	4 11	10 U	1 11	0.41 .1
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	4 (1	2 11.1	4 []	10 U	1 [].[	0.15 U.I
Vinyl chloride	UG/L	180	66%	2	67	78	118	4.8	2 U	2.3 J	10 U	1 U	2.8

	Facility Location ID Matrix Sample ID Sample Date QC Code Study ID								ASH LANDFILL MWT-23 GW ALBW20080 3/16/2007 SA LTM	ASH LANDFILL MWT-23 GW ALBW20094 6/6/2007 SA LTM	ASH LANDFILL MWT-23 GW ALBW20110 11/16/2007 DU LTM	ASH LANDFILL MWT-23 GW ALBW20109 11/16/2007 SA LTM	ASH LANDFILL MWT-23 GW ALBW20125 6/25/2008 SA LTM	ASH LANDFILL MWT-23 GW ALBW20140 12/12/2008 SA LTM
	Sampling Round		Maximum	Frequency	Cleanup	Number of	Number of Times	Number of Samples	2	3	4	4	5	6
Parameter		Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other														
Iron		UG/L	296000	100%		11	12	12	120000					
Iron+Manganese		UG/L	352900	100%		12	12	12	139500					
Manganese		UG/L	56900	100%		12	12	12	19500					
Ethane		UG/L	98	88%		0	49	56	45	4.1	0.66	0.49	0.53	4.6
Ethene		UG/L	200	88%		0	49	56	5.9	0.28	0.39	0.3	0.048	1.2
Methane		UG/L	23000	95%		0	53	56	23000	18000	17000	15000	18000	19000
Sulfate		MG/L	1060	70%		0	39	56	2 U	2 U	2.7	2.8	2 U	6.3
Total Organic Carbon	n	MG/I	2050	100%		0	56	56	210	303	155	147	28.4	20.1

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

#### Table B-1 Complete Groundwater Data for Ash Landfill Long Term Monitoring Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

Facility Location ID Matrix Sample ID Sample Date QC Code								ASH LANDFILL MWT-23 GW ALBW20155 6/2/2009 SA	ASH LANDFILL MWT-23 GW ALBW20170 12/15/2009 SA	ASH LANDFILL MWT-24 GW ALBW20063 1/3/2007 SA	ASH LANDFILL MWT-24 GW ALBW20078 3/15/2007 SA	ASH LANDFILL MWT-24 GW ALBW20092 6/5/2007 SA	ASH LANDFILL MWT-24 GW ALBW20107 11/13/2007 SA
Study ID			<b>F</b> actor <b>1</b>		Number	Number	Number	LIM	LIM	LIM	LIM	LIM	LIM
Sampling Round		Maximum	Frequency	Cleanun	Number	of Times	of Samples	1	8	1	2	3	4
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds	•	Turuo	2010011011	eeulo	_xooouunooo	20100104	/	raido (d)	value (u)	raido (u)	Value (u)	raido (d)	
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	0.26 U	0.26 U	0.71 J	0.58 J	2 U	1 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	0.21 U	0.21 U	1 U	1 U	2 U	1 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	0.31 U	0.31 U	1 U	1 U	2 UJ	1 U
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	0.23 U	0.23 U	1 U	1 U	2 U	1 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	0.75 U	0.38 U	0.81 J	0.83 J	1.1 J	1 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	0.29 U	0.29 U	1 U	1 U	2 U	1 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	0.41 U	0.41 U	1 U	1 U	2 U	1 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	1 UJ	0.39 U	1 U	1 U	2 U	1 U
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	0.17 U	0.17 U	1 U	1 U	2 U	1 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.2 U	0.2 U	1 U	1 U	2 U	1 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	0.64 J	0.21 U	1 U	1 U	2 U	1 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	0.14 U	0.32 U	1 U	1 U	2 U	1 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.16 U	0.36 U	1 U	1 U	2 U	1 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.16 U	0.39 U	1 U	1 U	2 U	1 U
Acetone	UG/L	2600	29%		0	34	118	1.6 J	1.3 U	42 U	54	73	5 U
Benzene	UG/L	0	0%	1	0	0	118	0.16 U	0.41 U	1 U	1 U	2 U	1 U
Bromodichloromethane	UG/L	0	0%	80 <sup>°</sup>	0	0	118	0.39 U	0.39 U	1 U	1 U	2 U	1 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.26 UJ	0.26 UJ	1 U	1 U	2 U	1 U
Carbon disulfide	UG/L	0	0%		0	0	118	0.19 UJ	0.19 UJ	1 U	1 U	2 U	1 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	0.27 U	0.27 U	1 U	1 U	2 U	1 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	0.32 U	0.32 U	1 U	1 U	2 U	1 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.32 U	0.32 U	1 U	1 U	2 U	1 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	0.32 U	0.32 UJ	1 U	1 U	2 U	1 U
Chloroform	UG/L	27	5%	7	4	6	118	0.34 U	0.34 U	<u> </u>	<u> </u>	2 U	<u> </u>
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	0.42 J	0.47 J	210	68	19	6.7
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	0.36 U	0.36 U	1 U	1 U	2 U	1 U
Cyclohexane	UG/L	0	0%		0	0	118	0.53 U	0.53 U	1 U	1 U	2 U	1 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	0.29 U	0.29 U	1 U	1 U	2 U	1 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	0.49 J	0.18 U	1 U	1 U	2 U	1 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	0.19 U	0.19 U	1 U	1 U	2 U	1 U
Methyl Acetate	UG/L	6	2%		0	2	118	0.17 UJ	0.5 U	1 U	1 UJ	6	1 UJ
Methyl Tertbutyl Ether	UG/L	0	0%		0	0	118	0.16 U	0.16 U	1 U	1 U	2 U	1 U
Methyl bromide	UG/L	0	0%	5	0	0	117	0.28 U	0.28 U	1 U	1 U	2 U	1 U
Methyl butyl ketone	UG/L	0	0%		0	0	118	1.2 U	1.2 U	5 U	5 U	10 U	5 UJ
Methyl chloride	UG/L	0	0%	5	0	0	118	0.35 U	0.35 UJ	10	10	2 U	10
Methyl cyclohexane	UG/L	0	0%		0	0	118	0.5 U	0.5 U	10	10	20	10
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	1.3 U	1.3 U	24	36	40	5 U
Methyl isobutyl ketone	UG/L	0	0%	_	0	0	118	0.91 U	0.91 U	50	50	10 0	50
Methylene chloride	UG/L	18	10%	5	/	12	118	0.44 U	0.44 U	10	10	1 J	10
Styrene	UG/L	0	0%	5	0	0	118	0.18 0	0.18 U	10	10	20	10
Tetrachioroethene	UG/L	0	0%	5	0	0	118	0.36 0	0.36 U	10	10	20	10
Totuene	UG/L	590	19%	5	10	23	110	6.1 0.00 LL	0.51 0	10	10	20	10
Tropa 1.2 Dichlaraothana	UG/L	U	U%	5	U	0	118	0.66 U	0.66 U	30	30	6 U	3 U
		0	4∠% 0%	5	3	50	110	0.13 U	0.42 U	2.1	U.08 J	20	1 U
Trichloroothono	UG/L	2700	0%	0.4	19	0	110	0.37 U	0.37 0		10	20	10
Trichlorofluoromothano		2700	00%	5 5	40	0	110	0.16 U	0.40 U	0.94 J	10	20	1.0
Vinyl chloride	UG/L	180	66%	2	67	78	118	0.15 U 0.24 U	0.15 U 0.24 U	19	45	2 05	3.8

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Fac Locatior Ma Sample D QC C Study Study Sampling Rov	ility a ID atrix e ID Date ode y ID und		Frequency		Number	Number	Number	ASH LANDFILL MWT-23 GW ALBW20155 6/2/2009 SA LTM 7	ASH LANDFILL MWT-23 GW ALBW20170 12/15/2009 SA LTM 8	ASH LANDFILL MWT-24 GW ALBW20063 1/3/2007 SA LTM 1	ASH LANDFILL MWT-24 GW ALBW20078 3/15/2007 SA LTM 2	ASH LANDFILL MWT-24 GW ALBW20092 6/5/2007 SA LTM 3	ASH LANDFILL MWT-24 GW ALBW20107 11/13/2007 SA LTM 4
		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other													
Iron	UG/L	296000	100%		11	12	12						
Iron+Manganese	UG/L	352900	100%		12	12	12						
Manganese	UG/L	56900	100%		12	12	12						
Ethane	UG/L	98	88%		0	49	56	1.6	1				
Ethene	UG/L	200	88%		0	49	56	0.16	0.058				
Methane	UG/L	23000	95%		0	53	56	21000	18000				
Sulfate	MG/L	1060	70%		0	39	56	0.35 U	0.35 U				
Total Organic Carbon	MG/L	2050	100%		0	56	56	15.6	17.4				

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID Matrix Sample ID Sample Date								ASH LANDFILL MWT-24 GW ALBW20122 6/26/2008	ASH LANDFILL MWT-24 GW ALBW20137 12/12/2008	ASH LANDFILL MWT-24 GW ALBW20152 6/2/2009	ASH LANDFILL MWT-24 GW ALBW20167 12/15/2009	ASH LANDFILL PT-17 GW ALBW20058 1/2/2007	ASH LANDFILL PT-17 GW ALBW20073 3/15/2007
QC Code								SA	SA	SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	5	6	7	8	1	2
		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds													
1,1,1-I richloroethane	UG/L	0.76	3%	5	0	4	118	5 U	0.76 J	0.26 U	0.4 J	10	20
1,1,2,2-I etrachloroethane	UG/L	0	0%	5	0	0	118	5 U	0.21 U	0.21 U	0.21 U	10	20
1,1,2-I richlereethere	UG/L	0	0%	5	0	0	118	5 UJ	0.31 U	0.31 U	0.31 U	10	20
1,1,2-Thenloroethane	UG/L	1 1	0%	5	0	0	110	50	0.23 0	0.23 0	0.23 0	10	20
1,1-Dichloroethono		2.1	7%	5	0	0	110	50	0.75 0	0.75 0	0.7 5	111	2.0
1 2 4-Trichlorobenzene	UG/L	2.1	0%	5	0	0	118	511	0.29 0	0.29 0	0.29 0	1	2 0
1 2-Dibromo-3-chloropropane	UG/L	Õ	0%	0 04	Õ	Ő	118	5 111	1	1	0.39 []	1 11	211
1.2-Dibromoethane	UG/L	ő	0%	0.0006	õ	ő	118	5 U	0.17 U	0.17 U	0.17 U	1 U	2 U
1.2-Dichlorobenzene	UG/L	õ	0%	3	õ	õ	118	5 U	0.2 U	0.2 U	0.2 U	1 U	2 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	5 U	0.21 U	0.21 U	0.21 U	1 U	2 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	5 U	0.14 U	0.14 U	0.32 U	1 U	2 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	5 U	0.16 U	0.16 U	0.36 U	1 U	2 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	5 U	0.16 U	0.16 U	0.39 U	1 U	2 U
Acetone	UG/L	2600	29%		0	34	118	25 U	1.3 U	1.3 U	1.3 U	9.3 U	22
Benzene	UG/L	0	0%	1	0	0	118	5 U	0.16 U	0.16 U	0.41 U	1 U	2 U
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	5 U	0.38 U	0.39 U	0.39 U	1 U	2 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	5 U	0.26 U	0.26 UJ	0.26 UJ	1 U	2 U
Carbon disulfide	UG/L	0	0%		0	0	118	5 U	0.19 U	0.19 UJ	0.19 UJ	1 U	2 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	5 U	0.27 UJ	0.27 U	0.27 U	1 U	2 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	5 U	0.18 U	0.32 U	0.32 U	1 U	2 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	5 U	0.32 U	0.32 U	0.32 U	1 U	2 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	5 UJ	0.32 U	0.47 J	0.32 UJ	1 U	2 U
Chloroform	UG/L	27	5%	7	4	6	118	<u> </u>	0.34 U	0.34 U	0.34 U	<u> </u>	<u> </u>
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	31	52	38	32	62	26
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	5 U	0.36 U	0.36 U	0.36 U	10	20
Cyclohexane	UG/L	0	0%	-	0	0	118	5 U	0.22 U	0.53 U	0.53 U	10	20
Dichlorodifiuoromethane	UG/L	0	0%	5	0	0	118	50	0.28 UJ	0.29 0	0.29 0	10	20
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	50	0.18 U	0.18 U	0.18 U	10	20
Nothyl Apototo		0	0%	5	0	0	110	50	0.19 0	0.19 0	0.19 0	10	2.0
Methyl Tertbutyl Ether	UG/L	0	2 /8		0	2	118	5 11	0.16 U	0.17 03	0.5 0	1	2 03
Methyl bromide	UG/L	0	0%	5	0	0	117	5 111	0.28 []	0.28 []	0.28 []	1 1	211
Methyl butyl ketone	UG/L	õ	0%	Ū	õ	õ	118	25 UJ	1.2 U	1.2 U	1.2 U	5 U	10 U
Methyl chloride	UG/L	0	0%	5	0	0	118	5 UJ	0.34 U	0.35 U	0.35 UJ	1 U	2 U
Methyl cyclohexane	UG/L	0	0%		0	0	118	5 U	0.22 U	0.5 U	0.5 U	1 Ū	2 U
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	25 UJ	1.3 U	1.3 U	1.3 U	5.4	11
Methyl isobutyl ketone	UG/L	0	0%		0	0	118	25 UJ	0.91 U	0.91 U	0.91 U	5 U	10 U
Methylene chloride	UG/L	18	10%	5	7	12	118	5 U	0.44 UJ	0.44 U	0.44 U	1 U	1.2 J
Styrene	UG/L	0	0%	5	0	0	118	5 U	0.18 U	0.18 U	0.18 U	1 U	2 U
Tetrachloroethene	UG/L	0	0%	5	0	0	118	5 U	0.36 U	0.36 U	0.36 U	1 U	2 U
Toluene	UG/L	590	19%	5	16	23	118	5 U	0.51 U	0.51 U	0.51 U	1 U	2 U
Total Xylenes	UG/L	0	0%	5	0	0	118	15 U	0.93 U	0.66 U	0.66 U	3 U	6 U
I rans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	5 U	0.13 U	0.13 U	0.42 U	1 U	2 U
I rans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	5 U	0.37 U	0.37 U	0.37 U	10	2 U
I richloroethene	UG/L	2700	68%	5	48	80	118	5 U	6	4.8	4./	6	
I IICHIOFOTIUOFOMETNANE	UG/L	U 100	0%	5	0	U 70	118	5 UJ	0.15 UJ	0.15 U	0.15 U	10	2 U
vinyi chionde	UG/L	180	00%	2	07	10	110	5 U	3.0	1.3	4	21	21

	Facility								ASH LANDFILL					
	Location ID								MWT-24	MWT-24	MWT-24	MWT-24	PT-17	PT-17
	Matrix								GW	GW	GW	GW	GW	GW
	Sample ID								ALBW20122	ALBW20137	ALBW20152	ALBW20167	ALBW20058	ALBW20073
	Sample Date								6/26/2008	12/12/2008	6/2/2009	12/15/2009	1/2/2007	3/15/2007
	QC Code								SA	SA	SA	SA	SA	SA
	Study ID								LTM	LTM	LTM	LTM	LTM	LTM
	Sampling Round			Frequency		Number	Number	Number	5	6	7	8	1	2
			Maximum	of	Cleanup	of	of Times	of Samples						
Parameter		Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)					
Other														
Iron		UG/L	296000	100%		11	12	12						
Iron+Manganese		UG/L	352900	100%		12	12	12						
Manganese		UG/L	56900	100%		12	12	12						
Ethane		UG/L	98	88%		0	49	56						

Notes:

Ethene

Sulfate

Methane

Total Organic Carbon

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

200

23000

1060

2050

88%

95%

70%

100%

0

0

0

0

49

53 39 56

UG/L

UG/L

MG/L

MG/L

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID Matrix								ASH LANDFILL PT-17 GW					
Sample ID								ALBW20087	ALBW20102	ALBW20116	ALBW20131	ALBW20146	ALBW20161
Sample Date								6/5/2007	11/13/2007	6/26/2008	12/11/2008	6/2/2009	12/15/2009
Study ID								I TM					
Sampling Round			Frequency		Number	Number	Number	3	4	5	6	7	8
1 3		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)					
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	1 U	1 U	1 U	0.26 UJ	0.26 U	0.26 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.21 U	0.21 U	0.21 U
1,1,2-I richloro-1,2,2-I rifluoroethane	UG/L	0	0%	5	0	0	118	1 UJ	10	1 UJ	0.31 U	0.31 U	0.31 U
1,1,2-I richloroethane	UG/L	0	0%	1	0	0	118	10	10	10	0.23 U	0.23 U	0.23 U
1,1-Dichloroethane		1.1	7%	5	0	0	110	10	10	10	0.75 0	0.75 U	0.36 U
1,1-Dichlorobenzene		2.1	1 % 0%	5	0	0	118	1 1	1 1	1 1	0.29 0	0.29 0	0.29 0
1.2-Dibromo-3-chloropropane		0	0%	0.04	0	0	118	1 1	1 11	1 111	1	0.410	0.30 11
1 2-Dibromoethane	UG/L	0	0%	0.004	0	0	118	1 U	1 U	1 U	0 17 U	0 17 U	0.33 0
1 2-Dichlorobenzene	UG/L	Ő	0%	3	0	0	118	1 U	1 U	1 U	0211	021	021
1.2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	1 U	1 U	1 U	0.21 U	0.21 U	0.21 U
1.2-Dichloropropane	UG/L	0	0%	1	0	0	118	1 U	1 Ū	1 Ū	0.14 U	0.14 U	0.32 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	1 U	0.16 U	0.16 U	0.36 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	1 U	0.16 U	0.16 U	0.39 U
Acetone	UG/L	2600	29%		0	34	118	5 U	5 U	5 U	1.3 U	1.3 U	1.3 U
Benzene	UG/L	0	0%	1	0	0	118	1 U	1 U	1 U	0.16 U	0.16 U	0.41 U
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	1 U	0.38 U	0.39 U	0.39 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	1 U	0.26 U	0.26 UJ	0.26 UJ
Carbon disulfide	UG/L	0	0%		0	0	118	1 U	1 U	1 U	0.19 U	0.19 UJ	0.19 UJ
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.27 UJ	0.27 U	0.27 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.18 U	0.32 U	0.32 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	1 U	1 U	0.32 U	0.32 U	0.32 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	1 U	1 U	1 UJ	0.32 U	0.49 J	0.32 UJ
Chloroform	UG/L	27	5%	7	4	6	118	<u> </u>	<u> </u>	<u> </u>	0.34 U	0.34 U	0.34 U
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	43	27	21	24	56	65
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1 U	1 U	1 U	0.36 U	0.36 U	0.36 U
Cyclohexane	UG/L	0	0%	_	0	0	118	1 U	1 U	1 U	0.22 U	0.53 U	0.53 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.28 UJ	0.29 U	0.29 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	10	10	10	0.18 U	0.18 U	0.18 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	10	10	10	0.19 U	0.19 U	0.19 U
Methyl Acetate	UG/L	6	2%		0	2	118	10	1 UJ	1 UJ	0.17 U	0.17 UJ	0.5 0
Methyl bromide	UG/L	0	0%	F	0	0	110	10	10	10	0.10 0	0.16 U	0.10 0
Methyl butyl ketono	UG/L	0	0%	5	0	0	119	5.0	5.00	1 UJ	1.20 0	1.20 0	1.20 U
Methyl chloride		0	0%	5	0	0	118	1 11	1 11	1 111	03411	0.35 11	0.35 111
Methyl cyclohexane	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.22 []	0.50	0.55 05
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	5 U	5 U	5 1.1	13.0	13 U	13.0
Methyl isobutyl ketone	UG/L	0	0%		õ	0	118	5 U	5 U	5 UJ	0.91 U	0.91 U	0.91 U
Methylene chloride	UG/L	18	10%	5	7	12	118	1 U	1 U	1 U	0.44 UJ	0.44 U	0.44 U
Styrene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.18 U	0.18 U	0.18 U
Tetrachloroethene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	0.36 U	0.36 U	0.36 U
Toluene	UG/L	590	19%	5	16	23	118	1 U	1 U	1 U	0.51 U	0.51 U	0.51 U
Total Xylenes	UG/L	0	0%	5	0	0	118	3 U	3 U	3 U	0.93 U	0.66 U	0.66 U
Trans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	0.77 J	0.54 J	1 U	0.46 J	1.1	1.8
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1 U	<u> </u>	<u> </u>	0.37 U	0.37 U	0.37 U
Trichloroethene	UG/L	2700	68%	5	48	80	118	3.4	15	8.5	9.2	8	7.8
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	1 UJ	1 U	1 UJ	0.15 UJ	0.15 U	0.15 U
Vinyl chloride	UG/L	180	66%	2	67	78	118	9.9	22	23	10	55	20

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Facili	ty							ASH LANDFILL					
Location I	D							PT-17	PT-17	PT-17	PT-17	PT-17	PT-17
Matr	ix							GW	GW	GW	GW	GW	GW
Sample	D							ALBW20087	ALBW20102	ALBW20116	ALBW20131	ALBW20146	ALBW20161
Sample Da	te							6/5/2007	11/13/2007	6/26/2008	12/11/2008	6/2/2009	12/15/2009
QC Coo	de							SA	SA	SA	SA	SA	SA
Study I	D							LTM	LTM	LTM	LTM	LTM	LTM
Sampling Rour	nd		Frequency		Number	Number	Number	3	4	5	6	7	8
		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)					
Other													
Iron	UG/L	296000	100%		11	12	12						
Iron+Manganese	UG/L	352900	100%		12	12	12						
Manganese	UG/L	56900	100%		12	12	12						
Ethane	UG/L	98	88%		0	49	56			98	6.9	50	9.9
Ethene	UG/L	200	88%		0	49	56			66	6.6	56	5
Methane	UG/L	23000	95%		0	53	56			5700	380	8300	1500
Sulfate	MG/L	1060	70%		0	39	56			15.2	45.8	28	46.2 J
Total Organic Carbon	MG/L	2050	100%		0	56	56			6	2.6	4.9	2.4

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility Location ID Matrix Sample ID Sample Date QC Code Study ID Sampling Round			Frequency		Number	Number	Number	ASH LANDFILL MWT-7 GW ALBW20062 1/4/2007 SA LTM 1	ASH LANDFILL MWT-7 GW ALBW20077 3/15/2007 SA LTM 2	ASH LANDFILL MWT-7 GW ALBW20091 6/5/2007 SA LTM 3	ASH LANDFILL MWT-7 GW ALBW20106 11/13/2007 SA LTM 4	ASH LANDFILL MWT-7 GW ALBW20120 6/25/2008 SA LTM 5	ASH LANDFILL MWT-7 GW ALBW20135 12/15/2008 SA LTM 6
Parameter	Units	Maximum Value	of Detection	Cleanup Goals <sup>1</sup>	of Exceedances	of Times Detected	of Samples Analyzed	Value (Q)	- Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	1 U	1 U	1 U	1 U	1 U	0.26 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 U	0.21 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	1 U	1 U	1 UJ	1 U	1 UJ	0.31 U
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	1 U	1 U	1 U	1 U	1 U	0.23 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	1 U	1 U	1 U	1 U	1 U	0.75 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	1 U	1 U	1 U	1 U	1 U	0.29 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 U	0.41 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	1 U	1 U	1 U	1 U	1 UJ	1 UJ
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	1 U	1 U	1 U	1 U	1 U	0.17 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	1 U	1 U	1 U	0.2 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	1 U	1 U	1 U	1 U	1 U	0.21 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	1 U	1 U	1 U	1 U	1 U	0.14 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 U	1 U	10	1 U	1 U	0.16 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	10	10	10	10	10	0.16 U
Acetone	UG/L	2600	29%		0	34	118	5 U	5 U	5 U	5 U	5 U	1.3 U
Benzene	UG/L	0	0%	1	0	0	118	10	10	10	10	10	0.16 U
Bromodichloromethane	UG/L	0	0%	80 ็	0	0	118	1 U	1 U	1 U	1 U	1 U	0.38 U
Bromoform	UG/L	0	0%	80 <sup>0</sup>	0	0	118	1 U	1 U	1 U	1 U	1 U	0.26 U
Carbon disulfide	UG/L	0	0%		0	0	118	1 U	1 U	1 U	1 U	1 U	0.19 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 U	0.27 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 U	0.18 U
Chlorodibromomethane	UG/L	0	0%	80 °	0	0	118	1 U	1 U	1 U	1 U	1 U	0.32 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	1 U	1 U	1 U	0.65 J	1 UJ	0.93 J
Chloroform	UG/L	27	5%	7	4	6	118	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	0.34 U
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	35	42	61	90	90	79
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1 U	1 U	1 U	1 U	1 U	0.36 U
Cyclohexane	UG/L	0	0%		0	0	118	1 U	1 U	1 U	1 U	1 U	0.22 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	1 U	1 U	1 U	1 U	1 U	0.28 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	1 U	1 U	10	1 U	1 U	0.18 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	10	10	10	10	10	0.19 U
Methyl Acetate	UG/L	6	2%		0	2	118	10	1 UJ	10	1 UJ	1 UJ	0.17 U
Methyl Fertbutyl Ether	UG/L	0	0%	-	0	0	118	10	10	10	10	10	0.16 U
Methyl bromide	UG/L	0	0%	5	0	0	117	10	10	10	10	1 UJ	0.28 U
Methyl butyl ketone	UG/L	0	0%	-	0	0	118	50	50	50	5 UJ	5 UJ	1.2 U
Methyl chloride	UG/L	0	0%	5	0	0	118	10	10	10	10	1 UJ	0.34 U
Methyl cyclonexane	UG/L	1000	0%		0	0	110	10	10	10	10	10	0.22 0
Methyl iechutyl ketope	UG/L	4900	18%		0	21	110	50	5 U	50	50	5 UJ	1.3 U
Methylana ablarida	UG/L	10	0%	-	0	10	110	50	30	30	50	5 UJ	0.91 0
Styropo	UG/L	18	10%	5	/	12	110	10	10	10	1 U	10	0.44 UJ
Tetrachloraethana		0	0%	5	0	0	110	10	10	10	1 U	10	0.10 0
Teluene		500	10%	5	16	23	110	10	1 U	111	1 1	10	0.50 0
		590	19%	5	10	23	110	10	10	211	211	10	0.01 0
Trans-1 2-Dichloroothono		U Q	120/	5	2	50	110	30	30	30	30	30	0.93 U
Trans-1,2-Dichloropropopo		0	4270	0.4	3	0	110	1 U	1.1	10	10	1.1	0.13 U
Trichloroothopo	UG/L	2700	0%	U.4 5	U 49	80	110	10	10	10	510	10	0.37 0
Trichlorofluoromothano		2100	00%	5	40 0	00	110	490	440	410	510	440	0.15
Vinyl chloride		180	66%	2	67	78	118	0.51	97	100	24	12	13
Viriyi Grilofiue	00/L	100	00 /0	4	07	10	110	0.51 J	5.1	10	24	12	15

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Facili Location I Matt Sample Da QC Coc Study J	ty D ix D te le D		Fromuonov		Number	Number	Number	ASH LANDFILL MWT-7 GW ALBW20062 1/4/2007 SA LTM	ASH LANDFILL MWT-7 GW ALBW20077 3/15/2007 SA LTM 2	ASH LANDFILL MWT-7 GW ALBW20091 6/5/2007 SA LTM 2	ASH LANDFILL MWT-7 GW ALBW20106 11/13/2007 SA LTM	ASH LANDFILL MWT-7 GW ALBW20120 6/25/2008 SA LTM	ASH LANDFILL MWT-7 GW ALBW20135 12/15/2008 SA LTM
Sampling Rour	ia	Maximum	of	Cleanup	of	of Times	of Samples	I	2	3	4	5	0
Parameter	Units	Value	Detection	Goals <sup>i</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other													
Iron	UG/L	296000	100%		11	12	12						
Iron+Manganese	UG/L	352900	100%		12	12	12						
Manganese	UG/L	56900	100%		12	12	12						
Ethane	UG/L	98	88%		0	49	56					6.7	11
Ethene	UG/L	200	88%		0	49	56					2	0.27
Methane	UG/L	23000	95%		0	53	56					400	670
Sulfate	MG/L	1060	70%		0	39	56					29.1	29.1
Total Organic Carbon	MG/L	2050	100%		0	56	56					2.3	3

#### Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

#### Table B-1 Complete Groundwater Data for Ash Landfill Long Term Monitoring Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity

Facility Location ID Matrix								ASH LANDFILL MWT-7 GW	ASH LANDFILL MWT-7 GW	ASH LANDFILL PT-24 GW	ASH LANDFILL PT-24 GW	ASH LANDFILL PT-24 GW	ASH LANDFILL PT-24 GW
Sample ID Sample Date								ALBW20150 6/2/2009	ALBW20165 12/15/2009	ALBW20061 1/2/2007	ALBW20076 3/15/2007	ALBW20090 6/5/2007	ALBW20105 11/13/2007
QC Code								SA	SA	SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	7	8	1	2	3	4
_		Maximum	of	Cleanup	of	of Times	of Samples						
Parameter	Units	Value	Detection	Goals	Exceedances	Detected	Analyzed	Value (Q)					
Volatile Organic Compounds		0.70	20/	F	0	4	110	0.00.11	0.00.11	4.11	4.11	4.11	4.11
1, 1, 1-1 Inchioroethane	UG/L	0.76	3%	5	0	4	110	0.26 0	0.26 0	10	10	10	10
1, 1, 2, 2-1 etrachioroethane	UG/L	0	0%	5	0	0	118	0.21 0	0.21 U	10	1 1	1 1 1 1	10
1 1 2-Trichloroethane	UG/L	0	0%	1	0	0	118	0.31 0	0.23 []	1 1	1 1	1 11	1 1
1 1-Dichloroethane	UG/L	1 1	7%	5	0	8	118	0.25 U	0.38 U	0.68.1	1 U	0.75.1	0.56 J
1.1-Dichloroethene	UG/L	2.1	7%	5	õ	8	118	0.29 U	0.48 J	1 U	1 U	1 U	1 U
1.2.4-Trichlorobenzene	UG/L	0	0%	5	0	õ	118	0.41 U	0.41 U	1 U	1 U	1 U	1 U
1.2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	1 UJ	0.39 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	0.17 U	0.17 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.2 U	0.2 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	0.21 U	0.21 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	0.14 U	0.32 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.16 U	0.36 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	0.16 U	0.39 U	1 U	1 U	1 U	1 U
Acetone	UG/L	2600	29%		0	34	118	1.3 U	1.3 U	5 U	5 U	5 U	5 U
Benzene	UG/L	0	0%	1	0	0	118	0.16 U	0.41 U	1 U	1 U	1 U	1 U
Bromodichloromethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.39 U	0.39 U	1 U	1 U	1 U	1 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.26 UJ	0.26 UJ	1 U	1 U	1 U	1 U
Carbon disulfide	UG/L	0	0%		0	0	118	0.19 UJ	0.19 UJ	1 U	1 U	1 U	1 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	0.27 U	0.27 U	1 U	1 U	1 U	1 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	0.32 U	0.32 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	0.32 U	0.32 U	1 U	1 U	1 U	1 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	0.61 J	0.32 UJ	1 U	1 U	1 U	1 U
Chloroform	UG/L	27	5%	7	4	6	118	0.34 U	0.34 U	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	68	140	54	38	60	39
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	0.36 U	0.36 U	1 U	1 U	1 U	1 U
Cyclohexane	UG/L	0	0%	_	0	0	118	0.53 U	0.53 U	10	1 U	10	10
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	0.29 U	0.29 U	10	10	10	10
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	0.18 U	0.18 U	10	10	10	10
Isopropylbenzene	UG/L	0	0%	5	0	0	118	0.19 U	0.19 U	10	10	10	10
Methyl Acetate	UG/L	6	2%		0	2	118	0.17 UJ	0.5 0	10	1 UJ	10	1 UJ
Methyl hermide	UG/L	0	0%	F	0	0	110	0.10 0	0.16 U	10	10	10	10
Methyl butyl ketene	UG/L	0	0%	5	0	0	110	0.28 0	0.28 0	10	10	10	5.00
Methyl chloride	UG/L	0	0%	5	0	0	110	0.35 []	0.25 111	111	50	50	5 UJ 1 II
Methyl cyclobexane	UG/L	0	0%	5	0	0	118	0.55 0	0.55 05	10	1 1	10	111
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	1311	131	511	511	511	511
Methyl isobutyl ketone	UG/L	-300	0%		0	0	118	0.91 U	0.91 U	5 U	50	5 U	5 U
Methylene chloride	UG/L	18	10%	5	7	12	118	0.44 []	0.44 U	1 U	1 U	1 U	1 U
Styrene	UG/L	0	0%	5	0	0	118	0.18 U	0.18 U	1 U	1 U	1 U	1 U
Tetrachloroethene	UG/L	0	0%	5	0	0	118	0.36 U	0.36 U	1 U	1 U	1 U	1 U
Toluene	UG/L	590	19%	5	16	23	118	0.51 U	0.51 U	1 U	1 U	1 U	1 U
Total Xylenes	UG/L	0	0%	5	0	0	118	0.66 U	0.66 U	3 U	3 U	3 U	3 U
Trans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	0.13 U	0.55 J	0.86 J	0.81 J	1.6	1 U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	0.37 U	0.37 U	1 U	1 U	1 U	1 U
Trichloroethene	UG/L	2700	68%	5	48	80	118	330	350	4	2.8	3.1	3.8
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	0.15 U	0.15 U	1 U	1 U	1 UJ	1 U
Vinyl chloride	UG/L	180	66%	2	67	78	118	9.3	21	0.6 J	1 U	2.6	1 U

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Lo S Sar	Facility ocation ID Matrix Sample ID mple Date QC Code Study ID pa Paund		Fromuonov		Number	Number	Number	ASH LANDFILL MWT-7 GW ALBW20150 6/2/2009 SA LTM	ASH LANDFILL MWT-7 GW ALBW20165 12/15/2009 SA LTM °	ASH LANDFILL PT-24 GW ALBW20061 1/2/2007 SA LTM 1	ASH LANDFILL PT-24 GW ALBW20076 3/15/2007 SA LTM 2	ASH LANDFILL PT-24 GW ALBW20090 6/5/2007 SA LTM 2	ASH LANDFILL PT-24 GW ALBW20105 11/13/2007 SA LTM
Sampii	ng Rouna	Maxim	m of	Cleanup	of	of Times	of Samples	7	0	I	2	3	4
Parameter	Uni	its Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other													
Iron	UG	5/L 29600	0 100%		11	12	12						
Iron+Manganese	UG	JL 35290	0 100%		12	12	12						
Manganese	UG	JL 56900	100%		12	12	12						
Ethane	UG	6/L 98	88%		0	49	56	7.8	17				
Ethene	UG	5/L 200	88%		0	49	56	0.76	0.52				
Methane	UG	JL 23000	95%		0	53	56	1100	2900				
Sulfate	MG	S/L 1060	70%		0	39	56	27	29.3 J				
Total Organic Carbon	MG	G/L 2050	100%		0	56	56	3.1	4.5 J				

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility								ASH LANDFILL				
Location ID								PT-24	PT-24	PT-24	PT-24	MW-56
Matrix								GW	GW	GW	GW	GW
Sample ID								ALBW20119	ALBW20134	ALBW20149	ALBW20164	ALBW20072
Sample Date								6/26/2008	12/12/2008	6/2/2009	12/15/2009	1/4/2007
QC Code								SA	SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	5	6	7	8	1
		Maximum	of	Cleanup	of	of Times	of Samples					
Parameter	Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)				
Volatile Organic Compounds												
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	1 U	0.26 U	0.26 U	0.26 U	1 U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	0	0	118	1 U	0.21 U	0.21 U	0.21 U	1 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/L	0	0%	5	0	0	118	1 UJ	0.31 U	0.31 U	0.31 U	1 U
1,1,2-Trichloroethane	UG/L	0	0%	1	0	0	118	1 U	0.23 U	0.23 U	0.23 U	1 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	0.69 J	0.75 U	0.75 U	0.38 U	1 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	1 U	0.29 U	0.29 U	0.29 U	1 U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	0	0	118	1 U	0.41 U	0.41 U	0.41 U	1 U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	0	0	118	1 UJ	1 UJ	1 UJ	0.39 U	10
1,2-Dibromoethane	UG/L	0	0%	0.0006	0	0	118	1 U	0.17 U	0.17 U	0.17 U	1 U
1,2-Dichlorobenzene	UG/L	0	0%	3	0	0	118	10	0.2 U	0.2 U	0.2 U	1 U
1,2-Dichloroethane	UG/L	5.6	11%	0.6	11	13	118	10	0.21 U	0.21 U	0.21 U	10
1,2-Dichloropropane	UG/L	0	0%	1	0	0	118	10	0.14 U	0.14 U	0.32 U	1 U
1,3-Dichlorobenzene	UG/L	0	0%	3	0	0	118	10	0.16 U	0.16 U	0.36 U	10
1,4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	10	0.16 U	0.16 U	0.39 U	10
Acetone	UG/L	2600	29%		0	34	118	5 U	1.3 U	1.3 U	1.3 U	5 U
Benzene	UG/L	0	0%	1	0	0	118	10	0.16 U	0.16 U	0.41 U	10
Bromodichloromethane	UG/L	0	0%	80 5	0	0	118	1 U	0.38 U	0.39 U	0.39 U	1 U
Bromoform	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	0.26 U	0.26 UJ	0.26 UJ	1 U
Carbon disulfide	UG/L	0	0%		0	0	118	1 U	0.19 U	0.19 UJ	0.19 UJ	1 U
Carbon tetrachloride	UG/L	0	0%	5	0	0	118	1 U	0.27 U	0.27 U	0.27 U	1 U
Chlorobenzene	UG/L	0	0%	5	0	0	118	1 U	0.18 U	0.32 U	0.32 U	1 U
Chlorodibromomethane	UG/L	0	0%	80 <sup>b</sup>	0	0	118	1 U	0.32 U	0.32 U	0.32 U	1 U
Chloroethane	UG/L	1.1	6%	5	0	7	118	1 UJ	0.32 U	0.32 U	0.32 UJ	1 U
Chloroform	UG/L	27	5%	7	4	6	118	<u> </u>	0.34 U	0.34 U	0.34 U	1 U
Cis-1,2-Dichloroethene	UG/L	720	81%	5	80	96	118	48	34	32	28	1.2
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1 U	0.36 U	0.36 U	0.36 U	1 U
Cyclohexane	UG/L	0	0%		0	0	118	1 U	0.22 U	0.53 U	0.53 U	1 U
Dichlorodifluoromethane	UG/L	0	0%	5	0	0	118	1 U	0.28 U	0.29 U	0.29 U	1 U
Ethyl benzene	UG/L	1.3	3%	5	0	4	118	1 U	0.18 U	0.18 U	0.18 U	1 U
Isopropylbenzene	UG/L	0	0%	5	0	0	118	10	0.19 U	0.19 U	0.19 U	10
Methyl Acetate	UG/L	6	2%		0	2	118	1 UJ	0.17 U	0.17 UJ	0.5 U	10
Methyl Tertbutyl Ether	UG/L	0	0%	_	0	0	118	10	0.16 U	0.16 U	0.16 U	10
Methyl bromide	UG/L	0	0%	5	0	0	117	1 UJ	0.28 U	0.28 U	0.28 U	10
Methyl butyl ketone	UG/L	0	0%	_	0	0	118	5 UJ	1.2 U	1.2 U	1.2 U	50
Methyl chloride	UG/L	0	0%	5	0	0	118	1 UJ	0.34 U	0.35 U	0.35 UJ	10
Methyl cyclonexane	UG/L	0	0%		0	0	118	10	0.22 0	0.5 0	0.5 0	10
Methyl etnyl ketone	UG/L	4900	18%		0	21	118	5 UJ	1.3 U	1.3 U	1.3 U	50
Methylana ablarida	UG/L	10	0%	-	0	12	110	5 UJ	0.91 0	0.91 0	0.91 0	50
Sturese	UG/L	18	10%	5	1	12	110	10	0.44 UJ	0.44 0	0.44 U	10
Styrene	UG/L	0	0%	5	0	0	110	10	0.18 U	0.18 0	0.18 0	10
Teluene	UG/L	500	0%	5 E	16	22	110	10	0.36 0	0.30 0	0.30 U	10
Total Xylongo		590	19%	5	10	23	110	211	0.01 0	0.01 0	0.01 0	211
Trans-1 2-Dichloroothono		U g	12%	5	2	50	110	30	0.93 0	0.00 U	0.00 0	3 0
Trans-1,2-Dichloropropene		0	42 /0	0.4	0	0	118	1.1	0.30 J	0.03 J	0.01 J	111
Trichloroethene	UG/L	2700	68%	5	48	80	118	24	22	17	17	111
Trichlorofluoromethane		0	0%	5	-0	0	118	2.7	0.15.11	0 15 11	0 15 11	1 11
Vinvl chloride	UG/L	180	66%	2	67	78	118	1.9	0.26.1	2	1.6	1 11

	Facility Location ID Matrix								ASH LANDFILL PT-24 GW	ASH LANDFILL PT-24 GW	ASH LANDFILL PT-24 GW	ASH LANDFILL PT-24 GW	ASH LANDFILL MW-56
	Sample ID Sample Date								ALBW20119 6/26/2008	ALBW20134 12/12/2008	ALBW20149 6/2/2009	ALBW20164 12/15/2009	ALBW20072 1/4/2007
	QC Code Study ID								SA LTM	SA LTM	SA LTM	SA LTM	SA LTM
	Sampling Round		Maximum	Frequency of	Cleanup	Number of	Number of Times	Number of Samples	5	6	7	8	1
Parameter		Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other		•											
Other Iron		UG/L	296000	100%		11	12	12					
Other Iron Iron+Manganese		UG/L UG/L	296000 352900	100% 100%		11 12	12 12	12 12					
Other Iron Iron+Manganese Manganese		UG/L UG/L UG/L	296000 352900 56900	100% 100% 100%		11 12 12	12 12 12	12 12 12					
Other Iron Iron+Manganese Manganese Ethane		UG/L UG/L UG/L UG/L	296000 352900 56900 98	100% 100% 100% 88%		11 12 12 0	12 12 12 49	12 12 12 56					
Other Iron Iron+Manganese Manganese Ethane Ethene		UG/L UG/L UG/L UG/L UG/L	296000 352900 56900 98 200	100% 100% 100% 88% 88%		11 12 12 0 0	12 12 12 49 49	12 12 12 56 56					, <i>, ,</i>
Other Iron Iron+Manganese Manganese Ethane Ethene Methane		UG/L UG/L UG/L UG/L UG/L UG/L	296000 352900 56900 98 200 23000	100% 100% 100% 88% 88% 95%		11 12 12 0 0 0	12 12 12 49 49 53	12 12 12 56 56 56					
Other Iron Iron+Manganese Manganese Ethane Ethene Methane Sulfate		UG/L UG/L UG/L UG/L UG/L UG/L MG/L	296000 352900 56900 98 200 23000 1060	100% 100% 88% 88% 95% 70%		11 12 12 0 0 0 0	12 12 12 49 49 53 39	12 12 12 56 56 56 56					

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

Facility								ASH LANDFILL				
Location ID								MW-56	MW-56	MW-56	MW-56	MW-56
Matrix								GW	GW	GW	GW	GW
Sample ID								ALBW20101	ALBW20124	ALBW20139	ALBW20154	ALBW20169
Sample Date								6/6/2007	6/26/2008	12/11/2008	6/4/2009	12/18/2009
QC Code								SA	SA	SA	SA	SA
Study ID								LTM	LTM	LTM	LTM	LTM
Sampling Round			Frequency		Number	Number	Number	3	5	6	7	8
		Maximum	of	Cleanup	of	of Times	of Samples					
Parameter	Units	Value	Detection	Goals 1	Exceedances	Detected	Analyzed	Value (Q)				
Volatile Organic Compounds				_	_							
1,1,1-Trichloroethane	UG/L	0.76	3%	5	0	4	118	1 U	1 U	0.26 UJ	0.26 U	0.26 U
1,1,2,2- I etrachloroethane	UG/L	0	0%	5	0	0	118	10	1 U	0.21 U	0.21 U	0.21 U
1,1,2-I richloro-1,2,2-I rifluoroethane	UG/L	0	0%	5	0	0	118	1 UJ	1 UJ	0.31 U	0.31 U	0.31 UJ
1,1,2-I richloroethane	UG/L	0	0%	1	0	0	118	10	10	0.23 U	0.23 U	0.23 U
1,1-Dichloroethane	UG/L	1.1	7%	5	0	8	118	10	10	0.75 U	0.75 U	0.38 U
1,1-Dichloroethene	UG/L	2.1	7%	5	0	8	118	10	10	0.29 U	0.29 U	0.29 U
1,2,4-Thchiorobenzene	UG/L	0	0%	0.04	0	0	110	10	1 U	0.41 0	0.41 0	0.41 0
1,2-Dibromo-3-chioropropane	UG/L	0	0%	0.04	0	0	110	10	1 UJ	0.17.11	0 17 11	0.39 0
1,2-Diblomoethane		0	0%	0.0000	0	0	110	10	1 U	0.17 0	0.17 0	0.17 0
1,2-Dichloroothano	UG/L	5.6	0%	0.6	11	13	110	1 U	1 U	0.2 0	0.2 0	0.2 0
1.2-Dichloropropago		0.0	0%	1	0	13	110	1.1	10	0.21 0	0.21 0	0.21 0
1.3-Dichlorobonzono		0	0%	2	0	0	110	1.1	10	0.14 0	0.14 0	0.32 0
1 4-Dichlorobenzene	UG/L	0	0%	3	0	0	118	1 11	10	0.16 U	0.10 0	0.30 U
Acetone		2600	20%	5	0	34	118	511	511	1311	13111	1311
Benzene	UG/L	2000	0%	1	0	0	118	1 11	1 11	0.16 []	0.16 []	0.41 []
Bromodichloromothano		0	0%	80 b	0	0	119	1 11	1 1	0.38 []	0.10 0	0.30 []
Dromoticillorometriane		0	0 /8	00 b	0	0	110	10	10	0.30 U	0.39 0	0.39 0
Biomolorm Carbon disulfido	UG/L	0	0%	00	0	0	110	10	1 U	0.20 0	0.20 0	0.20 0
Carbon totrachlarida		0	0%	E	0	0	110	10	1 U	0.19 0	0.19 0	0.19 0
Chlorobenzene	UG/L	0	0%	5	0	0	118	1 11	10	0.27 03	0.27 0	0.27 0
Chlorodibromomothana		0	0%	00 b	0	0	110	1.1	1.0	0.10 0	0.32 0	0.32 0
Chloroothano	UG/L	11	6%	00 5	0	7	110	1 U	1 1 1	0.32 0	0.32 0	0.32 0
Chloroform		27	5%	7	4	6	118	1 11	1 05	0.34 11	0.32 0	0.34 11
Cis-1 2-Dichloroethene	UG/L	720	81%	5	80	96	118	17	13	0.54 0	0.04 0	0.54.0
Cis-1 3-Dichloropropene	UG/L	0	0%	04	0	0	118	111	1.0	0.36 []	0.36.11	0.36 []
Cyclobexane	UG/L	Ő	0%	0.4	õ	0	118	1 11	1 11	0.00 0	0.53 []	0.53 []
Dichlorodifluoromethane	UG/L	Ő	0%	5	õ	Ő	118	1 U	1 U	0.22 0	0.00 0	0.00 0
Ethyl benzene	UG/L	1.3	3%	5	õ	4	118	1 U	1 U	0.18 U	0.18 U	0.18 U
Isopropylbenzene	UG/L	0	0%	5	õ	0	118	1 U	1 U	0.19 U	0.10 U	0.19 U
Methyl Acetate	UG/L	6	2%	-	0	2	118	1 U	1 UJ	0.17 U	0.17 U	0.5 U
Methyl Tertbutyl Ether	UG/L	õ	0%		0	0	118	1 U	1 U	0.16 U	0.16 U	0.16 U
Methyl bromide	UG/L	0	0%	5	0	0	117	1 Ū	1 UJ	0.28 U	0.28 U	0.28 UJ
Methyl butyl ketone	UG/L	0	0%		0	0	118	5 U	5 UJ	1.2 U	1.2 U	1.2 U
Methyl chloride	UG/L	0	0%	5	0	0	118	1 U	1 UJ	0.34 U	0.35 U	0.35 U
Methyl cyclohexane	UG/L	0	0%		0	0	118	1 U	1 U	0.22 U	0.5 U	0.5 U
Methyl ethyl ketone	UG/L	4900	18%		0	21	118	5 U	5 UJ	1.3 U	1.3 U	1.3 U
Methyl isobutyl ketone	UG/L	0	0%		0	0	118	5 U	5 UJ	0.91 U	0.91 U	0.91 U
Methylene chloride	UG/L	18	10%	5	7	12	118	1 U	1 U	0.44 UJ	0.44 U	0.44 U
Styrene	UG/L	0	0%	5	0	0	118	1 U	1 U	0.18 U	0.18 U	0.18 U
Tetrachloroethene	UG/L	0	0%	5	0	0	118	1 U	1 U	0.36 U	0.36 U	0.36 U
Toluene	UG/L	590	19%	5	16	23	118	1 U	1 U	0.51 U	0.51 U	0.51 U
Total Xylenes	UG/L	0	0%	5	0	0	118	3 U	3 U	0.93 U	0.66 U	0.66 U
Trans-1,2-Dichloroethene	UG/L	8	42%	5	3	50	118	1 U	1 U	0.13 U	0.13 U	0.42 U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	0	0	118	1 U	1 U	0.37 U	0.37 U	0.37 U
Trichloroethene	UG/L	2700	68%	5	48	80	118	1 U	1 U	0.33 J	0.18 U	0.46 U
Trichlorofluoromethane	UG/L	0	0%	5	0	0	118	1 UJ	1 UJ	0.15 UJ	0.15 U	0.15 UJ
Vinyl chloride	UG/L	180	66%	2	67	78	118	1 U	1 U	0.24 U	0.24 U	0.24 U

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	Facility Location ID Matrix Sample ID Sample Date QC Code Study ID								ASH LANDFILL MW-56 GW ALBW20101 6/6/2007 SA LTM	ASH LANDFILL MW-56 GW ALBW20124 6/26/2008 SA LTM	ASH LANDFILL MW-56 GW ALBW20139 12/11/2008 SA LTM	ASH LANDFILL MW-56 GW ALBW20154 6/4/2009 SA LTM	ASH LANDFILL MW-56 GW ALBW20169 12/18/2009 SA LTM
	Sampling Round		Maximum	Frequency of	Cleanup	Number of	Number of Times	Number of Samples	3	5	6	7	8
Parameter		Units	Value	Detection	Goals <sup>1</sup>	Exceedances	Detected	Analyzed	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Other													
Iron		UG/L	296000	100%		11	12	12					
Iron+Manganese		UG/L	352900	100%		12	12	12					
Manganese		UG/L	56900	100%		12	12	12					
Ethane		UG/L	98	88%		0	49	56					
Ethene		UG/L	200	88%		0	49	56					
Methane		UG/L	23000	95%		0	53	56					
Sulfate		MG/L	1060	70%		0	39	56					
Total Organic Carbo	n	MG/L	2050	100%		0	56	56					

Notes:

1. The cleanup goal values are NYSDEC Class GA Groundwater Standards unless noted otherwise.

a. NYSDEC Class GA Groundwater Standards (TOGS 1.1.1, June 1998).

b. Federal Maximum Contaminant Level (http://www.epa.gov/safewater/contaminants/index.html)

2. Shading indicates a concentration above the GA Groundwater standard.

U = compound was not detected

J = the reported value is and estimated concentration

#### **APPENDIX C**

#### **REGRESSION PLOTS**





Time (months)

Concentration (ug/L)



Concentration (ug/L)

#### Figure C-3 Regression Plot of Well Concentrations At MWT-27 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity




Figure C-4 Regression Plot of Well Concentrations At MWT-28 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity





Concentration (ug/L)

Figure C-5 Regression Plot of Well Concentrations At MWT-29 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Appendix C

Figure C-6 Regression Plot of Well Concentrations At MWT-22 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Time (months)

Appendix C

Figure C-7 Regression Plot of Well Concentrations At PT-22 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



## Appendix C

## Figure C-8 Regression Plot of Well Concentrations At MWT-23 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



## Appendix C

Concentration (ug/L)

Figure C-9 Regression Plot of Well Concentrations At MWT-24 Ash Landfill Annual Report, Year 3 Seneca Army Depot Activity



Time (months)

ND = not detected.



Time (months)

Concentration (ug/L)

# APPENDIX D

## **RESPONSE TO COMMENTS**

## Army's Response to Comments from the United States Environmental Protection Agency

Subject: Draft Annual Report and Year 3 Review Ash Landfill Operable Unit Seneca Army Depot Romulus, New York

Comments Dated: May 26, 2010

Date of Comment Response: August 12, 2010

## **Army's Response to Comments**

## **GENERAL COMMENTS**

The Annual Report presents biowall recharge assessment values that are relatively close, if not below benchmark values used to evaluate anaerobic conditions at the site, and vinyl chloride was detected in one of the biowall monitoring wells. However, the Annual Report does not allow for a mid-year assessment of groundwater parameters. In addition, it should be noted that well MWT-7, located downgradient of all of the biowalls yet just upgradient of the property boundary, reported increasing concentrations of trichloroethylene, cis-1,2-dichloroethene, and vinyl chloride during the last two sampling events.

**Comment 1:** The Annual Report states, on Page 17, that recharge of the biowalls "is not necessary at this time." However, the geochemical and chemical data presented within the Annual Report do not appear to fully support this conclusion. The criteria used for assessment of the need for replenishment of the Ash Landfill biowalls are presented in Section 3.5, Biowall Recharge Evaluation, on Page 17. The values presented as assessment points for recharge of the biowalls include a total organic carbon (TOC) value of greater than 20 mg/L. The two most recent TOC values presented for biowall well MWT-23 are less than the 20 mg/L benchmark, and the TOC values at MWT-28 are also approaching 20 mg/L. Further, oxidation reduction potential (ORP) is another assessment point for recharge of the biowall, with a trigger value of less than -100 mV. The ORP values presented indicate that conditions have not maintained the specified criterion of 100 mV at well MWT-23 during the last monitoring event. It is also important to note that vinyl chloride was detected in MWT-27 during the most recent sampling event. Although it is not possible to determine whether the detection of vinyl chloride represents a 50% increase, this breakthrough coupled with not meeting all of the geochemical parameter benchmarks suggests that recharge of the biowalls may be necessary. At a minimum, the need for recharge of the biowalls should be reassessed following the next sampling event in Summer 2010, and not "after the completion of the fourth year of LTM" as recommended in Section 4.2, Recommendations.

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**Response 1:** As stated in the Report, the benchmark values are not an absolute set of conditions or parameters that can be used to determine the need to recharge. Through a lines-of-evidence approach, which includes consideration of geochemical parameters and chlorinated ethenes concentrations, a recharge is not necessary at this time. The text describes that the evaluation of geochemical parameters and the recharge evaluation focus on the levels present within the biowalls themselves compared to concentrations at upgradient locations. As such, the evaluation of the need to recharge is completed in accordance with the Remedial Design Report (RDR) (Parsons, 2006), and outlined in Section 3.5, is focused on the levels within the biowalls at monitoring wells MWT-27, 28, and 29.

As shown in Section 3.5 of the report, which discusses the geochemical parameters at the biowall process monitoring wells, TOC, DO, and ORP at MWT-27 and MWT-28 meet benchmark values. This indicates that highly reducing conditions are maintained in Biowalls B1/B2. Although TOC and ORP at MWT-23 do not meet the benchmark values, concentrations of chlorinated ethenes in the biowall process monitoring wells remain below GA standards or non-detect. The determination looks at both the geochemical parameters compared to benchmarks and the chlorinated ethene concentrations since both lines of evidence are critical evaluation factors. The review of both lines of evidence indicates that highly reducing conditions are maintained at Biowalls C1/C2.

The detection of an estimated 3.1 J ug/L of vinyl chloride at MWT-27 represents the first time a chlorinated ethene is detected above the standard at a biowall, and the concentrations will be monitored further to confirm that concentrations are actually rebounding. The reduction in the concentration of vinyl chloride across Biowalls B1/B2 from an estimated 3.1 J ug/L at Biowall B1 to 1.2 U ug/L at Biowall B2 demonstrates that the biowall pair is preventing contaminant breakthrough. The Army will continue to monitor vinyl chloride at this well and throughout the site as part of the regular sampling and evaluation schedule.

After each sampling event at the Ash Landfill OU, the Army evaluates both geochemical parameters and chlorinated ethene concentrations in the context of biowall process monitoring; a full discussion is included in each Annual Report. However, given the USEPA comment above, the Army will include a formal discussion of biowall recharge evaluation in the Round 9 Letter Report.

**Comment 2:** The Annual Report does not provide a general location map for the Seneca Army Depot Activity (SEAD). In addition, none of the figures included in the report show the SEDA site boundaries. As on-site and off-site wells are discussed in the Annual Report for the Ash Landfill Operable Unit (OU), it is important to show the site boundary lines so an evaluation of the detected concentrations in groundwater in relation to off-site areas can be conducted. Revise the Annual Report to include a general location map for SEDA. Further, clearly designate the SEDA site boundaries on all applicable figures, and ensure that the farmhouse wells reportedly located within 1,250 feet of the leading edge of the contaminant groundwater plume are shown on the figures.

**Response 2:** A figure showing the location of SEDA has been added as Figure 1. Subsequent figure numbers have been updated to reflect the addition of this figure. The SEDA site boundary has been added to all figures showing the site. The farmhouse wells are located at a significant distance from the center of the plume; including them on each figure would significantly alter the scale of each drawing so that the locations of the biowalls and the LTM monitoring wells would be difficult to view on the figure. As such, a new figure showing the location of the farmhouse in relation to the OU has been added as Figure 4.

**Comment 3:** Figure 4, Chlorinated Ethene Concentrations in Groundwater, shows groundwater isocontours, but it is unclear for what constituent(s) these contours apply (i.e., TCE, all chlorinated volatile organic compounds [VOCs], etc.) In addition, the legend of Figure 4 indicates that these isocontours are constructed using data from January 2000. Recent groundwater data should be used to show the current configuration of the groundwater plume. Revise the Annual Report to include a figure that shows the current configuration of the plume, with the constituents represented by the isocontours clearly defined, or alternatively, provide seasonally-based isocontours that could assist in the assessment of the plume's leading edge flow direction.

**Response 3:** Isocontours provided in former Figure 4, now referenced as Figure 6, were constructed using total chlorinated ethenes concentrations collected at the Ash Landfill from a January 2000 sampling event. The current biowall LTM program, as approved in the RDR, monitors groundwater conditions at wells located generally along the centerline of the historic plume. As a result, the current data from the biowall LTM program do not provide sufficient coverage to characterize the current shape of the plume, since information about the lateral extent of the plume is not available. The most recent round with sufficient data to develop isocontours is from the August 2004 sampling event completed prior to installation of the biowalls. The figure has been revised and the 2000 plume depiction is replaced with isocontours of total chlorinated ethenes based on August 2004.

Figures 6A - 6H, now referenced as Figures 9A - 9H, illustrate the current areal distribution of chlorinated ethene concentrations; likewise, former Figures 7A - 7J, now referred to as Figures 10A - 10J, provide insight into the temporal distribution of chlorinated ethene concentrations.

**Comment 4:** The Annual Report does not include a figure that plots groundwater elevations at the site by well location. Figure 4, Chlorinated Ethene Concentrations in Groundwater, includes a groundwater flow direction arrow, but the figure does not include any groundwater contours to support this groundwater flow direction. Revise the Annual Report to include a groundwater elevation map that is based on measurements collected during 2009.

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**Response 4:** A figure showing the groundwater elevations at the Ash Landfill has been added as Figure 7, and a figure showing groundwater elevations during 8R2009 has been added as Figure 8. Subsequent figure numbers have been updated to reflect the addition of this figure.

**Comment 5:** The Annual Report does not indicate whether potential vapor intrusion concerns associated with the VOC plumes have been evaluated. The Annual Report indicates that two "farmhouse wells are located approximately 1,250 feet from the leading edge of the plume" but the document does not indicate whether any on or off-site buildings are located closer to the plumes which may be of concern for the vapor intrusion pathway. In addition, the Annual Report does not indicate whether these off-site wells have been sampled. Please revise the Annual Report to address these concerns, and provide reference to appropriate documents which may evaluate the vapor intrusion pathway and include sampling data for off-site residential wells.

**Response 5:** Vapor intrusion is not an issue that is addressed or discussed in the ROD for the Ash Landfill; therefore it is not an issue that needs to be discussed in the Annual Report. There are no existing buildings located at the Ash Landfill; the nearest building is the farmhouse. The Land Use Control Remedial Design (LUC RD) Addendum #3 includes restrictions that prevent construction at the AOC to address vapor intrusion concerns.

MW-56, the compliance monitoring well located off-site and downgradient of the SEDA property, has been sampled regularly since 1999, and VOCs were never detected above GA standards. Monitoring well MW-56 serves as an early warning for the migration of chlorinated ethenes moving towards the farmhouse.

Wells at the farmhouse, which is located approximately 1535 feet from the SEDA boundary, were sampled during six groundwater monitoring events conducted between 1999 and 2003; Chlorinated ethenes were never detected at the farmhouse wells during these events; these data were reported in monitoring reports submitted to the USEPA and NYSDEC. Based on the fact that chlorinated ethenes are not found in the compliance monitoring well, there is no evidence to indicate that the chlorinated ethene plume has migrated to the farmhouse; therefore, vapor intrusion does not pose a concern.

The approved Remedial Design Report (RDR) (Parsons, 2006) outlines the wells that are included in the current LTM program. The farmhouse wells are not part of the monitoring program since the constituents of concern were never detected at this location; MW-56 is included as an early warning method.

## SPECIFIC COMMENTS

**Comment 1: Section 1.1, Long-Term Groundwater Monitoring Objectives, Page 2.** This section indicates that biowall process monitoring is conducted at two locations: within Biowall B1/B2 and within

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Biowall C2. Biowall monitoring within the most upgradient biowall, Biowall A1/A2, is currently not conducted, but it is unclear how the effectiveness of Biowall A1/A2 can be evaluated and the need for maintenance determined if data from within the biowall are not collected. Revise the Annual Report to indicate how it will be determined if and when Biowall A1/A2 will require maintenance/regeneration. Additional data collected from within the biowall may be necessary to make this determination unless appropriate justification is provided.

**Response 1:** Section 7.2 of the RDR (Parsons, 2006), which was approved by the USEPA and NYSDEC, details the long-term monitoring plan for the Ash Landfill OU. The RDR specifies that the approved plume performance monitoring wells and biowall process monitoring wells are sufficient to provide biowall process monitoring.

The biowalls were constructed at the same time and share the same construction details; as such, conditions in the area of Biowalls A1/A2 closely resemble conditions at Biowalls B1/B2 and at Biowalls C1/C2. It is anticipated that Biowall A1/A2 will degrade at the same rate as the biowalls further downgradient. The effectiveness and possible need for maintenance of Biowalls A1/A2 can be evaluated by continuing to sample according to the LTM plan with consideration for geochemical parameters and chlorinated ethenes concentrations throughout the site. An indication of the need to recharge Biowalls B1/B2 would suggest that Biowall A1/A2 also requires recharge.

**Comment 2: Section 2.3, Soil and Groundwater Impacts, Page 5.** This section describes a Non-Time Critical Removal Action (NTCRA) conducted in an area northwest of the Ash Landfill. The Annual Report states that this area is believed to have been the source of the groundwater plume. The limits of this excavation are not shown on a site figure. However, the initial source area/excavation area should be presented on a site figure to show the relationship between the initial source area and the current extent of groundwater contamination, especially given the lack of definitive trends in some of the monitoring data. Revise the Annual Report to include the excavation limits from the NTCRA on a site figure in relation to the existing groundwater plume.

**Response 2:** Figure 3 shows the limits of the NTCRA, referenced as the "Approximate Extent of IRM Treatment." The legend on Figure 3 has been revised to indicate "Approximate Extent of NTCRA Excavation and IRM Treatment". The text on page 5 has been updated to reference Figure 3.

**Comment 3: Section 2.3, Soil and Groundwater Impacts, Page 6.** The top of this page indicates that the Remedial Investigation (RI) for this site, dated 1994, determined that the VOC plume is vertically restricted to the upper till/weathered shale aquifer and is not present in the deeper competent shale aquifer. The Annual Report does not indicate whether any of the monitoring wells included in the current long-term monitoring program monitor the deeper shale aquifer to determine whether the conclusion from more than 15 years ago is still valid and VOCs have not migrated vertically into the deeper aquifer.

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Clarify whether any of the monitoring wells in the current long-term monitoring program monitor the deeper shale aquifer. If not wells currently monitor the deeper aquifer, it is recommended that sampling of a deeper well be considered, possibly as part of the comprehensive 5-year review process or sooner, to determine if the conclusion from the RI is still valid.

**Response 3:** A similar comment was provided by the USEPA on April 22, 2008 in response to the Annual Report, Year 1 (Parsons, 2008); the Army responded. The comment and response are provided below:

**Comment 1: Section 2.3, Soil and Groundwater Impacts, Groundwater, Page 5.** Section 2.3 states that vertically the groundwater plume "is restricted to the upper till/weathered shale aquifer and is not present in the deeper competent shale aquifer." However, the Report does not provide the basis for this statement. It is suggested that the Report be revised to provide the locations and well construction information of deep monitoring wells that substantiate that the plume has not migrated to deeper aquifer intervals. Alternatively, the Report should provide a reference to other documents where this information can be found.

**Response 1:** This statement was derived from the discussion in Section 4.4 of the RI, which presents the extent of contamination of groundwater at the Ash Landfill. As part of the RI, plume profiles were constructed for geologic cross sections that included monitoring well pairs of wells screened in the till/weathered shale, shallow, competent shale, and deep competent shale. The plume profiles indicated that contamination was confined to the upper aquifer. A reference to the RI will be added to the subject document.

As part of the RI at the Ash Landfill, plume profiles were constructed that included monitoring well pairs screened in the till/weathered shale, shallow competent shale; and deep competent shale. The plume profiles documented the lack of connection between the upper and lower aquifers.

Existing geology at the Ash Landfill further supports the conclusion that it is unlikely that contaminants in the shallow aquifer could migrate to the deep aquifer. The Ash Landfill RI Report (Parsons, 1994) states:

"The geologic study of the area [completed by] Mozola [in 1951] determined three reasons for the lack of hydrologic interconnection between the groundwater near the surface and the deeper aquifers. First, the shales in this region are relatively impermeable, i.e., absorbing, transmitting, and yielding water very slowly. Joints and other openings in the shales are generally very narrow or are filled with fine silt and clay. This impermeability tends to inhibit downward seepage of water from the surficial deposits. Second, the slope of the bedrock and the land surfaces toward the Finger Lakes favors rapid drainage of surface water. Third, the overlying glacial drift is considered too thin to hold large quantities of water for gradual recharge of the bedrock."

Lastly, Section 7.2 of the RDR (Parsons, 2006), which was approved by the USEPA and NYSDEC, details the long term monitoring plan for the Ash Landfill OU. The RDR and this subject document discuss only those wells that are being monitored currently; wells in the deeper aquifer are not included in the approved monitoring plan.

Based on the discussion above, the Army believes that sampling of the deeper aquifer is not necessary and not required by the Record of Decision.

**Comment 4: Section 3.1, Sample Collection, Page 8.** This section describes the groundwater sampling conducted during 2009 at the Ash Landfill OU. However, it does not appear that field sampling forms

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have been appended to the Annual Report. Field sampling forms should be provided as supporting documentation since they provide information that is not always included in the discussion section of the report, but may be applicable to the evaluation of the data (i.e., turbidity levels observed, well integrity, detected constituents during vapor monitoring, etc.). Revise the Annual Report to include field sampling forms/documentation.

**Response 4:** The field sampling forms are included as Appendix A for round 8R2009 and subsequent events in the revised report and in future Ash Landfill Annual Reports. (Former Appendices A and B are now referenced as Appendices B and C, respectively.)

**Comment 5:** Section 3.1, Sample Collection, Page 9. The third paragraph states, "As indicated in Table 1, samples from the wells in the biowall process monitoring group (MWT-23, MWT-16, MWT-27, MWT-28, and MWT-29)..." were submitted for laboratory analysis. Well MWT-16 could not be located within the figures and tables of the Annual Report. It appears that the correct well may be MWT-26, as this well is designated as a biowall process well on Table 1. Revise Section 3.1 to address this discrepancy.

**Response 5:** The wells in the biowall process monitoring are MWT-23, MWT-26, MWT-27, MWT-28, and MWT-29; the mention of "MWT-16" is a typographical error. The text on Page 9 has been changed to correctly read "MTW-26."

**Comment 6:** Section 3.2, Groundwater Elevations, Page 10. This section references Figure 5, Groundwater Elevations, for historical groundwater elevation measurements. A note at the bottom of Figure 5 identifies three wells (MW-56, PT-17, and PT-18A) at which groundwater level measurements were not collected during various monitoring events. The Annual Report does not elaborate on why groundwater level measurements were not collected from these wells. For clarity, revise the Annual Report to explain why data are not available from these wells on various dates. In addition, it would be helpful if groundwater elevation data were also presented in a table as supporting documentation. Lastly, given the potential concerns associated with the plume leading edge vinyl chloride concentrations, a solid understanding of groundwater flow at the plumes leading edge is crucial. The Army will ensure any future sampling includes water level measurements from MW-56 and PT-17 to assist in refining groundwater flow directions at the plume leading edge.

**Response 6:** The omission of MWT-56, PT-17, and PT-18A is a data gap in the field collection due to human error. In the future, the Army will be certain that all relevant the wells are gauged. The groundwater levels and fluctuations at the Ash Landfill are well characterized, since the wells have been measured since the RI in 1994. A table presenting the historic groundwater elevations has been added to the Annual Report as Table 2. Subsequent table numbers have been updated to reflect the addition of this table.

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**Comment 7: Section 3.3, Geochemical Data, Page 10.** Under the Dissolved Oxygen (DO) subsection, the Annual Report states, "In all wells sampled downgradient of the B1/B2 Biowalls, DO levels are depleted (less than 2 milligrams per liter [mg/L] in both Year 3 events (see Table 2)." The Annual Report is using 2 mg/L as a benchmark to describe depleted oxygen concentrations. However, EPA's *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater* (September 1998), states on Page 38, that "[a]naerobic bacteria generally cannot function at dissolved oxygen concentrations greater than about 0.5 mg/L and, hence, reductive dechlorination will not occur." 0.5 mg/L appears to be a more appropriate benchmark for the site. In addition, only four of the long-term monitoring wells reported DO concentrations below 0.5 mg/L during the 8R2009 sample round, as shown on Table 2, Groundwater Geochemical Data. Further, it is important to note that all monitoring wells reported increases in DO concentrations between the 7R2009 and 8R2009 sample rounds. Revise the Annual Report to use 0.5 mg/L as a benchmark for the DO subsection to acknowledge the increases in DO concentrations between the 7R2009 and 8R2009 sample rounds.

**Response 7:** The benchmark value of 2.0 mg/L was used to demonstrate the relative depletion of DO compared to background. Section 7.4.4 of the approved RDR (Parsons, 2006) states that 1.0 mg/L is the benchmark value that will be used to evaluate anaerobic conditions in the groundwater. The discussion has been revised to update the evaluation by comparing to the value of 1.0 mg/L.

As stated throughout the Report, "an absolute set of conditions or parameter values are not appropriate to determine the need to recharge. Rather a lines-of-evidence approach will be used that correlates a decrease in the efficiency of the system to degrade chloroethenes to geochemical evidence that indicates the cause is due to substrate depletion. A review of the data shows that historically DO concentrations are higher in winter than in summer; the "increases in DO concentrations between 7R2009 and 8R2009" likely reflect seasonal variations and not an overall increase in DO. Furthermore, the statement that "only four of the long-term monitoring wells reported DO concentrations below 0.5 mg/L in 8R2009" is incorrect. Five of the fourteen wells (MWT-27, MWT-28, MWT-22, MWT-7, and PT-24) reported DO concentrations below 0.5 mg/L. Wells that comply with the benchmark value are within the immediate vicinity of the biowalls, the most anaerobic portions of the site. Outside of these five wells, four additional wells (PT-18A, MWT-29, MWT-23, and PT-17) are at or below 0.63 mg/L of DO, values which are within the realm of natural variation and still indicate anaerobic conditions. DO concentrations in the remaining five wells were recorded at locations outside of established treatment zones, where low DO values are not anticipated. The Army will continue to monitor DO concentrations at all wells in the LTM program during the 9R2010 event and beyond and compare the DO levels in the biowall process wells to the 1.0 mg/L benchmark.

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The text has been modified to discuss the effect of seasonal variation on DO concentrations and now reads:

DO is the most favored electron acceptor (yields the most energy) used by microbes during biodegradation of organic carbon, and its presence can inhibit the anaerobic degradation of chlorinated ethenes. In the wells sampled within Biowalls B1/B2 and Biowall C2, DO levels are depleted (less than 1.0 milligrams per liter [mg/L]) in both Year 3 events (see **Table 3**). DO is depleted due to the presence of organic substrate in the biowalls. The depletion of DO enhances the potential for anaerobic degradation of chlorinated ethenes in groundwater. The data also show that historically DO concentrations are higher in winter than in summer; the increase in DO concentrations between the two Year 3 sampling events, 7R2009 and 8R2009, likely reflect seasonal variations and not a systemic increase in DO.

**Comment 8:** Section 3.3, Geochemical Data, Page 11. In the Sulfate subsection, the last sentence states, "These conditions indicate that sulfate is being depleted and that sulfate should not inhibit anaerobic dechlorination within and downgradient of the biowalls." As noted in the same paragraph, "Sulfate levels lower than 20 mg/L are desired to prevent inhibition of reductive dechlorination of chlorinated ethenes (USEPA, 1998)." While the biowall wells reported concentrations below 20 mg/L, well MWT-29, located downgradient of Biowall B2, reported a concentration of 644 mg/L, its highest reported concentration since monitoring began in 2007 (Table 2). This concentration would appear to inhibit anaerobic dechlorination downgradient of the biowall. Revise the Annual Report to discuss the increasing concentrations of sulfate detected in MWT-29.

**Response 8:** The concentrations of sulfate within the biowalls are below 20 mg/L, which indicates that conditions within the biowalls are conducive to anaerobic dechlorination. The geochemical benchmark values are designed to evaluate ideal biowall operation and specifically conditions within the biowalls (MWT-27, 28, and 23). Section 3.3 details that the evaluation of geochemical parameters will be based on comparing background (or upgradient) conditions to concentrations in the biowall at MWT-28. The LTM program includes data collection of geochemical parameters at locations downgradient of the biowalls, e.g., MWT-29, but the evaluation of data at these locations is not part of the assessment of whether the biowalls are functioning as designed. The geochemical data indicate that this location is outside of the treatment zone. This is useful information to understand the overall system, but does not impact the direct evaluation of the effectiveness of the biowalls. Wells outside of biowall pairs, like MWT-29, are designed to monitor downgradient changes in water quality, that is, to compare downgradient chlorinated ethenes concentrations to those upgradient. The text has been revised and now states: "These conditions indicate that sulfate is being depleted within the walls and that sulfate should not inhibit anaerobic dechlorination within the biowalls." The Army will continue to monitor the sulfate concentration at all wells as part of the regular sampling and evaluation schedule.

**Comment 9:** Section 3.3, Geochemical Data, Page 12. The Summary subsection briefly summarizes the evaluation of total organic carbon (TOC), oxidation reduction potential (ORP), sulfate and methane concentrations, but is does not include a summary of the DO concentrations. Since this geochemical parameter is also discussed in Section 3.3, it should be included in the Summary. In addition, it appears that ferrous iron and manganese were also evaluated, but results of these analyses are not discussed within

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the geochemical data section. Revise the Summary of Section 3.3 to include dissolved oxygen. Further, revise Section 3.3 to include an evaluation of ferrous iron and manganese concentrations.

**Response 9:** A bullet summarizing DO and a discussion of ferrous iron and manganese has been added to Section 3.3. The text on Page 12 now reads:

Ferrous Iron and Manganese

As described in USEPA (1998), iron III (ferric iron) is an electron acceptor used by iron-reducing bacteria under anaerobic conditions; Iron II (ferrous iron) is the product. Iron III is relatively insoluble in groundwater relative to Iron II. Therefore, an increase in concentrations of Iron II in groundwater is a clear indication that anaerobic iron reduction is occurring. Similarly, USEPA (1998) states that manganese (IV) is an electron acceptor used by manganese-reducing bacteria under anaerobic environments; soluble manganese (II) is the product. Under anaerobic conditions like those at the Ash Landfill, the presence of manganese and ferrous iron in groundwater at concentrations above the natural background concentrations demonstrates that manganese reduction and iron reduction are occurring at the site. These data support the conclusion that conditions within the biowalls are anaerobic and conducive to the degradation of chlorinated ethenes.

#### <u>Summary</u>

Monitoring data for wells within the biowalls during the third year of LTM indicate the following:

- DO remains below 1.0 mg/L in Biowalls B1/B2 and Biowall C2;
- Concentrations of TOC remain elevated, ranging from 15.6 mg/L to 81.7 mg/L;
- ORP remains low, ranging from -148 mV to -90 mV;
- Sulfate remains below 20 mg/L;
- Methane concentrations are 13 mg/L or higher; and
- Ferrous iron and manganese concentrations are increasing in the biowalls, indicating that conditions are conducive to the degradation of chlorinated ethenes.

**Comment 10:** Section 3.4, Chemical Data Analysis and Groundwater Remedy Evaluation, Page 15. In the evaluation of the third performance objective, to confirm that groundwater concentrations throughout the plume are decreasing to eventually meet GA standards, it is noted that three wells (PT-18A, PT-17, and MWT-7) are not included in the list of wells expected to comply with their respective standards by 2051. Well PT-18A is located upgradient of Biowall A1/A2, but wells PT-17 and MWT-7 are both located downgradient of all of the biowalls, and may be relocated beyond any influence of the biowalls. Of additional concern is that well MWT-7, which reported increasing concentrations of TCE, cis-1,2-dichloroethene, and vinyl chloride, during the last two sampling event, is located just east and upgradient of the site boundary (although specific boundaries have not been shown on Figure 4). If the performance objectives are not being met, specifically at the two downgradient, plume-leading-edge wells, additional measures to meet the performance objectives need to be considered. The Annual Report indicates that additional monitoring of these wells is necessary to determine long term trends; however, the Annual Report needs to describe the decision process for when conditions would warrant implementation of additional measures should concentrations continue to increase. Army's Response to USEPA Comments on Draft Annual Report and Yr 3 Review for Ash Landfill OU Comments Dated May 27, 2010 Page 11 of 14

In addition, it is not apparent from the plume configuration presented on Figure 4, Chlorinated Ethenes Concentrations in Groundwater, that the off-site sentry well, MW-56, will be appropriate to detect concentrations of contaminants migrating from MWT-7 at which vinyl chloride was detected at 21 ug/l, (and order of magnitude above the NYSDEC Class GA Groundwater Standard of 2 ug/l). A well located downgradient the leading edge of the plume, in a trajectory that is consistent with the highest concentrations detected, should be considered to ensure that contaminants detected above the remedial goals are not bypassing the existing monitoring network to the south of well MW-56, and migrating off-site at potentially unacceptable levels.

**Response 10:** The third performance objective, as stated in Section 1.1, is to "confirm that groundwater concentrations throughout the plume are decreasing to eventually meet NYSDEC Class GA groundwater standards." The Army is aware of the current absence of a trend at PT-18A, PT-17, and MWT-7, and the Army is continuing to monitor these wells. At this time, conclusions cannot be made regarding the Class GA standard. There is a groundwater use restriction at the site, and the Army plans to continue groundwater monitoring. Additional years of groundwater monitoring data will be gathered, and this additional time does not impact the future use of the groundwater due to the LUC.

A figure showing the groundwater flow direction has been added to the report as Figure 8. The figure continues to show that groundwater from the plume flows through the area immediately surrounding MW-56. As such, MW-56 is appropriately designated as the compliance well, and an additional well is not required.

**Comment 11:** Section 3.5, Biowall Recharge Evaluation, Page 17. The first bulleted item notes, "If COC concentrations have rebounded by greater than 50% for any single sampling event, this will indicate that recharge should be considered." However, if a COC was non-detect in the sampling event prior to being detected, a determination of a 50% increase cannot be made. However, it should be noted that the detection limits for some VOCs during the most recent sampling event appear elevated over prior sampling events. Table 3, Chlorinated Organics in Groundwater, shows detection limits for VOCs at biowall monitoring well MWT-28 were much higher during the December 2009 than the previous sampling event in June 2009. The Annual Report needs to acknowledge the changes in detection limits when concluding that VOCs are non-detect, particularly with respect to evaluating increases during sampling events. Revise the Annual Report to address this concern.

**Response 11:** Vinyl chloride was not detected in 7R2009 or 8R2009 at MWT-25, MWT-28, MWT-28, MWT-23, and MWT-56. At MWT-27 and MWT-28 the detection limit for VC increased from 7R2009 to 8R2009; though the detection limit was lower than earlier years, and the recent round was below the GA Standard. At the other three wells detection limits remained the same in both rounds. At MWT-28, detection limits for VC increased from 0.24 ug/L to 1.2 ug/L, both of which are below the Class GA standard for VC. Similarly, detection limits for cis-DCE and TCE at MWT-27 increased from 7R2009 to

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8R2009, yet concentrations remain below Class GA Standards; the same is true for all wells for which detection limits for TCE and cis-DCE increased from 7R2009 to 8R2009. In summary, since detection limits are below the Class GA Standards it is not a concern that limits have changed over the last two rounds of sampling.

As stated in the response to General Comment 1, the Army will continue to monitor vinyl chloride at this well as part of the regular sampling and evaluation schedule; further, the Army will continue to monitor VC detection limits.

**Comment 12:** Section 3.6, Soil Remedy Evaluation, Page 19. This section indicates that visual observations noted a small amount of soil erosion and the presence of rodent trails, cutting less than 6 inches into the soil cover of the Non-Combustible Fill Landfill (NCFL). The Annual Report does not, however, indicate whether the soil cover in these areas underwent corrective repairs to ensure that the full thickness of the 12-inch cover was maintained. Revise the Annual Report to describe what corrective action was implemented to maintain the full 12-inch soil cover at the NCFL.

**Response 12:** Soil cover in the areas of the "small amount of soil erosion and...rodent trails" was not repaired since the trails are in active use by animals at the Depot, and the depths of the trails have been maintained despite past corrective action to repair the thickness. As stated on Page 19 of the subject document "the erosion and the [animal] trails cut less than 6 inches into the cover. Therefore, underlying soil has not been exposed to the environment." As such, corrective action at the NCFL is unnecessary as the trails do not penetrate to depths that would expose underlying soil to vectors and the cover is still preventing environmental receptors from accessing the soil. Section 3.6 of the Report has been revised to discuss this:

#### 3.6 Soil Remedy Evaluation

Part of the remedial action was installing a 12-inch vegetative cover over the Ash Landfill and the NCFL. The covers have been inspected and field observations from Year 3 note that the landfills are vegetated with grass and clover. At the NCFL, visual observations noted a small amount of soil erosion and the presence of rodent trails; however, the erosion and the trails cut less than 6 inches into the cover. Therefore, underlying soil has not been exposed to the environment and corrective action is unnecessary. The Army will continue to monitor the integrity of the covers and ensure that the vegetative covers have not been breached and that the underlying soil is not exposed.

**Comment 13: Section 3.7, Land Use Controls (LUCs), Page 19.** One of the LUCs is to maintain the integrity of any current or future remedial or monitoring system, such as monitoring wells and impermeable reactive barriers. The Annual Report does not comment on the integrity of the monitoring wells at the site, and indicate whether any of them require maintenance.

**Response 13:** During every round of sampling at the Ash Landfill OU, the Army inspects each monitoring well. During 7R2009 and 8R2009 it was noted that all wells at the AOC are in good

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condition, all monitoring wells are viable for groundwater elevation readings, and the integrity of all wells in the LTM network is good. Section 3.7 of the Report has been revised to note the integrity of the wells and now reads:

## 3.7 Land Use Controls (LUCs)

During 7R2009 and 8R2009, groundwater monitoring wells were inspected by field personnel. The integrity of all wells at the Ash Landfill is intact and each well is viable for groundwater elevation readings and groundwater sampling, where approved.

**Comment 14:** Section 3.8, Operating Properly and Successfully, Page 20. In regards to whether the remedial action is "operating successfully," the Annual Report states, "The data presented in Section 3.3 demonstrate that concentrations of VOCs are decreasing and will eventually meet the Class GA groundwater standards." This section fails to mention the three wells (PT-18A, PT-17, and MWT-7) that are not included in the list of wells expected to comply with the Class GA standards. While additional data from these wells are necessary, it is important to note areas of the site (i.e., wells) at which deviations from an "operating successfully" designation could be applied. Revise Section 3.8 to acknowledge in the increasing contaminant concentrations at wells PT-18A, PT-17, and MWT-7.

**Response 14:** The subject document states that a remedial action may receive the USEPA's designation of "operating successfully" if "a system will achieve the cleanup levels or performance goals delineated in the decision document". An element of the remedy at the Ash Landfill, as documented in the approved ROD, is "migration control of the groundwater plume". The Annual Report for Year 3 shows that chlorinated ethene concentrations at the compliance well, MW-56, are below Class GA standards demonstrating that the plume has not migrated. Since the "migration control" component of the remedy is achieved, this is sufficient to demonstrate that the remedy is operating successfully. In addition, the Army provided an evaluation of well status that demonstrated that water quality in wells will eventually meet GA standards, which is an objective of the LTM program (not specified in the decision document).

It should be noted that at this time the data does not suggest, and a conclusion cannot be made, that wells PT-18A, PT-17, and MWT-7 will not eventually reach GA standards. At wells PT-18A, PT-17, and MWT-7, concentrations of TCE are generally decreasing, concentrations of cis-DCE are increasing, and concentrations of VC are neither decreasing nor increasing. Decreasing concentrations of TCE suggest that natural attenuation of chlorinated ethenes is occurring at the areas near these wells. Furthermore, increasing concentrations of TCE suggest that sequential reductive dechlorination is occurring – as concentrations of TCE decrease, those of cis-DCE increase suggesting that TCE is being degraded into cis-DCE at these locations.

**Comment 15: Table 3, Chlorinated Organics in Groundwater.** The notes on this table state that grey shading indicates that the concentrations were detected above Class GA groundwater standards.

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However, the applicable Class GA groundwater standards have not been included on Table 3. Revise Table 3 to include the applicable Class GA groundwater standard for each constituent.

**Response 15:** Table 3, now referenced as Table 4, has been revised to include the applicable Class GA Groundwater standard for PCE, TCE, and VC – the parameters that are evaluated in each annual report.

## Army's Response to Comments from the New York State Department of Environmental Conservation

Subject: Annual Report and Year 3 Review Ash Landfill Operable Unit Seneca Army Depot Romulus, New York

Comments Dated: June 17, 2010

## Date of Comment Response: August 12, 2010

**Army's Response to Comments** 

## **GENERAL COMMENTS:**

**Comment 1:** State noted that labeling to identify the sample period is not consistent.

**Response 1:** The first year of sampling was quarterly. At that time, the sampling rounds were identified as xQyyyy, where "x" is the round number, and "yyyy" is the 4 digit year. After the first year, the sample frequency was modified to semiannual. The sampling events were no longer quarterly so the "Q" designation in the name was not appropriate. An "R" was used to replace the "Q" to denote the round. The round number has been used sequentially since the first quarterly round. The nomenclature for the first 4 rounds, or quarters, will not be changed since the historic reports identify those rounds as quarters. This explanation will be added to the text.

**Comment 2:** State is satisfied with results, but revise the sections in the report as necessary to include a statement on the numerical progress towards the groundwater remediation goal (current level relative to goal).

**Response 2:** Section 3.4, titled "Chemical Data Analysis and Groundwater Remedy Evaluation", provides a complete discussion of the numerical progress toward the groundwater remediation goals. This section specifically discusses that 1) contaminant concentrations at the off-site trigger monitoring well MW-56 remain below Class GA Standards; and 2) TCE, cis-DCE, and VC concentrations at wells throughout the site are compliant, or trending toward compliance, with Class GA Standards. Former Figures 6A through 6J, now Figures 8A through 8J, quantitatively present the data by showing TCE, cis-DCE, and VC concentrations over time, with a comparison to Class GA Standards for each compound at wells throughout the site. Former Table 4, now Table 5, presents groundwater trends and provides estimated dates that wells will achieve the groundwater standards. The Army does not believe text changes are required.

**Comment 3:** The Annual Report should include a figure to show groundwater elevations contours in the area of plume.

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**Response 3:** A figure showing the groundwater elevations at the Ash Landfill has been added as Figure 8. Subsequent figure numbers have been updated to reflect the addition of this figure.

**Comment 4:** Revise the report to indicate what procedures were for groundwater monitoring (e.g. DER-10).

**Response 4:** Page 8 of the subject document describes the procedures that are used for groundwater monitoring at the Ash Landfill. The text reads:

"Groundwater samples were collected using low flow sampling techniques during each of the 2009 sampling rounds. Bladder pumps were used to purge the wells and collect the samples during these rounds. Sampling procedures, sample handling and custody, holding times, and collection of field parameters were conducted in accordance with the "Final Sampling and Analysis Plan for Seneca Army Depot Activity (SAP)" (Parsons, 2006)."

The Final Sampling and Analysis Plan for Seneca Army Depot Activity (SAP) (Parsons, 2006) references DER-10 and states:

"Groundwater sampling for monitoring wells and microwells will be performed according to the Ground Water Sampling Procedure Low Stress (Low Flow) Purging and Sampling (USEPA Region 2, 1998). Low flow methods will be used to ensure collected samples are representative of groundwater conditions at the site."

## **SPECIFIC COMMENTS:**

**Comment 1:** Section 2.3, Page 5. The Non Time Critical Removal Action (NTCRA) conducted in this area and removed VOC contaminated soil which acted as source material for the TCE plume. Does any of the current groundwater sampling data indicate presence of residual soil contamination which should be investigated for possible removal?

**Response 1:** The remedy, described in the approved ROD (Parsons, 2003) addresses a remedy for groundwater which focuses on "management of the VOC plume, which includes improving the quality of the existing plume and managing the migration of the plume off-site". The selected soil remedy, approved in the ROD and implemented in the remedial action, consisted of installing vegetative covers on the NCFL and the Ash Landfill and removing the debris piles. Soil sampling, specifically with the intent of delineating a potential source, was not required in the approved ROD and has not been completed.

**Comment 2:** Section 3.1, Page 8. There is no consistency in labeling samples in "Quarters" or "Round" in a year.

**Response 2:** Please refer to the response to General Comment 1.

**Comment 3:** Section 3.5, Page 16. Biowall Recharge Evaluation should be done in summer of 2010 and not after completion of the fourth year round.

**Response 3:** After each sampling event at the Ash Landfill OU, the Army reviews lines of evidence for both geochemical parameters and chlorinated ethene concentrations and evaluates whether recharge is required. A formal evaluation and discussion is documented in each Annual Report. The Army agrees to include a discussion of biowall recharge evaluation in the Round 9 Letter Report (summer 2010).