Engineering a Sustainable Future

EPA Region 1 RAC 2 Contract No. EP-S1-06-03

May 23, 2014
Nobis Project No. 80022

Via Electronic Submittal

U.S. Environmental Protection Agency, Region 1
Attention: Mr. Daniel Keefe, Task Order Project Officer
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3919

Subject: Transmittal of Final 2013 Groundwater Monitoring Data Summary Report
Nyanza Chemical Waste Dump Superfund Site – Operable Unit 2,
Ashland, Massachusetts
Remedial Action
Task Order No. 0022-RA-RA-0115

Dear Mr. Keefe:

Enclosed is the Final 2013 Groundwater Monitoring Data Summary report for the Nyanza Chemical Waste Dump Superfund Site, Operable Unit 2, located in Ashland, Massachusetts.

Should you have any questions or comments, please contact me at (978) 703-6006, or ballen@nobiseng.com.

Sincerely,

NOBIS ENGINEERING, INC.

Boyd Allen III, P.G.
Associate / Senior Project Manager

Enclosure

c: D. Buckley, MassDEP
File No. 80022/MA

SDMS Doc ID 558707

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2013 Groundwater Monitoring Data Summary

Nyanza Chemical Waste Dump – Operable Unit 2
Ashland, Massachusetts

Remedial Action
EPA Task Order No. 0022-RA-RA-0115

REMEDIAL ACTION CONTRACT
No. EP-S1-06-03

FOR

US Environmental Protection Agency
Region 1

BY

Nobis Engineering, Inc.

Nobis Project No. 80022

May 2014

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2013 Groundwater Monitoring Data Summary

Nyanza Chemical Waste Dump – Operable Unit 2
Ashland, Massachusetts
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May 2014

Boyd Allen III, P.G.
Senior Project Manager

Jennifer Lambert
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1.0 INTRODUCTION

Nobis Engineering, Inc. (Nobis) prepared this 2013 Groundwater Monitoring Data Summary Report (Report) for the Nyanza Chemical Waste Dump Superfund Site, Operable Unit II (Nyanza OU2) located in Ashland, Massachusetts. Site location is depicted in Figure 1-1.

This work was performed in accordance with the United States Environmental Protection Agency (EPA) Region I Remedial Action Contract 2, No. EP-S1-06-03, EPA Task Order No. 0022-RA-RA-0115, Amended Scope of Work (ASOW) dated March 23, 2012, Work Plan Amendment (WPA) No. 3 (Nobis, April 2012).

1.1 Objective

The Task Order objective is to implement a Remedial Action (RA) for the Nyanza OU2 (the Site) that eliminates, reduces, or controls risks to human health and the environment. More specifically, this Task Order includes recovery of dense non-aqueous phase liquid (DNAPL) using an extraction system. The Task Order was modified by Amendment No. 2 to include groundwater monitoring of approximately 30 wells. Amendment No. 3 further modified the monitoring program to include the collection of groundwater samples semi-annually over the next four years (through 2015). This will allow for a comprehensive evaluation as to the feasibility of Monitored Natural Attenuation (MNA) as an effective remedial alternative for the dissolved phase plume of Nyanza-related contaminants.

Natural attenuation relies on natural processes to decrease or “attenuate” groundwater contaminants. Periodic monitoring, including the collection of groundwater samples that are analyzed for the presence of site contaminants and other site characteristics, is used to verify that natural attenuation is working. The right conditions must exist in groundwater to effectively reduce the concentration of site-related contaminants in a reasonable timeframe.

Project tasks recently completed include:

- Installation and ongoing operation and maintenance of DNAPL recovery systems at monitoring wells MW-113A at the Worcester Air Conditioning facility and MW/B-11 at the Nyacol facility.

- Reinstallation of damaged/destroyed stream gages and completion of a location and elevation survey;

- Completion of a synoptic groundwater gaging round from site-wide monitoring wells;

- Analytical testing of groundwater collected from selected wells included in the work scope as Spring and Fall round monitoring wells; and

- Completion and submittal of this 2013 Groundwater Monitoring Report.

This 2013 Groundwater Monitoring Data Summary Report summarizes the above activities. In addition, this report compares 2013 groundwater analytical data with results collected from prior sampling efforts. The report also compares the 2013 data with two state groundwater standards: GW-1 and GW-2 as promulgated by the Massachusetts Department of Environmental Protection (MassDEP).

The GW-1 standards apply to groundwater that is in a current or potential drinking water source area, including wellhead and water supply protection areas and groundwater within 500 feet of a private water supply well. The GW-2 standards apply to groundwater within 30 feet of an existing or planned building that will be occupied and when groundwater is less than 15 feet below ground surface. GW-2 standards were developed with consideration to the potential migration of volatile contaminants from groundwater into indoor air. In 2014, MassDEP issued a Groundwater Use and Value Determination for Nyanza (MassDEP, 2014) that covered an area within a half mile radius centered on the Nyacol property. The Groundwater Use and Value Determination did not consider the review area to be a current drinking water source but identified four distinct areas as "potentially productive aquifers" for future water supplies based on hydrogeological characteristics. All but one area, a small portion of the known plume area north of Pleasant Street and adjacent to the Sudbury River were eliminated as potential future water supplies based on existing site uses (density of housing, lot size, proximity of commercial/industrial properties, etc.).

1.2 Site Location and Background

The former Nyanza facility is located on the north side of Megunko Road in the Town of Ashland, Massachusetts. The Town of Ashland is in Middlesex County and located 25 miles west of Boston,

and 20 miles east of Worcester (Figure 1-1). The Site is crossed by railroad tracks used daily by freight and MBTA commuter trains. A former landfill on Megunko Hill (now capped; Figure 1-2) is located to the southwest of the former Nyanza property. The Site study area focuses on groundwater contamination plumes that have migrated north and east from the former Nyanza facility.

Soil at the Site consists mainly of silty fine sand and sandy silt (corresponding to glaciolacustrine sediment) and fine to coarse sands with gravels/cobbles found at some locations (corresponding to glaciofluvial sediment) (Ebasco Services Incorporated, 1991). The content of fines is in the range of 1.5% to 33.5%, with no significant changes in percentages with depth below ground surface (bgs). Fines are defined as materials passing a No. 200 sieve during a soils test.

Soil thickness varies from approximately 3.5 feet at MW-502B to 115 feet at MW-404A. Depth to bedrock is shallowest in the Megunko Hill area and increases radially out from the Hill into a valley in the lowlands before beginning to rise again on the north shore of the Sudbury River. A meandering bedrock trough, attributed to a preglacial Sudbury River channel (Ebasco Services Incorporated, 1991), is located in the center of the Site, roughly parallel to the Sudbury River. There is also evidence of a bedrock low near MW-113A. This localized depression may provide a natural accumulation area for DNAPL, as the physical properties of DNAPL cause it to sink in groundwater where it may accumulate on top of competent bedrock or travel into bedrock fractures.

In the upland Megunko Hill area, overburden and bedrock groundwater generally flow in a northerly direction from the north side of Megunko Hill and in an easterly direction toward the Eastern Wetlands from the east side of Megunko Hill and the capped area. Section 2.0 provides the most recent overburden and bedrock groundwater level maps.

Flow in the lowland areas east of Megunko Hill is in a more northeasterly direction, toward the Sudbury River. Overburden and bedrock groundwater flow is also in a northerly direction towards the Sudbury River in the lowland areas north of Megunko Hill. Most vertical groundwater gradients were negligible (less than 0.02-foot difference between wells). Downward gradients were observed across the Site, with upward gradients observed primarily at locations adjacent to the Sudbury River.

In 1994, DNAPL was discovered at the Worcester Air Conditioning (WAC) property, north of the Nyacol facility and across the railroad right of way. The DNAPL found at this location was a reddish, dark brown liquid with a low viscosity and had a very strong almond-like chemical odor. Potential DNAPL sources include:

- a former concrete "vault" adjacent to the main processing building of Nyanza, Inc. previously used for solids separation prior to effluent discharge;
- two former lined lagoons south of Megunko Road;
- two former settling ponds (1 and 2) south of Megunko Road (between the lined lagoons and Trolley Brook);
- the former landfill on Megunko Hill (capped area);
- the former Chemical Brook; and
- Area E (the lower industrial area between Megunko Road and the railroad tracks).

Between 1998 and 2004, EPA conducted groundwater monitoring at the Site twice a year. It has recently reinstated the semi-annual monitoring events. Site monitoring wells and other features are presented in Figure 1-2.

In addition to the groundwater sampling events (described herein), other recent site activity included installation of DNAPL recovery systems at MW-113A at WAC and MW/B-11 at Nyacol. These systems are designed to extract localized DNAPL accumulations identified during previous drilling activities.

2.0 GROUNDWATER MONITORING INVESTIGATION

Groundwater sampling was conducted to characterize the nature and extent of groundwater contamination. Both overburden monitoring wells (OB) and bedrock monitoring wells (BR) exist at the Site. Wells are classified as OB, BR, or overburden/bedrock (OB/BR) based on where the well screen is positioned (OB/BR wells are screened across the overburden-bedrock interface). OB/BR wells (MW-04B, RW-1 and MW/B-5) are considered as OB wells when calculating groundwater elevations and mapping chemical distributions.

Two groundwater sampling rounds were conducted in 2013 to evaluate both the overburden and bedrock aquifers and compare any seasonal variability in the results. Nobis sampled 18

monitoring wells during the spring event (completed the week of May 20, 2013) and 43 monitoring wells during the fall event (completed the week of November 4, 2013). Wells were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and anions in both events, with an additional sub-set of 10 wells analyzed for dissolved gases during the fall event.

Specific information pertaining to each sampling event is presented in the following sections. Table 2-1 lists wells included within each sampling round, groundwater sample identification, dates of sample collection, analyses performed, and quality control (QC) sample designation (as appropriate). Figure 1-2 depicts wells included in each sampling round. Table 2-2 presents monitoring well construction details for the wells sampled.

Prior to each sampling event, Nobis obtained site-wide synoptic groundwater elevations from all monitoring wells. These data were used to develop groundwater flow maps. Overburden and bedrock groundwater flow directions are summarized below in Sections 2.1.1 and 2.2.1, respectively. Overburden and bedrock groundwater elevations and flow directions derived from fall gaging data (described as “flow paths” in this report) are depicted in Figures 2-1 and 2-2, respectively.

Prior to the initial groundwater sample collection, Nobis outfitted monitoring wells with dedicated Teflon or Teflon-lined polyethylene tubing. The tubing remains in the wells for future sampling use. Nobis used either peristaltic or bladder pumps to purge wells and collect groundwater samples. Bladder pumps were used when the hydraulic head in the well was beyond the lift capability of a peristaltic pump.

Bladder pumps were decontaminated and new bladder kits installed prior to sampling all wells requiring the bladder pump set-up. Due to the nature of peristaltic pumps and the use of dedicated tubing, no peristaltic pump components required decontamination between sample points. Movable equipment was decontaminated between wells.

The peristaltic pumps were battery operated. The bladder pumps were powered by an electric compressor. Pump controls allowed the sampler to adjust flow rate, minimizing drawdown in the well while purging and collecting groundwater samples.

Nobis collected groundwater samples in accordance with the EPA Region 1 low-stress sampling procedures. Nobis monitored the purge water for stabilization before collecting samples. Water level (drawdown), pumping rate, and water quality parameters were recorded every five minutes (or as appropriate) using YSI 600 XLM multi-parameter and Hach 2100Q turbidity meters (or equivalent). Field data were recorded on Low-Flow Field Log Sheets (Appendix A).

Monitoring wells were considered stable and ready to be sampled when three consecutive readings of water quality parameters achieved the following conditions:

- **Temperature** (3 percent difference between readings)
- **pH** (+/- 0.1 unit between readings)
- **Oxidation Reduction Potential** (ORP) (+/- 10 millivolts between readings)
- **Dissolved Oxygen** (DO) (10 percent difference between readings or readings less than 0.5 milligrams per liter [mg/L])
- **Specific conductance** (3 percent difference between readings)
- **Turbidity** (10 percent difference between readings or readings less than 5 Nephelometric Turbidity Units [NTU])

After parameter stabilization was achieved, groundwater samples were collected from the tubing directly into the sample containers. VOC samples were kept free of air bubbles or air pockets to minimize evaporative loss of dissolved VOCs.

2.1 Spring Sampling Event

The 2013 spring sampling event was conducted between May 20, 2013 and May 22, 2013, as detailed below.

2.1.1 Groundwater Elevations

Nobis completed the spring synoptic groundwater gaging round on May 20, 2013. Nobis collected depth-to-water measurements at 79 measuring points, including 72 site-wide monitoring wells and 7 stream gages installed at Mill Pond and the Sudbury River upstream and downstream of the dams, to calculate groundwater elevations and estimate flow direction.

Measured depths to water and calculated groundwater elevations for all monitoring locations included in the synoptic round are presented in Table 2-3. Groundwater depths ranged from 1.51 feet below ground surface (ft bgs) in RMW-405A to 25.44 ft bgs in MW-503B. With the exception of MW-402, MW-503B, and MW-505B (located on Megunko Hill), all depths to groundwater were less than 15 feet.

Groundwater flows to the northeast from the landfill and source area, away from the capped area and the highlands near the source area. Near the Boston and Albany railroad tracks, the groundwater flows more to the east, parallel to the Sudbury River. Both the overburden and shallow bedrock exhibit similar flow patterns, although the horizontal groundwater gradient is much higher in the bedrock near the capped area. Note that the bedrock potentiometric surface is derived from water levels in individual monitoring wells, and that flow in the bedrock is controlled by individual transmissive fractures.

2.1.2 Well Sampling

Nobis sampled 18 monitoring wells for laboratory analyses in accordance with the Quality Assurance Project Plan (QAPP) (Nobis, 2012b); however, MW-113A was omitted from this sample round due to the presence of DNAPL. As previously discussed with EPA, Nobis collected a sample from MW-302 to replace the omitted MW-113A sample. MW-302 was selected to further track downgradient plume migration. In addition, SVOC data are unavailable for MW-06A for the spring round because of sample bottle damage during shipping.

Samples were collected and analyzed for VOCs, SVOCs, and anions (chloride, nitrate, nitrite, sulfate, nitrate as nitrogen, and nitrite as nitrogen). Peristaltic pumps were used to sample all spring round monitoring wells.

QC samples were collected in conjunction with the groundwater samples and as per the QAPP. The spring QC samples included a field duplicate sample, a matrix spike/matrix spike duplicate (MS/MSD) sample, a trip blank, and two performance evaluation samples.

Groundwater samples and associated field QC samples were collected, preserved, and submitted to EPA-approved laboratories. VOC and SVOC samples were shipped to KAP Technologies, a Contract Laboratory Program (CLP) laboratory, in The Woodlands, Texas. Anion samples were

delivered via courier to EPA's Region 1 Office of Environmental Measurement and Evaluation (OEME) in North Chelmsford, MA.

2.2 Fall Sampling Event

The fall sampling event was conducted between November 4, 2013 and November 7, 2013. Details regarding the fall sampling event are included in the following sections.

2.2.1 Fall Groundwater Elevations

Nobis completed the fall synoptic groundwater gaging round on November 4, 2013. Nobis collected depth to water measurements from 78 measuring points, including 71 monitoring wells and 7 stream gages, to calculate groundwater elevations and estimate flow direction.

Groundwater gaging information is included in Table 2-3. Groundwater depths ranged between 2.43 feet bgs (RMW-405A) and 29.02 feet bgs (MW-503B). MW-503B also had the greatest depth to groundwater in the spring 2012 sampling round. MW-06A occasionally has depths to groundwater shallower than RMW-405A. All measured depths to groundwater were less than 15 feet except in RMW-117A, MW-301, MW-402, MW-503B, and MW-505B.

Overburden and bedrock groundwater flow directions calculated from fall gaging data are depicted in Figures 2-1 and 2-2 respectively. Monitoring well locations for the flow path analysis were selected from those wells in the source area and along the same general groundwater flow path with available VOC and geochemical data. Groundwater flow patterns are consistent with spring data and previous interpretations.

2.2.2 Well Sampling

There were 42 groundwater wells scheduled for sampling during the fall monitoring event, as per the QAPP. Nobis did not sample MW-503A because the well was dry. Monitoring wells MW-06B and MW-107 were added to the sample program as a replacement for MW-503A and to better define the edge of the downgradient plume.

To increase sampling efficiency, all but two wells were sampled using peristaltic pumps. MW-503B and MW-0402 were sampled using bladder pumps based on the greater depths to groundwater/limitations of the peristaltic pumps.

Samples were collected for VOCs, SVOCs, anions (chloride, nitrate, nitrite, sulfate, nitrate as nitrogen, and nitrite as nitrogen), and dissolved gasses analysis as per the EPA approved QAPP (Nobis, 2012b).

QC samples were collected in conjunction with the groundwater samples as per the QAPP. QC samples collected during the fall event included two field duplicate samples, two matrix spike/matrix spike duplicate (MS/MSD) samples, two trip blanks, and five performance evaluation samples. No equipment blank was necessary based on the use of dedicated sampling equipment.

Groundwater samples and associated field QC samples were collected, preserved, and submitted to EPA-approved laboratories. VOC and SVOC samples were shipped to ALS Group, a CLP laboratory in Salt Lake City, Utah. Dissolved gasses samples were shipped to Spectrum Analytical Inc., a Delivery of Analytical Services laboratory, in Warwick, Rhode Island. Anion samples were delivered via courier to EPA's Region 1 OEME Laboratory in North Chelmsford, MA.

2.3 Other Field Activities

2.3.1 Site Maintenance Activities and Monitoring Point Survey

On May 22, 2013, Nobis repaired three monitoring wells and established six new stream gage locations.

Nobis trimmed the PVC well risers at MW-404A, MW-304A, and MW-304B because standpipe (404A) and roadbox (304A and B) settling did not allow proper securing of the wells. Nobis cut the PVC riser, installed new well plugs, and surveyed repaired monitoring wells using a laser level to establish temporary measuring points for groundwater gaging and flow calculations.

Six new stream gages were installed to replace destroyed stream gage locations. Stream gage locations were affixed to hard structures (bridge abutments, dam structures) to promote longevity.

On June 20, 2013, A-Plus Construction Services Corporation surveyed repaired monitoring wells and stream gage locations for elevation and location. New elevations generated during the survey are included in Table 2-2.

2.3.2 DNAPL Recovery System Installation and Operations and Maintenance Activities

Nobis' step-drilling investigation conducted in 2012 identified measureable, recoverable thicknesses of DNAPL at MW/B-11 and MW-113A at Nyacol and WAC, respectively. During well construction at MW/B-11, the well screen was set at known fractures and a sump installed for future product extraction. The well at MW-113A is screened within the highest yielding bedrock fracture zone as determined from packer testing at the time of installation. The sump is only two inches at this location.

Nobis submitted the DNAPL Extraction System Evaluation Report to EPA on April 24, 2013. This report updated the Conceptual Site Model, identified and evaluated several technologies for DNAPL extraction, and recommended construction of a submersible pump recovery system.

In September 2013, Nobis completed DNAPL extraction system installations at MW/B-11 and MW-113A. Recovery systems consist of a compressed air powered recovery pump installed in the well, a solar powered electronic pump controller, a double-walled DNAPL collection tank, and an associated carbon system for treating product vapors. System components are housed inside a lighted and heated enclosure.

Nobis conducts on-going weekly operations and maintenance (O&M) activities to monitor system operation, check system components, and evaluate DNAPL recovery rates and volumes. In addition to regular O&M visits, a cellular emergency dialer provides remote system callout in the event of system interruptions. Specific details regarding extraction system construction and system O&M activities are summarized in a separate DNAPL Extraction System Construction Summary Report submitted to EPA in March 2014.

3.0 GROUNDWATER LABORATORY ANALYTICAL RESULTS

Nobis collected samples for VOCs, SVOCs, and anions analyses during both sampling events. Dissolved gasses samples were collected as part of the fall sampling round only.

Groundwater laboratory analytical results for VOCs, SVOCs, anions, and dissolved gasses are presented in Tables 3-1 series (spring round) and 3-2 series (fall round). Analytical results were compared to MassDEP GW-1 and GW-2 groundwater standards.

As stated in Section 1, GW-1 standards are protective of drinking water and GW-2 standards consider potential migration of volatile contaminants to indoor air. Threshold values for GW-2 standards are higher than GW-1 values in all instances for the contaminants of concern. Therefore if a GW-2 criterion is exceeded, it also exceeds the corresponding GW-1 criterion.

Because elevated concentrations of specific compounds in some samples, the laboratory needed to dilute these samples to obtain valid analytical results for the elevated constituents. Sample dilution raised the detection limits for all compounds such that some detection limits for non-detected compounds exceed the applicable MCP standard. However, these wells are still under scrutiny because the high concentration compounds are usually above the GW-1 criterion. This problem is generally limited to source area wells like MW-113A, MW/B-5, RW-1, MW/B-11, and SB-600. The following sections summarize the 2013 analytical and field data.

3.1 VOC Analytical Data

VOC data from both 2013 sampling events (Tables 3-1a and 3-2a) were compared to the GW-1 and GW-2 standards.

A total of 7 VOCs exceeded both the GW-1 and the GW-2 groundwater standards, including 1,2-dichlorobenzene (DCB); 1,3-DCB; 1,4-DCB; chlorobenzene; cis-1,2-dichloroethene (DCE); trichloroethene (TCE); and vinyl chloride (VC). Four additional VOCs, including 1,2,4-trichlorobenzene (TCB), 1,1-DCE, benzene, and methylene chloride, exceeded the GW-1 standard only, bringing the total number of compounds exceeding GW-1 to eleven.

Figure 1-2 depicts the Site source areas. The contaminant plume in both the bedrock and overburden originate on the Nyacol (former vault area) and WAC properties (source areas), flow north and then east to the areas south of the Sudbury River and Mill Pond, and then to the downgradient area east of Main Street. The contaminant plumes in the overburden and bedrock aquifers are similar. The highest concentrations are located in the bedrock in the source and

center plume areas. VOC concentrations exceeded the GW-2 standard in 28 monitoring wells and the GW-1 standard in 34.

Specific details for some compounds are as follows:

- **TCE** exceeded the GW-1/GW-2 standards at 26 sample locations, and was detected above the- GW-1 standard only at 6 additional locations. The highest TCE concentration was detected in MW-113A, located on the WAC property.

  TCE exceedances occurred in bedrock and overburden wells throughout the Site, including cross-gradient well MW-04B; the source areas; northeast of the landfill and along Megunko Road; throughout the downgradient plume area south of Mill Pond and west of Main Street; and east of Main Street in wells RMW-0405A and B. TCE contaminant distributions in overburden and bedrock wells for November 2013 are depicted in Figures 3-1 and 3-2, respectively.

- **VC** was detected at concentrations exceeding both the GW-1 and GW-2 standards in 13 monitoring wells. The highest concentration was detected in MW-203A; however, the laboratory was unable to report detection limits lower than the groundwater standards for all samples analyzed. Therefore, it is possible that some VC non-detect results might also exceed the groundwater standards at other sampling locations.

  VC exceedances historically have occurred in the north-central portion of the contaminant plume and downgradient from the source area south of Pleasant Street.

- **1,2 DCB** was detected above the GW-1/GW-2 standards at seven sampling locations and above the GW-1 standard only at ten other locations. The highest 1,2-DCB concentration was detected in MW/B-11.

  Elevated levels of 1,2-DCB were detected in bedrock and overburden wells in source area wells on the Nyacol and WAC properties, northeast of the landfill, on the south bank of the Sudbury River upstream of Mill Pond, and in the downgradient plume area south of Mill Pond and west of Main Street.

- **Chlorobenzene** was detected above the GW-1/GW-2 standards at 15 sampling locations and above the GW-1 standard only in four other locations. The highest concentration was detected in MW/B-11.

  The highest levels of chlorobenzene were detected in source area wells on the Nyacol and WAC properties, in bedrock and overburden wells on the south bank of the Sudbury River upstream of Mill Pond, and in the downgradient plume area south of Mill Pond.

- **1,4-DCB** was detected above the GW-1/GW-2 standards at 12 sampling locations and above the GW-1 standard only at an additional 16 locations. The highest concentration was detected in MW/B-11. Figures 3-3 and 3-4 depict the 1,4-DCB concentrations in fall 2013 in overburden and bedrock groundwater, respectively.

  Elevated levels of 1,4-DCB were detected in source area bedrock and overburden wells on the Nyacol and WAC properties, at the base and northeast of the landfill, on the south bank of the Sudbury River upstream of Mill Pond, in the downgradient plume area south of Mill Pond and west of Main Street, and east of Main Street in wells RMW-0405A and B.

- **Cis-1,2-DCE** was detected above the GW-1/GW-2 standards at 18 sampling locations and above the GW-1 standard only at six other locations. The highest concentration was detected in MW-405B. Figures 3-5 and 3-6 depict the cis-1,2-DCE concentrations in overburden and bedrock groundwater, respectively.

  Elevated levels of cis-1,2-DCE were detected in source area wells, immediately northeast of the landfill and south of Mill pond, west of Main Street, and east of Main Street near RMW-405B. Highest concentrations of cis-1,2-DCE were identified in bedrock at RMW-405B.

- **Additional VOCs –** 1,3-DCB was detected at concentrations above the GW-1/GW-2 standards in two locations and above the GW-1 standard only at an additional four locations. 1,1-DCE; 1,2,4-TCB; benzene, and methylene chloride were also detected in these areas at levels above the GW-1 standard.

3.2 SVOC Analytical Data

SVOC analytical data are presented in Tables 3-1b and 3-2b. SVOC data from both the spring and fall sampling events were compared to the GW-1 and GW-2 standards.

Elevated SVOCs were measured in many of the same wells where elevated VOCs were detected. Eleven compounds exceeded the GW-1 standard, including: 1,1-biphenyl; 2,4-dichlorophenol; 2-chlorophenol; 4-chloroaniline; benzo(a)anthracene, benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; indeno(1,2,3-cd)pyrene and pentachlorophenol. No SVOCs were detected above GW-2 standards.

SVOCs exceeded the GW-1 standard in eight monitoring wells, including five monitoring wells in the source area and three wells in the downgradient plume area south of Mill Pond. MW-204A had the most SVOC compounds exceeding GW-1.

In addition, elevated levels (≥15,000 µg/L) of nitrobenzene were detected in source area wells MW-113A, MW/B-5, RW-1, and MW-/B-11 and in MW-503B on Megunko hill. No groundwater standards exist for this compound.

In 2011, VOC compounds 1,2,4-TCB; 1,2-DCB; 1,3-DCB; and 1,4-DCB were listed as both VOC and SVOC compounds. In this report and going forward, these four compounds will be characterized as VOCs and are listed in Tables 3-1a and 3-2a.

3.3 Anion Analytical Data

Anion concentrations can be used as additional indicators of anaerobic biodegradation processes. When oxygen is depleted, microbes will preferentially use nitrate and sulfate as electron acceptors to anaerobically degrade hydrocarbons. Depletion of these terminal electron acceptors may be indicative of ongoing biodegradation.

Anion samples were collected during both the spring and fall sampling rounds to assess groundwater suitability to support natural attenuation and reductive dechlorination processes. Results are presented in Tables 3-1c and 3-2c and indicate the following:

- Nitrite was not detected in any of the 2013 samples.

- Nitrate and sulfate tend to be depleted immediately downgradient of the source area. The highest nitrate and sulfate concentrations were encountered away from the source area (maximum of 12 mg/L in MW-403A for nitrate and maximum of 3200 mg/L in MW-203A for sulfate).

- In certain conditions, chloride accumulation can be an indicator of anaerobic biodegradation. However, chloride concentrations can be influenced by road salt, especially in shallow monitoring wells near roadways and parking lots. The highest chloride concentrations were detected in the central portion of the plume, as well as a few locations cross-gradient to the plume. The highest chloride detections were in MW-203A (maximum of 6,100 mg/L), located close to a building entrance and parking lot.

3.4 Dissolved Gasses Analytical Data

Dissolved gas concentrations (ethane, ethylene, and methane) can be used as indicators of aerobic and anaerobic biodegradation processes. Anaerobic biodegradation, in particular, is well suited to render site groundwater contaminants harmless compounds over time. Ethane and ethylene are recognized end products of biologic and abiotic reductive dechlorination. Methane is an indicator of strongly reducing conditions well suited to biologically mediated reductive dechlorination (Wiedemeier et al., 2004). Eleven wells were sampled for dissolved gasses during the fall sampling event and results are presented in Table 3-2d.

The highest ethane concentrations were detected in MW/B-5, while the highest ethylene concentrations were detected in MW-203A. Elevated methane concentrations (above 500 µg/L) were detected in MW/B-5, MW-115B, MW-203A, and MW-405B. Natural attenuation processes represented in part by these gases are discussed in section 4 below.

3.5 Field Parameter Data

Field parameter data (Table 3-3) were used to track well stability prior to collecting samples as well as to assess potential for natural attenuation. The 2013 field parameter data results indicate the following:

- Temperature values were consistent across the Site with an average temperature of 13.5 degrees Celsius.

- The mean pH value across the Site was 6.2. One low pH value (<4) was measured in MW-302. The high pH values previously detected in 2012 at RMW-405A have decreased.

- The highest specific conductance values were measured in MW-115A and B, MW-203A, MW-304A, and RMW-405B. Elevated specific conductance values correlate well with the highest measured chloride levels.

- ORP is a measurement in millivolts (mV) of the tendency of a chemical species to acquire electrons and hence be reduced. In general, positive ORP values indicate oxidizing conditions and negative ORP values indicate reducing conditions. Reducing conditions were measured in 19 wells.

- Anaerobic biodegradation generally begins when DO levels are less than 0.5 mg/L. Anoxic conditions (DO below 0.5 mg/L) were encountered in 31 wells in at least one monitoring round. In general, these wells were source area or center plume area wells.

4.0 DATA EVALUATION

4.1 Data Quality Assessment and Limitations

In accordance with the WPA and QAPP, a data quality assessment was performed to evaluate whether the collected groundwater data would be reliable for assessing groundwater contamination. In general, the data proved reliable as described below.

Results of the Tier 1 modified data validation are in the memoranda presented in Appendix B. Data validation qualification flags were applied to VOC and SVOC data based on *EPA CLP National Functional Guidelines for Organic Superfund Data Review* (EPA, 2008). These flags marked non-conformance related to initial and continuing calibrations, blanks, deuterated monitoring compounds (DMCs), matrix spikes, and internal standards. Full comments on relative bias for these data are included in the data validation memos.

The groundwater data (with minor exceptions) were evaluated as reliable for decision-making purposes. Key excerpts include:

- Results for 1,4-Dioxane in the May and November 2013 sample rounds were qualified as estimated (J), estimated reporting limit (UJ), or Rejected (R) due to either DMC results that were out of the acceptance range or problems with the initial and continuing calibrations.

- Contamination of the laboratory method blank was reported in association with the November 2013 sample round. The following contaminants were detected below the Contract-Required Reporting Limit (CRQL) in the method blank samples: 1,2-DCB, 1,3-DCB, 1,4-DCB, 1,2,3-TCB, 1,2,4-TCB, chlorobenzene, chloroform, methylene chloride, TCE, cyclohexane, and bis(2-ethylhexyl)phthalate. Concentrations of these substances below the CRQL in associated field samples were qualified as non-detect (U) at the CRQL. Detections of these substances in associated field samples above the CRQL were not qualified. Regulatory limits for these compounds are at or above the CRQL, so these results are not expected to affect the interpretations or conclusions in this report.

- Trip blanks submitted during the November 2013 sample round also contained contaminants at similar concentrations to those reported in the laboratory method blank samples, indicating likely laboratory contamination of the trip blanks. The following contaminants were reported in trip blank samples associated with the November 2013 sample round at concentrations below the CRQL: 1,2-DCB, 1,3-DCB, 1,4-DCB, 1,2,4-TCB, 2-butanone, acetone, chloroform, chlorobenzene, toluene, and TCE. Concentrations of these substances below the CRQL in associated field samples were qualified as non-detect (U) at the CRQL. Detections of these substances above the CRQL in associated field samples were not qualified.

- Several samples in two of the three sample delivery groups for the November 2013 sample round reported internal standard area counts outside the lower acceptance limit. The following contaminants were qualified as estimated (J) for detections, and rejected (R) for non-detects in the affected field samples: benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, di-n-octylphthalate, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Data qualifiers were not applied to dissolved gas and anion data. Comments on relative bias for these data are made in the data validation memos and are summarized as follows:

- The November 2013 methane and ethane field replicates were qualified as estimated (J) due to imprecision between the two replicates.

- The dissolved gas results in sample MW-203A-110413A may be biased low due to dissolved gas losses associated with sample dilution preparation.

- Some of the November 2013 anion samples were received at the laboratory at elevated temperature. As such, they may be biased low due to temperature excursion.

- The nitrate results in the laboratory duplicate samples were not within the precision criteria. Additionally, the nitrate results in one field replicate pair out of three pairs was not within the established precision criteria. The remaining field replicate results were within criteria.

- Nitrite results may be biased high in samples containing elevated chloride concentrations; however, nitrite was non-detect in all laboratory samples.

4.2 Groundwater Concentration Trends

The following subsections describe the concentration trends for both geochemistry and selected contaminants of concern.

4.2.1 Geochemistry

Overburden and bedrock geochemistry are described separately below. Please refer to Figures 4-1 and 4-2 for overburden and bedrock results, respectively.

Overburden

DO was generally low (below 0.5 mg/L) along the flow path from the source area, while ORP was low and often positive in sign. With such low DO values, the ORP values would be expected to be much lower and negative in sign.

The southern part of the plume was generally nitrate depleted, while the eastern end of the northern flow path (MW-202, MW-201, and MW-115B) had moderate nitrate levels. The increase in nitrate in the central portion of the plume (MW-06B, MW-115B, MW-202, MW-203B, and MW-302) may be from an influx of water associated with the Eastern Wetland located south of Megunko Road and 600 feet east of the landfill, as shown on Figure 1-2. The depleted nitrate/sulfate and low DO and ORP at WP-105 (lower than the monitoring wells along the northern flow path) may reflect the influence of adjacent Mill Pond wetland material.

Sulfate concentrations were relatively high in the downgradient portion of the plume (the eastern ends of both flow paths) but appeared to be depleted in the southern flow path close to the source area. Nitrite was not detected in any of the monitoring wells.

The current geochemistry in the overburden appears to be somewhat favorable to reductive dechlorination, especially along the northern flow path. DO and ORP do not appear to be high enough to inhibit dechlorination in most areas, while nitrate and sulfate do not appear to be limiting factors except in the middle portions of the southern flow path.

Bedrock

Bedrock geochemistry trends were similar to those of the overburden. Dissolved oxygen was generally low (below 0.5 mg/L) along the flow path from the source area, while ORP was low and positive.

The southern part of the plume was depleted in nitrate once the plume had passed the railroad tracks, while the northern flow path had relatively high nitrate levels, with the exception of MW-113A in the source zone. Nitrite was not detected. Sulfate concentrations were relatively high throughout the plume, with only one possible depleted area at the end of the southern flow path.

The current geochemistry in the bedrock also appears to be somewhat favorable to reductive dechlorination. DO and ORP do not appear to be high enough to inhibit dechlorination except toward the eastern portion of the plume (MW-107 and MW-115A). Nitrate may be a limiting factor for dechlorination in the source area and along most of the southern flow path, but sulfate appears to be sufficient for dechlorination.

4.3 Historical Data Comparison

Nobis compared the results for the 2013 sampling rounds to the data collected in 2012. VOC, SVOC, and anion data from 2011 through 2013 are presented in Tables 4-1, 4-2, and 4-3, respectively. Only compounds with detections above GW-1 and GW-2 standards are included in the tables and in subsequent data comparisons. This comparison included a review of maximum concentrations as well as the number of times a groundwater standard was exceeded. An evaluation of these comparative data shows:

- One new VOC (1,1-DCE) was detected above the GW-1 standard. Most locations where 1,1-DCE was detected were from the source area and had much higher detection limits in 2012. However, two exceedances came from monitoring wells with low detection limits in 2012 (5 µg/L), but were at relatively low concentrations in fall 2013 (MW-304A, 7.1 J µg/L and MW-503B, 19 J µg/L).

  Seven new SVOCs were detected above the GW-1 standards, including: 2,4-dichlorophenol, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene.

- Maximum concentrations increased for 18 compounds, including:

  - **VOCs:** 1,1-DCE; 1,2,4-TCB; 1,2-DCB; 1,3-DCB; 1,4-DCB; chlorobenzene; cis-1,2-DCE; TCE; VC;

  - **SVOCs:** 2,4-dichlorophenol; 2-chlorophenol; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; indeno(1,2,3-cd)pyrene; and pentachlorophenol.

- Maximum concentrations decreased for three compounds including methylene chloride; 1,1-biphenyl; and 4-chloroanaline. Benzene concentrations remain unchanged.

- The total number of exceedances increased for 17 compounds, including:

  - **VOCs:** 1,1-DCE; 1,2,4-TCB; 1,2-DCB; 1,4-DCB; benzene; chlorobenzene; cis-1,2-DCE; TCE; VC;

  - **SVOCs:** 2,4-Dichlorophenol; 2-chlorophenol; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; and indeno(1,2,3-cd)pyrene;

- The total number of exceedances decreased for 1,3-DCB. Four compounds showed no change in the number of exceedances from 2012: methylene chloride; 1,1-biphenyl; 4-chloroanaline; and pentachlorophenol.

- The total number of wells exceeding GW-1 standards increased by one and the total number of wells exceeding GW-2 standards increased by four.

- Nitrobenzene concentrations increased in 11 wells (MW/B-5, MW-9B, MW/B-11, MW-104A, MW-113A, MW-204A, MW-302, MW-402, MW-503B, RW-1, and WP-105). Additional detections of nitrobenzene may have been limited by elevated detection limits because of dilutions. There is no MassDEP groundwater standard for nitrobenzene.

- Nitrobenzene concentrations have fluctuated in five wells (MW-113B, MW-304A, MW-401, RMW-305A, and SB-600) but decreased between their most recent sampling dates.

A review of VOC trends observed in the center plume wells in the source areas, as illustrated in Figure 4-3, suggests contaminant mobilization from the source areas based on increased concentrations since 2012. Downgradient wells concentrations (Figure 4-4) have generally remained consistent or only decreased slightly since 2012, with the exception of overburden wells MW-06A, MW-115B, and MW-302. The continued elevated concentrations within these wells could indicate continued plume migration from the source areas. Fringe wells (Figure 4-5) generally have lower concentrations and do not exhibit discernable contaminant concentration trends.

Historical anion concentrations remained generally consistent, with a few exceptions. Table 4-3 presents historical anion analytical data.

Nitrate and nitrite generally have remained unchanged, although concentrations decreased in MW-202, MW-203B, and SB-600. Sulfate concentrations have exhibited the most variability, with several wells increasing in concentration (MW-04C, MW-112A, MW-113B, MW-115A, MW-204A, MW-503B, and RMW-405A) and two wells decreasing consistently since 2011 (MW-201 and WP-105). Chloride concentrations increased steadily from 2011 to 2013 in wells MW-04B, MW/B-5, and MW-204A. Other wells with noticeable chloride increases from 2012 to 2013 include MW-04C, RMW-405A, MW/B-11, MW-113B, and MW-503B. The increase in chloride may be a result of parking lot runoff at the first two wells and reductive dechlorination west of the immediate source area for the others. The concentration trends for these wells will be reexamined in 2014. Samples were not analyzed for bromide or fluoride in 2013.

4.4 Molar Fractions

Analytical laboratory results were converted to molar concentrations (micromoles per liter [µmol/L]) to facilitate assessment of the degree to which reductive transformations occur. This is because transformation of 1 mole of parent molecules yields 1 mole of dechlorination products (Air Force Center for Engineering and the Environment [AFCEE], 2004; Interstate Technology & Regulatory Council [ITRC], 2005). This conversion is accomplished by dividing the concentration in µg/L by the molecular weight of the compound. Decreases in the molar concentration of the total chlorinated compounds would indicate that chlorinated mass is being reduced and transformed ultimately to non-toxic end products (AFCEE, 2004).

Plotting the molar concentration versus distance from the source area helps evaluate the effectiveness of natural attenuation along the groundwater flow path. Plotting changes to the molar fraction (as percentages) or total molar concentration over time in a single well shows the effectiveness of degradation at that location.

Example calculations used to derive molar percentages are provided in Appendix C for the flow paths depicted on Figure 2-1 and 2-2. These flow paths are general approximations of groundwater movement and provide a platform for discussing chemical changes downgradient of

Nyanza sources. Appendix C also contains tables of chlorinated ethene and chlorinated benzene molar fractions since 2011. The molar results for chlorinated ethenes and chlorinated benzenes are described separately below.

4.4.1 Chlorinated Ethenes

The stable chlorinated ethene with the greatest number of chlorine atoms is PCE, which can be degraded to TCE. TCE may be degraded predominantly to cis-1,2-DCE or occasionally to trans-1,2-DCE. Both DCE isomers can then be degraded to VC, and subsequently to ethane under appropriate conditions. Figures 4-6 and 4-7 present molar percentages for the various ethenes detected in the overburden and bedrock groundwater, respectively. These percentages are described by aquifer unit below.

Overburden

The overburden well closest to the source zone is MW-113B. However, this well has a relatively low TCE molar concentration (2.44 µmol/L) and a molar fraction more indicative of a degrading plume. MW-202, located more than 1000 feet downgradient along the northern flow path, has a much higher TCE concentration and a similar molar fraction, indicating a potentially different source or a higher concentration slug passing through this location. Farther to the east, MW-201 has both a drop in TCE concentration and in molar fraction, suggesting that degradation is occurring in this area. PCE was detected in two overburden wells (MW-302 and MW-406B); however, these total molar concentration was at or below 0.01 µmol/L in each location, suggesting that the PCE may be a stray detection.

MW-115B is an outlier along the northern flow path, with a higher TCE concentration than any other well on the flow path (19.79 µmol/L) and a molar fraction more suggestive of a source zone. The companion bedrock well at this location, MW-115A, has a higher TCE concentration and overall chlorinated ethene molar mass than overburden well MW-115B. The vertical hydraulic gradient is downward between MW-115B and MW-115A.

The southern flow path has a similar trend, with very low chlorinated ethene concentrations close to the source zone (cis-1,2-DCE was the only chlorinated ethene detected in MW-112B, at 0.04 µmol/L) and slightly higher concentrations and molar fractions of degradation products. MW-302, located farthest downgradient, has molar fractions indicative of further degradation, but relatively

high concentrations (2.44 µmol/L TCE), suggesting that this location may be more hydraulically influenced by MW-115B instead of MW-6A.

Bedrock

Chlorinated ethenes in the source zone (MW/B-11, SB-600, and MW-113A) are composed almost entirely of TCE, with concentrations close to or above 150 µmol/L (about 20,000 µg/L).

Along the southern flow path, the molar fractions appear to follow the expected degradation sequence, with the molar fraction of TCE decreasing as the groundwater moves from MW/B-11 to MW-112A to MW-110. However, degradation does not appear to progress beyond 1,2-DCE throughout the flow path. The easternmost well along the flow path, MW-406A, has minimal chlorinated ethenes but contained PCE. The concentrations of the detected chlorinated ethenes (PCE and 1,2-DCE) were each below the instrument's detection limit, thus, minimizing molar ratio usefulness with such low concentrations.

The northern flow path has fewer monitoring wells, but MW-203A does have higher concentrations of VC and a much lower percentage of TCE than in the source zone. The TCE concentration is also about an order or magnitude lower than in the source zone. However, MW-115A has a slightly higher TCE concentration and a molar fraction similar to that of the source area. MW-115A and MW-203A are screened approximately 10 feet apart vertically. MW-115A may represent a portion of the plume that is isolated and therefore has not been degraded.

4.4.2 Chlorinated Benzenes

The stable chlorinated benzene with the most chlorine atoms is hexachlorobenzene (HCB), which breaks down to pentachlorobenzene. Pentachlorobenzene may be degraded to any of three isomers of TCB and then to one of three isomers of DCB. Subsequently, DCB can be degraded to chlorobenzene and chlorobenzene can be mineralized into harmless constituents - methane, carbon dioxide, and chloride ions. Figures 4-8 and 4-9 present the molar percentages of the chlorinated benzenes detected in the overburden and bedrock groundwater, respectively. These percentages are described by aquifer unit below.

Overburden

The source area (MW-112B) has relatively low molar percentages of TCBs compared to the downgradient monitoring wells, suggesting that the chlorinated benzenes in the overburden source area have been degraded. Both the northern and southern portions of the downgradient plume (past MW-6A) reflect declining percentages of TCBs with corresponding increases of degradation products DCB and chlorobenzene. Again, MW-115B has a higher molar mass compared to the surrounding wells.

Bedrock

Source area wells MW/B-11 and MW-113A have almost no TCBs and a relatively high molar percentage of DCBs. The chlorobenzene percentage generally increases downgradient as would be expected with reductive dechlorination. The exception is MW-110, which has higher percentages of TCBs and may represent water from a different source zone or a portion of the flow path with relatively low degradation.

4.5 Changes over Time

The following subsections discuss general VOC trends, and then describe the chlorinated ethenes and chlorinated benzenes below in terms of molar percentages of individual compounds. Changes in molar fractions over time provide indications of ongoing degradation when the proportion of lower-molecular weight chlorinated ethenes increase over time, coupled with an overall reduction in mass. The tables in Appendix C provide molar fractions calculated for the last two or three years of data, as available, for chlorinated ethenes and chlorinated benzenes.

4.5.1 Quantitative Analysis for Chlorinated Benzenes and Chlorinated Ethenes

Tables 4-5a and 4-5b summarize select chlorinated benzene and chlorinated ethene minimum, maximum, and average concentrations for source area, downgradient center plume, and plume fringe wells in overburden and bedrock groundwater respectively.

In both overburden and bedrock groundwater, average concentrations in the source area have increased from 2012 to 2013. MW/B-5 had the highest concentrations in all three years and the

increase in 2013 concentrations may be a consequence of nearby DNAPL extraction system. Average concentrations were more consistent in the downgradient and fringe plume wells, although nitrobenzene did spike in 2012. The wells with the highest concentrations tend to remain consistent through time.

4.5.2 Chlorinated Ethenes

Overburden

Over time, most of the molar fractions for the various ethenes in the overburden wells varied by 5% or less which suggests relatively stable conditions. The exceptions are MW-6A, MW-113B, and MW-302. MW-113B is located within the source zone and the molar mass continually increased through spring 2012 and decreased in fall 2013. The relative percentage of TCE has dropped by more than 10% since mid-2012. Degradation products trans-1,2-DCE, 1,1-DCE, and VC appeared for the first time in 2013. In MW-6A, the molar mass has increased continuously but concentrations were relatively low so minor fluctuations created molar fraction swings greater than 5%. In MW-302, the molar mass has increased continuously since fall 2012 but the molar fraction of TCE has continuously decreased with corresponding increases in the cis-1,2-DCE fraction. This pattern cannot be explained by concentration fluctuations close to the detection limit, and may indicate a different source or passage of a slug of contamination.

Bedrock

Most of molar fractions in bedrock wells also varied by 5% or less except for MW-203A and MW-406A. As described earlier, ethenes were detected at extremely low concentrations in MW-406A; however, PCE was detected for the first time in the last sampling round. Molar fractions fluctuated at MW-203A and doubled between the spring 2013 and the fall 2013 sampling rounds. Between April and August 2012, the TCE fraction increased dramatically with an increase in molar mass. Molar mass continued to decrease in fall 2012 and spring 2013 before doubling in fall 2013. Throughout this period, the molar fraction of TCE continued to decrease, cis-1,2-DCE fractions fluctuated and ethylene increased from 2% to 35% of molar mass from fall 2012 to fall 2013.

4.5.3 Chlorinated Benzenes

Overburden

The molar fractions of the chlorinated benzenes tended to change more than the chlorinated ethenes. In general, the 1,2-DCB fraction decreased while the chlorobenzene fraction increased. At the same time, the total chlorinated benzene mass tended to remain stable or increase. This suggests that while degradation appears to be continuing over time, residual mass is still present to provide a continuing source of chlorinated benzenes downgradient.

Bedrock

Chlorinated benzene behavior in the bedrock is similar to trends observed over time in the overburden. In monitoring wells where the molar fractions have changed over time, primarily along the northern flow path, 1,2-DCB percentages have decreased with corresponding increases in chlorobenzene percentages. However, in the source wells and wells immediately downgradient (MW-113A, and MW-B11) the total chlorinated benzene molar mass has more than doubled. The drop in molar mass at MW-115A is paired with a slight increase in concentrations at the companion overburden well (MW-115B), suggesting that the concentration decrease may be due to mass transport rather than degradation.

4.6 Potential for Degradation

Figures 4-1 and Figure 4-2 depict the overburden and bedrock geochemistry, respectively. Both figures incorporate four indicator parameters considered to be important for determining groundwater suitability for contaminant degradation: DO, ORP, nitrate, and sulfate. The color spectrum indicates value ranges that are most favorable (red) to least favorable (green) for degradation.

Within the body of the overburden plume, DO concentrations are low but ORP reducing conditions are not prevalent and may be a limiting condition. (Note that MW-203A is the only location on Figure 4-2 with a red ORP symbol and it is the well with the highest ethylene and chlorobenzene molar fractions.) Nitrate and sulfate may be limiting factors for reductive dechlorination close to the source in the southern portion of the plume and relatively low concentrations may reflect previous biodegradation activities. The relatively high concentrations of sulfate immediately

downgradient of the depleted area may indicate a source of less sulfate depleted groundwater, possibly from the pond located immediately south of Megunko Road.

Geochemistry in the bedrock plume is favorable in places for degradation, with low DO concentrations, and relatively high sulfate concentrations, but the ORP is only low to moderate. Similar to the overburden, nitrate may be depleted in the southern portion of the plume.

Chloride concentrations may be influenced by road salt, especially in shallow wells near parking lots and roadways. However, increases in chloride concentrations over time also can indicate increased reductive dechlorination from cleaved off chlorine atoms. All of the locations with increased chloride (except MW-405A) are located within or cross-gradient (east) of the source area, suggesting that degradation has occurred in these areas. MW-405A is in the downgradient corner of a large parking lot and may be affected by road salt.

Degradation potential for chlorinated ethenes and benzenes in groundwater are described below.

4.6.1 Chlorinated Ethenes

Overburden

In the source zone, molar fractions of the ethenes indicate that degradation has already occurred. Degradation appears to be on-going at MW-113B, but trends over time indicate that degradation has slowed in the rest of the plume and that the plume may be reaching a steady-state condition. The exception is MW-302, which had anomalous ethene fractions in 2012. However, the 2013 results appear to indicate that the pulse of groundwater with more TCE is being degraded.

Bedrock

Molar fractions downgradient of the source indicate that degradation has occurred to some extent, but the molar fractions over time are generally stable, indicating that degradation may have slowed or is reaching steady state. However, MW-203A, in the north-central portion of the plume, may have received a pulse of non-degraded groundwater in 2012, perhaps from the exploratory drilling activities as part of the DNAPL step-drilling program. The molar fractions farther downgradient appear to indicate renewed degradation and PCE was detected at extremely low

concentrations in MW-406A in 2013. Since PCE was not detected elsewhere, this well also may reflect input from a different source.

4.6.2 Chlorinated Benzenes

Overburden

The pattern of chlorinated benzene molar fractions suggest that the TCBs in the source zone have already been degraded. However, the relatively high concentrations and similar molar fractions in the northeast portion of the downgradient plume indicate that reductive dechlorination may be less effective in this area or represents a steady state condition. At the same time, individual wells here have generally seen increases in less-chlorinated benzenes, suggesting that over time, degradation is continuing to occur. In the southern portion of the plume, the molar fractions are favorable for degradation. Because the groundwater in this area is also depleted in nitrate and sulfate, it could indicate that the degradation of chlorinated benzenes has consumed available nitrate and sulfate.

Bedrock

The chlorinated benzene molar fractions indicate some degradation in portions of the bedrock (such as along the northern flow path), where relative concentrations of chlorobenzene increase significantly and the total chlorobenzene concentrations decrease. The degradation may be fueled by available nitrate and sulfate, as well as low DO and ORP. However, the extremely high concentrations of DCB in the source zone (particularly at MW-113A and MW/B-11) may be high enough to inhibit microbial growth and thus minimize degradation in this area. These concentrations are higher than in the past, and may be related to contaminant mobilization towards the recently completed DNAPL recovery systems and partitioning into groundwater from accumulating product. Continued monitoring will be able to discern if these high concentrations are a temporary condition.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The 2013 data show a distribution of VOCs, SVOCs, and anions in the overburden and bedrock groundwater that is similar recent historical concentrations. TCE and other organic compounds generally had similar concentrations to those detected in 2012.

5.1 Conclusions

The following conclusions are based on the results of the 2013 sampling and evaluation of limited historical data:

- Depths to groundwater ranged between 1.51 feet bgs in RMW-405A (spring round) to 29.02 feet bgs in MW-503B (fall round). All depths to groundwater were less than 15 feet with the exception of the following wells located on Megunko Hill: RMW-117A, MW-301, MW-402, MW-503B, and MW-505B.

  Depth to groundwater is important at the Site because vapor mitigation measures may be necessary if VOC concentrations in groundwater exceed the GW-2 standard. These apply when groundwater is less than 15 feet from the ground surface, or contamination is detected within 30 feet of a school or residence. These conditions exist and have warranted the installation of Vapor Mitigation System (VMS) in a portion of the dissolved-phase plume.-

- Overburden groundwater flows in a northeasterly direction on the western portion of the Site, and towards Mill Pond, before turning in an easterly direction on the eastern portion of the Site, towards the Sudbury River. Bedrock groundwater flows in a similar direction, towards Mill Pond and the Sudbury River. Groundwater flow patterns are consistent with historical flow data and with previous report interpretations. It is likely that groundwater is discharging to the Sudbury River.

- The number of number of sample locations with exceedances of any analytes in the fall (comprehensive sampling round) increased in 2013. The number of locations with GW-1 exceedances increased by 1 to 34, and the number of locations with GW-2 exceedances increased by 4 to 28.

- 22 different compounds exceeded either GW-1 or GW-2 standards (which by extension also exceed GW-1 standards):

- Seven compounds exceeded the GW-1/GW-2 standards for 1,2-DCB, 1,3-DCB, 1,4-DCB, chlorobenzene, cis-1,2-DCE, TCE, and VC at 28 monitoring well locations.

- Fifteen additional compounds exceeded the GW-1 standard only for 1,1-DCE, 1,2,4-TCB; benzene; methylene chloride; 1,1-biphenyl; 2,4-dichlorophenol; 2-chlorophenol; 4-chloroaniline; benzo(a)anthracene; benzo(a)pyrene; benzo (b)fluoranthene; benzo(k)fluoranthene; chrysene; indeno(1,2,3-cd)pyrene and pentachlorophenol;. GW-1 standards were exceeded 34 monitoring wells (including wells with GW-2 exceedances).

- Maximum concentrations have increased for 19 of the 22 compounds with exceedances. Methylene chloride, 1,1-biphenyl, and 4-chloroanaline maximum concentrations decreased from 2012 to 2013.

- TCE concentrations increased in five overburden wells (MW-04B, RW-1, MW-304B, MW-202, and MW-115B) and in one bedrock well (MW-113A). Other wells have exhibited significant variation without a clear upward trend, or appear to be decreasing from a 2012 peak. These include MW-203A, MW-203B, MW-204A, MW-115A, MW-304B, and MW/B-5.

- The 2013 data plots for TCE in overburden and bedrock groundwater indicate concentration increases from 2011 and 2012 in the core of the plume and northwest of the landfill. Additional downgradient locations, especially MW-107, MW-112A, MW-112B, and MW-06B, have provided additional plume delineation.

- In consultation with the EPA Remedial Project Manager, additional specific VOCs of interest were contoured for the 2013 report, rather than using total VOCs. Elevated 1,4-DCB concentrations (representative of chlorinated benzenes) were found in the source area as well as the core of the downgradient plume, and appear to discharge to the Sudbury River. Elevated cis-1,2-DCE concentrations (potential indicator of vapor intrusion) are found in a broad area of the downgradient plume, with higher concentrations close to the Sudbury River in the overburden. Future reports will evaluate changes in these isocontours.

- A decrease in DO, ORP, nitrate, and sulfate downgradient of the source area (such as at MW-112A, MW-213, and MW-06A) corresponds to lower concentrations of chlorinated ethenes and benzenes. Likewise, a decrease in these indicators at WP-105 also appears to correspond to lower concentrations.

- The molar fractions of more chlorinated ethenes and benzenes in the source area wells (e.g., MW-113B, MW-113A, SB-600, and MW/B-11) generally are reduced to less chlorinated compounds downgradient. These areas correspond to depleted oxygen, nitrate, and sulfate, suggesting that biodegradation has occurred.

- Higher concentrations of VOCs and SVOCs may have been mobilized by 2012 intrusive site activities such as the step drilling program, well construction, and well development/redevelopment or partitioning in groundwater from accumulating product in the DNAPL recovery systems. The total impact of these activities is speculative at this point but may be resolved by evaluating results in future sampling rounds.

5.2 Recommendations

- Continue with the sampling program outlined in the Scope of Work to track possible plume migration and evaluate the feasibility of MNA.

- Include MW-06B and MW-107 in future fall sampling to evaluate the migration of the southern edge of the downgradient plume.

- Continue operation of the DNAPL extraction systems and evaluating DNAPL thickness (if present) in source area well without DNAPL pumping systems.

- Continue operation of the vapor mitigation systems at those locations where specific VOC concentrations warrant it.

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TABLES

Table 2-1
Summary of Field Samples Collected
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location	Sample #	EventID	Analyses	Sample Date	Sample Time	Sampler
MW/B-5	MW-B5-110513A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/5/2013	14:30	Michelle Carbonneau
MW/B-11	B-11-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	12:30	Michelle Carbonneau
MADEP-MW-1	DEP-MW1-110513A	Fall 2013	VOCs	11/5/2013	15:25	Jeff Brunelle
MW-04A	MW-4A-110413A	Fall 2013	VOCs, SVOCs, Anions	11/4/2013	14:15	Alice Arsenault
MW-04B	MW-4B-110413A	Fall 2013	VOCs, SVOCs, Anions	11/4/2013	14:42	Sean McDowell
MW-04C	MW-4C-110413A	Fall 2013	VOCs, SVOCs, Anions	11/5/2013	14:50	Jessica Olkowski
MW-06A	MW-06A-052213A	Spring 2013	VOCs, Anions	5/22/2013	11:53	Alie Goldberg
	MW-6A-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	12:55	Alice Arsenault
MW-06B	MW-6B-110713A	Fall 2013	VOCs, SVOCs, Anions	11/7/2013	9:40	Alice Arsenault
MW-09A	MW-9A-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	10:10	Alice Arsenault
MW-09B	MW-9B-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	10:57	Sean McDowell
MW-104A	MW-104A-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	9:50	Jessica Olkowski
MW-104B	MW-104B-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	10:00	Ayan Majmudar
MW-107	MW-107-110713A	Fall 2013	VOCs, SVOCs, Anions	11/7/2013	11:00	Alice Arsenault
MW-110	MW-110-052213A	Spring 2013	VOCs, SVOCs, Anions	5/22/2013	12:25	Michelle Carbonneau
	MW-110-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	12:47	Sean McDowell
MW-112A	MW-112A-110513A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/5/2013	15:12	Alice Arsenault
MW-112B	MW-112B-110513A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/5/2013	15:07	Sean McDowell
MW-113A	MW-113A-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	17:15	Michelle Carbonneau
MW-113B	MW-113B-052213A	Spring 2013	VOCs, SVOCs, Anions	5/22/2013	11:15	Erik Johnson
	MW-113B-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	15:20	Michelle Carbonneau
MW-115A	MW-115A-052013A	Spring 2013	VOCs, SVOCs, Anions	5/20/2013	14:33	Alie Goldberg
	MW-115A-110513A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/5/2013	11:50	Jessica Olkowski
MW-115B	MW-115B-052013A	Spring 2013	VOCs, SVOCs, Anions	5/20/2013	13:40	Josh Stewart
	MW-115B-110513A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/5/2013	12:00	Ayan Majmudar
RMW-116A	MW-116A-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	13:35	Alice Arsenault
MW-201	MW-201-110413A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/4/2013	12:00	Ayan Majmudar
MW-202	MW-202-110413A	Fall 2013	VOCs, SVOCs, Anions	11/4/2013	11:20	Jessica Olkowski
MW-203A	MW-203A-052113A	Spring 2013	VOCs, SVOCs, Anions	5/21/2013	12:26	Michelle Carbonneau
	MW-203A-110413A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/4/2013	11:43	Alice Arsenault
MW-203B	MW-203B-052113A	Spring 2013	VOCs, SVOCs, Anions	5/21/2013	12:07	Alie Goldberg
	MW-203B-110413A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/4/2013	11:52	Sean McDowell
MW-204A	MW-204A-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	14:10	Ayan Majmudar

Table 2-1
Summary of Field Samples Collected
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location	Sample #	EventID	Analyses	Sample Date	Sample Time	Sampler
MW-302	MW-302-052213A	Spring 2013	VOCs, SVOCs, Anions	5/22/2013	13:00	Erik Johnson
	MW-302-110513A	Fall 2013	VOCs, SVOCs, Anions	11/5/2013	11:21	Michelle Carbonneau
MW-304A	MW-304A-052113A	Spring 2013	VOCs, SVOCs, Anions	5/21/2013	11:55	Erik Johnson
	MW-304A-110513A	Fall 2013	VOCs, SVOCs, Anions	11/5/2013	14:45	Ayan Majmudar
MW-304B	MW-304B-052113A	Spring 2013	VOCs, SVOCs, Anions	5/21/2013	11:00	Jeff Brunelle
	MW-304B-110513A	Fall 2013	VOCs, SVOCs, Anions	11/5/2013	15:10	Jessica Olkowski
RMW-305A	RMW-305A-052113A	Spring 2013	VOCs, SVOCs, Anions	5/21/2013	15:50	Michelle Carbonneau
	MW-305A-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	12:20	Jessica Olkowski
MW-305B	MW-305B-052113A	Spring 2013	VOCs, SVOCs, Anions	5/21/2013	15:23	Alie Goldberg
	MW-305B-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	12:30	Ayan Majmudar
MW-401	MW-401-110513A	Fall 2013	VOCs, SVOCs, Anions	11/5/2013	16:30	Michelle Carbonneau
MW-402	MW-402-110713A	Fall 2013	VOCs, SVOCs, Anions	11/7/2013	14:20	Michelle Carbonneau
MW-403A	MW-403A-052013A	Spring 2013	VOCs, SVOCs, Anions	5/20/2013	10:25	Erik Johnson
	MW-403A-110413A	Fall 2013	VOCs, SVOCs, Anions	11/4/2013	14:55	Josh Stewart
RMW-403B	RMW-403B-052013A	Spring 2013	VOCs, SVOCs, Anions	5/20/2013	15:45	Michelle Carbonneau
	MW-403B-110513A	Fall 2013	VOCs, SVOCs, Anions	11/5/2013	14:41	Ayan Majmudar
RMW-405A	RMW-405A-0520A	Spring 2013	VOCs, SVOCs, Anions	5/20/2013	14:35	Michelle Carbonneau
	MW-405A-110513A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/5/2013	12:30	Alice Arsenault
RMW-405B	RMW-405B-052013A	Spring 2013	VOCs, SVOCs, Anions	5/20/2013	13:15	Erik Johnson
	MW-405B-110513A	Fall 2013	VOCs, SVOCs, Anions, Dissolved Gases	11/5/2013	13:07	Sean McDowell
MW-406A	MW-406A-052013A	Spring 2013	VOCs, SVOCs, Anions	5/20/2013	11:46	Alie Goldberg
	MW-406A-110513A	Fall 2013	VOCs, SVOCs, Anions	11/5/2013	10:48	Alice Arsenault
MW-406B	MW-406B-052013A	Spring 2013	VOCs, SVOCs, Anions	5/20/2013	11:20	Josh Stewart
	MW-406B-110513A	Fall 2013	VOCs, SVOCs, Anions	11/5/2013	10:27	Sean McDowell
MW-503B	MW-503B-110713A	Fall 2013	VOCs, SVOCs, Anions	11/7/2013	11:45	Michelle Carbonneau
RW-1	RW-1-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	15:25	Alice Arsenault
SB-600	SB-600-110613A	Fall 2013	VOCs, SVOCs, Anions	11/6/2013	12:30	Michelle Carbonneau
WP-105	WP-105-10513A	Fall 2013	VOCs, SVOCs, Anions	11/5/2013	13:00	Michelle Carbonneau

Table 2-2
Monitoring Well Construction Details
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

WELL ID	WELL TYPE	NORTHING (ft NAD83)	EASTING (ft NAD83)	GROUND ELEVATION (ft NAVD88)	TOC ELEVATION (ft NAVD88)	PVC/TUBING ELEVATION (ft NAVD88)	Constructed Depth (ft bgs)	Measured Depth (ft bmp)	Calculated Depth (ft bgs)	Depth to Bedrock (ft bgs) inferred	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)	Suggested Pump Intake (ft bgs)	Well Diameter (inches)	Well Constr. Material	Surface Completion
ERT-2	OB	2,919,999.69	663,215.43	197.5	197.93	197.68	30	27.20	27.02	(33.5)	*25*	*30*	*5*	28	2	PVC	SSP
MADEP-MW-1	OB	2,920,517.64	664,615.07	196.4	196.36	NA	15	15.00	15.00	BNE	10	15	*5*	13	0.75	S	FM
MADEP-MW-2	OB	2,920,508.24	664,493.86	194.7	194.74	NA	20	20.00	20.00	BNE	15	20	*5*	18	0.75	S	FM
MW/B-05	OB/BR	2,920,130.48	663,154.39	195.5	195.50	195.36	46	48.30	48.44	*42*	39	46	*7*	43	2	SS	FM
MW/B-11	BR	2,919,925.82	663,121.72	199.6	202.98	202.82	23.5	27.97	24.75	9	11.25	21.25	*10*	16	2	SS	SP
MW-03A	OB/BR	2,919,964.65	662,684.75	196.1	197.50	197.50	36	--	--	(35)	11	36	*25*	24	2	PVC	SP
MW-03B	BR	2,919,957.85	662,684.98	196.1	197.63	197.28	43	--	--	35	38	43	*5*	41	2	PVC	SP
MW-04A	OB	2,920,197.50	662,623.31	199.2	199.82	199.18	24	20.95	20.97	(67)	4	24	*20*	14	2	PVC	SSP
MW-04B	OB/BR	2,920,198.92	662,599.97	199.1	199.61	199.07	68	67.11	67.14	(67)	48	68	*20*	58	2	PVC	SSP
MW-04C	BR	2,920,203.33	662,571.13	198.9	199.33	198.89	78	77.60	77.61	67	73	78	*5*	76	2	PVC	SSP
MW-06A	OB	2,920,048.01	663,958.94	192.9	192.85	193.66	12	12.07	11.26	(58)	7	12	*5*	10	2	PVC	FM
MW-06B	OB	2,919,962.20	664,553.80	191.0	192.80	192.45	18	18.18	16.73	(26.6)	8	18	*10*	13	2	PVC	SP
MW-08	OB	2,919,995.67	663,211.23	197.5	198.49	198.23	UNK	46.45	45.72	(33.5)	UNK	UNK	UNK	30	2	PVC	SSP
MW-09A	OB	2,919,499.64	663,602.89	198.0	198.22	198.22	33	28.60	28.38	(33)	5.5	33	*27.5*	19	2	PVC	SSP
MW-09B	BR	2,919,497.33	663,605.50	197.9	197.96	197.82	41.7	41.50	41.58	33	34.7	41.7	*7*	38	2	PVC	SSP
MW-09C	OB	2,919,468.66	663,595.84	198.2	197.91	197.65	16	--	--	(33)	11	16	*5*	14	2	PVC	SSP
MW-11	OB	2,919,955.99	663,749.13	195.6	195.23	195.18	16	--	--	BNE	6	16	*10*	11	2	PVC	FM
RMW-102	OB	2,920,746.09	662,298.79	192.4	194.66	193.96	10	12.12	10.56	BNE	5	10	*5*	8	2	PVC	SP
MW-102A	BR	2,919,126.58	663,573.86	196.2	199.25	199.04	30	--	--	21	25	30	*5*	28	2	PVC	FM
MW-102B	OB	2,919,139.95	663,569.85	196.8	199.63	199.46	15.6	--	--	(21)	10.6	15.6	*5*	13	2	PVC	FM
MW-103	OB	2,919,417.23	664,220.04	198.0	200.85	200.67	15	19.00	16.33	BNE	10	15	*5*	13	2	PVC	SP
MW-104A	BR	2,919,573.20	663,382.96	201.2	202.93	202.70	40.1	42.25	40.75	19.3	35.1	40.1	*5*	38	2	SS	SP
MW-104B	OB	2,919,585.86	663,379.92	200.9	203.84	203.58	15.4	17.82	15.14	(19.3)	10.4	15.4	*5*	13	2	SS	SP
MW-105	OB	2,919,872.60	664,432.16	194.7	194.44	193.91	25.5	--	--	BNE	20.5	25.5	*5*	23	2	PVC	FM
MW-106	OB	2,919,951.78	664,633.08	190.6	190.58	190.30	23.8	22.97	23.25	BNE	18.8	23.8	*5*	21	2	PVC	FM
MW-107	BR	2,919,966.34	664,542.62	191.6	194.02	193.91	35.9	38.34	36.03	26.6	30.9	35.9	*5*	33	2	PVC	SP
MW-110	BR	2,920,043.95	663,931.26	193.8	193.80	193.36	69.1	69.80	70.24	58	64.1	69.1	*5*	67	2	PVC	FM
MW-112A	BR	2,920,077.59	663,489.86	195.3	197.93	197.81	43	46.65	44.14	35	38	43	*5*	41	2	SS	SP
MW-112B	OB	2,920,081.74	663,486.68	195.5	198.00	197.88	30	31.67	29.29	(35)	25	30	*5*	28	2	SS	SP
MW-113A	BR	2,920,145.57	663,136.34	195.6	195.59	195.36	51	53.90	54.13	43	46	51	*5*	49	2	SS	FM
MW-113B	OB	2,920,156.69	663,139.12	195.1	195.10	194.85	29.5	32.09	32.34	(43)	24.5	29.5	*5*	27	2	SS	FM
MW-115A	BR	2,920,354.89	664,995.07	192.2	192.21	192.10	91	91.85	91.96	70	86	91	*5*	89	2	PVC	FM
MW-115B	OB	2,920,359.83	664,988.95	192.0	192.02	191.84	48.5	47.26	47.44	(70)	43.5	48.5	*5*	46	2	PVC	FM
RMW-116A	BR	2,921,434.47	664,916.03	191.2	193.81	193.44	--	39.15	36.91	21	31.5	36.5	*5*	34	2	PVC	SP
RMW-117A	BR	2,921,491.08	663,221.66	209.9	212.70	211.94	--	--	--	19.5	29.5	34.5	*5*	32	2	PVC	SP
MW-201	OB	2,920,422.07	664,542.31	197.2	199.90	199.73	20	22.67	20.14	BNE	15	20	*5*	18	2	PVC	SP
MW-202	OB	2,920,440.93	664,295.53	198.3	198.33	198.11	25	28.08	28.27	BNE	20	25	*5*	23	2	PVC	SP
MW-203A	BR	2,920,302.23	664,195.74	194.0	194.22	193.96	78.7	78.82	78.86	68	73.7	78.7	*5*	76	2	SS	SSP
MW-203B	OB	2,920,306.93	664,196.64	193.9	194.23	193.87	32	31.91	31.94	(68)	27	32	*5*	30	2	PVC	SSP
MW-204A	BR	2,920,398.95	663,091.99	198.6	198.60	198.14	52	49.60	50.06	36.5	47	52	*5*	50	2	SS	FM
MW-204B	OB	2,920,408.53	663,096.97	199.0	198.97	198.63	28.6	--	--	(36.5)	23.6	28.6	*5*	26	2	SS	FM
MW-301	OB	2,918,909.77	663,492.44	207.2	209.20	209.00	22	--	--	BNE	17	22	*5*	20	2	PVC	SP
MW-302	OB	2,920,161.87	665,179.77	193.4	193.36	193.25	25	24.26	24.37	BNE	20	25	*5*	23	2	PVC	FM
MW-304A	BR	2,920,648.80	663,820.55	192.5	192.54	192.29	55	83.86	84.11	45	50	55	*5*	53	2	PVC	FM
MW-304B	OB	2,920,649.81	663,826.21	192.7	192.72	192.45	30.7	30.15	30.42	(45)	25.7	30.7	*5*	28	2	PVC	FM
RMW-305A	BR	2,920,636.40	663,453.20	196.5	196.47	196.32	54	54.64	54.79	47	49	54	*5*	52	2	SS	FM
MW-305B	OB	2,920,630.87	663,437.69	196.6	196.58	196.38	19.8	29.89	30.09	(44)	14.8	19.8	*5*	17	2	PVC	FM
MW-401	BR	2,920,096.98	663,287.63	196.7	196.66	196.20	98	97.82	98.28	41	83	98	*15*	91	2	SS	FM
MW-402	BR	2,919,650.65	663,160.83	220.2	222.98	222.92	108.5	77.30	74.58	14	93.5	108.5	*15*	101	2	SS	SP
MW-403A	BR	2,920,818.01	665,661.99	184.6	187.25	186.96	44.9	47.28	44.92	37	41	44.9	*3.9*	43	2	PVC	SP
RMW-403B	OB	2,920,797.07	665,698.53	185.0	187.53	187.13	19.5	21.83	19.70	(37)	14.5	19.5	*5*	17	2	PVC	SP
MW-404A	BR	2,919,293.71	665,480.83	189.0	191.90	191.70	135	--	--	111	130	135	*5*	133	2	PVC	SP
MW-404B	OB	2,919,302.01	665,466.81	188.9	191.73	191.67	37	39.34	36.57	(111)	32	37	*5*	35	2	PVC	SP
RMW-405A	BR	2,920,585.67	665,606.47	180.5	180.48	180.10	73.5	75.13	75.51	57.5	68.5	73.5	*5*	71	2	SS	FM
RMW-405B	OB	2,920,593.64	665,617.87	181.0	180.95	180.24	45.5	46.23	46.94	(57.5)	40.5	45.5	*5*	43	2	SS	FM
MW-406A	BR	2,919,818.16	666,143.33	186.6	186.57	186.20	66	62.78	63.15	45.9	61	66	*5*	64	2	PVC	FM
MW-406B	OB	2,919,819.88	666,131.82	186.7	186.66	186.34	43	42.41	42.73	(45.9)	38	43	*5*	41	2	PVC	FM

Table 2-2
Monitoring Well Construction Details
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

WELL ID	WELL TYPE	NORTHING (ft NAD83)	EASTING (ft NAD83)	GROUND ELEVATION (ft NAVD88)	TOC ELEVATION (ft NAVD88)	PVC/TUBING ELEVATION (ft NAVD88)	Constructed Depth (ft bgs)	Measured Depth (ft bmp)	Calculated Depth (ft bgs)	Depth to Bedrock (ft bgs) inferred	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)	Suggested Pump Intake (ft bgs)	Well Diameter (inches)	Well Constr. Material	Surface Completion
MW-407A	BR	2,918,882.58	666,800.77	183.6	186.47	186.42	108.6	--	--	87	103.6	108.6	*5*	106	2	PVC	SP
MW-407B	OB	2,918,888.71	666,816.81	183.6	186.64	186.34	47.5	--	--	(87)	42.5	47.5	*5*	45	2	PVC	SP
MW-408A	BR	2,919,702.12	667,239.50	184.4	187.34	187.12	46.9	--	--	32	41.9	46.9	*5*	44	2	PVC	SP
MW-408B	OB	2,919,706.77	667,224.35	184.8	187.65	187.38	29.7	--	--	(32)	24.7	29.7	*5*	27	2	PVC	SP
MW-503A	OB	2,919,549.62	663,120.36	238.8	241.67	240.77	15	17.80	15.83	(16)	5	15	*10*	10	2	SS	SP
MW-503B	BR	2,919,535.46	663,125.69	239.2	241.92	241.49	31	33.80	31.51	16	21	31	*10*	26	2	SS	SP
MW-505A	OB	2,919,667.34	662,683.36	229.8	233.06	232.82	14	--	--	(14.5)	9	14	*5*	12	2	SS	SP
MW-505B	BR	2,919,668.76	662,676.08	229.4	232.78	232.41	29.5	--	--	14.5	19.5	29.5	*10*	25	2	SS	SP
P-1	OB	2,920,124.26	663,192.12	196.2	196.20	195.88	42	--	--	42	39	42	*3*	40	2	PVC	FM
P-1B	BR	2,920,129.02	663,195.17	196.3	196.28	195.87	53	--	--	43	50	53	*3*	52	2	PVC	FM
P-1S	OB	2,920,124.68	663,196.58	196.4	196.35	195.99	18	19.79	20.15	43	8	18	*10*	13	2	PVC	FM
P-2	OB	2,920,123.55	663,235.35	197.1	197.11	196.80	43.2	--	--	45.5	40.2	43.2	*3*	42	2	PVC	FM
P-4	OB	2,920,119.27	663,159.43	196.3	196.3	195.83	32.5	32.09	32.56	33	29.5	32.5	*3*	31	2	PVC	FM
P-5	OB	2,920,153.71	663,184.28	197.0	197.04	196.57	43	--	--	43	38	43	*5*	40	2	PVC	FM
RW-1	OB/BR	2,920,141.47	663,177.40	196.2	196.22	195.90	54	40.20	40.52	41	36	51	*15*	44	6	SS	FM
RWS-1	OB	2,920,141.47	663,177.40	196.2	196.22	195.16	--	--	--	41	0	46	*46*	23	1.5	PVC	FM
SB-600	BR	2,919,958.29	663,128.34	199.1	201.99	201.19	--	46.95	44.86	19.6	UNK	UNK	UNK	44	--	--	SP
SB-601	BR	2,920,159.80	663,387.87	193.4	193.42	192.79	55.06	--	--	32.1	UNK	UNK	UNK	UNK			FM
WP-101	OB	2,918,821.87	664,061.26	192.0	NA	195.21	10	--	--	BNE	8	10	*2*	9	1.25	S	SP
WP-105	OB	2,920,732.84	664,512.80	191.5	NA	193.36	11	12.69	10.83	BNE	9	11	*2*	10	1.25	S	SP
SG-1A	Stream	2,920,640.48	661,455.08	TOP OF BRIDGE DECK		200.70	--	--	--	--	--	--	--	--	--	--	--
SG-1B	Stream	2,920,532.29	661,912.79	TOP OF ROCK		194.79	--	--	--	--	--	--	--	--	--	--	--
SG-2	Stream	2,920,691.53	663,451.64	TOP OF GAUGE = 2.18'		190.24	--	--	--	--	--	--	--	--	--	--	--
SG-2A	Stream	2920671.16	662030.61	TOP NAIL IN TREE		195.17	--	--	--	--	--	--	--	--	--	--	--
SG-2B	Stream	2921138.7	665024.61	TOP DAM WALL		191.16	--	--	--	--	--	--	--	--	--	--	--
SG-3A	Stream	2921280.67	665088.94	TOP BRIDGE ABUTMENT		182.86	--	--	--	--	--	--	--	--	--	--	--
SG-3B	Stream	292581.52	666076.77	TOP OF NUT		185.05	--	--	--	--	--	--	--	--	--	--	--

Notes:

1. ft NAD83	Location reference datum
2. ft NAVD88	Elevation reference datum
3. ft	Feet
4. ft bgs	Feet below ground surface
5. --	No data
6. NA	Not Applicable
7. UNK	Unknown
8. Well Type:	OB: Well screen completely in the overburden soils; OB/BR: Well screen straddles the bedrock contact; BR: Well screen completely in bedrock
9. Bedrock Data :	(36) Inferred bedrock depth based on neighboring well/boring data; BNE: Bedrock Not Encountered
10. Surface Completion:	FM: Flush Mount; SP: Standpipe; SSP: Short Standpipe
11. Well Construction:	SS: Stainless Steel; S: Steel; PVC: Polyvinyl Chloride

Table 2-3
2013 Synoptic Groundwater Gauging Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Depth Below Measuring Point (feet)				Calculated Depth to Groundwater (feet bgs)				Calculated Groundwater Elevation (MSL)			
	Date				Date				Date			
	8/13/2012	11/5/2012	5/20/2013	11/4/2013	8/13/2012	11/5/2012	5/20/2013	11/4/2013	8/13/2012	11/5/2012	5/20/2013	11/4/2013
ERT-2	--	--	6.29	8.05	--	--	6.11	7.87	--	--	191.39	189.63
MADEP-MW-1	--	--	--	--	--	--	--	--	--	--	--	--
MADEP-MW-2	--	--	--	--	--	--	--	--	--	--	--	--
MW/B-05	4.08	2.45	4.04	5.71	4.22	2.59	4.18	5.85	191.28	192.91	191.32	189.65
MW/B-11	9.39	5.39	9.06	12.21	6.17	2.17	5.84	8.99	193.43	197.43	193.76	190.61
MW-03A	NO WELL KEY				NO WELL KEY				NO WELL KEY			
MW-03B	--	--	4.72	3.94	--	--	3.54	2.76	--	--	192.56	193.34
MW-04A	7.17	5.62	6.94	8.89	7.19	5.64	6.96	8.91	192.01	193.56	192.24	190.29
MW-04B	7.12	5.63	6.89	8.75	7.15	5.66	6.92	8.78	191.95	193.44	192.18	190.32
MW-04C	6.83	5.37	6.45	8.52	6.84	5.38	6.46	8.53	192.06	193.52	192.44	190.37
MW-06A	3.51	2.37	3.87	5.27	2.70	1.56	3.06	4.46	190.15	191.29	189.79	188.39
MW-06B	--	--	5.37	6.26	--	--	3.92	4.81	--	--	187.08	186.19
MW-08	--	--	5.54	8.33	--	--	4.81	7.60	--	--	192.69	189.90
MW-09A	6.43	5.39	6.05	7.6	6.21	5.17	5.83	7.38	191.79	192.83	192.17	190.62
MW-09B	6.05	4.99	5.68	7.2	6.13	5.07	5.76	7.28	191.77	192.83	192.14	190.62
MW-09C	--	--	5.42	6.99	--	--	5.97	7.54	--	--	192.23	190.66
MW-11	--	--	4.73	6.26	--	--	5.15	6.68	--	--	190.45	188.92
RMW-102	--	--	3.91	4.66	--	--	2.35	3.10	--	--	190.05	189.30
MW-102A	7.02	5.78	5.96	7.93	4.18	2.94	3.12	5.09	192.02	193.26	193.08	191.11
MW-102B	--	--	6.42	8.34	--	--	3.76	5.68	--	--	193.04	191.12
MW-103	9.36	8.06	8.83	10.42	6.69	5.39	6.16	7.75	191.31	192.61	191.84	190.25
MW-104A	9.95	8.64	8.64	11.65	8.45	7.14	7.14	10.15	192.75	194.06	194.06	191.05
MW-104B	10.82	9.22	8.83	12.51	8.14	6.54	6.15	9.83	192.76	194.36	194.75	191.07
MW-105	NOT FOUND				NOT FOUND				NOT FOUND			
MW-106	--	--	3.12	4.24	--	--	3.40	4.52	--	--	187.18	186.06
MW-107	--	--	6.19	7.27	--	--	3.88	4.96	--	--	187.72	186.64
MW-110	3.03	1.92	3.42	4.85	3.47	2.36	3.86	5.29	190.33	191.44	189.94	188.51
MW-112A	7.13	5.79	7.28	8.61	4.62	3.28	4.77	6.10	190.68	192.02	190.53	189.20
MW-112B	7.07	5.65	7.27	8.7	4.69	3.27	4.89	6.32	190.81	192.23	190.61	189.18
MW-113A	3.94	2.22	3.95	6.73	4.17	2.45	4.18	6.96	191.42	193.14	191.41	188.63
MW-113B	3.59	2.00	3.58	5.21	3.84	2.25	3.83	5.46	191.26	192.85	191.27	189.64
MW-115A	8.54	6.95	8.43	9.2	8.65	7.06	8.54	9.31	183.56	185.15	183.67	182.90
MW-115B	8.29	7.51	8.11	8.9	8.47	7.69	8.29	9.08	183.55	184.33	183.73	182.94
RMW-116A	31.94 [1]	14.04	6.64	5.39	--	11.80	4.40	3.15	--	179.40	186.80	188.05
RMW-117A	--	--	13.1	17.41	--	--	11.06	15.37	--	--	198.84	194.53
MW-201	13.77	12.77	13.72	14.24	11.24	10.24	11.19	11.71	185.96	186.96	186.01	185.49
MW-202	11.08	10.11	11.07	11.66	11.27	10.30	11.26	11.85	187.03	188.00	187.04	186.45

Table 2-3
2013 Synoptic Groundwater Gauging Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Depth Below Measuring Point (feet)				Calculated Depth to Groundwater (feet bgs)				Calculated Groundwater Elevation (MSL)			
	Date				Date				Date			
	8/13/2012	11/5/2012	5/20/2013	11/4/2013	8/13/2012	11/5/2012	5/20/2013	11/4/2013	8/13/2012	11/5/2012	5/20/2013	11/4/2013
MW-203A	6.15	6.13	5.96	6.73	6.19	6.17	6.00	6.77	187.81	187.83	188.00	187.23
MW-203B	5.82	4.85	5.84	8.67	5.85	4.88	5.87	8.70	188.05	189.02	188.03	185.20
MW-204A	8.11	7.18	8.05	9.06	8.57	7.64	8.51	9.52	190.03	190.96	190.09	189.08
MW-204B	--	--	8.32	9.46	--	--	8.66	9.80	--	--	190.31	189.17
MW-301	--	14.87	14.91	19.47	--	13.07	13.11	17.67	--	194.13	194.09	189.53
MW-302	10.87	9.97	10.73	11.53	10.98	10.08	10.84	11.64	182.38	183.28	182.52	181.72
MW-304A	3.93	3.49	4.08	4.25	4.18	3.74	4.33	4.50	188.36	188.80	188.21	188.04
MW-304B	4.06	3.57	4.18	4.38	4.33	3.84	4.45	4.65	188.39	188.88	188.27	188.07
RMW-305A	7.18	6.46	7.17	7.68	7.33	6.61	7.32	7.83	189.14	189.86	189.15	188.64
MW-305B	7.35	6.81	7.43	7.89	7.55	7.01	7.63	8.09	189.03	189.57	188.95	188.49
MW-401	5.43	3.87	5.19	6.76	5.89	4.33	5.65	7.22	190.77	192.33	191.01	189.44
MW-402	24.16	22.03	21.42	26.84	21.44	19.31	18.70	24.12	198.76	200.89	201.50	196.08
MW-403A	7.79	6.98	7.67	9.02	5.43	4.62	5.31	6.66	179.17	179.98	179.29	177.94
RMW-403B	8.40	7.20	8.24	9.59	6.27	5.07	6.11	7.46	178.73	179.93	178.89	177.54
MW-404A	11.22	10.07	10.65	12.35	8.52	7.37	7.95	9.65	180.48	181.63	181.05	179.35
MW-404B	10.19	9.04	9.71	11.89	7.42	6.27	6.94	9.12	181.48	182.63	181.96	179.78
RMW-405A	2.07	1.65	1.12	2.05	2.45	2.03	1.50	2.43	178.03	178.45	178.98	178.05
RMW-405B	1.91	1.42	1.83	2.79	2.62	2.13	2.54	3.50	178.33	178.82	178.41	177.45
MW-406A	8.93	8.07	8.78	10.04	9.30	8.44	9.15	10.41	177.27	178.13	177.42	176.16
MW-406B	9.04	8.20	8.90	10.18	9.36	8.52	9.22	10.50	177.30	178.14	177.44	176.16
MW-407A	--	--	11.43	12.62	--	--	8.61	9.80	--	--	174.99	173.80
MW-407B	--	--	11.37	12.53	--	--	8.63	9.79	--	--	174.97	173.81
MW-408A	--	--	14.41	15.91	--	--	11.69	13.19	--	--	172.71	171.21
MW-408B	--	--	14.84	15.47	--	--	12.26	12.89	--	--	172.54	171.91
MW-503A	DRY	14.88	16.52	DRY	--	12.91	14.55	--	--	225.89	224.25	--
MW-503B	30.49	27.58	27.73	31.31	28.20	25.29	25.44	29.02	211.00	213.91	213.76	210.18
MW-505A	--	--	17.57	17.52	--	--	14.55	14.50	--	--	215.25	215.30
MW-505B	--	--	22.31	22.88	--	--	19.30	19.87	--	--	210.10	209.53
P-1	--	--	4.63	6.3	--	--	4.95	6.62	--	--	191.25	189.58
P-1B	--	--	4.49	6.21	--	--	4.90	6.62	--	--	191.38	189.66
P-1S	--	--	4.59	6.32	--	--	4.95	6.68	--	--	191.40	189.67
P-2	--	--	5.95	6.37	--	--	6.26	6.68	--	--	190.85	190.43
P-4	--	--	3.79	--	--	--	4.26	--	--	--	192.04	--
P-5	--	--	5.42	7.01	--	--	5.89	7.48	--	--	191.15	189.56
RW-1	4.63	3.02	4.63	6.27	4.95	3.34	4.95	6.59	191.27	192.88	191.27	189.63
RWS-1	--	--	3.87	5.51	--	--	4.93	6.57	--	--	191.29	189.65
SB-600	8.52	6.13	7.57	11.26	6.43	4.04	5.48	9.17	192.67	195.06	193.62	189.93

Table 2-3
2013 Synoptic Groundwater Gauging Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Depth Below Measuring Point (feet)				Calculated Depth to Groundwater (feet bgs)				Calculated Groundwater Elevation (MSL)			
	Date				Date				Date			
	8/13/2012	11/5/2012	5/20/2013	11/4/2013	8/13/2012	11/5/2012	5/20/2013	11/4/2013	8/13/2012	11/5/2012	5/20/2013	11/4/2013
SB-601	--	--	2.24	3.59	--	--	2.87	4.22	--	--	190.55	189.20
WP-101	NOT FOUND				NOT FOUND				NOT FOUND			
WP-105	6.92	6.68	6.98	7.27	5.06	4.82	5.12	5.41	186.44	186.68	186.38	186.09
SG-1A	--	--	7.38	7.49	NA	NA	NA	NA	--	--	193.32	193.21
SG-1B	--	--	1.46	1.64	NA	NA	NA	NA	--	--	193.33	193.15
SG-2	0.42	0.44	DRY	0.26	NA	NA	NA	NA	189.82	189.80	DRY	189.98
SG-2A	--	--	1.88	DRY	NA	NA	NA	NA	--	--	193.29	DRY
SG-2B	--	--	2.77	2.84	NA	NA	NA	NA	--	--	188.39	188.32
SG-3A	--	--	2.61	2.83	NA	NA	NA	NA	--	--	180.25	180.03
SG-3B	--	--	10.98	11.24	NA	NA	NA	NA	--	--	174.07	173.81

Notes:
1. ft Feet
2. ft bgs Feet below ground surface
3. -- No data
4. NA Not Applicable
5. 2012 gauging rounds completed before wells 304A/B and 404A were re-cut and re-surveyed. Calculated elevation data for these gauging rounds were entered manually with reference to the pre-existing measuring point elevations and are not calculated via spreadsheet formulas. 2013 calculated data references updated survey data.

Table 3-1a
Spring 2013 Data - VOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-06A	MW-110	MW-113B	MW-115A	MW-115B	MW-203A	MW-203B	MW-302	MW-304A		MW-304B	RMW-305A	MW-305B	MW-403A
		Sample ID	MW-06A-052213A	MW-110-052213A	MW-113B-052213A	MW-115A-052013A	MW-115B-052013A	MW-203A-052113A	MW-203B-052113A	MW-302-052213A	MW-304A-052113A	F-DUP01-052113A	MW-304B-052113A	RMW-305A-052113A	MW-305B-052113A	MW-403A-052013A
		Sample Date	22 May 13	22 May 13	22 May 13	20 May 13	20 May 13	21 May 13	21 May 13	22 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13	20 May 13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**										Duplicate				
1,1,1-Trichloroethane	200	4000	5 U	5 U	1.2 J	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
1,1,2,2-Tetrachloroethane	2	9	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 UJ
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
1,1,2-Trichloroethane	5	900	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
1,1-Dichloroethane	70	1000	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	1.4 J	5 U	20 U	5 U	5 U
1,1-Dichloroethene	7	80	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
1,2,3-Trichlorobenzene	--	--	11	5 U	5 U	5 U	22 J	25 U	130	5 U	25 U	7.3	5 U	20 U	2.9 J	5 U
1,2,4-Trichlorobenzene	70	2000	44	11	25	5 U	**160**	**75**	**760**	17	41	49	25	**75**	5 U	5 U
1,2-Dibromo-3-chloropropane	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 UJ
1,2-Dibromoethane	0.02	2	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
1,2-Dichlorobenzene	600	2000	29	5 U	350	5 U	**1700**	**2700**	**2100**	**670**	**1600** J	**1200**	280	**1000**	5 U	5 U
1,2-Dichloroethane	5	5	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
1,2-Dichloropropane	3	3	5 U	5 U	5 U	5 U	25 UJ	25 UJ	10 UJ	5 UJ	25 U	5 U	5 U	20 U	5 U	5 U
1,3-Dichlorobenzene	40	2000	3 J	5 U	13	5 U	22 J	29	29	6.6	23 J	22	5.8	24	5 U	5 U
1,4-Dichlorobenzene	5	200	2.7 J	5 U	**70**	5 U	**250**	**370**	**290**	**87**	**200**	**200**	**46**	**170**	5 U	5 U
1,4-Dioxane	3	6000	100 U	100 U	100 U	100 U	500 U	500 U	200 U	100 U	500 U	100 U	100 UJ	400 U	100 U	100 UJ
2-Butanone	4000	50000	10 U	10 U	10 U	10 U	50 U	50 U	20 U	10 U	50 U	10 U	10 U	40 U	10 U	10 U
2-Hexanone	--	--	10 U	10 U	10 U	10 U	50 U	50 U	20 U	10 U	50 U	10 U	10 U	40 U	10 U	10 U
4-Methyl-2-pentanone	350	50000	10 U	10 U	10 U	10 U	50 U	50 U	20 U	10 U	50 U	10 U	10 U	40 U	10 U	10 U
Acetone	6300	50000	10 U	10 U	10 U	10 U	50 U	50 U	20 U	10 U	50 U	10 U	10 U	40 U	10 U	10 U
Benzene	5	2000	5 U	5 U	5 U	5 U	**23** J	**110**	**26**	**54**	**28**	**26**	5 U	20 U	5 U	5 U
Bromochloromethane	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Bromodichloromethane	3	6	5 U	5 U	5 U	5 U	25 UJ	25 UJ	10 UJ	5 UJ	25 U	5 U	5 U	20 U	5 U	5 U
Bromoform	4	700	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Bromomethane	7	7	5 U	5 U	5 U	5 U	25 U	25 U	4.2 J	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Carbon disulfide	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Carbon tetrachloride	2	2	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Chlorobenzene	100	200	38	4.9 J	**120**	5 U	**2100**	**5700**	**1700**	**400**	**1100** J	**940**	**110**	**340**	5 U	5 U
Chloroethane	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Chloroform	50	50	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Chloromethane	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
cis-1,2-Dichloroethene	70	100	47	3.7 J	**100**	5 U	**230**	**350**	**380**	**180**	**470**	**500**	**190**	**80**	5 U	5 U
cis-1,3-Dichloropropene	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Cyclohexane	--	--	5 U	5 U	5 U	5 U	25 UJ	25 UJ	10 UJ	5 UJ	25 U	5 U	5 U	20 U	5 U	5 U
Dibromochloromethane	2	20	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Dichlorodifluoromethane	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Ethylbenzene	700	20000	5 U	5 U	5 U	5 U	25 U	25 U	8.4 J	6.6	25 U	2 J	5 U	20 U	5 U	5 U
Isopropylbenzene	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
m,p-Xylene	10000	9000	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Methyl acetate	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Methyl tert-butyl ether	70	50000	5 U	5 U	5 U	5 U	25 U	25 U	10 U	13	25 U	5 U	5 U	20 U	5 U	5 U
Methylcyclohexane	--	--	5 U	5 U	5 U	5 U	25 UJ	25 UJ	11 J	5 UJ	25 U	5 U	5 U	20 U	5 U	5 U
Methylene chloride	5	10000	5 U	5 U	5 U	1.2 J	**7.6** J	**6.5** J	2.1 J	5 U	**9.5** J	2.5 J	5 U	20 U	5 U	5 U

Table 3-1a
Spring 2013 Data - VOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-06A	MW-110	MW-113B	MW-115A	MW-115B	MW-203A	MW-203B	MW-302	MW-304A		MW-304B	RMW-305A	MW-305B	MW-403A
		Sample ID	MW-06A-052213A	MW-110-052213A	MW-113B-052213A	MW-115A-052013A	MW-115B-052013A	MW-203A-052113A	MW-203B-052113A	MW-302-052213A	MW-304A-052113A	F-DUP01-052113A	MW-304B-052113A	RMW-305A-052113A	MW-305B-052113A	MW-403A-052013A
		Sample Date	22 May 13	22 May 13	22 May 13	20 May 13	20 May 13	21 May 13	21 May 13	22 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13	20 May 13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**										Duplicate				
o-Xylene	10000	9000	5 U	5 U	5 U	5 U	25 U	25 U	10 U	6.8	25 U	1 J	5 U	20 U	5 U	5 U
Styrene	100	100	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Tetrachloroethene	5	50	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Toluene	1000	50000	5 U	5 U	5 U	5 U	8 J	30 J	10 U	1.6 J	6.8 J	4.1 J	5 U	20 U	5 U	5 U
trans-1,2-Dichloroethene	90	90	5 U	5 U	1.1 J	5 U	25 U	11 J	5 J	5 U	25 U	5.9	1.3 J	20 U	5 U	5 U
trans-1,3-Dichloropropene	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Trichloroethene	5	30	**11**	1.6 J	**440**	5 U	**2100**	**1800**	**730**	**320**	**2200**	**1800**	**120**	**1100**	5 U	5 UJ
Trichlorofluoromethane	--	--	5 U	5 U	5 U	5 U	25 U	25 U	10 U	5 U	25 U	5 U	5 U	20 U	5 U	5 U
Vinyl chloride	2	2	5 U	5 U	5 U	5 U	25 U	**600**	10 U	5 U	25 U	27	5 U	20 U	5 U	5 U

Notes:
1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
6. UJ qualified data with estimated reporting limit.
5. J qualified data is an estimated value.

Table 3-1a
Spring 2013 Data - VOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	RMW-403B	RMW-405A	RMW-405B	MW-406A	MW-406B	
		Sample ID	RMW-403B-052013A	RMW-405A-0520A	RMW-405B-052013A	MW-406A-052013A	MW-406B-052013A	TB-01-052213A
		Sample Date	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**						
1,1,1-Trichloroethane	200	4000	5 U	5 U	50 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	2	9	5 U	5 U	50 U	5 U	5 UJ	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	5 U	5 U	50 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	900	5 U	5 U	50 U	5 U	5 U	5 U
1,1-Dichloroethane	70	1000	5 U	5 U	50 U	5 U	5 U	5 U
1,1-Dichloroethene	7	80	5 U	5 U	50 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	--	--	5 U	5 U	50 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	70	2000	5 U	5 U	**130**	5 U	5 U	5 U
1,2-Dibromo-3-chloropropane	--	--	5 U	5 U	50 U	5 U	5 UJ	5 U
1,2-Dibromoethane	0.02	2	5 U	5 U	50 U	5 U	5 U	5 U
1,2-Dichlorobenzene	600	2000	5 U	5 U	**2000**	5 U	5 U	5 U
1,2-Dichloroethane	5	5	5 U	5 U	50 U	5 U	5 U	5 U
1,2-Dichloropropane	3	3	5 U	5 U	50 U	5 U	5 U	5 U
1,3-Dichlorobenzene	40	2000	5 U	5 U	**320**	5 U	5 U	5 U
1,4-Dichlorobenzene	5	200	5 U	5 U	**280**	5 U	5 U	5 U
1,4-Dioxane	3	6000	100 U	100 U	1000 U	100 UJ	100 UJ	100 U
2-Butanone	4000	50000	10 U	10 U	100 U	10 U	10 U	10 U
2-Hexanone	--	--	10 U	10 U	100 U	10 U	10 U	10 U
4-Methyl-2-pentanone	350	50000	10 U	10 U	100 U	10 U	10 U	10 U
Acetone	6300	50000	10 U	10 U	100 U	10 U	10 U	10 U
Benzene	5	2000	5 U	5 U	50 U	5 U	5 U	5 U
Bromochloromethane	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Bromodichloromethane	3	6	5 U	5 U	50 U	5 U	5 U	5 U
Bromoform	4	700	5 U	5 U	50 U	5 U	5 U	5 U
Bromomethane	7	7	5 U	5 U	50 U	5 U	5 U	5 U
Carbon disulfide	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Carbon tetrachloride	2	2	5 U	5 U	50 U	5 U	5 U	5 U
Chlorobenzene	100	200	5 U	5 U	**2400**	5 U	5 U	5 U
Chloroethane	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Chloroform	50	50	5 U	5 U	50 U	5 U	5 U	5 U
Chloromethane	--	--	5 U	5 U	50 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	70	100	5 U	5 U	**1200**	5 U	5 U	5 U
cis-1,3-Dichloropropene	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Cyclohexane	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Dibromochloromethane	2	20	5 U	5 U	50 U	5 U	5 U	5 U
Dichlorodifluoromethane	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Ethylbenzene	700	20000	5 U	5 U	50 U	5 U	5 U	5 U
Isopropylbenzene	--	--	5 U	5 U	50 U	5 U	5 U	5 U
m,p-Xylene	10000	9000	5 U	5 U	50 U	5 U	5 U	5 U
Methyl acetate	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Methyl tert-butyl ether	70	50000	5 U	5 U	50 U	5 U	5 U	5 U
Methylcyclohexane	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Methylene chloride	5	10000	1.8 J	5 U	50 U	5 U	5 U	5 U

Table 3-1a
Spring 2013 Data - VOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	RMW-403B	RMW-405A	RMW-405B	MW-406A	MW-406B	
		Sample ID	RMW-403B-052013A	RMW-405A-0520A	RMW-405B-052013A	MW-406A-052013A	MW-406B-052013A	TB-01-052213A
		Sample Date	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**						
o-Xylene	10000	9000	5 U	5 U	50 U	5 U	5 U	5 U
Styrene	100	100	5 U	5 U	50 U	5 U	5 U	5 U
Tetrachloroethene	5	50	5 U	5 U	50 U	5 U	5 U	5 U
Toluene	1000	50000	5 U	5 U	50 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	90	90	5 U	5 U	50 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Trichloroethene	5	30	5 U	5 U	**1700**	5 U	5 U	5 U
Trichlorofluoromethane	--	--	5 U	5 U	50 U	5 U	5 U	5 U
Vinyl chloride	2	2	5 U	5 U	50 U	5 U	5 U	5 U

Notes:
1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
6. UJ qualified data with estimated reporting limit.
5. J qualified data is an estimated value.

Table 3-1b
Spring 2013 Data - SVOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-110	MW-113B	MW-115A	MW-115B	MW-203A	MW-203B	MW-302	MW-304A	MW-304A	MW-304B	RMW-305A	MW-305B	MW-403A	RMW-403B	RMW-405A	RMW-405B	MW-406A	MW-406B
		Sample ID	MW-110-052213A	MW-113B-052213A	MW-115A-052013A	MW-115B-052013A	MW-203A-052113A	MW-203B-052113A	MW-302-052213A	MW-304A-052113A	F-DUP01-052113A	MW-304B-052113A	RMW-305A-052113A	MW-305B-052113A	MW-403A-052013A	RMW-403B-052013A	RMW-405A-0520A	RMW-405B-052013A	MW-406A-052013A	MW-406B-052013A
		Sample Date & Time	22 May 13	22 May 13	20 May 13	20 May 13	21 May 13	21 May 13	22 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**									Duplicate									
1,1'-Biphenyl	0.9	200	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4,5-Tetrachlorobenzene	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,2'-Oxybis(1-chloropropane)	--	--	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,3,4,6-Tetrachlorophenol	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,5-Trichlorophenol	200	50000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	10	5000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	10	30000	5 U	-- R	5 U	5 U	5 U	3.7 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	60	40000	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	200	50000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	30	20000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorophenol	10	20000	5 U	-- R	5 U	5 U	7.5	8.6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	10	2000	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylphenol	--	--	5 U	-- R	5 U	5 U	3.9 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitroaniline	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	--	--	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine	80	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloro-3-methylphenol	--	--	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloroaniline	20	50000	5 U	-- R	5 U	4.2 J	10	3.9 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.8	5 U	5 U
4-Chlorophenyl-phenylether	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	--	--	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitroaniline	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthene	20	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	30	10000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetophenone	--	--	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	30	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Atrazine		--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde		--	5 U	-- R	5 U	5 UJ	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U	5 U
Benzo(a)anthracene	1	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(a)pyrene	0.2	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	1	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	20	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	1	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bis(2-chloroethoxy)methane	--	--	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bis(2-chloroethyl)ether	30	30	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bis(2-ethylhexyl)phthalate	6	--	5 U	5 U	3.2 J	4 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Butylbenzylphthalate	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	--	--	5 U	-- R	5 U	5 U	3.5 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2.3 J	5.2	5 U
Carbazole	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	2	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	0.5	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzofuran	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethylphthalate	2000	50000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dimethylphthalate	30000	50000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Di-n-butylphthalate	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Table 3-1b
Spring 2013 Data - SVOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-110	MW-113B	MW-115A	MW-115B	MW-203A	MW-203B	MW-302	MW-304A	MW-304A	MW-304B	RMW-305A	MW-305B	MW-403A	RMW-403B	RMW-405A	RMW-405B	MW-406A	MW-406B
		Sample ID	MW-110-052213A	MW-113B-052213A	MW-115A-052013A	MW-115B-052013A	MW-203A-052113A	MW-203B-052113A	MW-302-052213A	MW-304A-052113A	F-DUP01-052113A	MW-304B-052113A	RMW-305A-052113A	MW-305B-052113A	MW-403A-052013A	RMW-403B-052013A	RMW-405A-0520A	RMW-405B-052013A	MW-406A-052013A	MW-406B-052013A
		Sample Date & Time	22 May 13	22 May 13	20 May 13	20 May 13	21 May 13	21 May 13	22 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**									Duplicate									
Di-n-octylphthalate	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	90	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluorene	30	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobenzene	1	1	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	0.6	1	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	8	100	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	0.5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isophorone	--	--	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	140	1000	5 U	-- R	5 U	110	14	5 U	18	3.3 J	3.4 J	5 U	5 U	5 U	5 U	5 U	5 U	18	5 U	5 U
Nitrobenzene	--	--	5 U	130	5 U	5 U	5 U	5 U	5 U	300	280	5 U	110	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitroso-di-n-propylamine	--	--	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	--	--	2.2 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pentachlorophenol	1	--	10 U	10 U	10 UJ	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Phenanthrene	40	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Phenol	1000	50000	5 U	-- R	5 U	5 UJ	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U	5 U
Pyrene	20		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Notes:
1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.

Table 3-1c
Spring 2013 Data - Anions Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location	MW-06A	MW-110	MW-113B	MW-115B	MW-115A	MW-203A	MW-203B	MW-302	MW-304A	MW-304A	MW-304B
Sample ID	MW-06A-052213A	MW-110-052213A	MW-113B-052213A	MW-115B-052013A	MW-115A-052013A	MW-203A-052113A	MW-203B-052113A	MW-302-052213A	F-DUP01-052113A	MW-304A-052113A	MW-304B-052113A
Sample Date & Time	05/22/13	05/22/13	05/22/13	05/20/13	05/20/13	05/21/13	05/21/13	05/22/13	05/21/13	05/21/13	05/21/13
Chemical Name									Duplicate		
Chloride	130	16	62	1700	3300	4800	290	910	2500	2500	910
Nitrate	0.50 U	0.50 U	0.20 U	0.50 U	0.20 U	1.32 J	0.50 U	0.50 U	1.6 J	2.4	0.85
Nitrate as Nitrogen	0.11 U	0.11 U	0.05 U	0.11 U	0.05 U	0.30 J	0.11 U	0.11 U	0.36 J	0.54	0.19
Nitrite	0.50 U	0.50 U	0.20 U	0.50 U	0.20 U	1.0 UJ	0.50 U	0.50 U	1.0 UJ	1.2 U	0.50 U
Nitrite as Nitrogen	0.15 U	0.15 U	0.06 U	0.15 U	0.06 U	0.3 UJ	0.15 U	0.15 U	0.3 UJ	0.38 U	0.15 U
Sulfate	24	24	120	1600	1800	2600	480	580	1400	1300	570

Notes:
1. All concentrations reported in milligrams per liter (mg/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.

Table 3-1c
Spring 2013 Data - Anions Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location	RMW-305A	MW-305B	MW-403A	RMW-403B	RMW-405A	RMW-405B	MW-406A	MW-406B
Sample ID	RMW-305A-052113A	MW-305B-052113A	MW-403A-052013A	RMW-403B-052013A	RMW-405A-0520A	RMW-0405B-052013A	MW-406A-052013A	MW-406B-052013A
Sample Date & Time	05/21/13	05/21/13	05/20/13	05/20/13	05/20/13	05/20/13	05/20/13	05/20/13
Chemical Name								
Chloride	97	92	140	180	320	3000	230	320
Nitrate	0.50 U	2.3	9.2	0.51	0.97	0.50 U	1.6	1.6
Nitrate as Nitrogen	0.11 U	0.52	2.1	0.12	0.22	0.11 U	0.36	0.36
Nitrite	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Nitrite as Nitrogen	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Sulfate	260	42	28	32	160	2300	28	25

Notes:
1. All concentrations reported in mill
2. Bold concentrations exceed MAD
3. Shaded concentrations exceed M
4. U qualified data not detected abo
5. J qualified data is an estimated va

Table 3-2a
Fall 2013 Data - VOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MADEP-MW-1	MW-04A	MW-04B	MW-04C	MW-B5	MW-06B	MW-6A	MW-09A	MW-09B	MW/B-11	MW-104A	MW-104B	MW-107	MW-110	MW-112A	MW-112B	MW-113A	MW-113B	MW-115A		MW-115B	MW-201
		Sample ID	DEP-MW1-110513A	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-B5-110513A	MW-6B-110713A	MW-6A-110613A	MW-9A-110613A	MW-9B-110613A	B-11-110613A	MW-104A-110613A	MW-104B-110613A	MW-107-110713A	MW-110-110613A	MW-112A-110513A	MW-112B-110513A	MW-113A-110613A	MW-113B-110613A	MW-115A-110513A	FDUP-01-110513A	MW-115B-110513A	MW-201-110413A
		Sample Date	11/05/13	11/04/13	11/04/13	11/04/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/07/13	11/06/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13		11/05/13	11/04/13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																				Duplicate		
1,1,1-Trichloroethane	200	4000	5 U	5 U	5 U	5 U	13 J	5 U	5 U	5 U	5 U	1000 U	1 J	5 U	5 U	5 U	5 U	5 U	500 U	0.6 J	25 U	25 U	25 U	5 U
1,1,2,2-Tetrachloroethane	2	9	5 UJ	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
1,1,2-Trichloroethane	5	900	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
1,1-Dichloroethane	70	1000	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	0.34 J	5 U	5 U	0.36 J	5 U	500 U	5 U	25 U	25 U	25 U	5 U
1,1-Dichloroethene	7	80	5 U	5 U	5 U	5 U	250 U	0.96 J	5 U	5 U	5 U	1000 U	5.6 J	5 U	1.2 J	5 U	1.5 J	5 U	500 U	2 J	5 J	5 J	6.1 J	1 J
1,2,3-Trichlorobenzene	--	--	5 U	5 U	5 U	5 U	250 U	5 U	13	5 U	5 U	1000 U	25 U	5 U	5 U	18	5 U	5 U	500 U	5 U	25 U	25 U	28	25
1,2,4-Trichlorobenzene	70	2000	6.6	5 U	5 U	5 U	**280**	16	37	5 U	5 U	**1700**	25 U	5 U	28	69	5 U	9.1	**510**	20	50	58	**190**	**110**
1,2-Dibromo-3-chloropropane	--	--	5 UJ	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
1,2-Dibromoethane	0.02	2	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
1,2-Dichlorobenzene	600	2000	15	5 U	5 U	5 U	**31000**	380	45	20	74	**110000**	**2700**	5.4	570	33	100	26	**64000**	220	**1000**	**1000**	**1800**	360
1,2-Dichloroethane	5	5	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
1,2-Dichloropropane	3	3	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
1,3-Dichlorobenzene	40	2000	5 U	5 U	5 U	5 U	**1100**	5.2	5 U	5 U	5 U	**4200**	25 U	5 U	7.4	5 U	5 U	5 U	**2500**	10	25 U	25 U	31	8.6
1,4-Dichlorobenzene	5	200	5 U	5 U	5 U	5 U	**6400**	**48**	**11**	**7.4**	**9**	**26000**	**220**	5 U	**78**	**5.6**	**15**	**5.5**	**15000**	**44**	**160**	**160**	**310**	**65**
1,4-Dioxane	3	6000	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
2-Butanone	4000	50000	20	10 U	10 U	10 U	500 U	10 U	10 U	10 U	10 U	2000 U	50 U	10 U	10 U	10 U	10 U	10 U	1000 U	10 U	50 U	50 U	50 U	10 U
2-Hexanone	--	--	10 U	10 U	10 U	10 U	500 U	10 U	10 U	10 U	10 U	2000 U	50 U	10 U	10 U	10 U	10 U	10 U	1000 U	10 U	50 U	50 U	50 U	10 U
4-Methyl-2-pentanone	350	50000	10 U	10 U	10 U	10 U	500 U	10 U	10 U	10 U	10 U	2000 U	50 U	10 U	10 U	10 U	10 U	10 U	1000 U	10 U	50 U	50 U	50 U	10 U
Acetone	6300	50000	94	10 U	10 U	10 U	500 U	10 U	10 U	10 U	10 U	2000 U	50 U	10 U	10 U	10 U	10 U	10 U	1000 U	10 U	50 U	50 U	50 U	10 U
Benzene	5	2000	5 U	5 U	5 U	5 U	**60 J**	**17**	1.5 J	5 U	5 U	**140 J**	25 U	5 U	2.1 J	5 U	2.1 J	5 U	**140 J**	0.81 J	**37**	**37**	**28**	**6.5**
Bromochloromethane	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Bromodichloromethane	3	6	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Bromoform	4	700	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	**5** U	5 U	500 U	5 U	25 U	**25** U	**25** U	5 U
Bromomethane	7	7	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Carbon disulfide	--	--	0.33 J	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Carbon tetrachloride	2	2	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Chlorobenzene	100	200	5 U	5 U	5 U	5 U	**21000**	**150**	67	42	5 U	**54000**	34	5 U	**170**	22	50	7.9	**49000**	86	**2100**	**2100**	**1600**	**300**
Chloroethane	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Chloroform	50	50	8.7	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Chloromethane	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
cis-1,2-Dichloroethene	70	100	1.8 J	5 U	5.7	6.3	**72 J**	**170**	49	14	19	**360 J**	**430**	**73**	**210**	45	**180**	3.4 J	27 J	**100**	**150**	**150**	**310**	**100**
cis-1,3-Dichloropropene	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Cyclohexane	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Dibromochloromethane	2	20	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	**5** U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Dichlorodifluoromethane	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Ethylbenzene	700	20000	5 U	5 U	5 U	5 U	250 U	5.6	0.93 J	5 U	5 U	1000 U	25 U	5 U	0.25 J	0.46 J	0.35 J	5 U	500 U	5 U	25 U	0.87 J	25 U	0.33 J
Isopropylbenzene	--	--	5 U	5 U	5 U	5 U	250 U	0.21 J	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
m,p-Xylene	10000	9000	5 U	5 U	5 U	5 U	250 U	0.32 J	5 U	5 U	5 U	1000 U	25 U	5 U	0.15 J	5 U	5 U	5 U	500 U	5 U	1.1 J	1.2 J	2.2 J	5 U
Methyl acetate	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Methyl tert-butyl ether	70	50000	0.6 J	5 U	5 U	5 U	250 U	8.8	5 U	5 U	5 U	1000 U	25 U	5 U	0.64 J	5 U	5 U	5 U	500 U	5 U	25 U	25 U	1.7 J	0.61 J
Methylcyclohexane	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Methylene chloride	5	10000	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	**16 J**	25 U	5 U
o-Xylene	10000	9000	5 U	5 U	5 U	5 U	250 U	6.8	5 U	5 U	5 U	1000 U	25 U	5 U	0.35 J	5 U	5 U	5 U	500 U	5 U	2.1 J	2.1 J	2.2 J	5 U
Styrene	100	100	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Tetrachloroethene	5	50	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U

Table 3-2a
Fall 2013 Data - VOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MADEP-MW-1	MW-04A	MW-04B	MW-04C	MW-B5	MW-06B	MW-6A	MW-09A	MW-09B	MW/B-11	MW-104A	MW-104B	MW-107	MW-110	MW-112A	MW-112B	MW-113A	MW-113B	MW-115A		MW-115B	MW-201
		Sample ID	DEP-MW1-110513A	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-B5-110513A	MW-6B-110713A	MW-6A-110613A	MW-9A-110613A	MW-9B-110613A	B-11-110613A	MW-104A-110613A	MW-104B-110613A	MW-107-110713A	MW-110-110613A	MW-112A-110513A	MW-112B-110513A	MW-113A-110613A	MW-113B-110613A	MW-115A-110513A	FDUP-01-110513A	MW-115B-110513A	MW-201-110413A
		Sample Date	11/05/13	11/04/13	11/04/13	11/04/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/07/13	11/06/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13		11/05/13	11/04/13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																				Duplicate		
Toluene	1000	50000	5 U	5 U	5 U	5 U	18 J	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	0.56 J	5 U	500 U	5 U	2.6 J	2.8 J	7.8 J	0.21 J
trans-1,2-Dichloroethene	90	90	5 U	5 U	5 U	5 U	250 U	1.4 J	1.6 J	0.42 J	0.26 J	1000 U	3.9 J	0.69 J	0.65 J	1.2 J	3.4 J	5 U	500 U	1.2 J	1.2 J	1.2 J	2.4 J	0.72 J
trans-1,3-Dichloropropene	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Trichloroethene	5	30	5 U	5 U	**75**	**81**	**18000**	**10**	**18**	5 U	**9.7**	**20000**	**990**	**17**	**7.3**	**14**	**160**	5 U	**47000**	**320**	**2100**	**2100**	**2600**	**190**
Trichlorofluoromethane	--	--	5 U	5 U	5 U	5 U	250 U	5 U	5 U	5 U	5 U	1000 U	25 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	25 U	25 U	25 U	5 U
Vinyl chloride	2	2	5 U	5 U	5 U	5 U	250 U	1.1 J	0.56 J	0.91 J	5 U	1000 U	**12 J**	5 U	1.3 J	0.5 J	**2.6 J**	5 U	500 U	**7.8**	**4.3 J**	**5 J**	**8.4 J**	1.4 J

Notes: 1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.
6. R qualified data rejected due to lab interference/calibration errors.

Table 3-2a
Fall 2013 Data - VOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-202	MW-203A	MW-203B	MW-204A	MW-302	MW-304A	MW-304B	MW-305A	MW-305B	MW-401	MW-402	MW-403A	MW-403B	MW-405A	MW-405B	MW-406A	MW-406B	MW-503B	RMW-116A	RW-1	SB-600		WP-105
		Sample ID	MW-202-110413A	MW-203A-110413A	MW-203B-110413A	MW-204A-110613A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-305A-110613A	MW-305B-110613A	MW-401-110513A	MW-402-110713A	MW-403A-110413A	MW-403B-110513A	MW-405A-110513A	MW-405B-110513A	MW-406A-110513A	MW-406B-110513A	MW-503B-110713A	MW-116A-110613A	RW-1-110613A	SB-600-110613A	FDUP-02-110613A	WP-105-10513A
		Sample Date	11/04/13	11/04/13	11/04/13	11/06/13	11/05/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13	11/07/13	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13		11/05/13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																						Duplicate	
1,1,1-Trichloroethane	200	4000	25 U	50 U	25 U	0.43 J	10 U	25 U	5 U	1.1 J	5 U	250 U	57 J	5 U	5 U	5 U	25 U	5 U	5 U	43 J	5 U	5.2 J	33 J	34 J	5 U
1,1,2,2-Tetrachloroethane	2	9	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
1,1,2-Trichloroethane	5	900	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
1,1-Dichloroethane	70	1000	25 U	50 U	25 U	0.24 J	10 U	25 U	5 U	0.38 J	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
1,1-Dichloroethene	7	80	5.6 J	**36 J**	5.8 J	1.2 J	1.9 J	**7.1 J**	2.1 J	2.7 J	5 U	**41 J**	**36 J**	5 U	5 U	0.9 J	**9.4 J**	5 U	5 U	**19 J**	5 U	100 U	**54 J**	**52 J**	5 U
1,2,3-Trichlorobenzene	--	--	180	50 U	140	5 U	10 U	25 U	5.5	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
1,2,4-Trichlorobenzene	70	2000	**830**	52	**660**	7.4	19	33	30	**78**	5 U	250 U	200 U	5 U	5 U	5 U	**140**	5 U	5 U	100 U	5 U	**180**	250 U	250 U	5 U
1,2-Dibromo-3-chloropropane	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
1,2-Dibromoethane	0.02	2	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
1,2-Dichlorobenzene	600	2000	**2400**	**1800**	**1900**	84	**640**	**1100**	320	**880**	5 U	**4400**	**760**	5 U	5 U	73	**1800**	5 U	5 U	260	5 U	**9900**	**1200**	**1200**	5 U
1,2-Dichloroethane	5	5	25 U	50 U	25 U	5 U	0.61 J	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
1,2-Dichloropropane	3	3	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
1,3-Dichlorobenzene	40	2000	**52**	50 U	**44**	5 U	10 U	31	8.2	33	5 U	250 U	200 U	5 U	5 U	5 U	29	5 U	5 U	100 U	5 U	**400**	250 U	250 U	5 U
1,4-Dichlorobenzene	5	200	**450**	**280**	**360**	**17**	**80**	**220**	**57**	**190**	5 U	**850**	200 U	5 U	5 U	**11**	**320**	5 U	5 U	100 U	5 U	**2300**	250 U	250 U	5 U
1,4-Dioxane	3	6000	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
2-Butanone	4000	50000	50 U	100 U	50 U	10 U	20 U	50 U	10 U	20 U	10 U	500 U	400 U	10 U	10 U	10 U	50 U	10 U	10 U	200 U	10 U	200 U	500 U	500 U	10 U
2-Hexanone	--	--	50 U	100 U	50 U	10 U	20 U	50 U	10 U	20 U	10 U	500 U	400 U	10 U	10 U	10 U	50 U	10 U	10 U	200 U	10 U	200 U	500 U	500 U	10 U
4-Methyl-2-pentanone	350	50000	50 U	100 U	50 U	10 U	20 U	50 U	10 U	20 U	10 U	500 U	400 U	10 U	10 U	10 U	50 U	10 U	10 U	200 U	10 U	200 U	500 U	500 U	10 U
Acetone	6300	50000	50 U	100 U	50 U	10 U	20 U	50 U	10 U	20 U	10 U	500 U	400 U	10 U	10 U	10 U	50 U	10 U	10 U	200 U	10 U	200 U	500 U	500 U	10 U
Benzene	5	2000	**50**	**140**	**31**	1.4 J	**46**	**32**	2.4 J	1.8 J	5 U	**49 J**	200 U	5 U	5 U	2.2 J	**35**	5 U	5 U	100 U	5 U	**20 J**	250 U	250 U	5 U
Bromochloromethane	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Bromodichloromethane	3	6	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Bromoform	4	700	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Bromomethane	7	7	25 U	50 U	25 U	5 U	10 U	26 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Carbon disulfide	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Carbon tetrachloride	2	2	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Chlorobenzene	100	200	**2400**	**5500**	**1700**	38	**440**	**1100**	**130**	**360**	5 U	**5500**	200 U	5 U	5 U	**160**	**2400**	5 U	5 U	100 U	5 U	**4500**	250 U	250 U	5 U
Chloroethane	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Chloroform	50	50	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Chloromethane	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
cis-1,2-Dichloroethene	70	100	**420**	**390**	**500**	38	**230**	**510**	**220**	**100**	5 U	**130 J**	**530**	5 U	5 U	49	**1500**	0.3 J	0.65 J	**92 J**	5 U	**200**	**140 J**	**140 J**	5 U
cis-1,3-Dichloropropene	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Cyclohexane	--	--	25 U	50 U	25 U	5 U	1.7 J	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Dibromochloromethane	2	20	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Dichlorodifluoromethane	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Ethylbenzene	700	20000	11 J	1.5 J	14 J	5 U	7.4 J	3.2 J	0.89 J	10 U	5 U	250 U	200 U	5 U	5 U	5 U	1.6 J	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Isopropylbenzene	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
m,p-Xylene	10000	9000	1 J	4.3 J	1 J	5 U	1 J	1.3 J	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	2.1 J	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Methyl acetate	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Methyl tert-butyl ether	70	50000	2.4 J	50 U	1.9 J	5 U	16	25 U	0.34 J	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Methylcyclohexane	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Methylene chloride	5	10000	25 U	50 U	1 J	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
o-Xylene	10000	9000	2 J	5 J	1.6 J	5 U	9.9 J	1.7 J	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	3.1 J	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Styrene	100	100	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Tetrachloroethene	5	50	25 U	50 U	25 U	5 U	0.68 J	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	0.18 J	0.79 J	100 U	5 U	100 U	250 U	250 U	5 U

Table 3-2a
Fall 2013 Data - VOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-202	MW-203A	MW-203B	MW-204A	MW-302	MW-304A	MW-304B	MW-305A	MW-305B	MW-401	MW-402	MW-403A	MW-403B	MW-405A	MW-405B	MW-406A	MW-406B	MW-503B	RMW-116A	RW-1	SB-600		WP-105
		Sample ID	MW-202-110413A	MW-203A-110413A	MW-203B-110413A	MW-204A-110613A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-305A-110613A	MW-305B-110613A	MW-401-110513A	MW-402-110713A	MW-403A-110413A	MW-403B-110513A	MW-405A-110513A	MW-405B-110513A	MW-406A-110513A	MW-406B-110513A	MW-503B-110713A	MW-116A-110613A	RW-1-110613A	SB-600-110613A	FDUP-02-110613A	WP-105-10513A
		Sample Date	11/04/13	11/04/13	11/04/13	11/06/13	11/05/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13	11/07/13	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13		11/05/13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																						Duplicate	
Toluene	1000	50000	1.6 J	37 J	2.5 J	5 U	1.4 J	5.8 J	0.34 J	10 U	5 U	9.5 J	200 U	5 U	5 U	0.33 J	7.9 J	5 U	5 U	100 U	5 U	100 U	250 U	250 U	0.16 J
trans-1,2-Dichloroethene	90	90	4.3 J	36 J	4.3 J	0.4 J	0.7 J	14 J	1.6 J	2.1 J	5 U	250 U	200 U	5 U	5 U	5 U	1.7 J	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
trans-1,3-Dichloropropene	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Trichloroethene	5	30	**1400**	**1600**	**900**	**360**	**320**	**1800**	**140**	**1000**	5 U	**14000**	**14000**	5 U	5 U	**120**	**1400**	5 U	5 U	**7900**	5 U	**6100**	**18000**	**20000**	5 U
Trichlorofluoromethane	--	--	25 U	50 U	25 U	5 U	10 U	25 U	5 U	10 U	5 U	250 U	200 U	5 U	5 U	5 U	25 U	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U
Vinyl chloride	2	2	**9.1 J**	**1300**	**7.6 J**	**3.1 J**	1.7 J	**110**	**8.3**	**2.8 J**	5 U	250 U	200 U	5 U	5 U	0.4 J	**7.1 J**	5 U	5 U	100 U	5 U	100 U	250 U	250 U	5 U

Notes: 1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.
6. R qualified data rejected due to lab interference/calibration errors.

Table 3-2b
Fall 2013 Data - SVOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-04A	MW-04B	MW-04C	MW-B5	MW-06B	MW-6A	MW-09A	MW-09B	MW/B-11	MW-104A	MW-104B	MW-107	MW-110	MW-112A	MW-112B	MW-113A	MW-113B	MW-115A		MW-115B	MW-201	MW-202
		Sample ID	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-B5-110513A	MW-6B-110713A	MW-6A-110613A	MW-9A-110613A	MW-9B-110613A	B-11-110613A	MW-104A-110613A	MW-104B-110613A	MW-107-110713A	MW-110-110613A	MW-112A-110513A	MW-112B-110513A	MW-113A-110613A	MW-113B-110613A	MW-115A-110513A	FDUP-01-110513A	MW-115B-110513A	MW-201-110413A	MW-202-110413A
		Sample Date & Time	11/04/13	11/04/13	11/04/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/07/13	11/06/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13		11/05/13	11/04/13	11/04/13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																			Duplicate			
1,1'-Biphenyl	**0.9**	200	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	0.45 J	**2.5 J**
1,2,4,5-Tetrachlorobenzene	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2,2'-Oxybis(1-Chloropropane)	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2,3,4,6-Tetrachlorophenol	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2,4,5-Trichlorophenol	200	50000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	0.44 J	15 U
2,4,6-Trichlorophenol	10	5000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2,4-Dichlorophenol	**10**	30000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	**12 J**	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2,4-Dimethylphenol	60	40000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2,4-Dinitrophenol	200	50000	10 U	10 U	10 U	30 U	100 U	50 U	50 U	50 U	200 U	100 U	50 U	50 U	50 U	20 U	20 U	500 U	100 U	21 U	30 U	50 U	10 U	30 U
2,4-Dinitrotoluene	30	20000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2,6-Dinitrotoluene	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2-Chloronaphthalene	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2-Chlorophenol	**10**	20000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	**27 J**	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	1.3 J	1.4 J	25 U	5 U	1.8 J
2-Methylnaphthalene	10	2000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2-Methylphenol	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
2-Nitroaniline	--	--	10 U	10 U	10 U	30 U	100 U	50 U	50 U	50 U	200 U	100 U	50 U	50 U	50 U	20 U	20 U	500 U	100 U	21 U	30 U	50 U	10 U	30 U
2-Nitrophenol	--	--	5 U	5 U	5 U	9.9 J	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
3,3'-Dichlorobenzidine	80	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	17 J	50 U	25 U	25 U	25 U	10 U	10 U	21 J	50 U	10 U	15 U	25 U	5 U	15 U
3-Nitroaniline	--	--	10 U	10 U	10 U	1.4 J	100 U	50 U	50 U	50 U	200 U	100 U	50 U	50 U	50 U	20 U	20 U	500 U	100 U	21 U	30 U	50 U	10 U	30 U
4,6-Dinitro-2-Methylphenol	--	--	10 U	10 U	10 U	30 U	100 U	50 U	50 U	50 U	200 U	100 U	50 U	50 U	50 U	20 U	20 U	500 U	100 U	21 U	30 U	50 U	10 U	30 U
4-Bromophenyl-Phenylether	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
4-Chloro-3-Methylphenol	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
4-Chloroaniline	**20**	50000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	**22 J**	50 U	25 U	2.3 J	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	1.9 J
4-Chlorophenyl-Phenylether	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
4-Methylphenol	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
4-Nitroaniline	--	--	10 U	10 U	10 U	30 U	100 U	50 U	50 U	50 U	18 J	100 U	50 U	50 U	50 U	20 U	20 U	500 U	100 U	21 U	30 U	50 U	10 U	30 U
4-Nitrophenol	--	--	10 U	10 U	10 U	9 J	100 U	50 U	50 U	50 U	200 U	100 U	50 U	50 U	50 U	20 U	20 U	500 U	100 U	21 U	30 U	50 U	10 U	30 U
Acenaphthene	20	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Acenaphthylene	30	10000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Acetophenone	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Anthracene	30	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Atrazine	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Benzaldehyde	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Benzo(A)Anthracene	**1**	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Benzo(A)Pyrene	**0.2**	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	R	R	R	5 U	15 U
Benzo(B)Fluoranthene	**1**	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	R	R	R	5 U	15 U
Benzo(G,H,I)Perylene	20	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	R	R	R	5 U	15 U
Benzo(K)Fluoranthene	**1**	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	R	R	R	5 U	15 U
Bis(2-Chloroethoxy)Methane	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Bis(2-Chloroethyl)Ether	30	30	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Bis(2-Ethylhexyl)Phthalate	6	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Butylbenzylphthalate	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Caprolactam	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	8.4 J	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	0.95 J	15 U	25 U	5 U	15 U
Carbazole	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Chrysene	**2**	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Dibenz(A,H)Anthracene	0.5	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	R	R	R	5 U	15 U
Dibenzofuran	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Diethylphthalate	2000	50000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Dimethylphthalate	30000	50000	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Di-N-Butyl Phthalate	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Di-N-Octyl Phthalate	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	R	R	R	5 U	15 U

Table 3-2b
Fall 2013 Data - SVOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-04A	MW-04B	MW-04C	MW-B5	MW-06B	MW-6A	MW-09A	MW-09B	MW/B-11	MW-104A	MW-104B	MW-107	MW-110	MW-112A	MW-112B	MW-113A	MW-113B	MW-115A		MW-115B	MW-201	MW-202
		Sample ID	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-B5-110513A	MW-6B-110713A	MW-6A-110613A	MW-9A-110613A	MW-9B-110613A	B-11-110613A	MW-104A-110613A	MW-104B-110613A	MW-107-110713A	MW-110-110613A	MW-112A-110513A	MW-112B-110513A	MW-113A-110613A	MW-113B-110613A	MW-115A-110513A	FDUP-01-110513A	MW-115B-110513A	MW-201-110413A	MW-202-110413A
		Sample Date & Time	11/04/13	11/04/13	11/04/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/07/13	11/06/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13		11/05/13	11/04/13	11/04/13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																			Duplicate			
Fluoranthene	90	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Fluorene	30	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Hexachlorobenzene	1	1	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Hexachlorobutadiene	0.6	1	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Hexachlorocyclopentadiene	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Hexachloroethane	8	100	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Indeno(1,2,3-Cd)Pyrene	**0.5**	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	R	R	R	5 U	15 U
Isophorone	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Naphthalene	140	1000	5 U	5 U	5 U	3.3 J	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	32 J	50 U	2.4 J	2.9 J	100	5 U	15 U
Nitrobenzene	--	--	5 U	5 U	1.3 J	540000	11 J	25 U	25 U	13 J	92000	38 J	25 U	25 U	25 U	10 U	10 U	280000	59	10 U	15 U	25 U	5 U	15 U
N-Nitroso-Di-N-Propylamine	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
N-Nitrosodiphenylamine	--	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	2.1 J	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	2.4 J
Pentachlorophenol	**1**	--	10 U	10 U	10 U	**4.4 J**	100 U	50 U	50 U	50 U	**20 J**	100 U	50 U	50 U	50 U	20 U	20 U	500 U	100 U	21 U	30 U	50 U	10 U	**1.2 J**
Phenanthrene	40	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U
Phenol	1000	50000	5 U	5 U	5 U	28	50 U	25 U	25 U	25 U	57 J	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	0.69 J	15 U
Pyrene	20	--	5 U	5 U	5 U	15 U	50 U	25 U	25 U	25 U	100 U	50 U	25 U	25 U	25 U	10 U	10 U	250 U	50 U	10 U	15 U	25 U	5 U	15 U

Notes:
1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.
6. R qualified data rejected due to lab interference/calibration errors.

Table 3-2b
Fall 2013 Data - SVOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-203A	MW-203B	MW-204A	MW-302	MW-304A	MW-304B	MW-305A	MW-305B	MW-401	MW-402	MW-403A	MW-403B	MW-405A	MW-405B	MW-406A	MW-406B	MW-503B	RMW-116A	RW-1	SB-600		WP-105
		Sample ID	MW-203A-110413A	MW-203B-110413A	MW-204A-110613A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-305A-110613A	MW-305B-110613A	MW-401-110513A	MW-402-110713A	MW-403A-110413A	MW-403B-110513A	MW-405A-110513A	MW-405B-110513A	MW-406A-110513A	MW-406B-110513A	MW-503B-110713A	MW-116A-110613A	RW-1-110613A	SB-600-110613A	FDUP-02-110613A	WP-105-10513A
		Sample Date & Time	11/04/13	11/04/13	11/06/13	11/05/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13	11/07/13	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13		11/05/13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																					Duplicate	
1,1'-Biphenyl	**0.9**	200	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
1,2,4,5-Tetrachlorobenzene	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2,2'-Oxybis(1-Chloropropane)	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2,3,4,6-Tetrachlorophenol	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	1.6 J	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2,4,5-Trichlorophenol	200	50000	15 U	2.3 J	25 U	25 U	0.78 J	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2,4,6-Trichlorophenol	10	5000	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	1.2 J	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2,4-Dichlorophenol	**10**	30000	15 U	2.6 J	25 U	25 U	0.79 J	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2,4-Dimethylphenol	60	40000	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2,4-Dinitrophenol	200	50000	30 U	50 U	50 U	50 U	10 U	10 U	100 U	50 U	30 U	30 U	10 U	50 U	50 U	100 U	50 U	10 U	30 U	30 U	200 U	100 U	50 U	10 U
2,4-Dinitrotoluene	30	20000	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2,6-Dinitrotoluene	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2-Chloronaphthalene	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2-Chlorophenol	**10**	20000	**13 J**	**12 J**	25 U	25 U	1.5 J	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2-Methylnaphthalene	10	2000	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2-Methylphenol	--	--	3.4 J	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
2-Nitroaniline	--	--	30 U	50 U	50 U	50 U	10 U	10 U	100 U	50 U	30 U	1.7 J	10 U	50 U	50 U	100 U	50 U	10 U	30 U	30 U	200 U	100 U	50 U	10 U
2-Nitrophenol	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	1.5 J	5 U	25 U	25 U	50 U	25 U	5 U	2.2 J	15 U	100 U	50 U	2.5 J	5 U
3,3'-Dichlorobenzidine	80	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
3-Nitroaniline	--	--	30 U	50 U	50 U	50 U	10 U	10 U	100 U	50 U	30 U	30 U	10 U	50 U	50 U	100 U	50 U	10 U	30 U	30 U	200 U	100 U	50 U	10 U
4,6-Dinitro-2-Methylphenol	--	--	30 U	50 U	50 U	50 U	10 U	10 U	100 U	50 U	30 U	2 J	10 U	50 U	50 U	100 U	50 U	10 U	30 U	30 U	200 U	100 U	50 U	10 U
4-Bromophenyl-Phenylether	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
4-Chloro-3-Methylphenol	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
4-Chloroaniline	**20**	50000	15 U	25 U	25 U	25 U	0.48 J	0.41 J	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
4-Chlorophenyl-Phenylether	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
4-Methylphenol	--	--	18	25 U	25 U	25 U	0.74 J	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
4-Nitroaniline	--	--	30 U	50 U	50 U	50 U	10 U	10 U	100 U	50 U	30 U	2.4 J	10 U	50 U	50 U	100 U	50 U	10 U	30 U	30 U	200 U	100 U	50 U	10 U
4-Nitrophenol	--	--	30 U	50 U	50 U	50 U	10 U	10 U	100 U	50 U	5.2 J	3.8 J	10 U	50 U	50 U	100 U	50 U	10 U	3.2 J	30 U	200 U	9.1 J	11 J	10 U
Acenaphthene	20	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Acenaphthylene	30	10000	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Acetophenone	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Anthracene	30	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Atrazine	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Benzaldehyde	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	24	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Benzo(A)Anthracene	**1**	--	15 U	25 U	**6 J**	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Benzo(A)Pyrene	**0.2**	--	15 U	25 U	**8.2 J**	R	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	R	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Benzo(B)Fluoranthene	**1**	--	15 U	25 U	**16 J**	R	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	R	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Benzo(G,H,I)Perylene	20	--	15 U	25 U	7 J	R	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	R	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Benzo(K)Fluoranthene	**1**	--	15 U	25 U	**5 J**	R	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	R	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Bis(2-Chloroethoxy)Methane	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Bis(2-Chloroethyl)Ether	30	30	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	22	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Bis(2-Ethylhexyl)Phthalate	6	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Butylbenzylphthalate	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Caprolactam	--	--	15 U	25 U	25 U	25 U	1.2 J	5 U	50 U	25 U	15 U	8.5 J	5 U	25 U	25 U	4.8 J	25 U	5 U	39	15 U	100 U	50 U	25 U	5 U
Carbazole	--	--	15 U	25 U	3.9 J	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Chrysene	**2**	--	15 U	25 U	**14 J**	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Dibenz(A,H)Anthracene	0.5	--	15 U	25 U	25 U	R	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	R	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Dibenzofuran	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Diethylphthalate	2000	50000	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Dimethylphthalate	30000	50000	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Di-N-Butyl Phthalate	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Di-N-Octyl Phthalate	--	--	15 U	25 U	25 U	R	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	R	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U

Table 3-2b
Fall 2013 Data - SVOC Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location	MW-203A	MW-203B	MW-204A	MW-302	MW-304A	MW-304B	MW-305A	MW-305B	MW-401	MW-402	MW-403A	MW-403B	MW-405A	MW-405B	MW-406A	MW-406B	MW-503B	RMW-116A	RW-1	SB-600		WP-105
		Sample ID	MW-203A-110413A	MW-203B-110413A	MW-204A-110613A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-305A-110613A	MW-305B-110613A	MW-401-110513A	MW-402-110713A	MW-403A-110413A	MW-403B-110513A	MW-405A-110513A	MW-405B-110513A	MW-406A-110513A	MW-406B-110513A	MW-503B-110713A	MW-116A-110613A	RW-1-110613A	SB-600-110613A	FDUP-02-110613A	WP-105-10513A
		Sample Date & Time	11/04/13	11/04/13	11/06/13	11/05/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13	11/07/13	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13		11/05/13
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																					Duplicate	
Fluoranthene	90	--	15 U	25 U	29	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Fluorene	30	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Hexachlorobenzene	1	1	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Hexachlorobutadiene	0.6	1	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Hexachlorocyclopentadiene	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Hexachloroethane	8	100	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Indeno(1,2,3-Cd)Pyrene	**0.5**	--	15 U	25 U	**7.4 J**	R	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	R	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Isophorone	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Naphthalene	140	1000	9.7 J	25 U	25 U	25 J	2.9 J	5 U	50 U	25 U	2 J	1.7 J	5 U	25 U	25 U	11 J	25 U	5 U	15 U	15 U	100 U	50 U	2.1 J	5 U
Nitrobenzene	--	--	15 U	25 U	16 J	33	160	0.67 J	78	25 U	14000	1600	5 U	25 U	25 U	50 U	25 U	5 U	17000	15 U	15000	9700	10000	10
N-Nitroso-Di-N-Propylamine	--	--	15 U	25 U	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
N-Nitrosodiphenylamine	--	--	15 U	2.2 J	25 U	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Pentachlorophenol	**1**	--	30 U	50 U	50 U	50 U	10 U	10 U	100 U	50 U	**7.4 J**	**1.2 J**	10 U	50 U	50 U	100 U	50 U	10 U	30 U	30 U	200 U	100 U	50 U	10 U
Phenanthrene	40	--	15 U	25 U	15 J	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U
Phenol	1000	50000	3.8 J	2.4 J	25 U	25 U	1.6 J	0.85 J	50 U	25 U	5.1 J	15 U	5 U	25 U	25 U	50 U	25 U	5 U	29	15 U	100 U	50 U	2.8 J	5 U
Pyrene	20	--	15 U	25 U	20 J	25 U	5 U	5 U	50 U	25 U	15 U	15 U	5 U	25 U	25 U	50 U	25 U	5 U	15 U	15 U	100 U	50 U	25 U	5 U

Notes:
1. All concentrations reported in micrograms per liter (ug/L)
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standard
4. U qualified data not detected above laboratory detection
5. J qualified data is an estimated value.
6. R qualified data rejected due to lab interference/calibrati

Table 3-2c
Fall 2013 Data - Anions Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location	MW-04A	MW-04B	MW-04C	MW/B-5	MW-06B	MW-6A	MW-09A	MW-09B	MW/B-11	MW-104A	MW-104B	MW-107
Sample ID	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-B5-110513A	MW-6B-110713A	MW-6A-110613A	MW-9A-110613A	MW-9B-110613A	B-11-110613A	MW-104A-110613A	MW-104B-110613A	MW-107-110713A
Sample Date & Time	11/04/13	11/04/13	11/04/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/07/13
Chemical Name												
Chloride	9.6	200	93	240	460	94	140	23	150	230	9.2	350
Nitrate	0.05 U	0.27	0.22	3.6	0.05 U	0.05 U	0.5 U	0.72	0.54 J	0.2	0.06	0.05 U
Nitrate as Nitrogen	0.011 U	0.06	0.05	0.81	0.011 U	0.011 U	0.11 U	0.16	0.12 J	0.05	0.01	0.011 U
Nitrite	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.05 U
Nitrite as Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.15 U	0.15 U	0.15 UJ	0.15 U	0.15 U	0.015 U
Sulfate	6.8	200	160	300	300	32	410	220	810	350	290	460

Notes: 1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.

Table 3-2c
Fall 2013 Data - Anions Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location	MW-110	MW-112A	MW-112B	MW-113A	MW-113B	MW-115A	MW-115A	MW-115B	MW-201	MW-202	MW-203A	MW-203B
Sample ID	MW-110-110613A	MW-112A-110513A	MW-112B-110513A	MW-113A-110613A	MW-113B-110613A	MW-115A-110513A	FDUP-01-110513A	MW-115B-110513A	MW-201-110413A	MW-202-110413A	MW-203A-110413A	MW-203B-110413A
Sample Date & Time	11/06/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13		11/05/13	11/04/13	11/04/13	11/04/13	11/04/13
Chemical Name							Duplicate					
Chloride	40	300	110	25	70	3700	3600	1800	270	420	6100	260
Nitrate	0.05 U	0.19	0.05 U	0.05 U	0.2	5 UJ	5 UJ	5 UJ	0.44	0.42	5 U	0.32
Nitrate as Nitrogen	0.011 U	0.04	0.011 U	0.011 U	0.05 J	1.12 UJ	1.12 UJ	1.1 UJ	0.09	0.09	1.1 U	0.07
Nitrite	0.05 U	0.05 U	0.05 U	0.05 U	0.5 U	5 UJ	5 UJ	5 UJ	0.05 U	1 U	5 U	0.05 U
Nitrite as Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.15 UJ	1.52 UJ	1.52 UJ	1.52 UJ	0.015 U	0.015 U	1.5 U	0.015 U
Sulfate	26	330	22	51	130	2000	2000	1800	190	670	3200	480

Notes: 1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.

Table 3-2c
Fall 2013 Data - Anions Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location	MW-204A	MW-302	MW-304A	MW-304B	MW-305A	MW-305B	MW-401	MW-402	MW-403A	MW-403B	MW-405A	MW-405B
Sample ID	MW-204A-110613A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-305A-110613A	MW-305B-110613A	MW-401-110513A	MW-402-110713A	MW-403A-110413A	MW-403B-110513A	MW-405A-110513A	MW-405B-110513A
Sample Date & Time	11/06/13	11/05/13	11/05/13	11/05/13	11/06/13	11/06/13	11/05/13	11/07/13	11/04/13	11/05/13	11/05/13	11/05/13
Chemical Name												
Chloride	1100	900	2700	920	110	32	750	220	160	180	4000	3400
Nitrate	3.4 J	0.05 U	0.05 U	0.05 U	0.17 J	1.9	0.05 U	5.2	12	0.31 J	0.05 U	5 UJ
Nitrate as Nitrogen	0.77 J	0.011 U	0.011 U	0.011 U	0.04 J	0.43	0.015 U	1.17	2.71	0.07 J	0.011 U	1.1 UJ
Nitrite	5 UJ	0.05 U	0.05 U	0.05 U	0.5 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	5 UJ
Nitrite as Nitrogen	1.5 UJ	0.015 U	0.015 U	0.015 U	0.15 UJ	0.015 U	0.011 U	0.015 U	0.015 U	0.015 U	0.015 U	1.5 UJ
Sulfate	2800	580	1400	600	290	44	560	610	27	33	2200	2700

Notes: 1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.

Table 3-2c
Fall 2013 Data - Anions Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location	MW-406A	MW-406B	MW-503B	RMW-116A	RW-1	SB-600		WP-105
Sample ID	MW-406A-110513A	MW-406B-110513A	MW-503B-110713A	MW-116A-110613A	RW-1-110613A	SB-600-110613A	FDUP-02-110613A	WP-105-10513A
Sample Date & Time	11/05/13	11/05/13	11/07/13	11/06/13	11/06/13	11/06/13		11/05/13
Chemical Name							Duplicate	
Chloride	150	190	100	12	140	520	520	520
Nitrate	0.5 U	0.05 U	5.5	0.94 J	0.3 J	0.62 J	0.62 J	0.62 J
Nitrate as Nitrogen	0.011 U	0.011 U	1.24	0.21 J	0.07 J	0.14 J	0.14 J	0.14 J
Nitrite	0.5 UJ	0.5 UJ	0.05 U	0.05 U	0.5 UJ	1 UJ	1 UJ	1 UJ
Nitrite as Nitrogen	0.15 UJ	0.15 UJ	0.015 U	0.015 U	0.15 UJ	0.3 UJ	0.3 UJ	0.3 UJ
Sulfate	19	35	290	22	230	470	470	470

Notes: 1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.

Table 3-2d
Fall 2012 Data - Dissolved Gases Analytical Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location	MW-B5	MW-112A	MW-112B	MW-115A		MW-115B	MW-201	MW-203A	MW-203B	MW-405A	MW-405B
Sample ID	MW-B5-110513A	MW-112A-110513A	MW-112B-110513A	MW-115A-110513A	FDUP-01-110513A	MW-115B-110513A	MW-201-110413A	MW-203A-110413A	MW-203B-110413A	MW-405A-110513A	MW-405B-110513A
Sample Date & Time	11/05/13	11/05/13	11/05/13	11/05/13		11/05/13	11/04/13	11/04/13	11/04/13	11/05/13	11/05/13
Chemical Name			Duplicate								
Ethane	33	1.2 U	1.2 U	2.5	1.3 U	2	1.2 U	17 J	1.8	3.7	3
Ethylene	18	2.2	1.5 U	5.4 J	2.3 J	7.4	1.5 U	540 J	32	3.5	7.7
Methane	790	330	120	310 J	200 J	800	170	1800	430	55	1000

Notes:

1. All concentrations reported in micrograms per liter (ug/L).
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.

Table 3-3
2013 Annual Data - Field Parameter Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location	Sample #	Sample Date	Turbidity (NTU)	Temp (^oC)	pH (SU)	Conductivity (mS)	DO (mg/L)	ORP (mV)
MW/B-5	MW-B5-110513A	11/5/2013	1.48	11.08	6.28	1424	0.24	82.7
MW/B-11	B-11-110613A	11/6/2013	no readings collected due to extraction system, sampled from pump					
MADEP-MW-1	DEP-MW1-110513A	11/5/2013	no readings collected due to well diameter and low water volume					
MW-04A	MW-4A-110413A	11/4/2013	3.01	11.65	5.86	94	0.27	126.2
MW-04B	MW-4B-110413A	11/4/2013	5.01	10.82	6.25	1088	0.35	152.7
MW-04C	MW-4C-110413A	11/5/2013	3.01	9.01	6.87	692	0.34	78.3
MW-06A	MW-06A-052213A	5/22/2013	5	11.4	5.48	548	0.21	58.6
	MW-6A-110613A	11/6/2013	2.89	15.24	5.77	459	0.39	22.1
MW-06B	MW-6B-110713A	11/7/2013	37.3	14.94	5.84	1988	1.35	15.6
MW-09A	MW-9A-110613A	11/6/2013	38.1	13.95	6.4	1466	0.38	-81.5
MW-09B	MW-9B-110613A	11/6/2013	12.3	14.22	6.59	1070	6.93	-29
MW-104A	MW-104A-110613A	11/6/2013	1.24	13.94	7.03	1479	0.47	16.1
MW-104B	MW-104B-110613A	11/6/2013	27.2	14.85	6.29	740	0.32	-36.6
MW-107	MW-107-110713A	11/7/2013	5.51	14.06	5.83	1959	1.04	47.1
MW-110	MW-110-052213A	5/22/2013	8.94	12.71	5.9	181	0.09	5.2
	MW-110-110613A	11/6/2013	7.98	13.7	6.28	253	0.25	-0.47
MW-112A	MW-112A-110513A	11/5/2013	31.4	12.9	6.51	1760	0.39	-31.3
MW-112B	MW-112B-110513A	11/5/2013	64.1	13.06	6.42	526	0.39	-52.5
MW-113A	MW-113A-110613A	11/6/2013	no readings collected due to extraction system, sampled from pump					
MW-113B	MW-113B-052213A	5/22/2013	0.53	14.31	5.32	494	0.39	106.4
	MW-113B-110613A	11/6/2013	0.78	11.51	5.95	522	0.4	59.2
MW-115A	MW-115A-052013A	5/20/2013	3.79	15.44	6.63	12662	0.2	-31.3
	MW-115A-110513A	11/5/2013	2.52	12.55	6.42	11802	0.66	-39.3
MW-115B	MW-115B-052013A	5/20/2013	2.53	14.12	5.89	7745	0.31	5.4
	MW-115B-110513A	11/5/2013	12.8	12.54	6.02	7313	0.31	-17.3
RMW-116A	MW-116A-110613A	11/6/2013	0.38	12.14	7.7	238	5.02	108.5
MW-201	MW-201-110413A	11/4/2013	6.66	15.83	5.59	1283	0.43	124.5
MW-202	MW-202-110413A	11/4/2013	1.82	14.29	5.38	2450	0.37	193.8
MW-203A	MW-203A-052113A	5/21/2013	15.6	17.98	7.45	20050	0.04	-200.7
	MW-203A-110413A	11/4/2013	9.83	12.14	7.48	17094	0.07	-278.7
MW-203B	MW-203B-052113A	5/21/2013	39.1	13.22	6.12	2042	0.08	-2.3
	MW-203B-110413A	11/4/2013	3.15	13.08	6.29	1909	0.23	-47.4
MW-204A	MW-204A-110613A	11/6/2013	235	17.17	5.25	3282	0.45	110.6
MW-302	MW-302-052213A	5/22/2013	3.87	14.31	3.81	3749	0.02	328.9
	MW-302-110513A	11/5/2013	1.65	13.68	4.63	3496	0.65	240.2
MW-304A	MW-304A-052113A	5/21/2013	3.92	13.71	5.85	9756	0.09	2.3
	MW-304A-110513A	11/5/2013	40.9	11.77	6.59	9048	0.1	-142.5
MW-304B	MW-304B-052113A	5/21/2013	2.55	13.74	6.47	3612	0.3	-14.8
	MW-304B-110513A	11/5/2013	1.5	12.24	6.5	3719	0.48	-11.4
RMW-305A	RMW-305A-052113A	5/21/2013	3.95	12.92	5.44	950	0.36	57.2
	MW-305A-110613A	11/6/2013	3.25	13.87	5.8	971	0.36	12.4
MW-305B	MW-305B-052113A	5/21/2013	1.7	13.42	4.3	425	1.54	386.2
	MW-305B-110613A	11/6/2013	0.31	14.36	4.76	205	0.34	358.4
MW-401	MW-401-110513A	11/5/2013	1.62	12.55	7.36	3009	0.24	-58.1
MW-402	MW-402-110713A	11/7/2013	16.3	11.68	6.79	1980	1.68	84.1
MW-403A	MW-403A-052013A	5/20/2013	0.92	12.06	4.74	586	3.74	258.7
	MW-403A-110413A	11/4/2013	0.5	11.41	5.11	656	4.59	214

Table 3-3
2013 Annual Data - Field Parameter Results
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location	Sample #	Sample Date	Turbidity (NTU)	Temp (^oC)	pH (SU)	Conductivity (mS)	DO (mg/L)	ORP (mV)
RMW-403B	RMW-403B-052013A	5/20/2013	123	11.83	5.7	764	1.43	105.8
	MW-403B-110513A	11/5/2013	9.96	10.27	6.7	802	9.69	-27.2
RMW-405A	RMW-405A-0520A	5/20/2013	7.95	15.13	7.7	1528	0.14	-87.9
	MW-405A-110513A	11/5/2013	5.34	13.84	8.03	1680	0.39	-167.7
RMW-405B	RMW-405B-052013A	5/20/2013	4.93	13.63	5.47	12555	0.35	15.8
	MW-405B-110513A	11/5/2013	9.88	13.58	5.9	12131	0.27	-54.1
MW-406A	MW-406A-052013A	5/20/2013	1.87	17.13	7.75	656	1.85	42.3
	MW-406A-110513A	11/5/2013	2.05	15.31	7.71	610	0.29	-110
MW-406B	MW-406B-052013A	5/20/2013	0.74	14.47	6.16	1266	0.49	164.2
	MW-406B-110513A	11/5/2013	2.11	14.81	7.16	820	0.26	-6.9
MW-503B	MW-503B-110713A	11/7/2013	4.08	12.61	7.06	1260	10.87	354.5
RW-1	RW-1-110613A	11/6/2013	11.7	13.63	5.62	952	0.53	114.7
SB-600	SB-600-110613A	11/6/2013	11.9	13.13	6.56	2570	0.41	59.2
WP-105	WP-105-10513A	11/5/2013	0.71	13.73	6.45	478	0.32	-49.1

Notes:
^oC - Degrees Celsius
DO - Dissolved Oxygen
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
ORP - Oxygen Reduction Potential
mS - microsiemens
SU - Standard Unit

Table 4-1
Historical Data Comparison - VOCs and MNA Parameter Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, MA

Well ID	Sample Date	Volatiles (µg/L)										
		Benzene	Chlorobenzene	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Methylene chloride
	GW-1	5	100	70	5	5	2	70	600	40	5	5
	GW-2	2000	200	100	50	30	2	2000	2000	2000	200	10000
MADEP-MW-1	01/20/11	1.1	57	37	1 U	**88**	1 U	24	71	2.2	**16**	1 U
	11/09/12	5.0 U	19	5.0 U	5.0 U	**5.5**	5.0 U	3.4 J	22	5.0 U	5.0 U	5.0 U
	11/05/13	5 U	5 U	1.8 J	5 U	5 U	5 U	6.6	15	5 U	5 U	5 U
MADEP-MW-2	01/20/11	1 U	21	15	1 U	**35**	1 U	14	33	1	**7.5**	1 U
MW-04A	01/18/11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	11/06/12	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/04/13	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
MW-04B	01/18/11	1 U	1 U	1.3	1 U	**16**	1 U	1 U	1 U	1 U	1 U	1 U
	11/06/12	5.0 U	5.0 U	5.0 U	5.0 U	**34**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/04/13	5 U	5 U	5.7	5 U	**75**	5 U	5 U	5 U	5 U	5 U	5 U
MW-04C	11/06/12	5.0 U	5.0 U	5.0 U	5.0 U	**11**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/04/13	5 U	5 U	6.3	5 U	**81**	5 U	5 U	5 U	5 U	5 U	5 U
MW/B-5	01/11/11	500 U	**17000**	500 U	500 U	**8700**	500 U	500 U	**22000**	**720**	**4800**	500 U
	04/19/12	1700 U	**27000**	1700 U	1700 U	**17000**	1700 U	1700 UJ	**30000**	**1100 J**	**7100**	1700 U
		1700 U	**28000**	1700 U	1700 U	**17000**	1700 U	1700 UJ	**31000**	**1100 J**	**7400**	1700 U
	11/08/12	500 U	**15000**	500 U	500 U	**7100**	500 U	500 U	**20000**	**820**	**5500**	500 U
	11/05/13	**60 J**	**21000**	**72 J**	250 U	**18000**	250 U	**280**	**31000**	**1100**	**6400**	250 U
MW-06A	01/19/11	1 U	22	**96**	1 U	**10**	1.3	41	20	1 U	3.5	1 U
	08/14/12	1.2 J	58	**76**	5.0 U	**22**	5.0 U	22	15	3.9 J	**10**	5.0 U
	11/07/12	5.0 U	27	19	5.0 U	**9.8**	5.0 U	14	12	5.0 U	**5.4**	5.0 U
	05/22/13	5.0 U	38	47	5.0 U	**11**	5.0 U	44	29	3.0 J	2.7 J	5.0 U
	11/06/13	1.5 J	67	49	5 U	**18**	0.56 J	37	45	5 U	**11**	5 U
MW-06B	11/07/13	**17**	**150**	**170**	5 U	**10**	1.1 J	16	380	5.2	**48**	5 U
MW-08	01/19/11	1 U	1.1	8.7	1 U	**5.1**	1 U	1 U	4.7	1.5	1.9	1 U

Table 4-1
Historical Data Comparison - VOCs and MNA Parameter Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, MA

Well ID	Sample Date	Volatiles (µg/L)										
		Benzene	Chlorobenzene	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Methylene chloride
	GW-1	5	100	70	5	5	2	70	600	40	5	5
	GW-2	2000	200	100	50	30	2	2000	2000	2000	200	10000
MW-09A	11/07/12	5.0 U	24	6.2	5.0 U	5.0 U	5.0 U	5.0 U	16	5.0 U	**5.7**	5.0 U
	11/06/13	5 U	42	14	5 U	5 U	0.91 J	5 U	20	5 U	**7.4**	5 U
MW-09B	11/07/12	5.0 U	5.0 U	16	5.0 U	4.6 J	5.0 U	5.0 U	48	5.0 U	**5.4**	5.0 U
	11/06/13	5 U	5 U	19	5 U	**9.7**	5 U	5 U	74	5 U	**9**	5 U
MW/B-11	11/09/12	400 U	**30000**	**190 J**	400 U	**6900**	400 U	**240 J**	**46000**	**1200**	**8400**	400 U
	11/06/13	**140 J**	**54000**	**360 J**	1000 U	**20000**	1000 U	**1700**	**110000**	**4200**	**26000**	1000 U
RMW-102	01/17/11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-103	01/14/11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-104A	11/07/12	20 U	50	**710**	20 U	**1700**	20 U	20 U	**2000**	15 J	**200**	20 U
	11/06/13	25 U	34	**430**	25 U	**990**	**12 J**	25 U	**2700**	25 U	**220**	25 U
MW-104B	11/07/12	5.0 U	5.0 U	28	5.0 U	**7.8**	5.0 U	5.0 U	11	5.0 U	5.0 U	5.0 U
	11/06/13	5 U	5 U	**73**	5 U	**17**	5 U	5 U	5.4	5 U	5 U	5 U
MW-107	01/18/11	10 U	**170**	**180**	10 U	**37**	10 U	25	530	10 U	**75**	10 U
		10 U	**170**	**170**	10 U	**34**	10 U	25	530	10 U	**74**	10 U
	11/07/13	2.1 J	**170**	**210**	5 U	**7.3**	1.3 J	28	570	7.4	**78**	5 U
MW-110	08/15/12	0.63 J	23	**73**	5.0 U	**15**	0.60 J	**80**	40	5.0 U	**6.8**	5.0 U
	11/07/12	5.0 U	15	28	5.0 U	**6.5**	5.0 U	43	29	5.0 U	4.6 J	5.0 U
	05/22/13	5.0 U	4.9 J	3.7 J	5.0 U	1.6 J	5.0 U	11	5.0 U	5.0 U	5.0 U	5.0 U
	11/06/13	5 U	22	45	5 U	**14**	0.5 J	69	33	5 U	**5.6**	5 U
MW-112A	01/20/11	1 U	7.5	19	1 U	**19**	1 U	1.1	17	1 U	3	1 U
	11/05/13	2.1 J	50	**180**	5 U	**160**	**2.6 J**	5 U	100	5 U	**15**	5 U
MW-112B	11/05/13	5 U	7.9	3.4 J	5 U	5 U	5 U	9.1	26	5 U	**5.5**	5 U

Table 4-1
Historical Data Comparison - VOCs and MNA Parameter Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, MA

Well ID	Sample Date	Volatiles (µg/L)										
		Benzene	Chlorobenzene	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Methylene chloride
	GW-1	5	100	70	5	5	2	70	600	40	5	5
	GW-2	2000	200	100	50	30	2	2000	2000	2000	200	10000
MW-113A	01/11/11	200 U	**16000**	200 U	200 U	**13000**	200 U	**280**	**26000**	**870**	**5800**	200 U
	11/08/12	400 U	**19000**	400 U	400 U	**17000**	400 U	400 U	**28000**	**890**	**6100**	400 U
	11/06/13	**140 J**	**49000**	27 J	500 U	**47000**	500 U	**510**	**64000**	**2500**	**15000**	500 U
MW-113B	08/15/12	25 U	39	37	25 U	**190**	25 U	25 U	99	25 U	**17 J**	25 U
		25 U	72	60	25 U	**510**	25 U	12 J	160	25 U	**32**	25 U
	11/07/12	5.0 U	64	67	5.0 U	**290**	5.0 U	26	240	9.7	**42**	**41**
	05/22/13	5.0 U	**120**	**100**	5.0 U	**440**	5.0 U	25	350	13	**70**	5.0 U
	11/06/13	0.81 J	86	**100**	5 U	**320**	**7.8**	20	220	10	**44**	5 U
MW-115A	04/19/12	**75 J**	**1800**	**310**	250 U	**3100**	250 U	250 U	**1700**	250 U	**240 J**	250 U
	08/14/12	**37 J**	**1800 J**	**140**	100 U	**1600**	100 U	100 UJ	**820 J**	100 UJ	**120 J**	**23 J**
	11/05/12	**46 J**	**2600**	**130**	50 U	**2300**	50 U	**110**	**1600**	50 U	**280**	50 U
		46 J	**2500**	**130**	50 U	**2200**	50 U	**130**	**1600**	50 U	**270**	50 U
	05/20/13	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.2 J
	11/05/13	**37**	**2100**	**150**	25 U	**2100**	**4.3 J**	50	**1000**	25 U	**160**	25 U
		37	**2100**	**150**	25 U	**2100**	**5 J**	58	**1000**	25 U	**160**	**16 J**
MW-115B	01/13/11	10 U	**190**	67	10 U	**640**	10 U	35	160	10 U	**27**	10 U
	08/14/12	**30 J**	**1300**	**320**	100 U	**2100**	100 U	**120**	**1300**	100 U	**210**	**13 J**
	11/05/12	50 U	**1600**	**290**	50 U	**2500**	50 U	**220**	**1800**	50 U	**320**	50 U
	05/20/13	**23 J**	**1500**	**230**	25 U	**2100**	25 U	**160**	**1700**	22 J	**250**	**7.6 J**
	11/05/13	**28**	**1600**	**310**	25 U	**2600**	**8.4 J**	**190**	**1800**	31	**310**	25 U
RMW-116A	11/06/12	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/06/13	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Table 4-1
Historical Data Comparison - VOCs and MNA Parameter Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, MA

Well ID	Sample Date	Volatiles (µg/L)										
		Benzene	Chlorobenzene	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Methylene chloride
	GW-1	5	100	70	5	5	2	70	600	40	5	5
	GW-2	2000	200	100	50	30	2	2000	2000	2000	200	10000
MW-201	01/10/11	**10**	**400**	**130**	1 U	**240**	**2.3**	**120**	400	11	**93**	1 U
	11/05/12	**7.4**	**390**	**100**	5.0 U	**180**	5.0 U	**120**	460	8.2	**66**	5.0 U
	11/04/13	**6.5**	**300**	**100**	5 U	**190**	1.4 J	**110**	360	8.6	**65**	5 U
MW-202	01/10/11	**15.7**	**710**	**100**	1 U	**390**	**3.5**	**220**	**720**	15.6	**120**	1 U
		15.8	**710**	**99**	1 U	**380**	**2.4**	**230**	**710**	15.5	**120**	1 U
	11/05/12	**52**	**2500**	**360**	25 U	**1500**	25 U	**800**	**2600**	**45**	**390**	25 U
	11/04/13	**50**	**2400**	**420**	25 U	**1400**	**9.1 J**	**830**	**2400**	**52**	**450**	25 U
MW-203A	01/10/11	**67.6**	**3600**	**110**	1 U	**500**	**460**	69.2	**1500**	31.4	**280**	1 U
	04/19/12	**170 J**	**7600**	**230 J**	250 U	**1100**	**1000**	250 U	**3000**	**50 J**	**480**	250 U
	08/13/12	**170 J**	**7000**	**210 J**	400 U	**4100**	**300 J**	400 U	**3000**	400 U	**500**	**76 J**
	11/05/12	**140**	**6400**	**220**	40 U	**2800**	**350**	**140**	**3200**	**49**	**500**	40 U
	05/21/13	**110**	**5700**	**350**	25 U	**1800**	**600**	**75**	**2700**	29	**370**	**6.5 J**
	11/04/13	**140**	**5500**	**390**	50 U	**1600**	**1300**	52	**1800**	50 U	**280**	50 U
MW-203B	01/11/11	**16**	**750**	**170**	10 U	**560**	10 U	**210**	**700**	15	**130**	10 U
	08/13/12	**34 J**	**2100**	**530**	100 U	**1200**	100 U	**660**	**2000**	100 U	**390**	100 U
	11/05/12	**30**	**1800**	**370**	25 U	**800**	25 U	**620**	**2000**	34	**290**	25 U
	05/21/13	**26**	**1700**	**380**	10 U	**730**	10 U	**760**	**2100**	29	**290**	2.1 J
	11/04/13	**31**	**1700**	**500**	25 U	**900**	**7.6 J**	**660**	**1900**	**44**	**360**	1 J
MW-204A	01/14/11	10 U	55.3	**145.2**	10 U	**174.8**	**15.2**	11.8	128	10 U	**28.8**	10 U
	11/06/12	5.0 U	24	10	5.0 U	**69**	5.0 U	5.0 U	32	5.0 U	**5.6**	5.0 U
	11/06/13	1.4 J	38	38	5 U	**360**	**3.1 J**	7.4	84	5 U	**17**	5 U

Table 4-1
Historical Data Comparison - VOCs and MNA Parameter Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, MA

Well ID	Sample Date	Volatiles (µg/L)										
		Benzene	Chlorobenzene	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Methylene chloride
	GW-1	5	100	70	5	5	2	70	600	40	5	5
	GW-2	2000	200	100	50	30	2	2000	2000	2000	200	10000
MW-302	01/14/11	**50.1**	**435.1**	**214.2**	20 U	**335.4**	20 U	20 U	577.2	**84**	**80.2**	20 U
	11/07/12	**41**	**370**	**160**	5.0 U	**330**	5.0 U	15	**610**	6.3	**65**	5.0 U
		39	**350**	**150**	5.0 U	**290**	5.0 U	14	550	5.7	**59**	5.0 U
	05/22/13	**54**	**400**	**180**	5.0 U	**320**	5.0 U	17	**670**	6.6	**87**	5.0 U
	11/05/13	**46**	**440**	**230**	0.68 J	**320**	1.7 J	19	**640**	10 U	**80**	10 U
MW-304A	01/17/11	50 U	**1200**	**450**	50 U	**2000**	**65**	50 U	**1100**	50 U	**220**	50 U
	04/19/12	**44 J**	**2000**	**170**	160 U	**800**	160 U	160 U	**2000**	**52 J**	**390**	160 U
	08/13/12	**36 J**	**1300**	**660**	100 U	**2600**	**29 J**	**100**	**1400**	100 U	**290**	100 U
	11/06/12	**27 J**	**1000**	**480**	5.0 U	**1700**	**46**	42	**1200**	24	**180**	5.0 U
	05/21/13	**28**	**1100 J**	**470**	25 U	**2200**	25 U	41	**1600 J**	23 J	**200**	**9.5 J**
		26	**940**	**500**	5.0 U	**1800**	**27**	49	**1200**	22	**200**	2.5 J
	11/05/13	**32**	**1100**	**510**	25 U	**1800**	**110**	33	**1100**	31	**220**	25 U
MW-304B	01/17/11	5 U	**120**	**170**	5 U	**120**	**5.8**	20	230	5	**40**	5 U
	08/13/12	2.3 J	**110**	**200**	10 U	**130**	**4.6 J**	27	230	5.8 J	**41**	10 U
	11/06/12	5.0 U	51	63	5.0 U	**55**	5.0 U	9.2	93	5.0 U	**17**	5.0 U
	05/21/13	5.0 U	**110**	**190**	5.0 U	**120**	5.0 U	25	280	5.8	**46**	5.0 U
	11/05/13	2.4 J	**130**	**220**	5 U	**140**	**8.3**	30	320	8.2	**57**	5 U
RMW-305A	08/15/12	50 U	**290**	**90**	50 U	**950**	50 U	58	**650**	50 U	**140**	50 U
	11/06/12	5.0 U	**180**	60	5.0 U	**870**	5.0 U	49	**730**	18	**100**	5.0 U
	05/21/13	20 U	**340**	**80**	20 U	**1100**	20 U	**75**	**1000**	24	**170**	20 U
	11/06/13	1.8 J	**360**	**100**	10 U	**1000**	**2.8 J**	**78**	**880**	33	**190**	10 U

Table 4-1
Historical Data Comparison - VOCs and MNA Parameter Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, MA

Well ID	Sample Date	Volatiles (µg/L)										
		Benzene	Chlorobenzene	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Methylene chloride
	GW-1	5	100	70	5	5	2	70	600	40	5	5
	GW-2	2000	200	100	50	30	2	2000	2000	2000	200	10000
MW-305B	01/21/11	1 U	1 U	1 U	1 U	1	1 U	1 U	1 U	1 U	1 U	1 U
	08/15/12	5.0 U	5.0 U	5.0 U	5.0 U	2.0 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/06/12	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	05/21/13	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/06/13	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
MW-306	01/21/11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-401	11/07/12	250 U	**4200**	**150 J**	250 U	**12000**	250 U	250 U	**3900**	250 U	**700**	250 U
		250 U	**3900**	250 U	250 U	**14000**	250 U	250 U	**3500**	**96 J**	**670**	250 U
	11/05/13	**49 J**	**5500**	**130 J**	250 U	**14000**	250 U	250 U	**4400**	250 U	**850**	250 U
MW-402	11/09/12	130 U	130 U	**520**	130 U	**8000**	130 U	130 U	**610**	130 U	130 U	130 U
	11/07/13	200 U	200 U	**530**	200 U	**14000**	200 U	200 U	**760**	200 U	200 U	200 U
RMW-403A	01/20/11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	08/13/12	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/06/12	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	05/20/13	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/04/13	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
RMW-403B	01/19/11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	08/13/12	5.0 U	5.0 U	5.0 U	5.0 U	0.91 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/06/12	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	05/20/13	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.8 J
	11/05/13	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Table 4-1
Historical Data Comparison - VOCs and MNA Parameter Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, MA

Well ID	Sample Date	Volatiles (µg/L)										
		Benzene	Chlorobenzene	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Methylene chloride
	GW-1	5	100	70	5	5	2	70	600	40	5	5
	GW-2	2000	200	100	50	30	2	2000	2000	2000	200	10000
RMW-405A	08/14/12	2.1 J	**220**	41	10 U	**190**	10 U	6.5 J	140	10 U	**24**	10 U
	11/05/12	5.0 U	57	19	5.0 U	**51**	5.0 U	5.0 U	24	5.0 U	5.0 U	5.0 U
	05/20/13	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/05/13	2.2 J	**160**	49	5 U	**120**	0.4 J	5 U	73	5 U	**11**	5 U
RMW-405B	08/14/12	**47 J**	**2800**	**890**	100 U	**3000**	100 U	**130**	**2000**	100 U	**360**	100 U
	11/05/12	**37 J**	**2400**	**810**	50 U	**2200**	50 U	**130**	**1800**	50 U	**290**	50 U
	05/20/13	50 U	**2400**	**1200**	50 U	**1700**	50 U	**130**	**2000**	**320**	**280**	50 U
	11/05/13	**35**	**2400**	**1500**	25 U	**1400**	**7.1 J**	**140**	**1800**	29	**320**	25 U
MW-406A	01/13/11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	08/14/12	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/07/12	5.0 U	4.3 J	5.0 U	5.0 U	**8**	5.0 U	5.0 U	14	5.0 U	5.0 U	5.0 U
	05/20/13	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/05/13	5 U	5 U	0.3 J	0.18 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
MW-406B	01/13/11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	08/14/12	5.0 U	5.0 U	0.66 J	1.2 J	1.3 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/07/12	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	05/20/13	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/05/13	5 U	5 U	0.65 J	0.79 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
MW-503A	11/09/12	5.0 UJ	5.0 U	5.0 U	5.0 U	4.0 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
MW-503B	11/08/12	5.0 U	4.1 J	6	5.0 U	**240**	5.0 U	5.4	180	13	**25**	5.0 U
	11/07/13	100 U	100 U	**92 J**	100 U	**7900**	100 U	100 U	260	100 U	100 U	100 U
P-1S	01/11/11	1 U	1 U	4.8	1 U	2.4	1 U	1 U	1 U	1 U	1 U	1 U
P-4	01/11/11	10 U	**374.4**	**99.3**	10 U	**1000**	10 U	65.3	**1100**	**48.4**	**252.5**	10 U

Table 4-1
Historical Data Comparison - VOCs and MNA Parameter Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, MA

Well ID	Sample Date	Volatiles (µg/L)										
		Benzene	Chlorobenzene	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Methylene chloride
	GW-1	5	100	70	5	5	2	70	600	40	5	5
	GW-2	2000	200	100	50	30	2	2000	2000	2000	200	10000
RW-1	01/11/11	10 U	**502.3**	**91.2**	10 U	**1500**	10 U	**75.2**	**1300**	**60.7**	**318.9**	10 U
	11/08/12	100 U	**1600**	**80 J**	100 U	**1700**	100 U	**75 J**	**4600**	**180**	**1200**	100 U
	11/06/13	**20 J**	**4500**	**200**	100 U	**6100**	100 U	**180**	**9900**	**400**	**2300**	100 U
SB-600	11/09/12	400 U	400 U	400 U	400 U	**23000**	400 U	400 U	400 U	400 U	400 U	400 U
	11/06/13	250 U	250 U	**140 J**	250 U	**18000**	250 U	250 U	**1200**	250 U	250 U	250 U
		250 U	250 U	**140 J**	250 U	**20000**	250 U	250 U	**1200**	250 U	250 U	250 U
WP-105	01/21/11	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	11/06/12	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	11/05/13	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Notes:
1. All concentrations reported in
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.
6. -- No Data

Table 4-2
Historic Data Comparison - SVOCs Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	Semivolatiles (ug/L)										
		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4-Dichlorophenol	2-Chlorophenol	Aniline	Chrysene	Indeno(1,2,3-cd)pyrene	Nitrobenzene	Pentachlorophenol
	GW-1	70	600	40	5	10	10	--	2	0.5	--	1
	GW-2	2000	2000	2000	200	30000	20000	--	--	--	--	--
MW-04A	01/18/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/04/13	--	--	--	--	5 U	5 U	--	5 U	5 U	5 U	10 U
MW-04B	01/18/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/04/13	--	--	--	--	5 U	5 U	--	5 U	5 U	5 U	10 U
MW-04C	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/04/13	--	--	--	--	5 U	5 U	--	5 U	5 U	1.3 J	10 U
MW/B-5	01/11/11	**252**	**15954**	**592**	**3535**	2.5 U	2.5 U	974	2.5 U	2.5 U	41000	5 U
	11/08/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	32000	**2.6 J**
	11/05/13	--	--	--	--	15 U	15 U	--	15 U	15 U	540000	**4.4 J**
MW-06A	01/19/11	64	31	2.5 U	**5.3**	2.5 U	2.5 U	14	2.5 U	2.5 U	2.5 U	2.5 U
	08/14/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/06/13	--	--	--	--	25 U	25 U	--	25 U	25 U	25 U	50 U
MW-06B	11/07/13	--	--	--	--	50 U	50 U	--	50 U	50 U	11 J	100 U
MW-08	01/19/11	6.3	23	8.4	**8.7**	2.5 U	2.5 U	5.8	2.5 U	2.5 U	74	2.5 U
MW-09A	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/06/13	--	--	--	--	25 U	25 U	--	25 U	25 U	25 U	50 U
MW-09B	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/06/13	--	--	--	--	25 U	25 U	--	25 U	25 U	13 J	50 U
MW/B-11	11/09/12	--	--	--	--	3.3 J	5.0 U	--	5.0 U	5.0 U	39000	**9.3 J**
	11/06/13	--	--	--	--	**12 J**	**27 J**	--	100 U	100 U	92000	**20 J**
RMW-102	01/17/11	15	180	4	**29**	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U

Table 4-2
Historic Data Comparison - SVOCs Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	Semivolatiles (ug/L)										
		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4-Dichlorophenol	2-Chlorophenol	Aniline	Chrysene	Indeno(1,2,3-cd)pyrene	Nitrobenzene	Pentachlorophenol
	GW-1	70	600	40	5	10	10	--	2	0.5	--	1
	GW-2	2000	2000	2000	200	30000	20000	--	--	--	--	--
MW-103	01/14/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
MW-104A	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	28	10 UJ
	11/06/13	--	--	--	--	50 U	50 U	--	50 U	50 U	38 J	100 U
MW-104B	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/06/13	--	--	--	--	25 U	25 U	--	25 U	25 U	25 U	50 U
MW-107	01/18/11	28	370	5.8	**60**	2.5 U	2.5 U	4.1	2.5 U	2.5 U	2.5 U	2.5 U
		23	380	4.8	**50**	2.5 U	2.5 U	3.7	2.5 U	2.5 U	2.5 U	2.5 U
	11/07/13	--	--	--	--	25 U	25 U	--	25 U	25 U	25 U	50 U
MW-110	08/15/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	05/22/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/06/13	--	--	--	--	25 U	25 U	--	25 U	25 U	25 U	50 U
MW-112A	01/20/11	2.5 U	33	2.5 U	**6**	2.5 U	2.5 U	4.6	2.5 U	2.5 U	2.5 U	2.5 U
	11/05/13	--	--	--	--	10 U	10 U	--	10 U	10 U	10 U	20 U
MW-112B	11/05/13	--	--	--	--	10 U	10 U	--	10 U	10 U	10 U	20 U
MW-113A	01/11/11	**160**	**15000**	**500**	**3300**	2.5 U	2.5 U	40	2.5 U	2.5 U	42000	5 U
	11/06/13	--	--	--	--	250 U	250 U	--	250 U	250 U	280000	500 U
MW-113B	08/15/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	110	10 U
		--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	120	10 U
	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	12	10 UJ
	05/22/13	--	--	--	--	R	R	--	5.0 U	5.0 U	130	10 U
	11/06/13	--	--	--	--	50 U	50 U	--	50 U	50 U	59	100 U

Table 4-2
Historic Data Comparison - SVOCs Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	Semivolatiles (ug/L)										
		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4-Dichlorophenol	2-Chlorophenol	Aniline	Chrysene	Indeno(1,2,3-cd)pyrene	Nitrobenzene	Pentachlorophenol
GW-1		70	600	40	5	10	10	--	2	0.5	--	1
GW-2		2000	2000	2000	200	30000	20000	--	--	--	--	--
MW-115A	08/14/12	--	--	--	--	5.0 U	1.6 J	--	5.0 U	5.0 U	5.0 U	10 U
	11/05/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
		--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	05/20/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/05/13	--	--	--	--	10 U	1.3 J	--	10 U	R	10 U	21 U
		--	--	--	--	15 U	1.4 J	--	15 U	R	15 U	30 U
MW-115B	01/13/11	**120**	**950**	16	**170**	2.5 U	2.5 U	860	2.5 U	2.5 U	4	5 U
	08/14/12	--	--	--	--	5.0 U	2.1 J	--	5.0 U	R	5.0 U	**2.5 J**
	11/05/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	**2.3 J**
	05/20/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/05/13	--	--	--	--	25 U	25 U	--	25 U	R	25 U	50 U
RMW-116A	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/06/13	--	--	--	--	15 U	15 U	--	15 U	15 U	15 U	30 U
MW-201	01/10/11	**178**	570	14	**113**	2.5 U	2.5 U	4	2.5 U	2.5 U	2.5 U	2.5 U
	11/05/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/04/13	--	--	--	--	5 U	5 U	--	5 U	5 U	5 U	10 U
MW-202	01/10/11	**416**	**1138**	25	**201**	2.5 U	4	24	2.5 U	2.5 U	2.5 U	2.5 U
		390	**1079**	23	**190**	2.5 U	4.3	17	2.5 U	2.5 U	2.5 U	2.5 U
	11/05/12	--	--	--	--	5.0 U	2.5 J	--	5.0 U	5.0 U	5.0 U	10 U
	11/04/13	--	--	--	--	15 U	1.8 J	--	15 U	15 U	15 U	**1.2 J**
MW-203A	01/10/11	**109**	**2265**	**55**	**428**	2.5 U	7	8232	2.5 U	2.5 U	8	2.5 U
	08/13/12	--	--	--	--	10 U	**25**	--	10 U	10 U	79	20 U
	11/05/12	--	--	--	--	4.5 J	**14**	--	5.0 U	5.0 U	4.2 J	10 U
	05/21/13	--	--	--	--	5.0 U	7.5	--	5.0 U	5.0 U	5.0 U	10 U
	11/04/13	--	--	--	--	15 U	**13 J**	--	15 U	15 U	15 U	30 U

Table 4-2
Historic Data Comparison - SVOCs Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	Semivolatiles (ug/L)										
		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4-Dichlorophenol	2-Chlorophenol	Aniline	Chrysene	Indeno(1,2,3-cd)pyrene	Nitrobenzene	Pentachlorophenol
GW-1		70	600	40	5	10	10	--	2	0.5	--	1
GW-2		2000	2000	2000	200	30000	20000	--	--	--	--	--
MW-203B	01/11/11	**334**	**990**	25	**180**	2.5 U	7	18	2.5 U	2.5 U	2.5 U	5 U
	08/13/12	--	--	--	--	5.6 J	**24**	--	10 U	10 U	10 U	20 U
	11/05/12	--	--	--	--	5.0 U	**12**	--	5.0 U	5.0 U	5.0 U	10 U
	05/21/13	--	--	--	--	3.7 J	8.6	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/04/13	--	--	--	--	2.6 J	**12 J**	--	25 U	25 U	25 U	50 U
MW-204A	01/14/11	7.6	61.5	2.6	**13.3**	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/06/13	--	--	--	--	25 U	25 U	--	**14 J**	**7.4 J**	16 J	50 U
MW-302	01/14/11	14.6	452.2	5.4	**50.6**	2.5 U	2.5 U	160.2	2.5 U	2.5 U	2.5 U	2.5 U
	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
		--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	05/22/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/05/13	--	--	--	--	25 U	25 U	--	25 U	R	33	50 U
MW-304A	01/17/11	34	**780**	20	**160**	2.5 U	2.5 U	3.2	2.5 U	2.5 U	140	2.5 U
	08/13/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	380	10 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	150	10 UJ
	05/21/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	300	10 U
		--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	280	10 U
	11/05/13	--	--	--	--	0.79 J	1.5 J	--	5 U	5 U	160	10 U
MW-304B	01/17/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
	08/13/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	05/21/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/05/13	--	--	--	--	5 U	5 U	--	5 U	5 U	0.67 J	10 U

Table 4-2
Historic Data Comparison - SVOCs Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	Semivolatiles (ug/L)										
		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4-Dichlorophenol	2-Chlorophenol	Aniline	Chrysene	Indeno(1,2,3-cd)pyrene	Nitrobenzene	Pentachlorophenol
GW-1		70	600	40	5	10	10	--	2	0.5	--	1
GW-2		2000	2000	2000	200	30000	20000	--	--	--	--	--
RMW-305A	08/15/12	--	--	--	--	5.0 U	3.1 J	--	5.0 U	5.0 U	55	10 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	29	10 U
	05/21/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	110	10 U
	11/06/13	--	--	--	--	50 U	50 U	--	50 U	50 U	78	100 U
MW-305B	01/21/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
	08/15/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	05/21/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/06/13	--	--	--	--	25 U	25 U	--	25 U	25 U	25 U	50 U
MW-306	01/21/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
MW-401	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.9	10 UJ
		--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	18000	**4.3 J**
	11/05/13	--	--	--	--	15 U	15 U	--	15 U	15 U	14000	**7.4 J**
MW-402	11/09/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	610	10 U
	11/07/13	--	--	--	--	15 U	15 U	--	15 U	15 U	1600	**1.2 J**
RMW-403A	01/20/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
	08/13/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 UJ	5.0 U	10 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	05/20/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/04/13	--	--	--	--	5 U	5 U	--	5 U	5 U	5 U	10 U
RMW-403B	01/19/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
	08/13/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	05/20/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/05/13	--	--	--	--	25 U	25 U	--	25 U	25 U	25 U	50 U

Table 4-2
Historic Data Comparison - SVOCs Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	Semivolatiles (ug/L)										
		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4-Dichlorophenol	2-Chlorophenol	Aniline	Chrysene	Indeno(1,2,3-cd)pyrene	Nitrobenzene	Pentachlorophenol
GW-1		70	600	40	5	10	10	--	2	0.5	--	1
GW-2		2000	2000	2000	200	30000	20000	--	--	--	--	--
RMW-405A	08/14/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/05/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	05/20/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/05/13	--	--	--	--	25 U	25 U	--	25 U	25 U	25 U	50 U
RMW-405B	08/14/12	--	--	--	--	10 U	2.7 J	--	10 U	10 U	10 U	20 U
	11/05/12	--	--	--	--	5.0 U	5.0 UJ	--	5.0 U	5.0 U	5.0 UJ	10 U
	05/20/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/05/13	--	--	--	--	50 U	50 U	--	50 U	R	50 U	100 U
MW-406A	01/13/11	2.5 U	3.6	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	5.6	5 U
	08/14/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 UJ	5.0 U	10 U
	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	12	10 UJ
	05/20/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/05/13	--	--	--	--	25 U	25 U	--	25 U	25 U	25 U	50 U
MW-406B	01/13/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	3.4	5 U
	08/14/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/07/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	20000	**4.5 J**
	05/20/13	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 UJ
	11/05/13	--	--	--	--	5 U	5 U	--	5 U	5 U	5 U	10 U
MW-503A	11/09/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	33	10 U
MW-503B	11/08/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	3.6 J	10 U
	11/07/13	--	--	--	--	15 U	15 U	--	15 U	15 U	17000	30 U
P-1S	01/11/11	2.5 U	11	2.5 U	3	2.5 U	2.5 U	2.5 U	2.5 U	**3**	20	5 U
P-4	01/11/11	**110**	**1766**	**79**	**406**	2.5 U	2.5 U	48	2.5 U	2.5 U	1647	5 U

Table 4-2
Historic Data Comparison - SVOCs Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	Semivolatiles (ug/L)										
		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4-Dichlorophenol	2-Chlorophenol	Aniline	Chrysene	Indeno(1,2,3-cd)pyrene	Nitrobenzene	Pentachlorophenol
	GW-1	70	600	40	5	10	10	--	2	0.5	--	1
	GW-2	2000	2000	2000	200	30000	20000	--	--	--	--	--
RW-1	01/11/11	**114**	**2050**	**89**	**470**	2.5 U	2.5 U	19	2.5 U	2.5 U	2297	5 U
	11/08/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	1000	10 U
	11/06/13	--	--	--	--	100 U	100 U	--	100 U	100 U	15000	200 U
SB-600	11/09/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	32000	10 U
	11/06/13	--	--	--	--	50 U	50 U	--	50 U	50 U	9700	100 U
		--	--	--	--	25 U	25 U	--	25 U	25 U	10000	50 U
WP-105	01/21/11	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
	11/06/12	--	--	--	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	10 U
	11/05/13	--	--	--	--	5 U	5 U	--	5 U	5 U	10	10 U

Notes:
1. All concentrations reported in
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.
6. R data rejected due to lab interference/calibration errors
7. -- No Data

Table 4-3
Historical Data Comparison - Anions Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	General Chemistry (mg/L)										
		Bromide	Chloride	Fluoride	Nitrate	Nitrate & Nitrite	Nitrate as Nitrogen	Nitrite	Nitrite + Nitrate (as Nitrogen)	Nitrite as Nitrogen	Sulfate	Dissolved Oxygen
MW-04A	01/18/11	0.1 U	4.9	0.1 U	0.1 U	--	0.02 U	0.1 U	0.02 U	0.03 U	14	2.31
	11/06/12	--	4.7	--	0.66	--	0.15	0.05 U	--	0.015 U	10	0.5
	11/04/13	--	9.6	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	6.8	0.27
MW-04B	01/18/11	0.22	110	0.32	1.4 B	--	0.32	0.1 U	0.02 U	0.03 U	110	4.62
	11/06/12	--	140	--	2.6	--	0.59	0.05 UJ	--	0.015 U	130	1.32
	11/04/13	--	200	--	0.27	--	0.06	0.05 U	--	0.015 U	200	0.35
MW-04C	11/06/12	--	59	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	60	0.9
	11/04/13	--	93	--	0.22	--	0.05	0.05 U	--	0.015 U	160	0.34
MW/B-5	01/11/11	0.1 U	120	0.3	--	0.1 U	0.02 U	--	0.03 U	0.03 U	130	4.9
	04/19/12	--	--	--	--	--	--	--	--	--	--	0.26
	11/08/12	--	160	--	70	--	16	4.5	--	1.4	320	2.29
	11/05/13	--	240	--	3.6	--	0.81	0.05 U	--	0.015 U	300	0.24
MW-06A	01/19/11	0.1 U	91	0.3	0.1 U	--	0.02 U	0.1 U	0.02 U	0.03 U	43	0.92
	08/14/12	0.0001 U	0.12	0.0001 U	0.00005 U	--	0.000011 U	0.00005 U	--	0.000015 U	0.038	0.41
	11/07/12	--	92	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	42	0.24
	11/06/13	--	94	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	32	0.39
MW-06B	11/07/13	--	460	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	300	1.35
MW-08	01/19/11	0.1 U	110	0.22	6 JB	--	1.4	0.1 U	0.03 U	0.02 U	450	1.89
MW-09A	11/07/12	--	110	--	1 U	--	0.22 U	1 U	--	0.3 U	420	0.87
	11/06/13	--	140	--	0.5 U	--	0.11 U	0.5 U	--	0.15 U	410	0.38
MW-09B	11/07/12	--	23	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	430	2.49
	11/06/13	--	23	--	0.72	--	0.16	0.5 U	--	0.15 U	220	6.93
MW/B-11	11/09/12	--	72	--	2.7	--	0.61	4.6	--	1.4	700	0.47
	11/06/13	--	150	--	0.54 J	--	0.12 J	0.5 UJ	--	0.15 UJ	810	--
RMW-102	01/17/11	0.2	73	0.32	--	0.1 U	0.02 U	--	0.03 U	0.03 U	17	--
MW-103	01/14/11	0.1 U	15	0.2	--	0.1 U	0.02 U	--	0.03 U	0.03 U	22	--
MW-104A	11/07/12	--	290	--	1 U	--	0.22 U	1 U	--	0.3 U	410	0.49
	11/06/13	--	230	--	0.2	--	0.05	0.5 U	--	0.15 U	350	0.47
MW-104B	11/07/12	--	16	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	260	0.6
	11/06/13	--	9.2	--	0.06	--	0.01	0.5 U	--	0.15 U	290	0.32

Table 4-3
Historical Data Comparison - Anions Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	General Chemistry (mg/L)										
		Bromide	Chloride	Fluoride	Nitrate	Nitrate & Nitrite	Nitrate as Nitrogen	Nitrite	Nitrite + Nitrate (as Nitrogen)	Nitrite as Nitrogen	Sulfate	Dissolved Oxygen
MW-107	01/18/11	0.1 U	330	1.3	0.1 U	--	0.02 U	0.1 U	0.02 U	0.03 U	400	0.83
		0.1 U	330	1.2	0.1 U	--	0.02 U	0.1 U	0.02 U	0.03 U	400	0.83
	11/07/13	--	350	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	460	1.04
MW-110	08/15/12	0.1 U	46	0.16	0.05 U	--	0.011 U	0.05 U	--	0.015 U	38	0.53
	11/07/12	--	34	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	34	0.75
	11/06/13	--	40	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	26	0.25
MW-112A	01/20/11	0.1 U	210	0.78	0.1 U	--	0.02 U	0.1 U	0.03 U	0.03 U	140	0.45
	11/05/13	--	300	--	0.19	--	0.04	0.05 U	--	0.015 U	330	0.39
MW-112B	11/05/13	--	110	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	22	0.39
MW-113A	01/11/11	0.1 U	44	0.22	--	12	0.02 U	--	0.03 U	0.03 U	34	0.86
	11/08/12	--	13	--	0.26	--	0.06	0.05 U	--	0.015 U	22	0.95
	11/06/13	--	25	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	51	--
MW-113B	08/15/12	0.1 U	37	0.1	0.93	--	0.21	0.05 U	--	0.015 U	62	2.52
		0.1 U	35	0.1	0.95	--	0.21	0.05 U	--	0.015 U	62	2.52
	11/07/12	--	53	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	96	0.41
	11/06/13	--	70	--	0.2	--	0.05 J	0.5 U	--	0.15 UJ	130	0.4
MW-115A	04/19/12	--	--	--	--	--	--	--	--	--	--	0.16
	08/14/12	0.02 U	4	0.02 U	0.01 U	--	0.0022 U	0.01 U	--	0.0031 U	2.1	0.5
	11/05/12	--	3300	--	10	--	2.3	1 U	--	0.3 U	1700	0.26
		--	3500	--	6.5	--	1.5	1 U	--	0.3 U	1800	0.26
	11/05/13	--	3700	--	5 UJ	--	1.12 UJ	5 UJ	--	1.52 UJ	2000	0.66
		--	3600	--	5 UJ	--	1.12 UJ	5 UJ	--	1.52 UJ	2000	0.66
MW-115B	01/13/11	5.7	1700	8.4	--	5 U	0.02 U	--	1.5 U	0.03 U	1700	5.55
	08/14/12	0.01 U	2	0.01 U	0.005 U	--	0.0011 U	0.005 U	--	0.0015 U	1.9	1.03
	11/05/12	--	1700	--	1 U	--	0.22 U	1 U	--	0.3 U	1800	0.43
	11/05/13	--	1800	--	5 UJ	--	1.1 UJ	5 UJ	--	1.52 UJ	1800	0.31
RMW-116A	11/06/12	--	11	--	0.87	--	0.2	0.05 U	--	0.015 U	27	8.15
	11/06/13	--	12	--	0.94 J	--	0.21 J	0.05 U	--	0.015 U	22	5.02

Table 4-3
Historical Data Comparison - Anions Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	General Chemistry (mg/L)										
		Bromide	Chloride	Fluoride	Nitrate	Nitrate & Nitrite	Nitrate as Nitrogen	Nitrite	Nitrite + Nitrate (as Nitrogen)	Nitrite as Nitrogen	Sulfate	Dissolved Oxygen
MW-201	01/10/11	0.53	400	0.3	--	1 U	0.02 U	--	0.3 U	0.03 U	340	0.33
	11/05/12	--	270	--	0.6	--	0.14	0.05 U	--	0.03 U	220	0.2
	11/04/13	--	270	--	0.44	--	0.09	0.05 U	--	0.015 U	190	0.43
MW-202	01/10/11	1.2	470	0.23	--	1 U	0.02 U	--	0.3 U	0.03 U	730	7.82
		1.1	470	0.22	--	1 U	0.02 U	--	0.3 U	0.03 U	740	7.82
	11/05/12	--	450	--	2.1	--	0.47	1 U	--	0.3 U	710	0.82
	11/04/13	--	420	--	0.42	--	0.09	1 U	--	0.015 U	670	0.37
MW-203A	01/10/11	8.2	5200	0.1 U	--	2.4	0.02 U	--	0.54	0.03 U	2700	0.23
	04/19/12	--	--	--	--	--	--	--	--	--	--	0.12
	08/13/12	20 U	6900	20 U	10 U	--	2.2 U	10 U	--	3 U	3700	1.36
	11/05/12	--	5900	--	5.3	--	1.2	1 U	--	0.3 U	3200	0.08
	11/04/13	--	6100	--	5 U	--	1.1 U	5 U	--	1.5 U	3200	0.07
MW-203B	01/11/11	0.1 U	320	0.41	--	0.1 U	0.02 U	--	--	0.02 U	550	0.8
	08/13/12	0.6	320	0.4	4.7	--	0.03	0.05 U	--	0.015 U	540	0.7
	11/05/12	--	280	--	1 U	--	0.22 U	1 U	--	0.3 U	490	0.98
	11/04/13	--	260	--	0.32	--	0.07	0.05 U	--	0.015 U	480	0.23
MW-204A	01/14/11	0.1	86	1.8	--	0.1 U	0.02 U	--	0.03 U	0.03 U	310	3.29
	11/06/12	--	580	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	1200	0.68
	11/06/13	--	1100	--	3.4 J	--	0.77 J	5 UJ	--	1.5 UJ	2800	0.45
MW-302	01/14/11	0.78	900	0.77	--	0.1 U	0.02 U	--	0.03 U	0.03 U	560	0.61
	11/07/12	--	890	--	1 U	--	0.22 U	1 U	--	0.3 U	600	0.67
		--	900	--	1 U	--	0.22 U	1 U	--	0.3 U	600	0.67
	11/05/13	--	900	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	580	0.65
MW-304A	01/17/11	0.1 U	2800	0.1 U	--	3.5	0.02 U	--	0.79	0.03 U	1400	0.41
	04/19/12	--	--	--	--	--	--	--	--	--	--	0.18
	08/13/12	20 U	2900	20 U	10 U	--	2.2 U	10 U	--	3 U	1500	0.36
	11/06/12	--	2800	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	1400	0.93
	11/05/13	--	2700	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	1400	0.1

Table 4-3
Historical Data Comparison - Anions Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	General Chemistry (mg/L)										
		Bromide	Chloride	Fluoride	Nitrate	Nitrate & Nitrite	Nitrate as Nitrogen	Nitrite	Nitrite + Nitrate (as Nitrogen)	Nitrite as Nitrogen	Sulfate	Dissolved Oxygen
MW-304B	01/17/11	0.1 U	830	0.23	--	0.1 U	0.02 U	--	0.03 U	0.03 U	550	0.42
	08/13/12	0.6	950	0.16	0.26	--	0.06	0.05 U	--	0.015 U	620	0.53
	11/06/12	--	970	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	610	0.39
	11/05/13	--	920	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	600	0.48
RMW-305A	08/15/12	0.1 U	100	1	0.05 U	--	0.011 U	0.05 U	--	0.015 U	250	0.44
	11/06/12	--	97	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	270	0.33
	11/06/13	--	110	--	0.17 J	--	0.04 J	0.5 UJ	--	0.15 UJ	290	0.36
MW-305B	01/21/11	0.15 J	39	0.18	5.4 J	--	1.2	0.1 U	0.03 U	0.03 U	41	1.17
	08/15/12	0.1 U	35	0.1 U	1.9	--	0.43	0.05 U	--	0.015 U	42	0.51
	11/06/12	--	24	--	0.81	--	0.18	0.05 U	--	0.015 U	45	0.38
	11/06/13	--	32	--	1.9	--	0.43	0.05 U	--	0.015 U	44	0.34
MW-306	01/21/11	0.1 U	26	1.1	0.1 U	--	0.02 U	0.1 U	0.03 U	0.03 U	6.4	--
MW-401	11/07/12	--	650	--	1 U	--	0.22 U	1 U	--	0.3 U	500	0.35
		--	640	--	1 U	--	0.22 U	1 U	--	0.3 U	500	0.35
	11/05/13	--	750	--	0.05 U	--	0.015 U	0.05 U	--	0.011 U	560	0.24
MW-402	11/09/12	--	210	--	5.1	--	1.2	0.05 U	--	0.015 U	590	1.51
	11/07/13	--	220	--	5.2	--	1.17	0.05 U	--	0.015 U	610	1.68
RMW-403A	01/20/11	0.13	140	0.67	14	--	3.2	0.1 U	0.03 U	0.03 U	34	3.76
	08/13/12	0.2	150	0.3	11	--	2.5	0.05 U	--	0.015 U	34	3.26
	11/06/12	--	130	--	9.9	--	2.2	0.05 UJ	--	0.015 U	36	1.43
	11/04/13	--	160	--	12	--	2.71	0.05 U	--	0.015 U	27	4.59
RMW-403B	01/19/11	0.1 U	170	0.28	0.1 U	--	0.02 U	0.1 U	0.02 U	0.03 U	42	--
	08/13/12	0.5	190	0.16	1.7	--	0.38	0.05 U	--	0.015 U	33	1.75
	11/06/12	--	170	--	1.2	--	0.27	0.05 U	--	0.015 U	37	2.19
	11/05/13	--	180	--	0.31 J	--	0.07 J	0.05 U	--	0.015 U	33	9.69
RMW-405A	08/14/12	0.0011	0.42	0.00085	0.0013	--	0.00029	0.00005 U	--	0.000015 U	0.22	2.37
	11/05/12	--	360	--	1.2	--	0.27	1 U	--	0.3 U	180	1.24
	11/05/13	--	4000	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	2200	0.39

Table 4-3
Historical Data Comparison - Anions Results Summary, Detects Only
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well ID	Sample Date	General Chemistry (mg/L)										
		Bromide	Chloride	Fluoride	Nitrate	Nitrate & Nitrite	Nitrate as Nitrogen	Nitrite	Nitrite + Nitrate (as Nitrogen)	Nitrite as Nitrogen	Sulfate	Dissolved Oxygen
RMW-405B	08/14/12	0.02 U	3.7	0.02 U	0.01 U	--	0.0022 U	0.01 U	--	0.0031 U	2.8	0.54
	11/05/12	--	3200	--	6.9	--	1.6	1 U	--	0.3 U	2600	1.08
	11/05/13	--	3400	--	5 UJ	--	1.1 UJ	5 UJ	--	1.5 UJ	2700	0.27
MW-406A	01/13/11	0.3	230	0.37	--	0.1 U	0.02 U	--	0.03 U	0.03 U	33	--
	08/14/12	0.00045	0.22	0.0014	0.00005 U	--	0.000011 U	0.00005 U	--	0.000015 U	0.029	0.49
	11/07/12	--	110	--	0.05 U	--	0.011 U	0.05 UJ	--	0.015 U	16	0.45
	11/05/13	--	150	--	0.5 U	--	0.011 U	0.5 UJ	--	0.15 UJ	19	0.29
MW-406B	01/13/11	0.1 U	190	1.7	--	0.1 U	0.02 U	--	0.03 U	0.03 U	32	--
	08/14/12	0.0005	0.19	0.00077	0.00005 U	--	0.000011 U	0.00005 U	--	0.000015 U	0.035	0.47
	11/07/12	--	170	--	0.05 U	--	0.011 U	0.05 UJ	--	0.015 U	37	0.48
	11/05/13	--	190	--	0.05 U	--	0.011 U	0.5 UJ	--	0.15 UJ	35	0.26
MW-503A	11/09/12	--	1	--	2.5	--	0.56	0.22	--	0.07	45	0.56
MW-503B	11/08/12	--	27	--	5.7	--	1.3	0.05 U	--	0.015 U	57	1.69
	11/07/13	--	100	--	5.5	--	1.24	0.05 U	--	0.015 U	290	10.87
P-1S	01/11/11	0.1 U	21	0.19	--	3.9	0.02 U	--	0.88	0.03 U	150	1.64
P-4	01/11/11	0.1 U	140	0.24	--	0.32	0.02 U	--	0.07	0.02 U	190	--
RW-1	01/11/11	0.1 U	110	0.24	--	0.1 U	0.02 U	--	--	0.02 U	210	0.44
	11/08/12	--	72	--	3.3	--	0.74	0.05 UJ	--	0.015 U	130	0.31
	11/06/13	--	140	--	0.3 J	--	0.07 J	0.5 UJ	--	0.15 UJ	230	0.53
SB-600	11/09/12	--	510	--	1.8	--	0.41	0.05 U	--	0.015 U	460	0.33
	11/06/13	--	520	--	0.62 J	--	0.14 J	1 UJ	--	0.3 UJ	470	0.41
		--	520	--	0.48 J	--	0.11 J	1 UJ	--	0.3 UJ	480	0.41
WP-105	01/21/11	0.11	120	0.21	14 J	--	3.2	0.1 U	0.03 U	0.03 U	12	0.39
	11/06/12	--	95	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	4.8	1.11
	11/05/13	--	120	--	0.05 U	--	0.011 U	0.05 U	--	0.015 U	0.19	0.32

Notes:
1. All concentrations reported in
2. Bold concentrations exceed MADEP GW-1 Standards.
3. Shaded concentrations exceed MADEP GW-2 Standards.
4. U qualified data not detected above laboratory detection limit.
5. J qualified data is an estimated value.
6. -- No Data

Table 4-4
Historical Data Comparison - MCP Exceedances and Maximum Concentrations
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Compound	2013				2012				2013 - 2012 Differences			
	Number of Wells Exceeding GW-1 only	Number of Wells Exceeding GW-1/GW-2	Total Number of Exceedances	Maximum Concentration (µg/L)	Number of Wells Exceeding GW-1 only	Number of Wells Exceeding GW-1/GW-2	Total Number of Exceedances	Maximum Concentration (µg/L)	GW-1 Only Exceedances	GW-1/GW-2 Exceedances	Total Number of Exceedances	Maximum Concentration (µg/L)
VOCS												
1,1-Dichloroethene	7	0	7	54	0	0	0	6.2	7	0	7	47.8
1,2,4-Trichlorobenzene	10	0	10	1700	9	0	9	800	1	0	1	900
1,2-Dichlorobenzene	10	7	17	110000	9	7	16	46000	1	0	1	64000
1,3-Dichlorobenzene	4	2	6	4200	7	0	7	1200	-3	2	-1	3000
1,4-Dichlorobenzene	16	12	28	26000	12	11	23	8400	4	1	5	17600
Benzene	15	0	15	140	8	0	8	140	7	0	7	0
Chlorobenzene	4	15	19	54000	1	14	15	30000	3	1	4	24000
cis-1,2 Dichloroethene	6	18	24	1500	2	12	14	810	4	6	10	690
Methylene Chloride	1	0	1	16	1	0	1	41	0	0	0	-25
Trichloroethylene	6	26	32	47000	6	24	30	23000	0	2	2	24000
Vinyl Chloride	13	13	26	1300	0	2	2	350	13	11	24	950
SVOCS												
1,1-Biphenyl	1	0	1	2.5	1	0	1	2.6	0	0	0	-0.1
2,4-Dichlorophenol	1	0	1	12	0	0	0	4.5	1	0	1	7.5
2-Chlorophenol	3	0	3	27	2	0	2	14	1	0	1	13
4-Chloroanaline	1	0	1	22	1	0	1	42	0	0	0	-20
Benzo(A)Anthracene	1	0	1	6	0	0	0	All ND	1	0	1	6
Benzo(A)Pyrene	1	0	1	8.2	0	0	0	All ND	1	0	1	8.2
Benzo(B)Fluoranthene	1	0	1	16	0	0	0	All ND	1	0	1	16
Benzo(K)Fluoranthene	1	0	1	5	0	0	0	All ND	1	0	1	5
Chrysene	1	0	1	14	0	0	0	All ND	1	0	1	14
Indeno(1,2,3-Cd)Pyrene	1	0	1	7.4	0	0	0	All ND	1	0	1	7.4
Pentachlorophenol	5	0	5	20	5	0	5	9.3	0	0	0	10.7

Number of sampling locations with exceedances	2013			2012			2013 - 2012 Differences		
	GW-1	GW-2	--	GW-1	GW-2	--	GW-1	GW-2	--
	34	28		33	24		+1	+4	

Notes: GW-1 is exceeded if GW-2 is exceeded. GW-1 exceedances are included in the GW-2 exceedance count. Total number of GW-1 excedances is GW-1/GW-2 plus GW-1 only.

Table 4-5a
Quantitative Comparison for Selected Compounds - Overburden
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

	Source Area Wells[1]				Downgradient Center Plume Wells[2]				Plume Fringe Wells[3]			
	Minimum	Average	Maximum	Max. Location	Minimum	Average	Maximum	Max. Location	Minimum	Average	Maximum	Max. Location
1,2-Dichlorobenzene												
January 2011	*0.5*	4881	22000	MW/B-5	20	335	720	MW-202	*0.5*	23	230	MW-304B
November 2012	*2.5*	4971	20000	MW/B-5	12	1163	2600	MW-202	*0.5*	16	93	MW-304B
November 2013	5.4	10281	31000	MW/B-5	15	937	2400	MW-202	*0.5*	44	320	MW-304B
1,4-Dichlorobenzene												
January 2011	*0.5*	1075	4800	MW/B-5	3.5	60	130	MW-203B	*0.5*	4	40	MW-304B
November 2012	*2.5*	1349	5500	MW/B-5	*2.5*	197	390	MW-202	*2.5*	5	17	MW-304B
November 2013	*2.5*	2187	6400	MW/B-5	*2.5*	165	450	MW-202	*2.5*	10	57	MW-304B
Chlorobenzene												
January 2011	*0.5*	3576	17000	MW/B-5	21	323	750	MW-203B	*0.5*	12	120	MW-304B
November 2012	*2.5*	3334	15000	MW/B-5	19	1138	2500	MW-202	*2.5*	11	51	MW-304B
November 2013	*2.5*	6397	21000	MW/B-5	*2.5*	907	2400	MW-202/ RMW-405B	*2.5*	23	130	MW-304B
Trichloroethene												
January 2011	2.4	2242	8700	MW/B-5	10	287	560	MW-203B	*0.5*	14	120	MW-304B
November 2012	4	1820	7100	MW/B-5	5.5	941	2500	MW-115B	*2.5*	13	55	MW-304B
November 2013	17	6109	18000	MW/B-5	*2.5*	684	2600	MW-115B	*2.5*	29	140	MW-304B
Vinyl Chloride												
January 2011	*0.5*	50	*250*	MW/B-5	*0.5*	4	*10*	MW-302	*0.5*	1	5.8	MW-304B
November 2012	*2.5*	62	*250*	MW/B-5	*2.5*	12	*25*	RMW-405B	*2.5*	*2.5*	*2.5*	(all same)
November 2013	*2.5*	59	*175*	MW/B-5	0.56	4	9.1	MW-202	0.91	3	8.3	MW-304B
Nitrobenzene												
January 2011	20	9008	41000	MW/B-5	*1.25*	2	4	MW-115B	*1.25*	1	3.4	MW-406B
November 2012	*2.5*	6610	32000	MW/B-5	*2.5*	*2.5*	*2.5*	All Locations	*2.5*	2502	20000	MW-406B
November 2013	*12.5*	138800	540000	MW/B-5	*2.5*	14	33	MW-302	0.67	7	10	WP-105

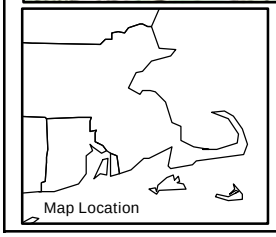
Notes:
Values in italics are non-detects; value shown is half the detection limit for calculation purposes.
All units are in micrograms per liter (µg/L)
1. Source-area wells include: MW-B5, MW-08, MW-104B, MW-113B, P-1S, P-4, and RW-1
2. Downgradient plume wells include: MADEP-MW-1, MADEP-MW-2, MW-06A, MW-06B, MW-112B, MW-115B, MW-201, MW-202, MW-203B, MW-302, and MW-405B
3. Plume fringe wells include: MW-04A, MW-04B, MW-09A, MW-103, MW-304B, MW-305B, MW-306, MW-406B, RMW-102, RMW-403B, and WP-105.

Table 4-5b
Quantitative Comparison for Selected Compounds - Overburden
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

	Source Area Wells[1]				Downgradient Center Plume Wells[2]				Plume Fringe Wells[3]			
	Minimum	Average	Maximum	Max. Location	Minimum	Average	Maximum	Max. Location	Minimum	Average	Maximum	Max. Location
1,2-Dichlorobenzene												
January 2011	26000	26000	26000	MW-113A	17	682	1500	MW-203A	*0.5*	307	1100	MW-304A
November 2012	180	11556	46000	MW-B11	24	1213	3200	MW-203A	*2.5*	254	1200	MW-304A
November 2013	260	26189	110000	MW-B11	33	596	1800	MW-203A	*2.5*	269	1100	MW-304A
1,4-Dichlorobenzene												
January 2011	5800	5800	5800	MW-113A	3	119	280	MW-203A	*0.5*	62	220	MW-304A
November 2012	*25*	2241	8400	MW-B11	*2.5*	197	500	MW-203A	*2.5*	38	180	MW-304A
November 2013	*50*	6049	26000	MW-B11	5.6	92	280	MW-203A	*2.5*	56	220	MW-304A
Chlorobenzene												
January 2011	16000	16000	16000	MW-113A	*7.5*	1259	3600	MW-203A	*0.5*	314	1200	MW-304A
November 2012	4.1	7646	30000	MW-B11	15	2268	6400	MW-203A	*2.5*	152	1000	MW-304A
November 2013	34	15544	54000	MW-B11	*22*	1334	5500	MW-203A	*2.5*	189	1100	MW-304A
Trichloroethene												
January 2011	13000	13000	13000	MW-113A	19	185	500	MW-203A	*0.5*	544	2000	MW-304A
November 2012	240	10120	23000	SB-600	6.5	1289	2800	MW-203A	*2.5*	333	1700	MW-304A
November 2013	990	17700	47000	MW-113A	*7.3*	667	2100	MW-115A	*2.5*	407	1800	MW-304A
Vinyl Chloride												
January 2011	*100*	*100*	*100*	MW-113A	*0.5*	155	460	MW-203A	*0.5*	20	65	MW-304A
November 2012	*2.5*	*115*	*200*	MW-B11, MW-113A, SB-600	*2.5*	95	350	MW-203A	*2.5*	8	46	MW-304A
November 2013	12	166	*250*	MW-113A	0.4	218	1300	MW-203A	2.5	16	110	MW-304A
Nitrobenzene												
January 2011	42000	42000	42000	MW-113A	*1.25*	4	8	MW-203A	*1.25*	37	140	MW-304A
November 2012	3.6	14940	39000	MW-B11	*2.5*	3	4.2	MW-203A	*2.5*	25	150	MW-304A
November 2013	*38*	59234	280000	MW-113A	*5*	*10*	*12.5*	MW-107, MW-110, RMW-405A	1.3	36	160	MW-304A

Notes:
Values in italics are non-detects; value shown is half the detection limit for calculation purposes.
All units are in micrograms per liter (µg/L)
1. Source-area wells include: MW-B11, MW-104A, MW-401, MW-402, MW-503B, and SB-600.
2. Downgradient plume wells include: MW-107, MW-110, MW-112A, MW-115A, MW-203A, and RMW-405A
3. Plume fringe wells include: MW-04C, MW-09B, MW-204A, MW-304A, MW-406A, RMW-102, RMW-116A, RMW-305A, and RMW-403A.

FIGURES



USGS Topographic Map
Ashland, Massachusetts
Revised 1982

0 500 1,000 2,000
Feet
1 inch = 2,000 feet

N

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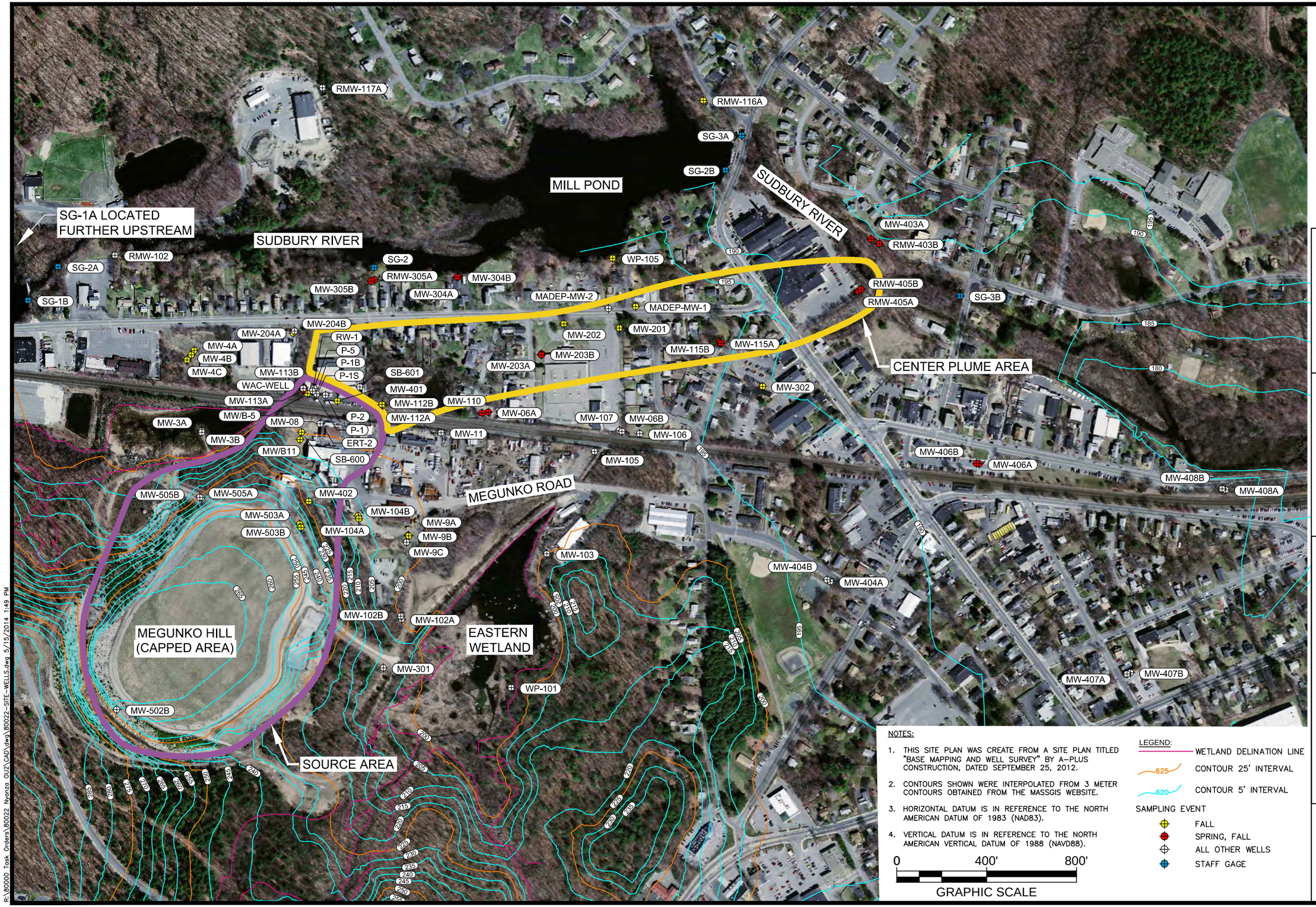
FIGURE 1-1

SITE LOCUS PLAN
NYANZA CHEMICAL WASTE DUMP
SUPERFUND SITE - OPERABLE UNIT II
ASHLAND, MASSACHUSETTS

PREPARED BY: JH
CHECKED BY: JL
PROJECT NO. 80022
DATE: MARCH 2014

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\Fig_1-1_Nyanza_Locus.mxd Date Printed: 3/19/2014



DATE: APRIL 2014
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NYANZA CHEMICAL WASTE DUMP
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OPERABLE UNIT II
AHSLAND, MASSACHUSETTS

SITE PLAN / MONITORING WELLS PLAN

FIGURE 1-2

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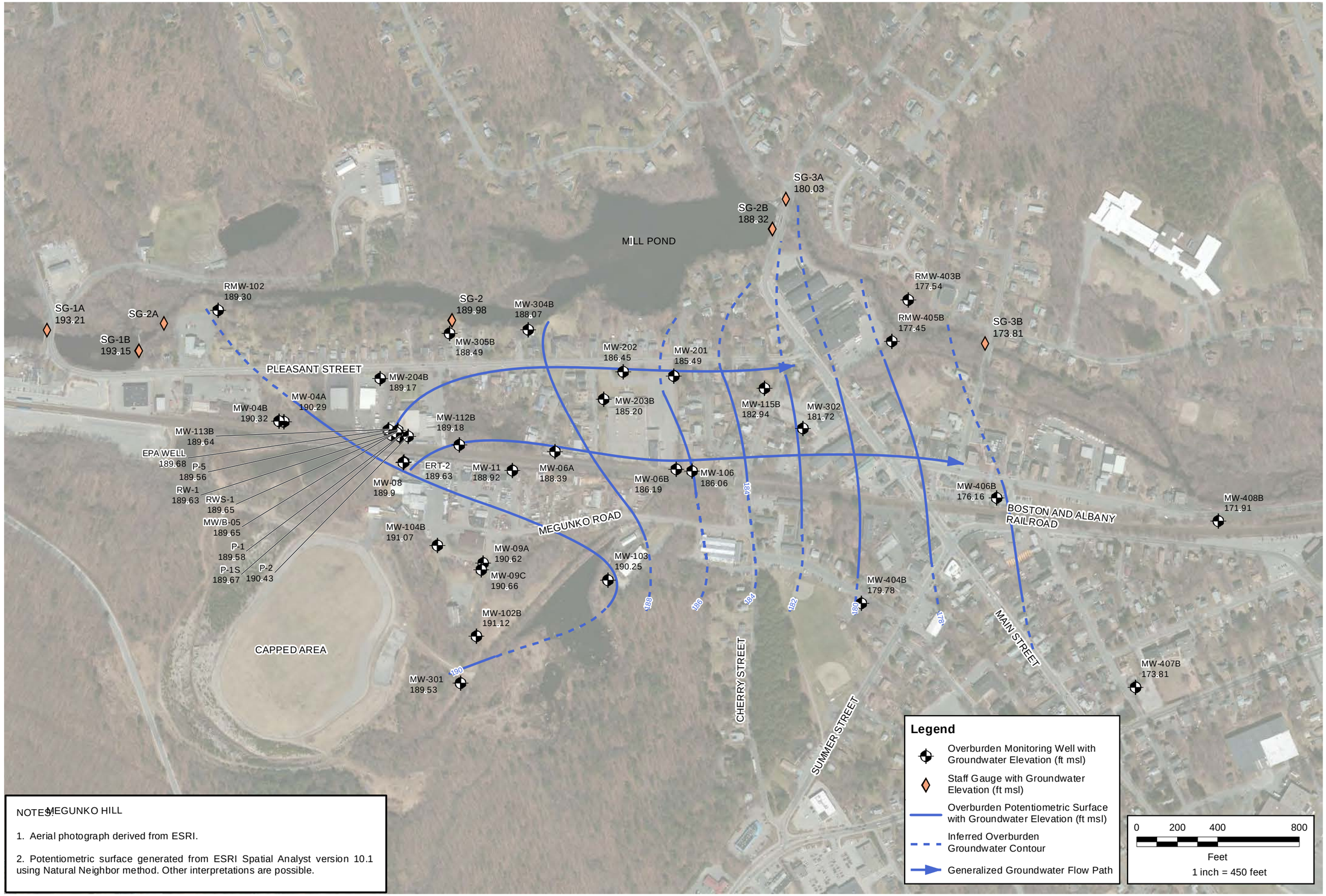

NOTES:

1. Aerial photograph derived from ESRI.

2. Potentiometric surface generated from ESRI Spatial Analyst version 10.1 using Natural Neighbor method. Other interpretations are possible.

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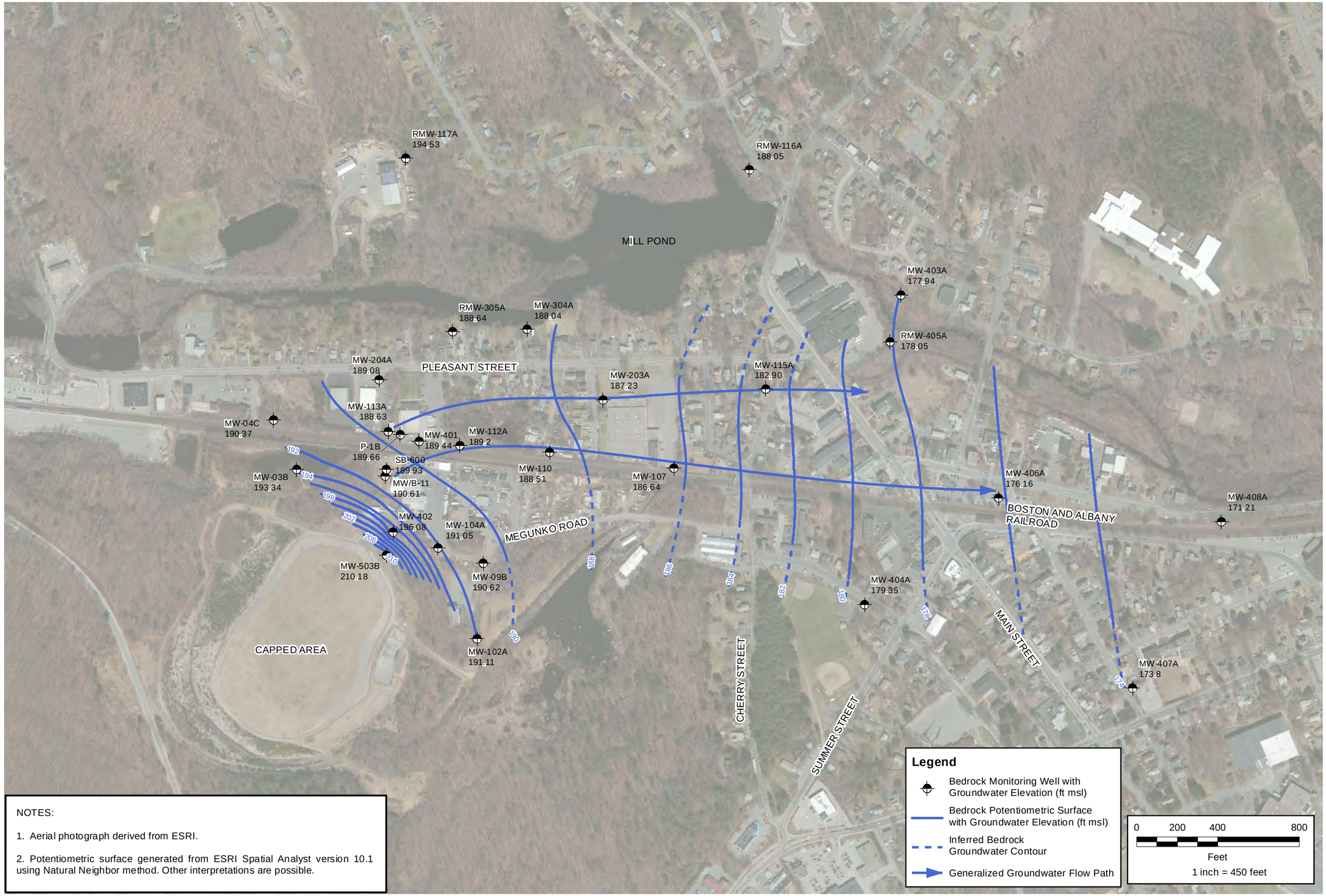
NYANZA CHEMICAL WASTE DUMP
SUPERFUND SITE
OPERABLE UNIT II
ASHLAND, MASSACHUSETTS

OVERBURDEN GROUNDWATER ELEVATIONS
AND POTENTIOMETRIC SURFACES
NOVEMBER, 2013

FIGURE
2-1

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\Fig_2-1_OB_GW_Elev_Nov2013.mxd Date Printed: 5/15/2014



NOTES:

1. Aerial photograph derived from ESRI.

2. Potentiometric surface generated from ESRI Spatial Analyst version 10.1 using Natural Neighbor method. Other interpretations are possible.

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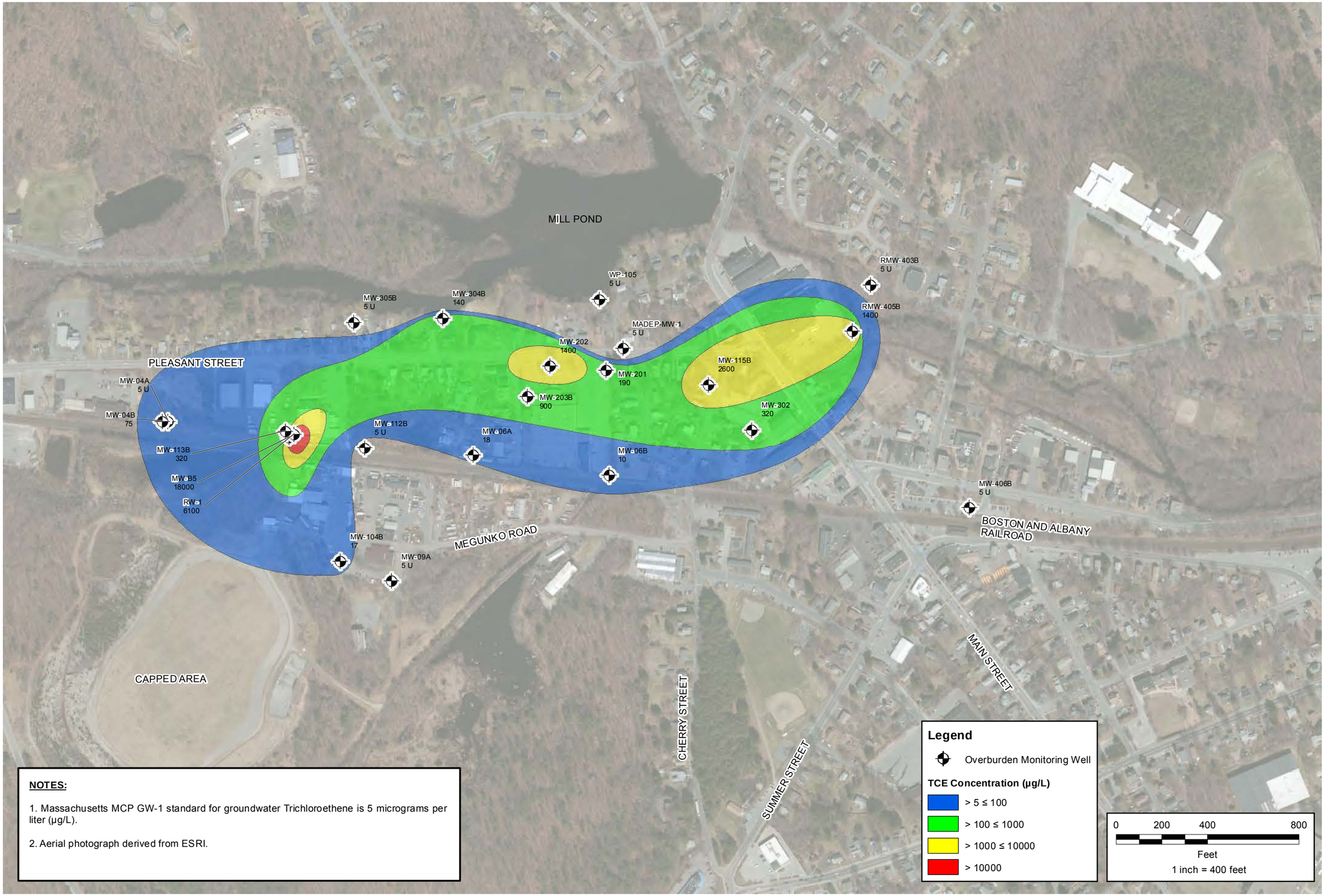
BEDROCK GROUNDWATER ELEVATIONS
AND POTENTIOMETRIC SURFACES
NOVEMBER, 2013

FIGURE
2-2

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\Fig_2-2_BR_GW_Elev_Nov2013.mxd Date Printed: 5/15/2014



NOTES:

1. Massachusetts MCP GW-1 standard for groundwater Trichloroethene is 5 micrograms per liter (µg/L).

2. Aerial photograph derived from ESRI.

N

DATE: MARCH 2014
PROJECT NO. 80022

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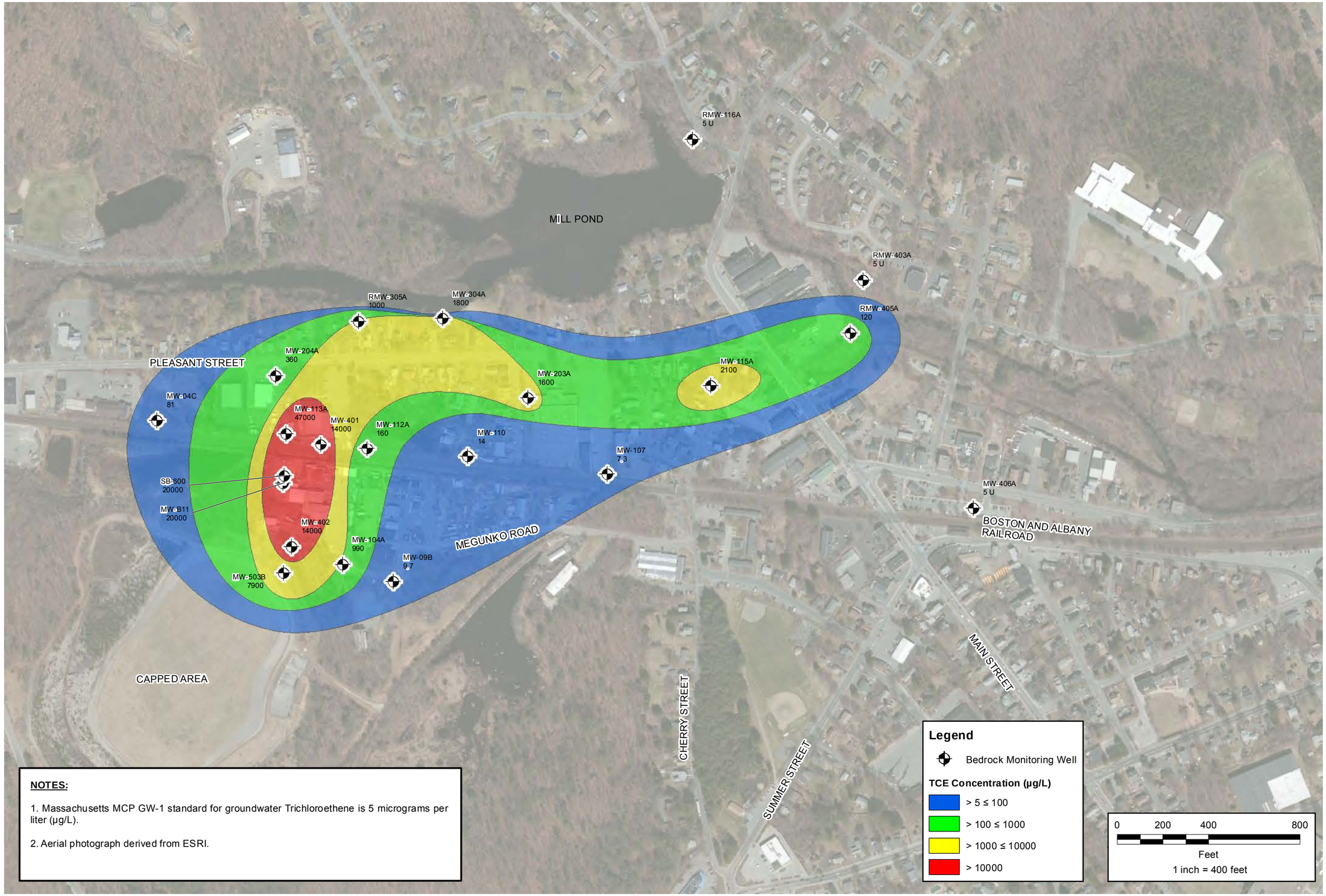
NYANZA CHEMICAL WASTE DUMP
SUPERFUND SITE
OPERABLE UNIT II
ASHLAND, MASSACHUSETTS

OVERBURDEN GROUNDWATER
TRICHLOROETHENE RESULTS
NOVEMBER, 2013

FIGURE
3-1

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\Fig_3-1_OB_TCE_Nov2013.mxd Date Printed: 3/20/2014



NOTES:

1. Massachusetts MCP GW-1 standard for groundwater Trichloroethene is 5 micrograms per liter (µg/L).

2. Aerial photograph derived from ESRI.

DATE: MARCH 2014
PROJECT NO. 80022

PREPARED BY: JH
CHECKED BY: BA

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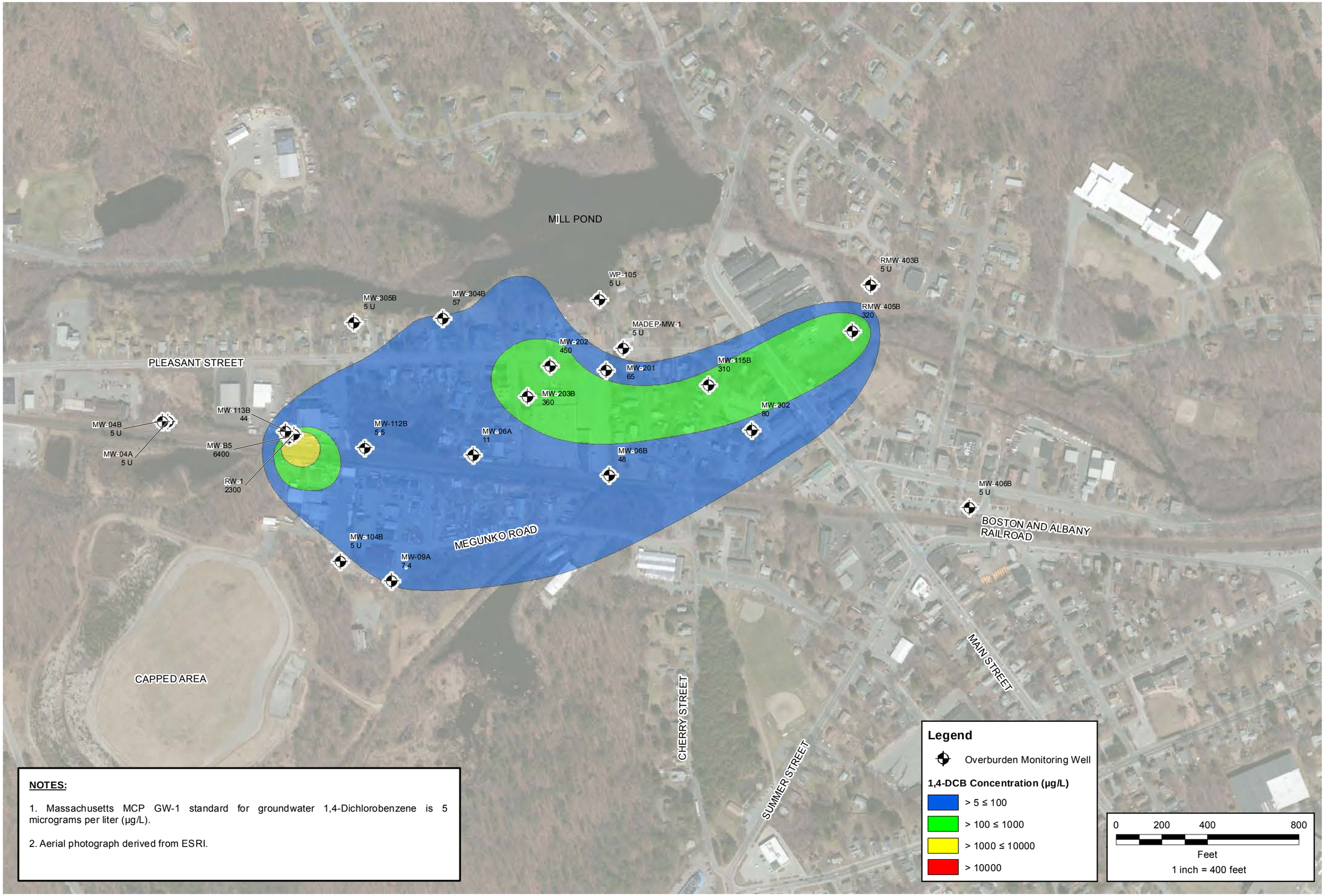
NYANZA CHEMICAL WASTE DUMP
SUPERFUND SITE
OPERABLE UNIT II
ASHLAND, MASSACHUSETTS

BEDROCK GROUNDWATER
TRICHLOROETHENE RESULTS
NOVEMBER, 2013

FIGURE
3-2

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\Fig_3-2_BR_TCE_Nov2013.mxd Date Printed: 3/20/2014



NOTES:

1. Massachusetts MCP GW-1 standard for groundwater 1,4-Dichlorobenzene is 5 micrograms per liter (µg/L).

2. Aerial photograph derived from ESRI.

N

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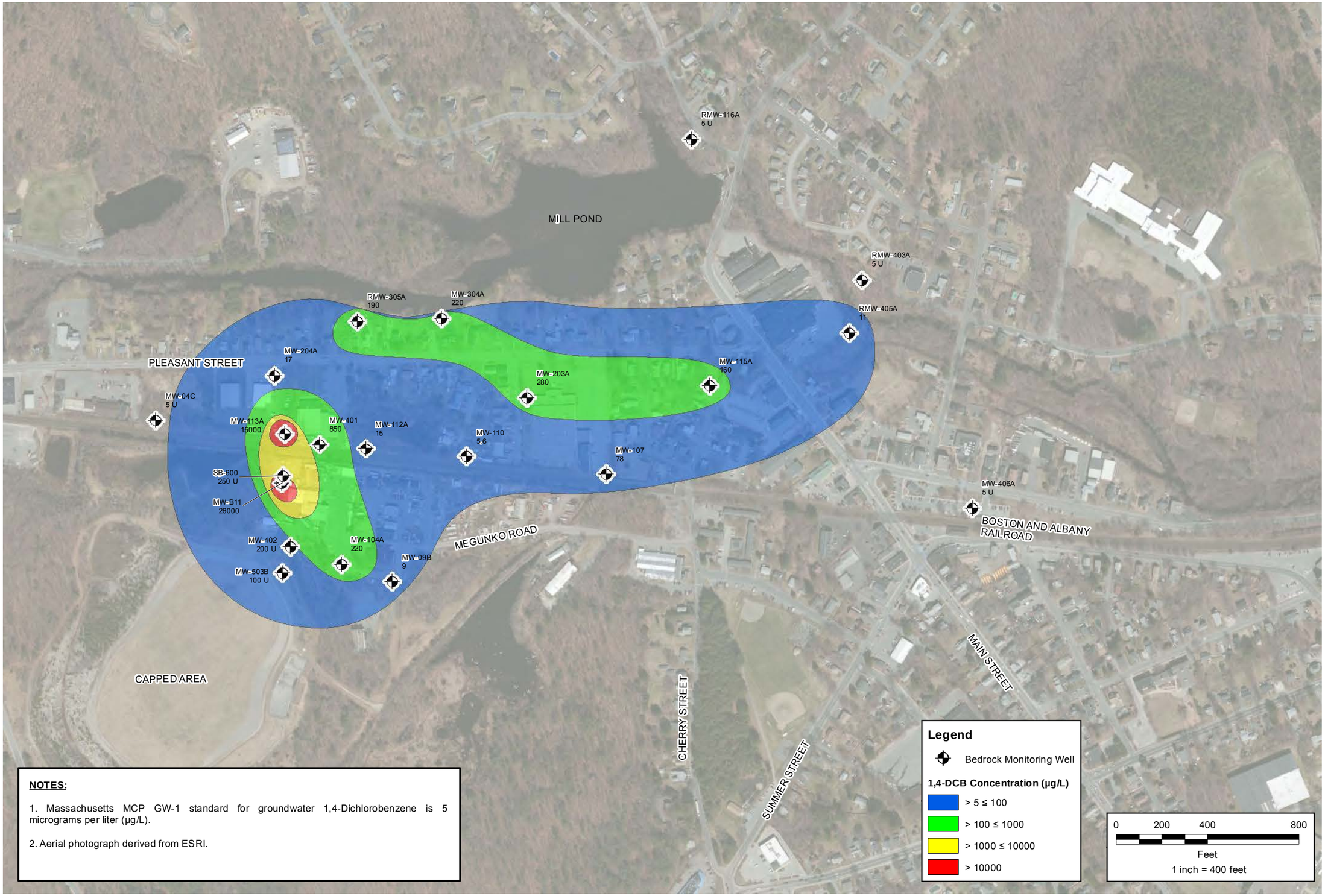
OVERBURDEN GROUNDWATER
1,4-DICHLOROBENZENE RESULTS
NOVEMBER, 2013

FIGURE 3-3

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\Fig_3-3_OB_14DCB_Nov2013.mxd Date Printed: 3/20/2014



NOTES:

1. Massachusetts MCP GW-1 standard for groundwater 1,4-Dichlorobenzene is 5 micrograms per liter (µg/L).

2. Aerial photograph derived from ESRI.

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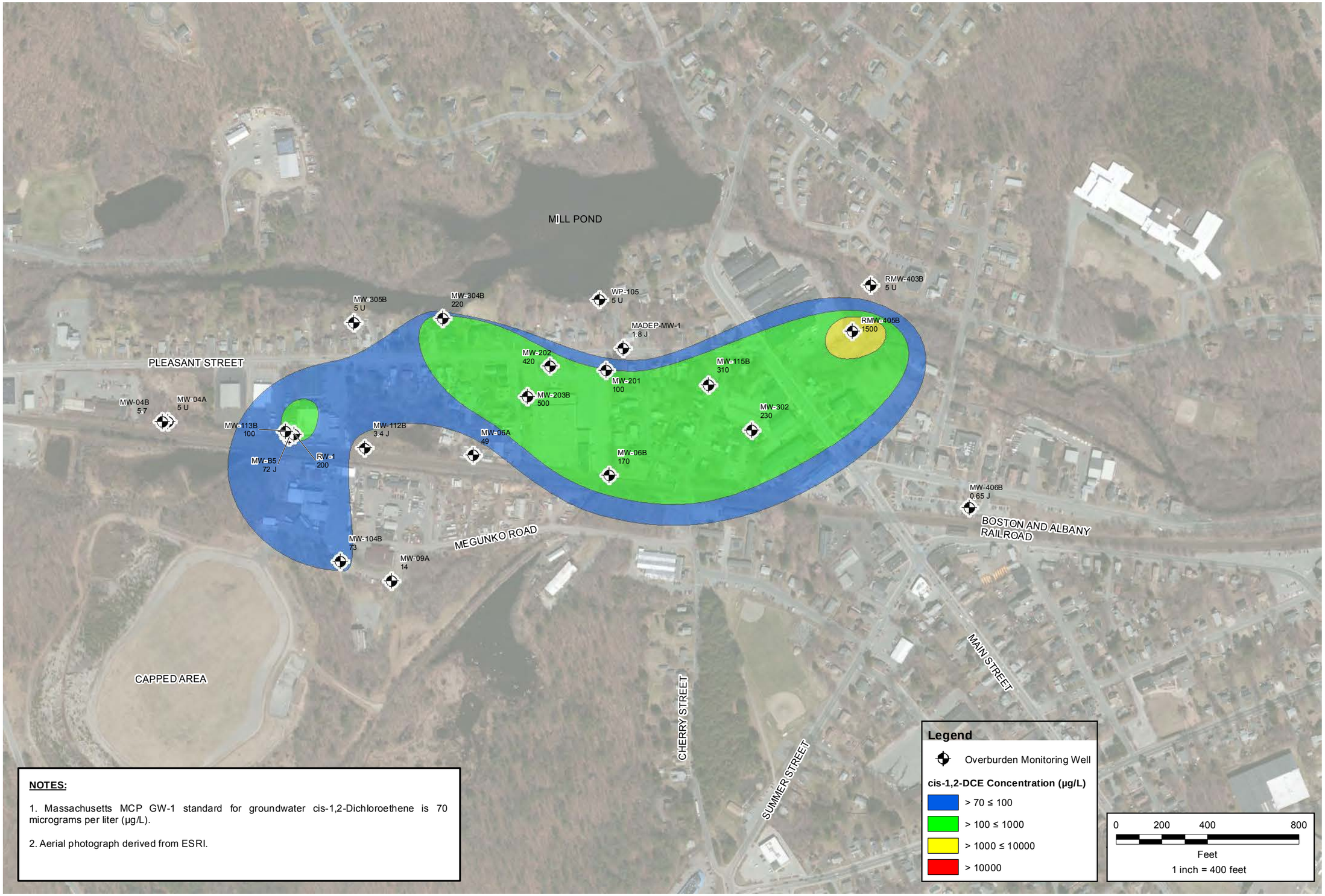
BEDROCK GROUNDWATER
1,4-DICHLOROBENZENE RESULTS
NOVEMBER, 2013

FIGURE
3-4

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\Fig_3-4_BR_14DCB_Nov2013.mxd Date Printed: 3/20/2014



NOTES:

1. Massachusetts MCP GW-1 standard for groundwater cis-1,2-Dichloroethene is 70 micrograms per liter (µg/L).

2. Aerial photograph derived from ESRI.

N

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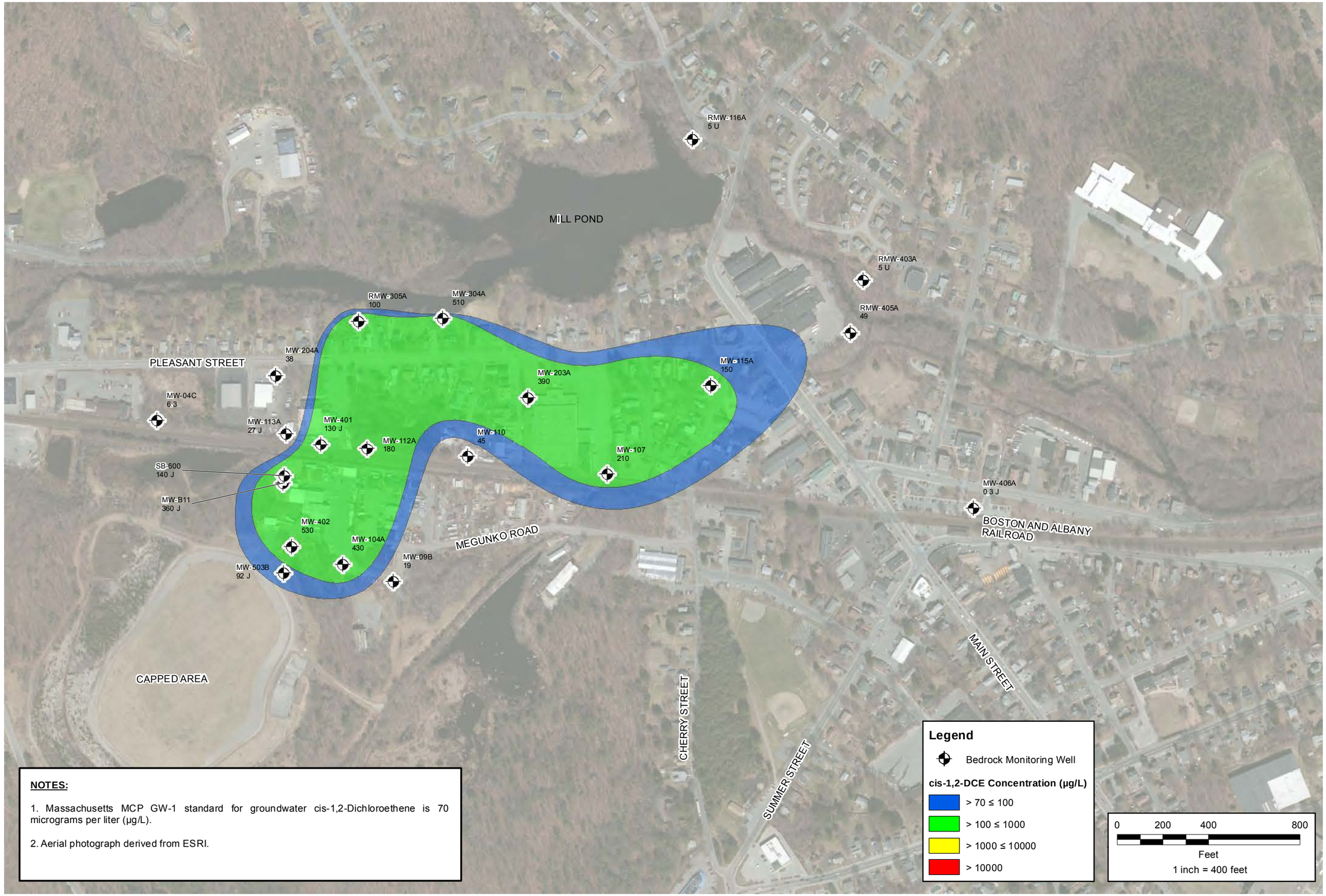
OVERBURDEN GROUNDWATER
CIS-1,2-DICHLOROETHENE RESULTS
NOVEMBER, 2013

FIGURE 3-5

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\Fig_3-5_OB_CIS12DCE_Nov2013.mxd Date Printed: 3/20/2014



NOTES:

1. Massachusetts MCP GW-1 standard for groundwater cis-1,2-Dichloroethene is 70 micrograms per liter (µg/L).

2. Aerial photograph derived from ESRI.

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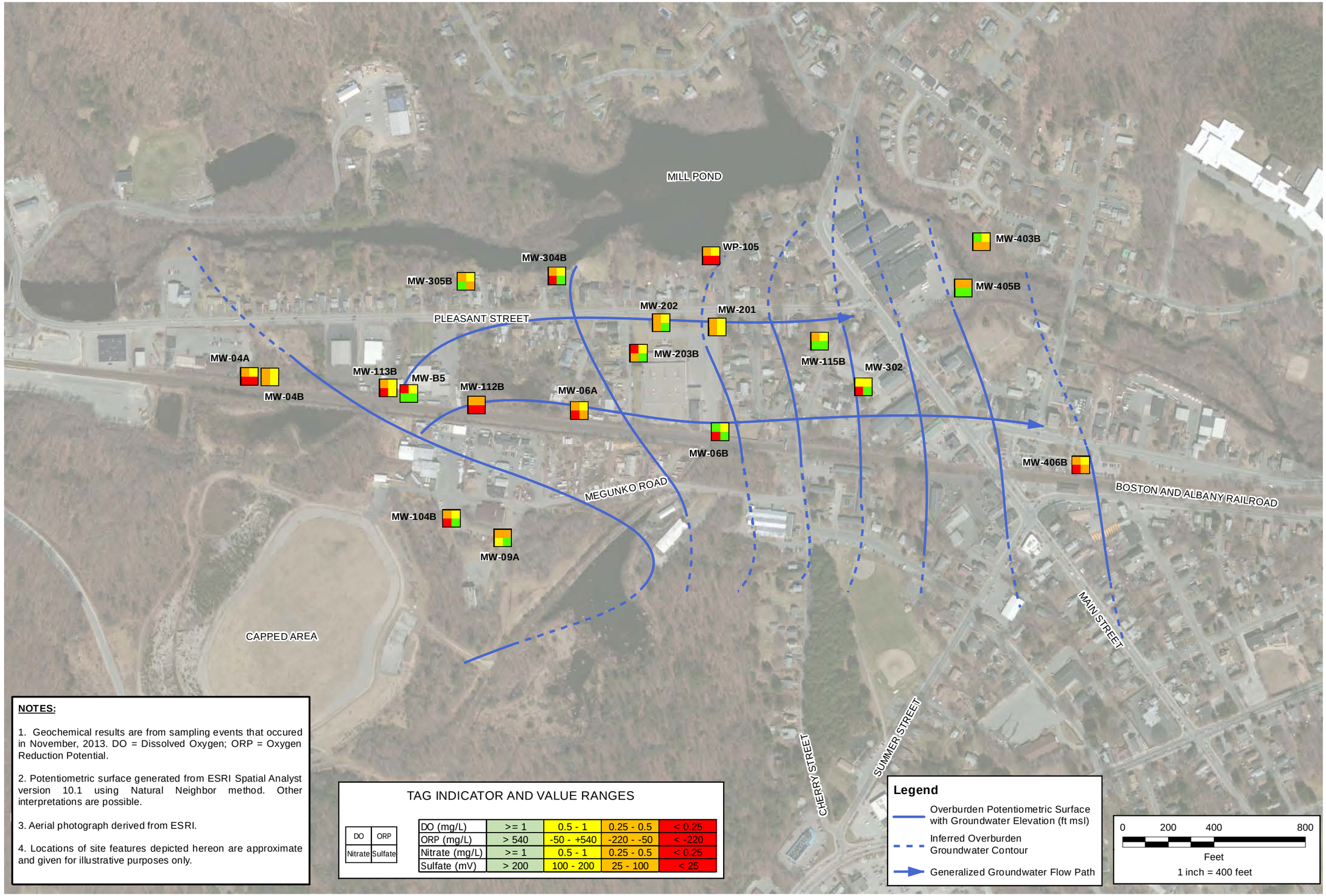
BEDROCK GROUNDWATER
CIS-1,2-DICHLOROETHENE RESULTS
NOVEMBER, 2013

FIGURE
3-6

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\Fig_3-6_BR_CIS12DCE_Nov2013.mxd Date Printed: 3/20/2014



NOTES:

1. Geochemical results are from sampling events that occured in November, 2013. DO = Dissolved Oxygen; ORP = Oxygen Reduction Potential.

2. Potentiometric surface generated from ESRI Spatial Analyst version 10.1 using Natural Neighbor method. Other interpretations are possible.

3. Aerial photograph derived from ESRI.

4. Locations of site features depicted hereon are approximate and given for illustrative purposes only.

TAG INDICATOR AND VALUE RANGES

DO	ORP
Nitrate	Sulfate

DO (mg/L)	>= 1	0.5 - 1	0.25 - 0.5	< 0.25
ORP (mg/L)	> 540	-50 - +540	-220 - -50	< -220
Nitrate (mg/L)	>= 1	0.5 - 1	0.25 - 0.5	< 0.25
Sulfate (mV)	> 200	100 - 200	25 - 100	< 25

Legend

- Overburden Potentiometric Surface with Groundwater Elevation (ft msl)
- Inferred Overburden Groundwater Contour
- Generalized Groundwater Flow Path

DATE: APRIL 2014
PROJECT NO. 80022

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NYANZA CHEMICAL WASTE DUMP
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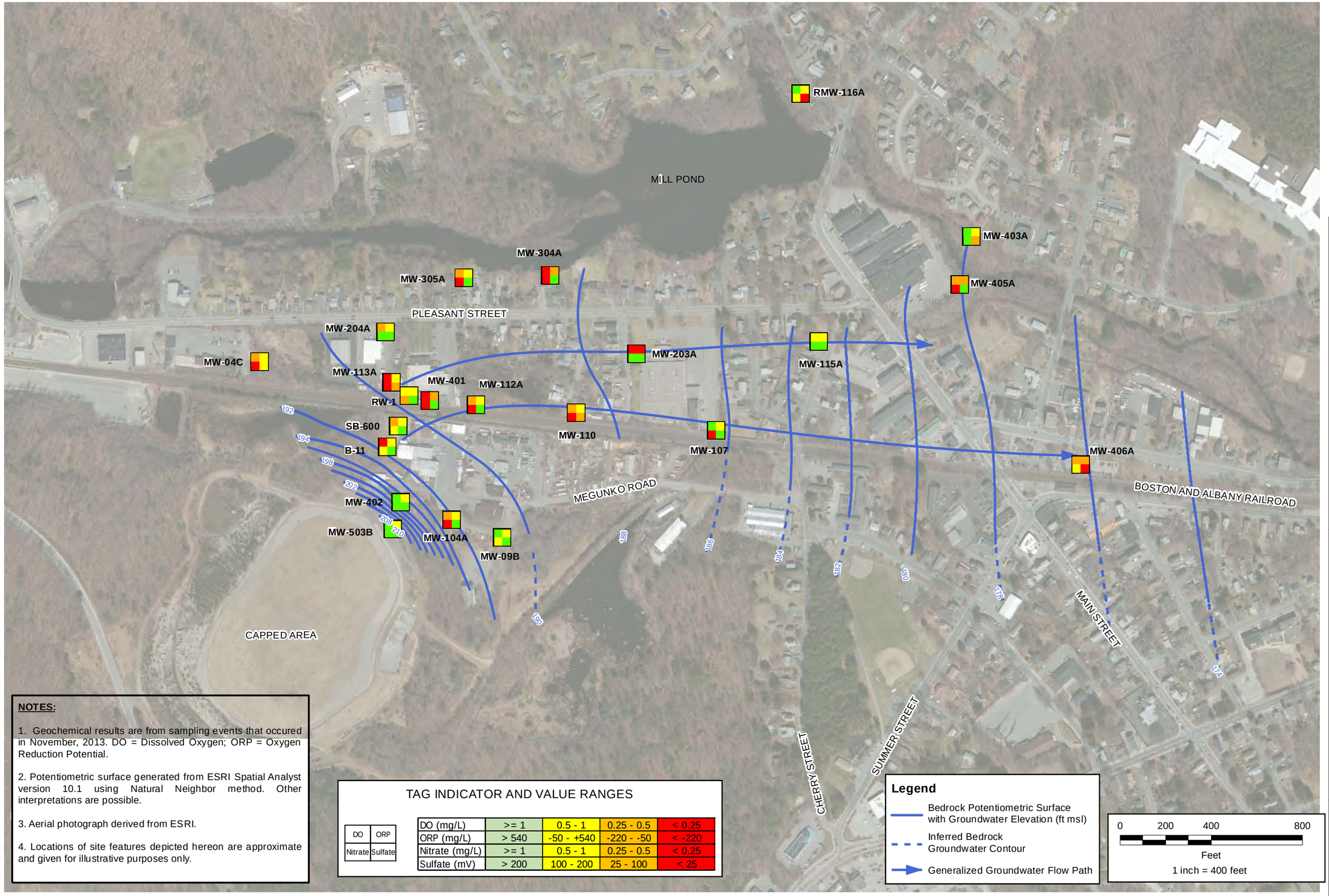
ASHLAND, MASSACHUSETTS

OVERBURDEN GROUNDWATER
GEOCHEMISTRY RESULTS
NOVEMBER, 2013

FIGURE
4-1

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\GW Geochemistry 2013\Fig_4-1_Nyanza_OB_Geochem.mxd Date Printed: 5/15/2014



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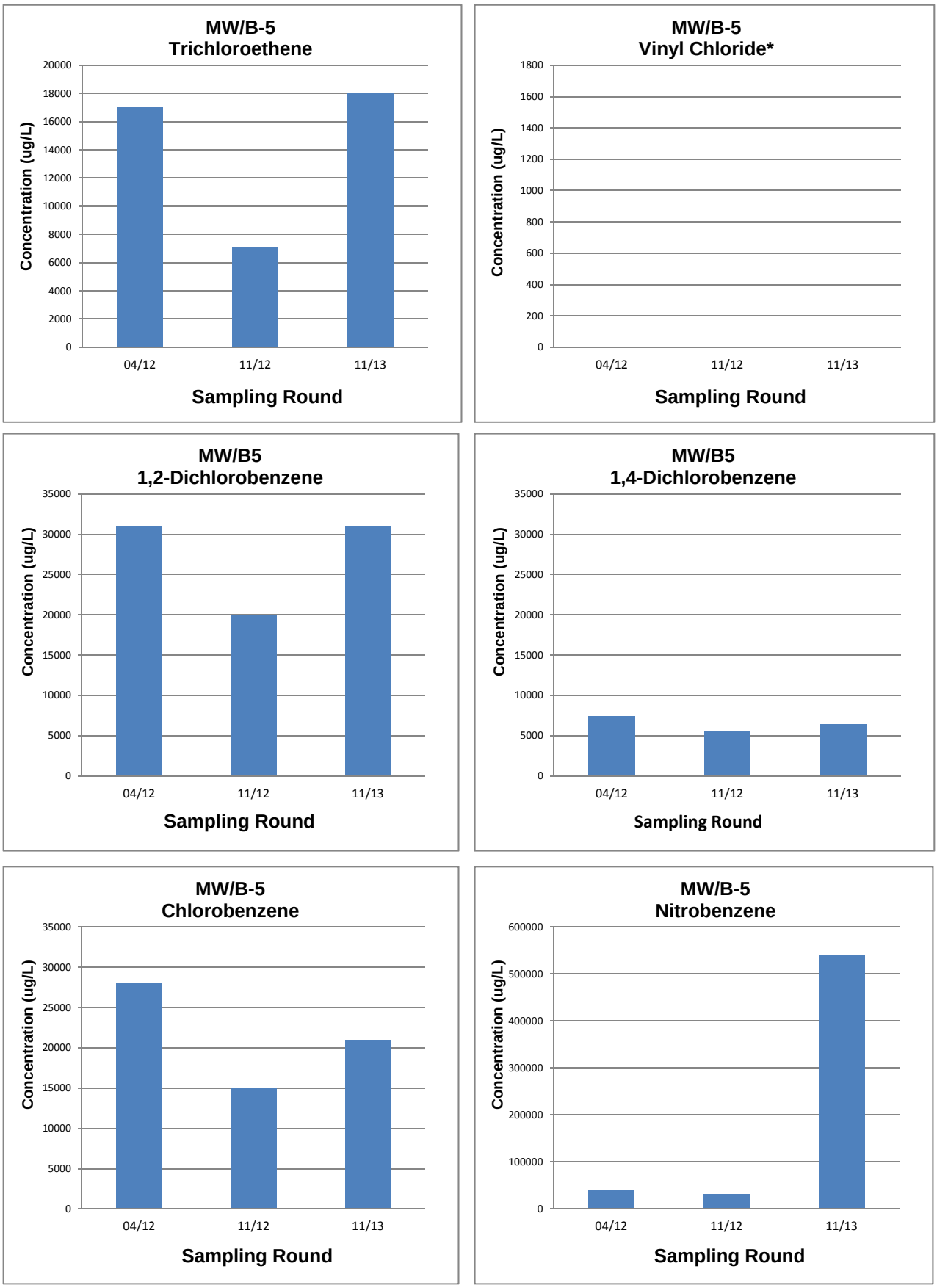
BEDROCK GROUNDWATER
GEOCHEMISTRY RESULTS
NOVEMBER, 2013

FIGURE
4-2

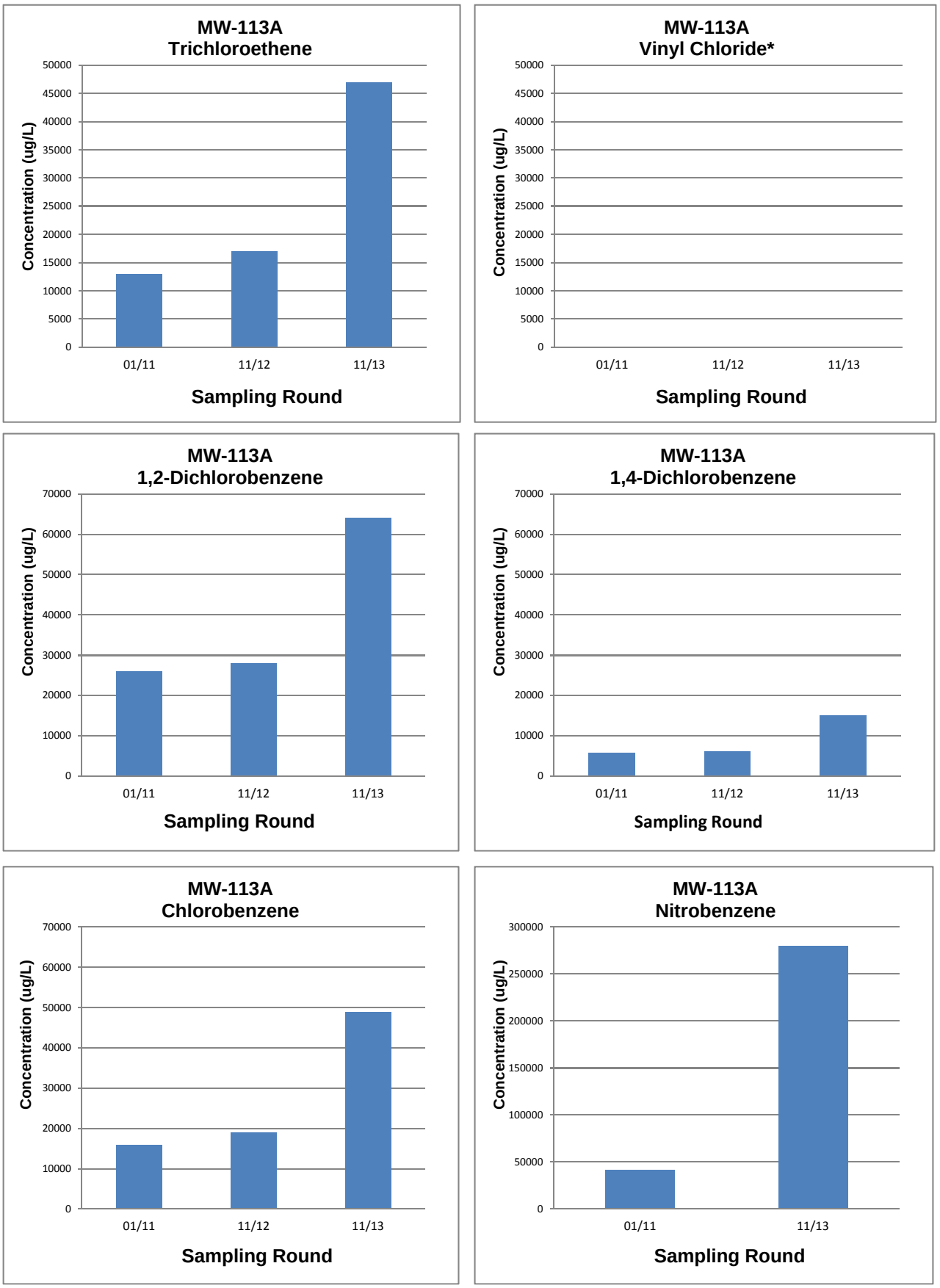
Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\GW Geochemistry 2013\Fig_4-2_Nyanza_BR_Geochem.mxd Date Printed: 5/15/2014

Figure 4-3a
Concentration Trends in Source Area Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts



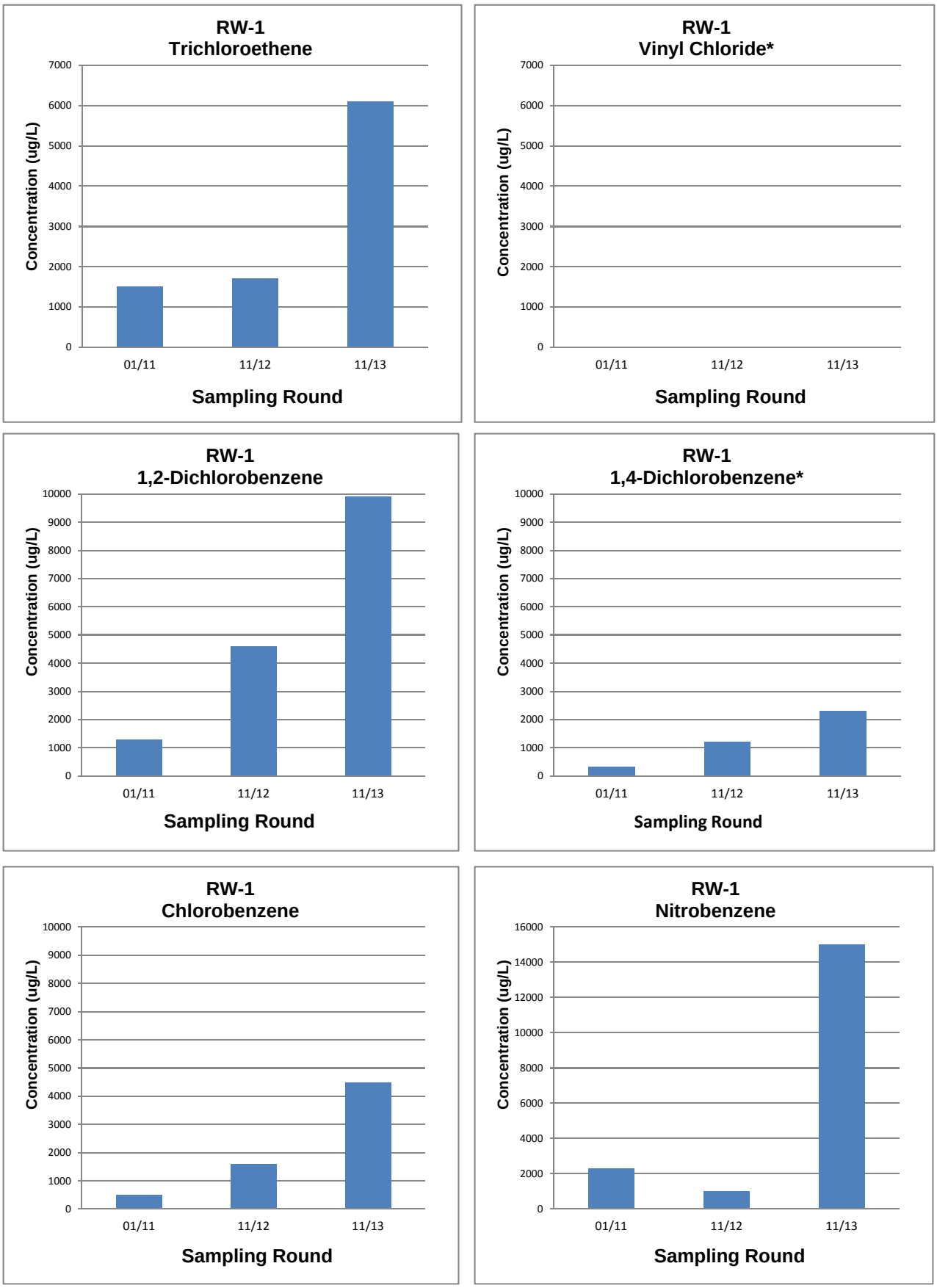
*vinyl chloride not detected

Figure 4-3b
Concentration Trends in Source Area Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts



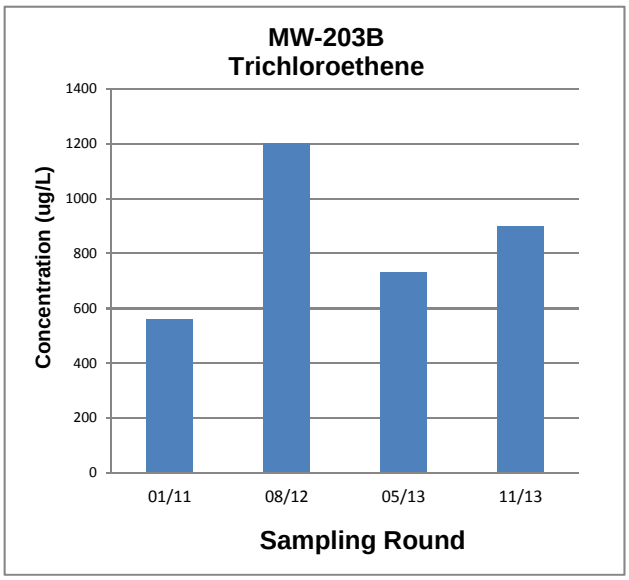
*vinyl chloride not detected after 2011; nitrobenzene not analyzed in 2012.

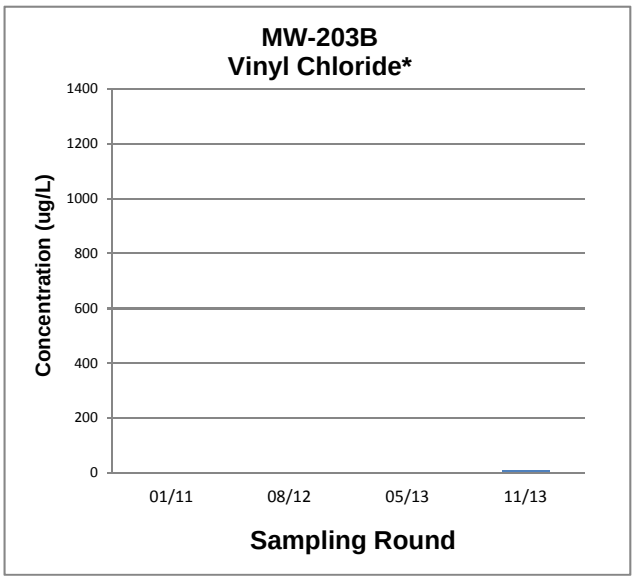
Figure 4-3c
Concentration Trends in Source Area Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

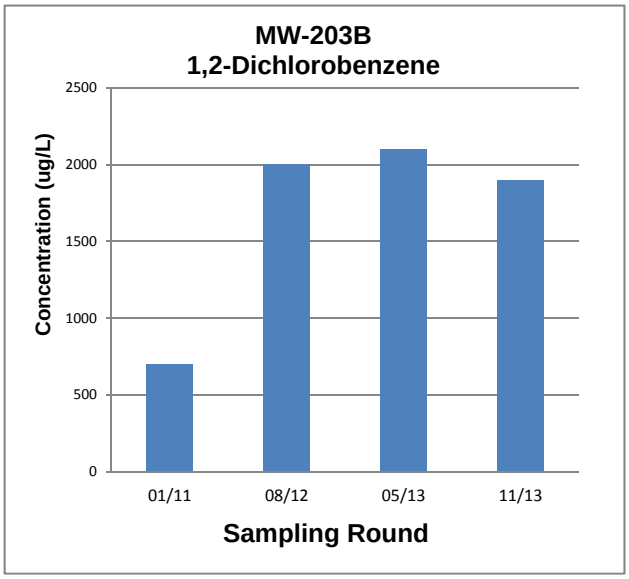


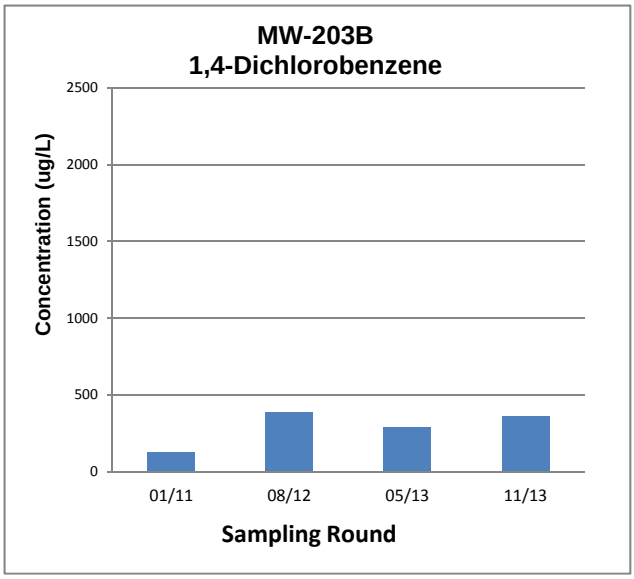
*vinyl chloride not detected.

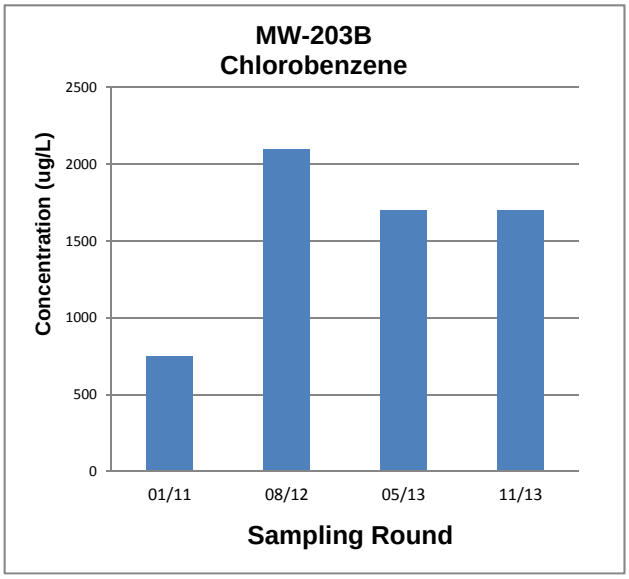
Figure 4-4a
Concentration Trends in Downgradient Center Plume Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

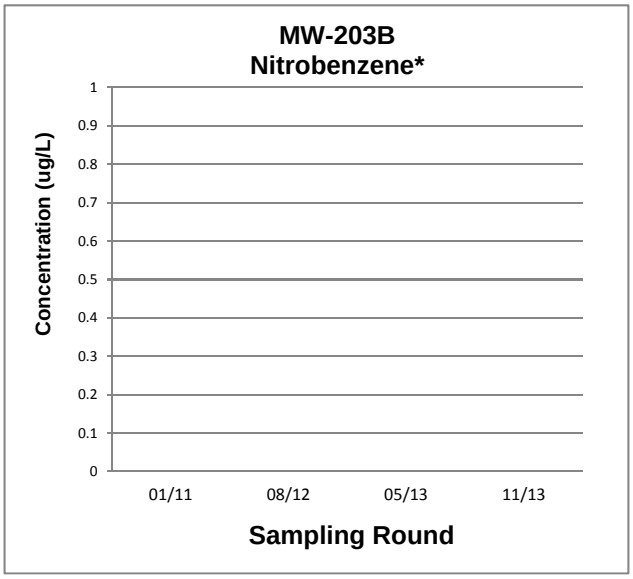






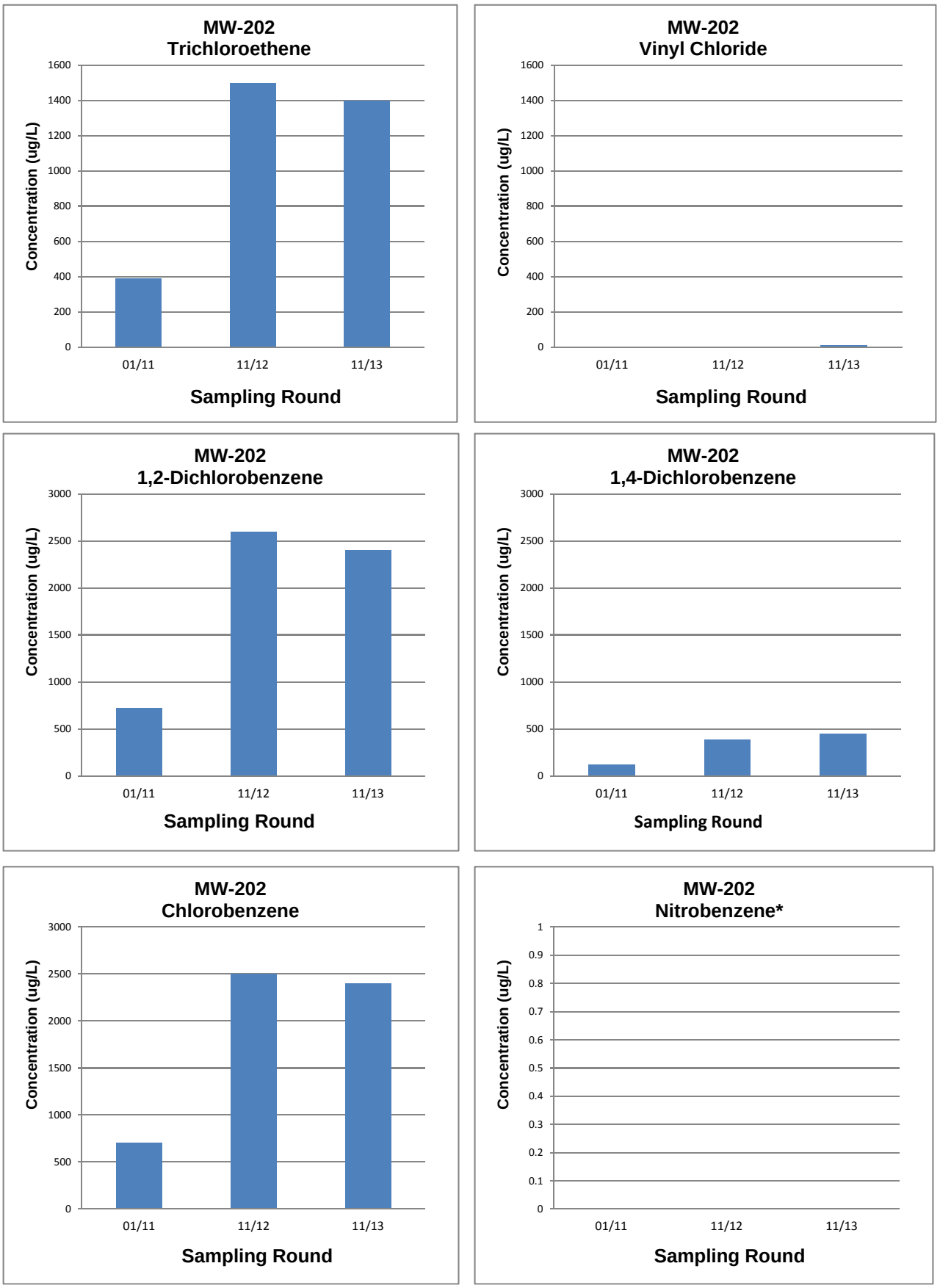






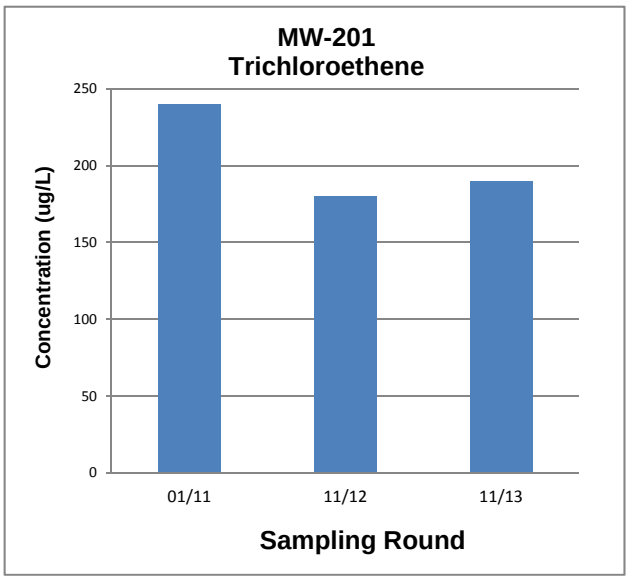
*nitrobenzene not detected; vinyl chloride not detected prior to fall 2013.

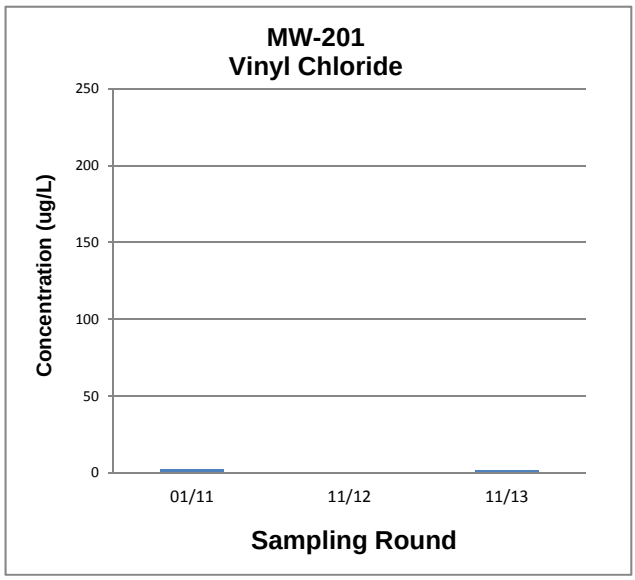
Figure 4-4b
Concentration Trends in Downgradient Center Plume Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

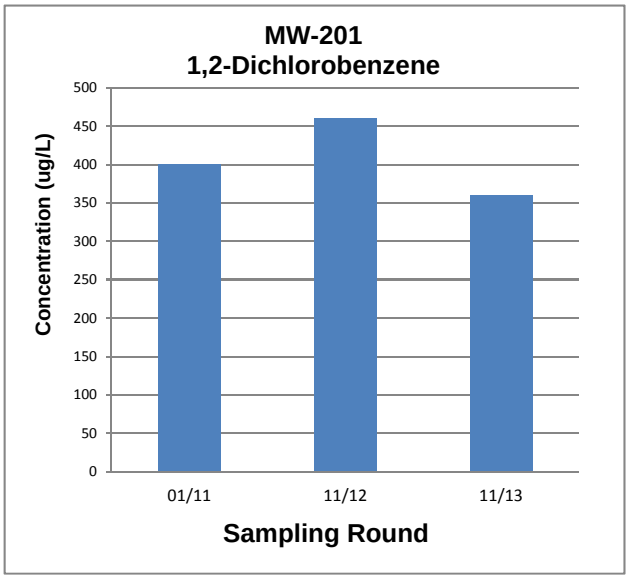


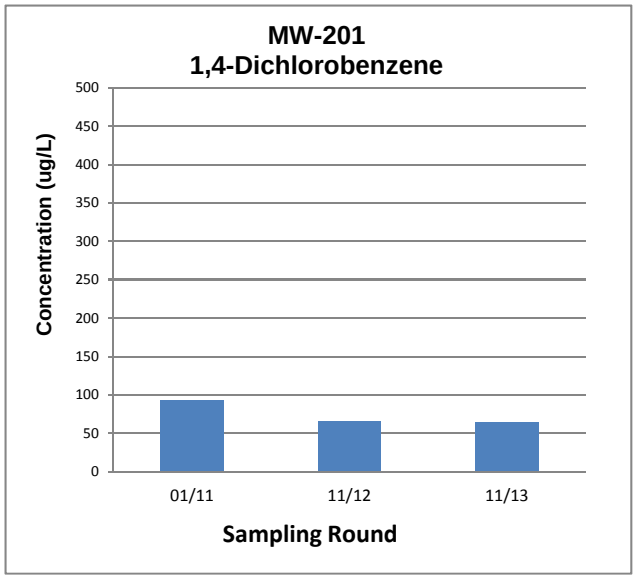
*nitrobenzene not detected

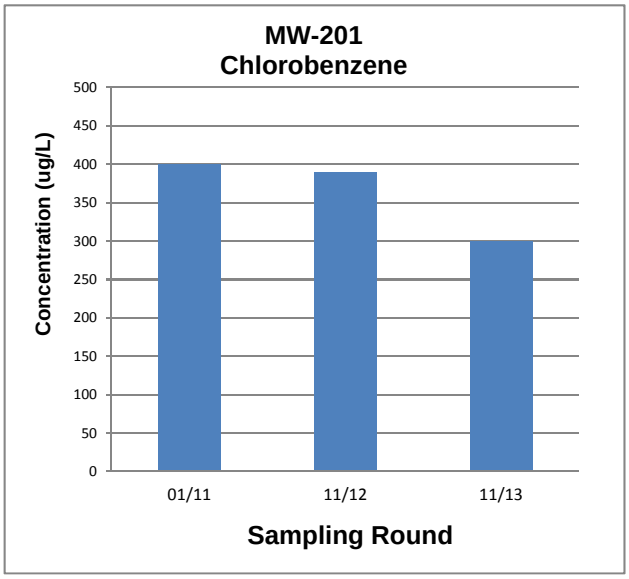
Figure 4-4c
Concentration Trends in Downgradient Center Plume Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

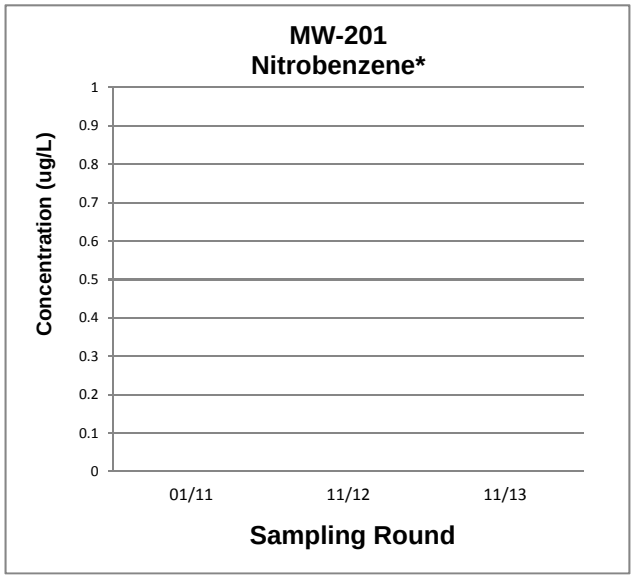






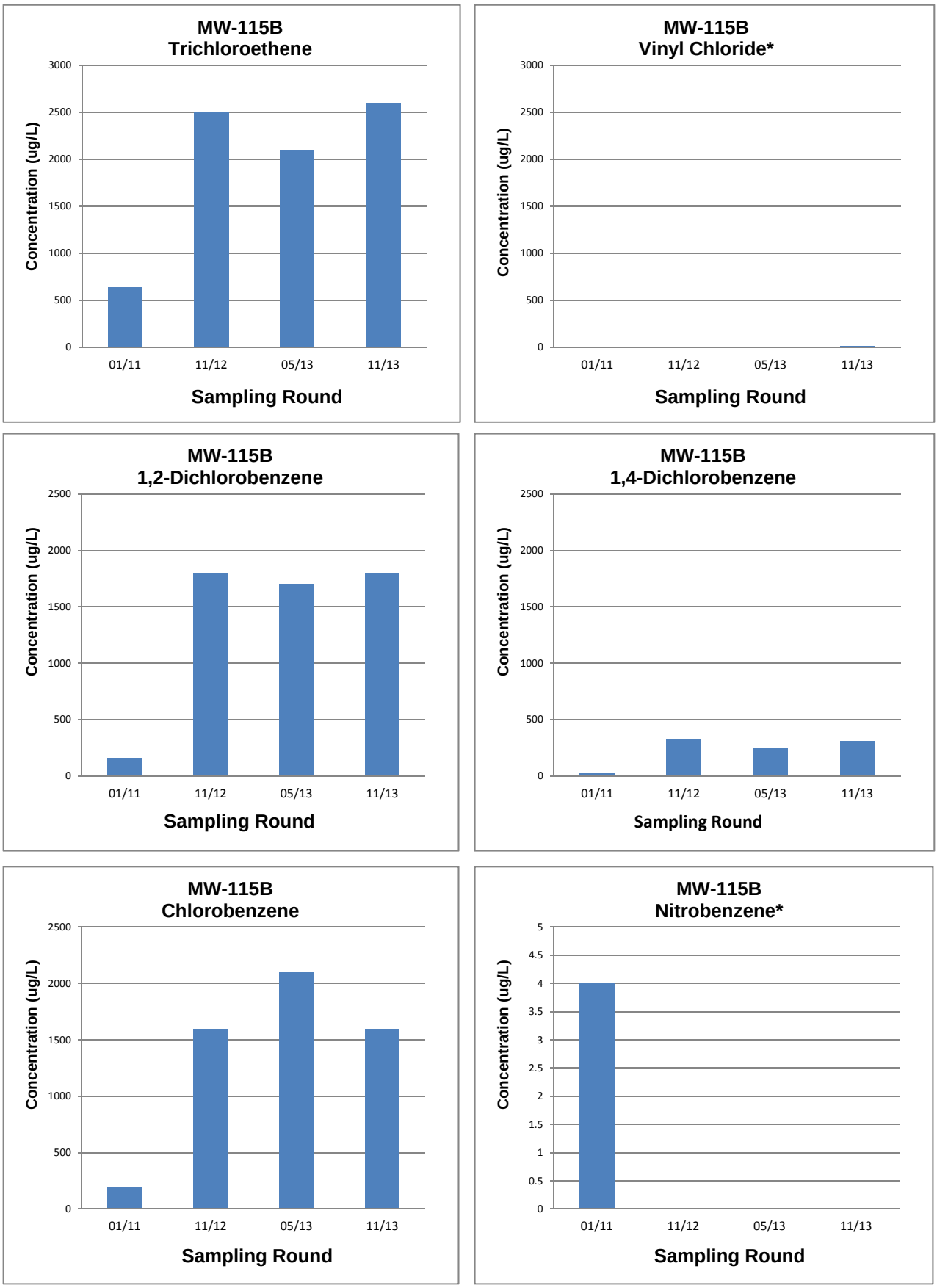






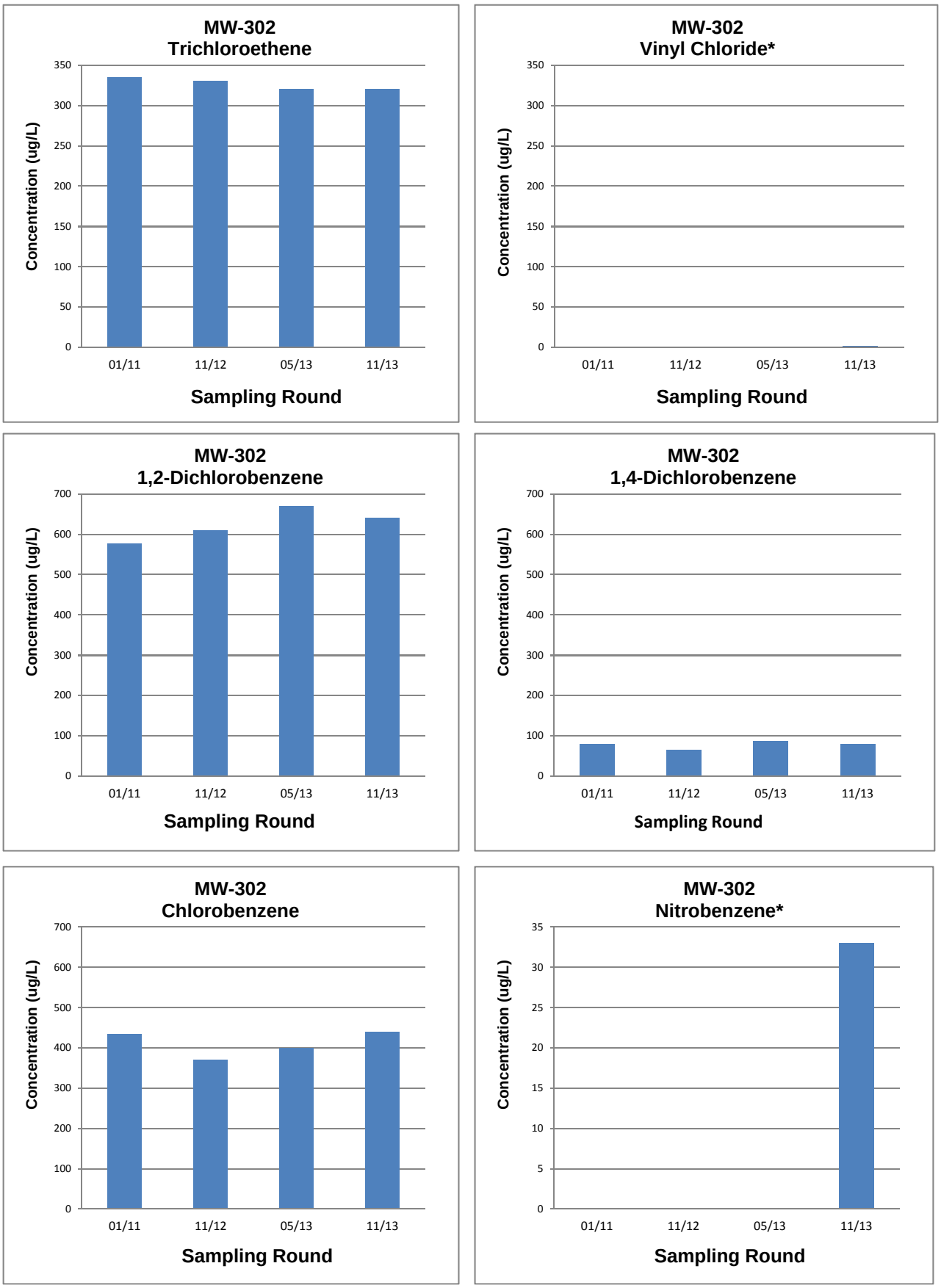
*Nitrobenzene not detected; vinyl chloride not detected in 2012.

Figure 4-4d
Concentration Trends in Downgradient Center Plume Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts



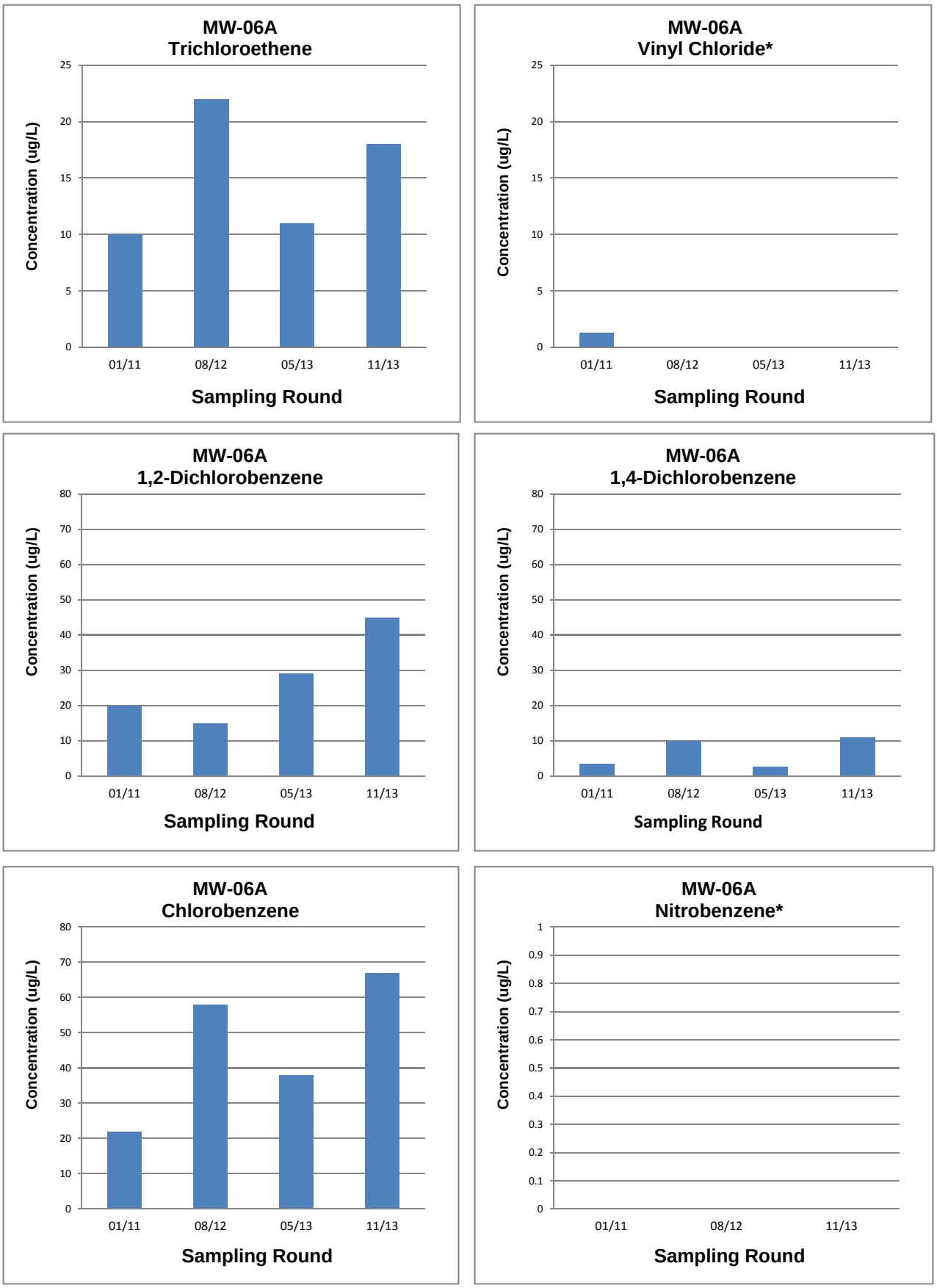
*nitrobenzene not detected in 2012 or 2013; vinyl chloride not detected prior to fall 2013

Figure 4-4e
Concentration Trends in Downgradient Center Plume Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts



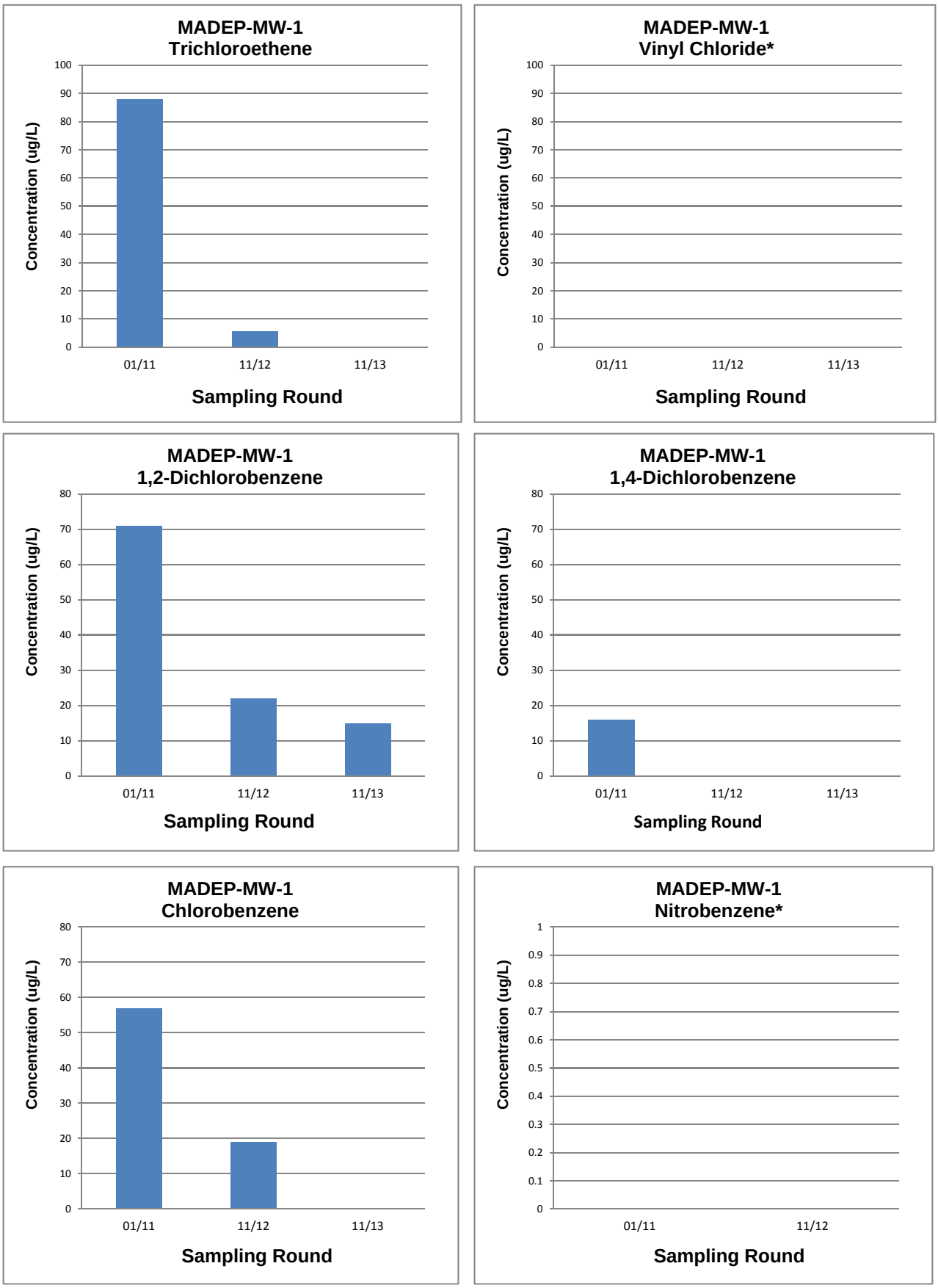
*nitrobenzene not detected 2011-spring 2013; vinyl chloride not detected in 2011-2012

Figure 4-4f
Concentration Trends in Downgradient Center Plume Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts



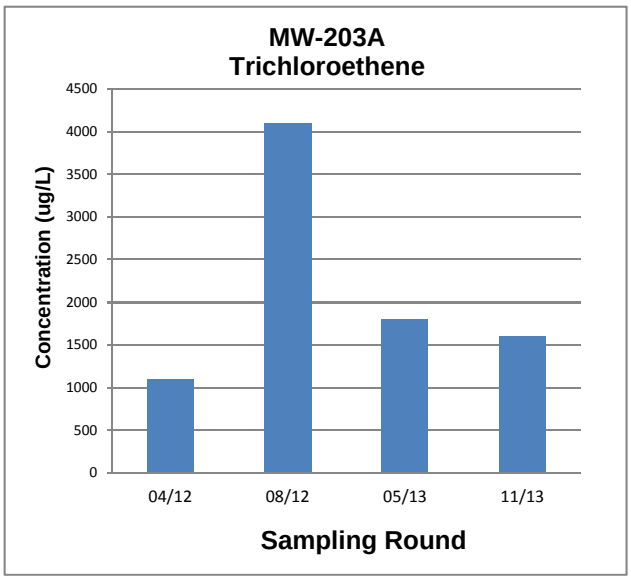
*Nitrobenzene not detected and not analyzed in spring 2013; vinyl chloride not detected after 2011.

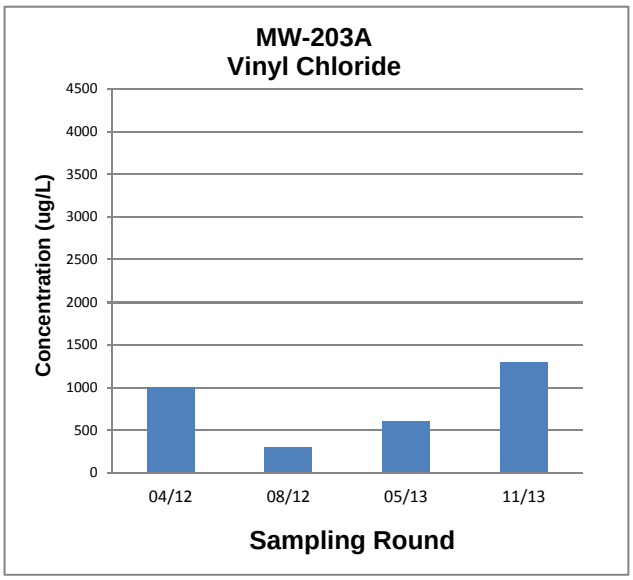
Figure 4-4g
Concentration Trends in Downgradient Center Plume Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

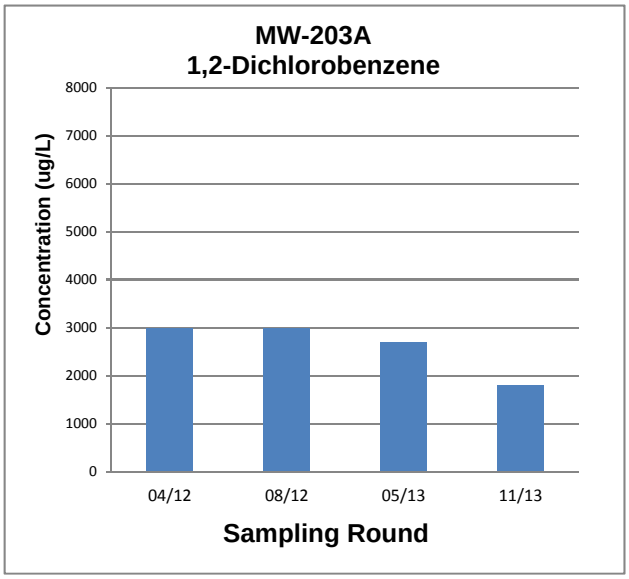


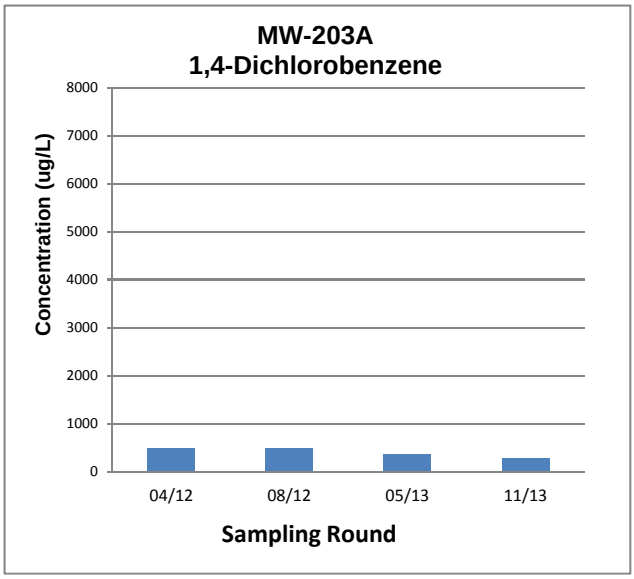
*Vinyl chloride, nitrobenzene not detected. Nitrobenzene not analyzed in fall 2013.

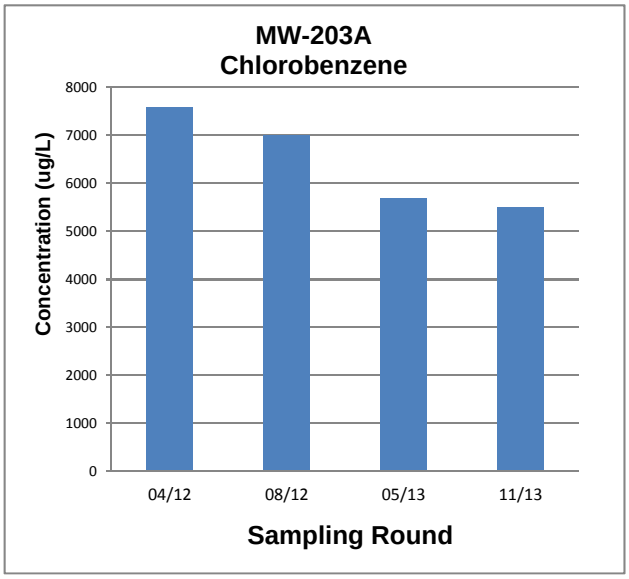
Figure 4-4h
Concentration Trends in Downgradient Center Plume Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

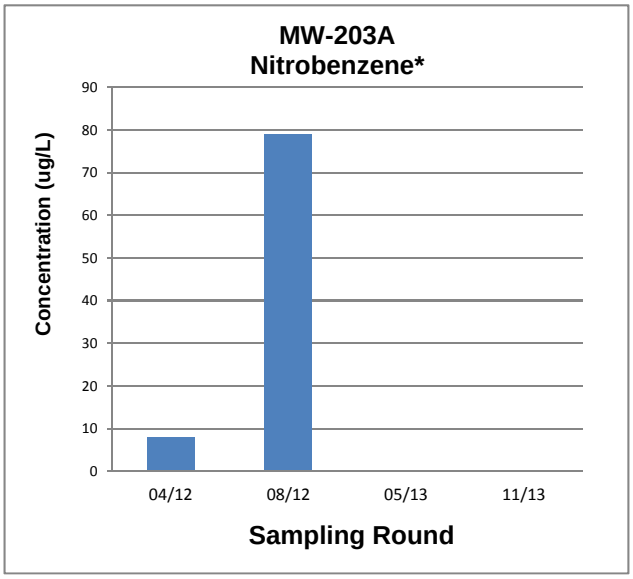






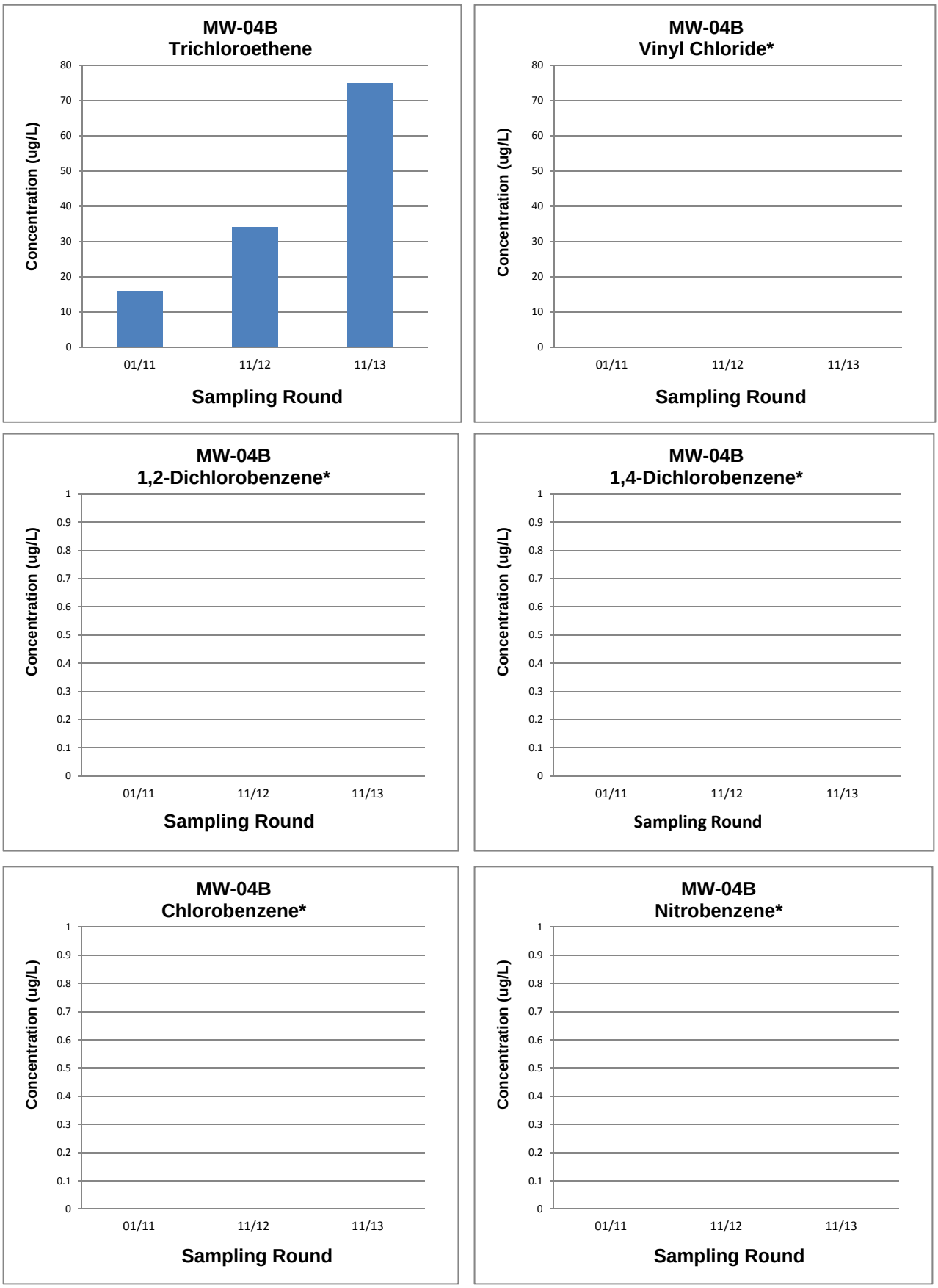






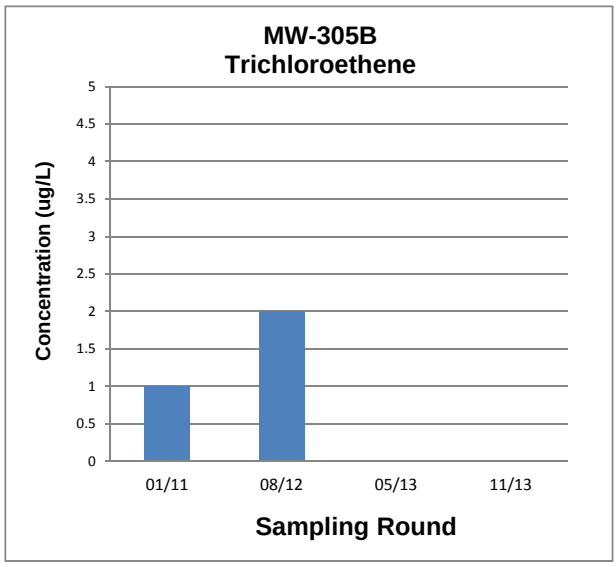
*nitrobenzene not detected in 2013

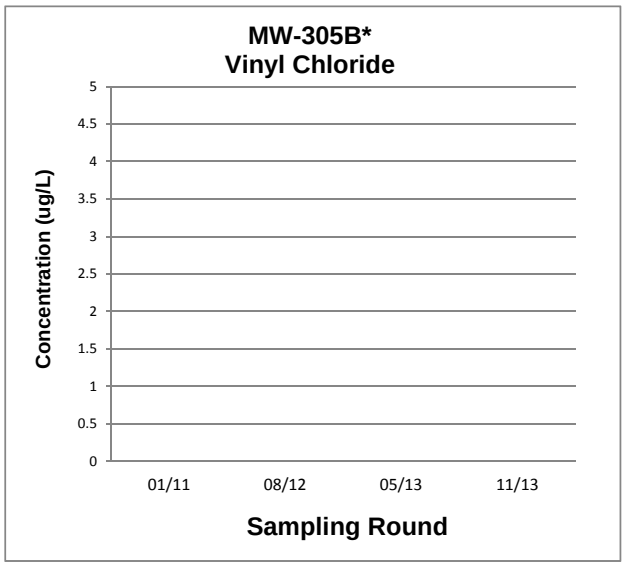
Figure 4-5a
Concentration Trends in Plume Fringe Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

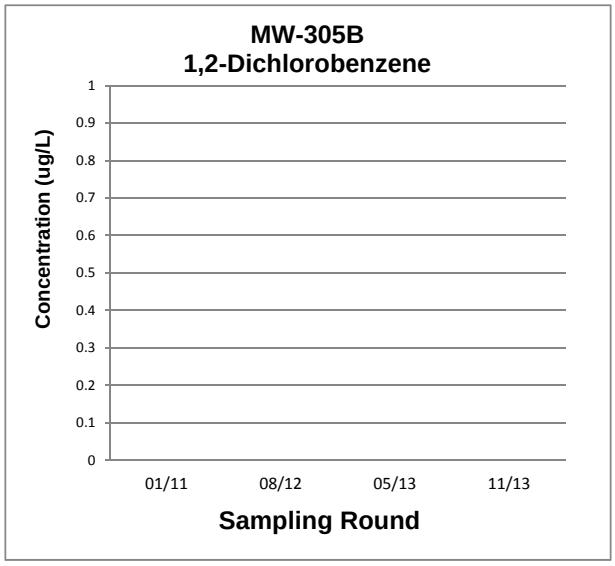


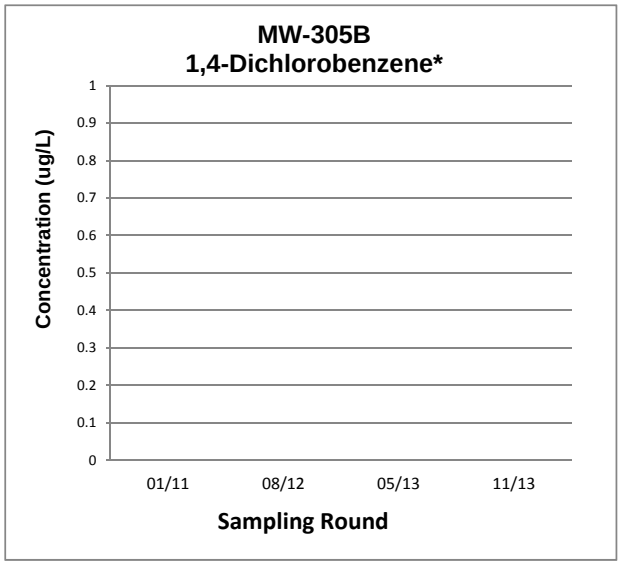
*vinyl chloride, 1,2-dichlorobenzene, 1,4-dichlorobenzene, chlorobenzene, nitrobenzene not detected

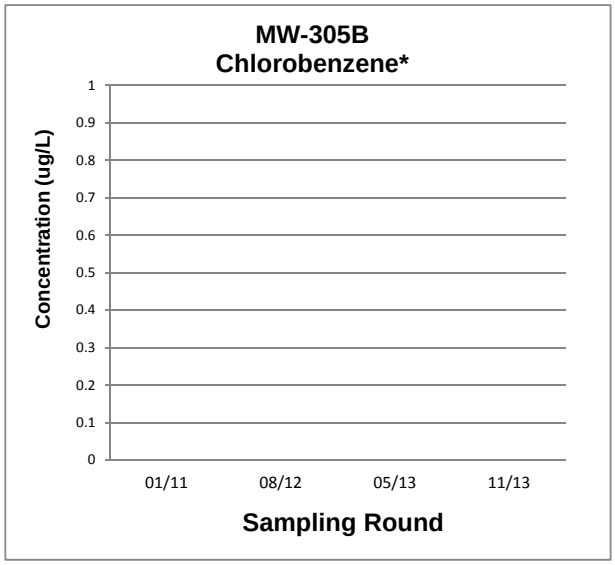
Figure 4-5b
Concentration Trends in Plume Fringe Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

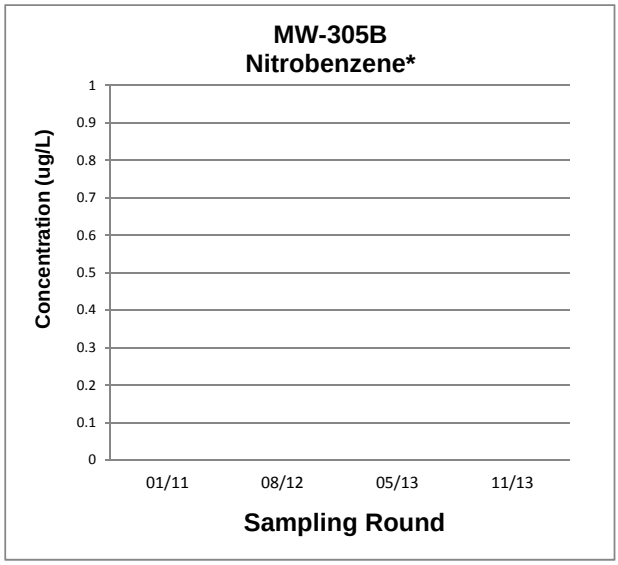






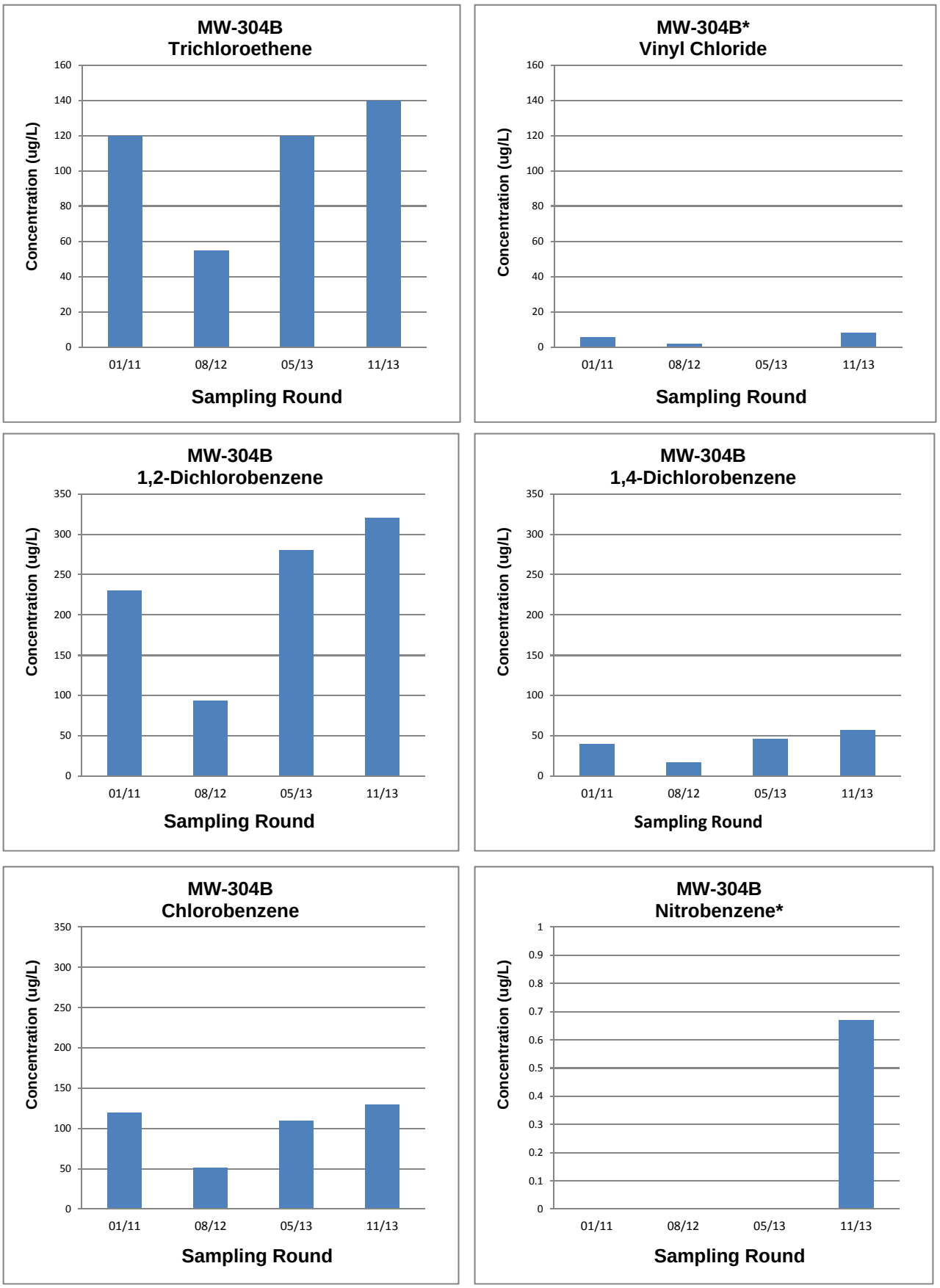






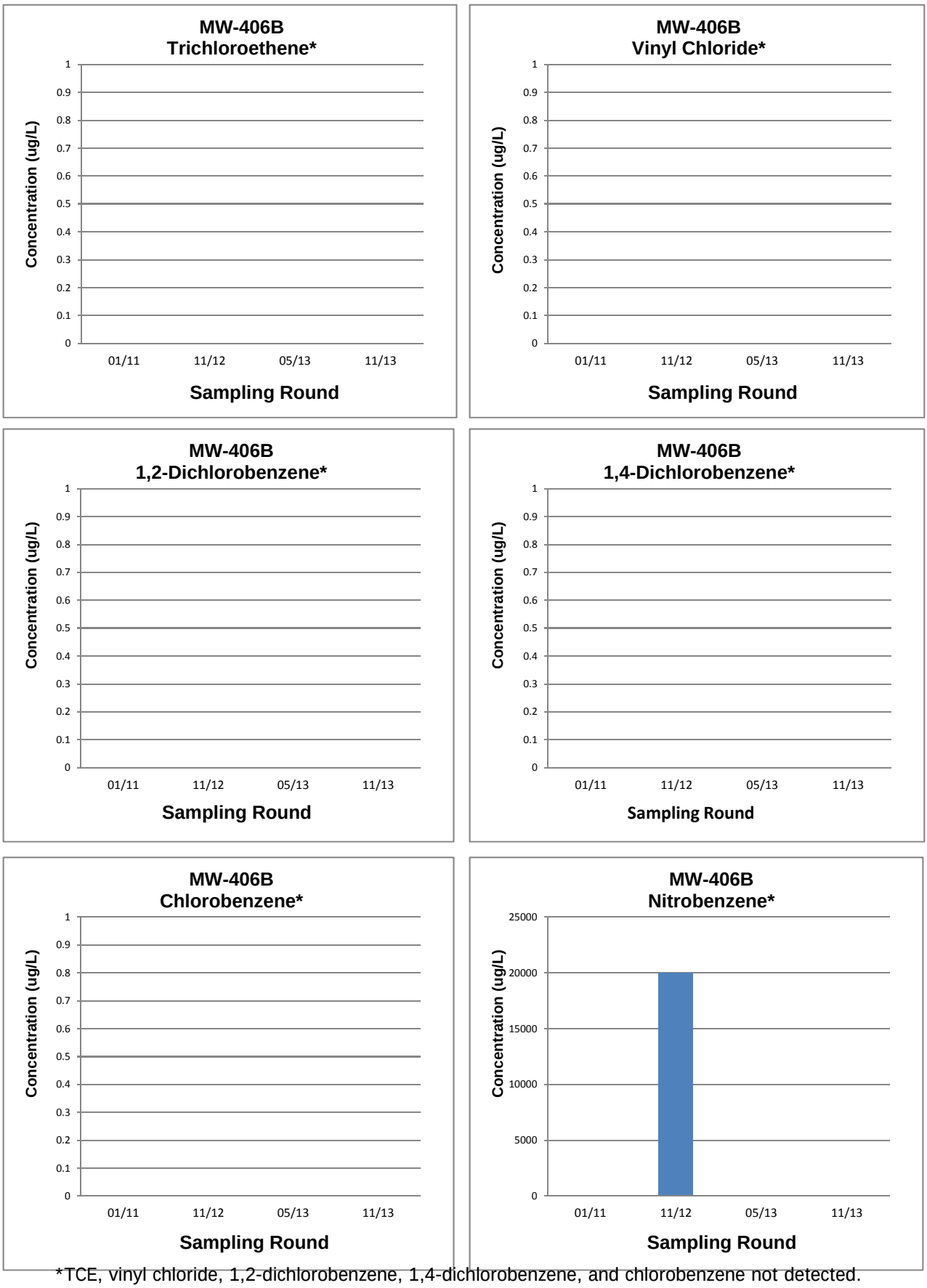
*vinyl chloride, 1,2-dichlorobenzene, 1,4-dichlorobenzene, chlorobenzene, nitrobenzene not detected.
TCE not detected in 2013.

Figure 4-5c
Concentration Trends in Plume Fringe Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts



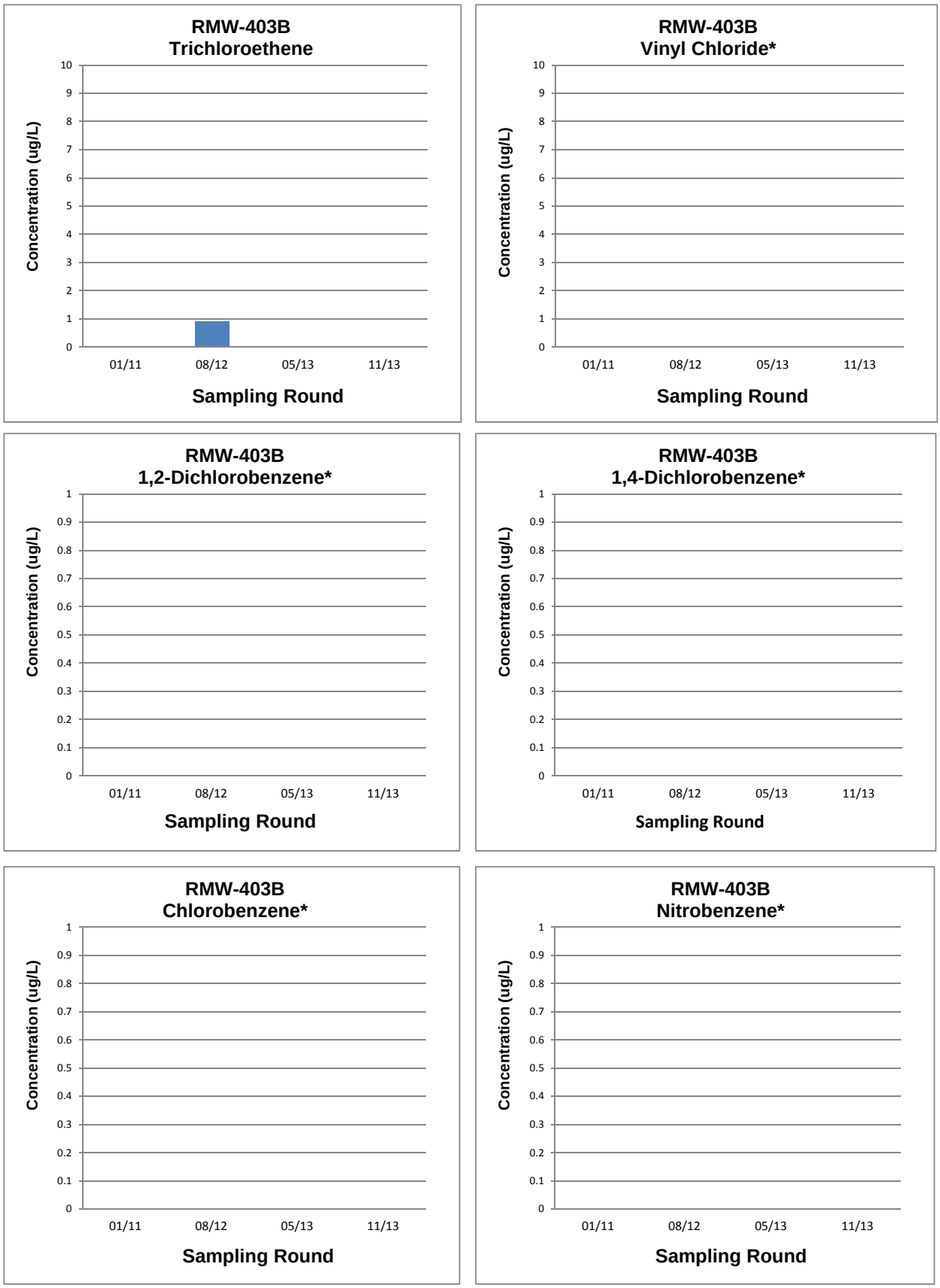
*vinyl chloride not detected in spring 2013; nitrobenzene not detected 2011-2012

Figure 4-5d
Concentration Trends in Plume Fringe Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts



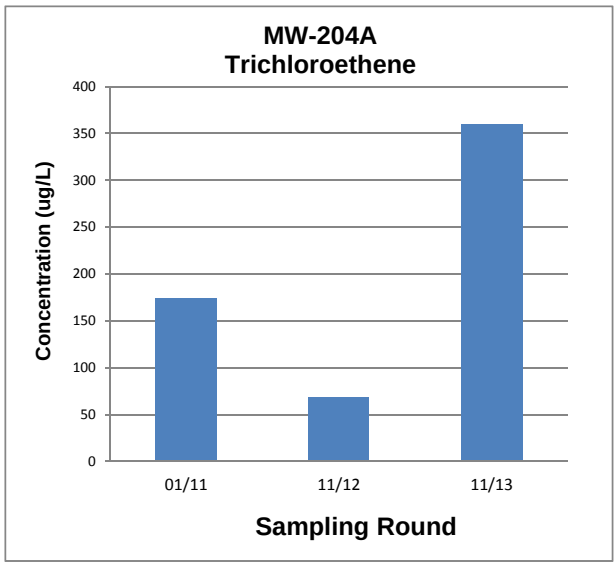
*TCE, vinyl chloride, 1,2-dichlorobenzene, 1,4-dichlorobenzene, and chlorobenzene not detected.
Nitrobenzene not detected in 2013.

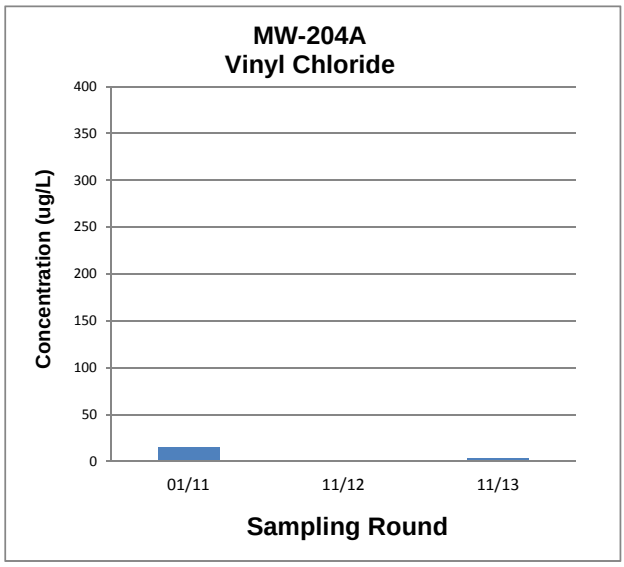
Figure 4-5e
Concentration Trends in Plume Fringe Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

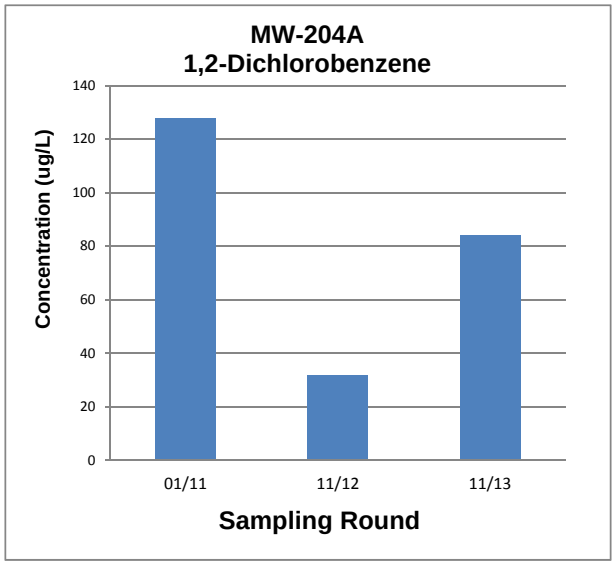


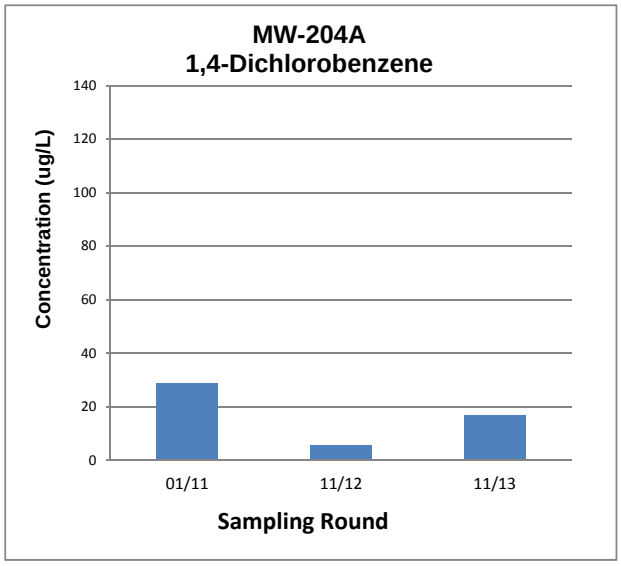
*vinyl chloride, 1,2-dichlorobenzene, 1,4-dichlorobenzene, chlorobenzene, and nitrobenzene not detected.
TCE not detected in 2011 or 2013.

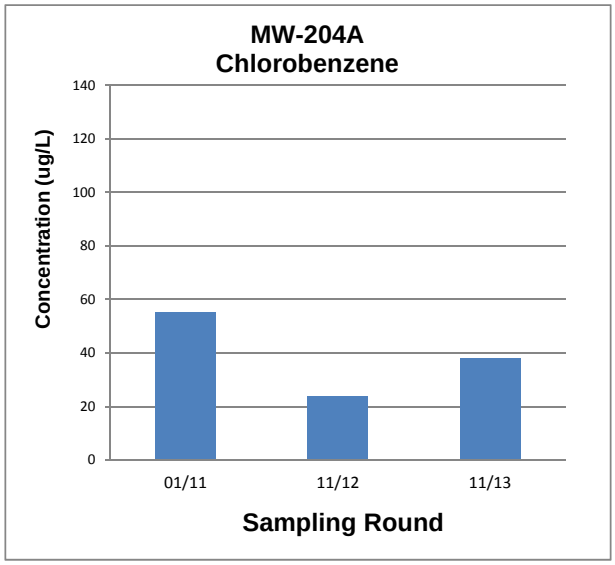
Figure 4-5f
Concentration Trends in Plume Fringe Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

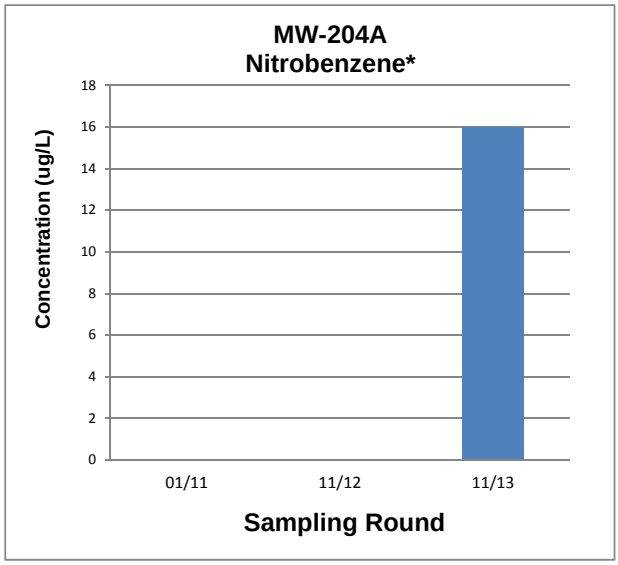






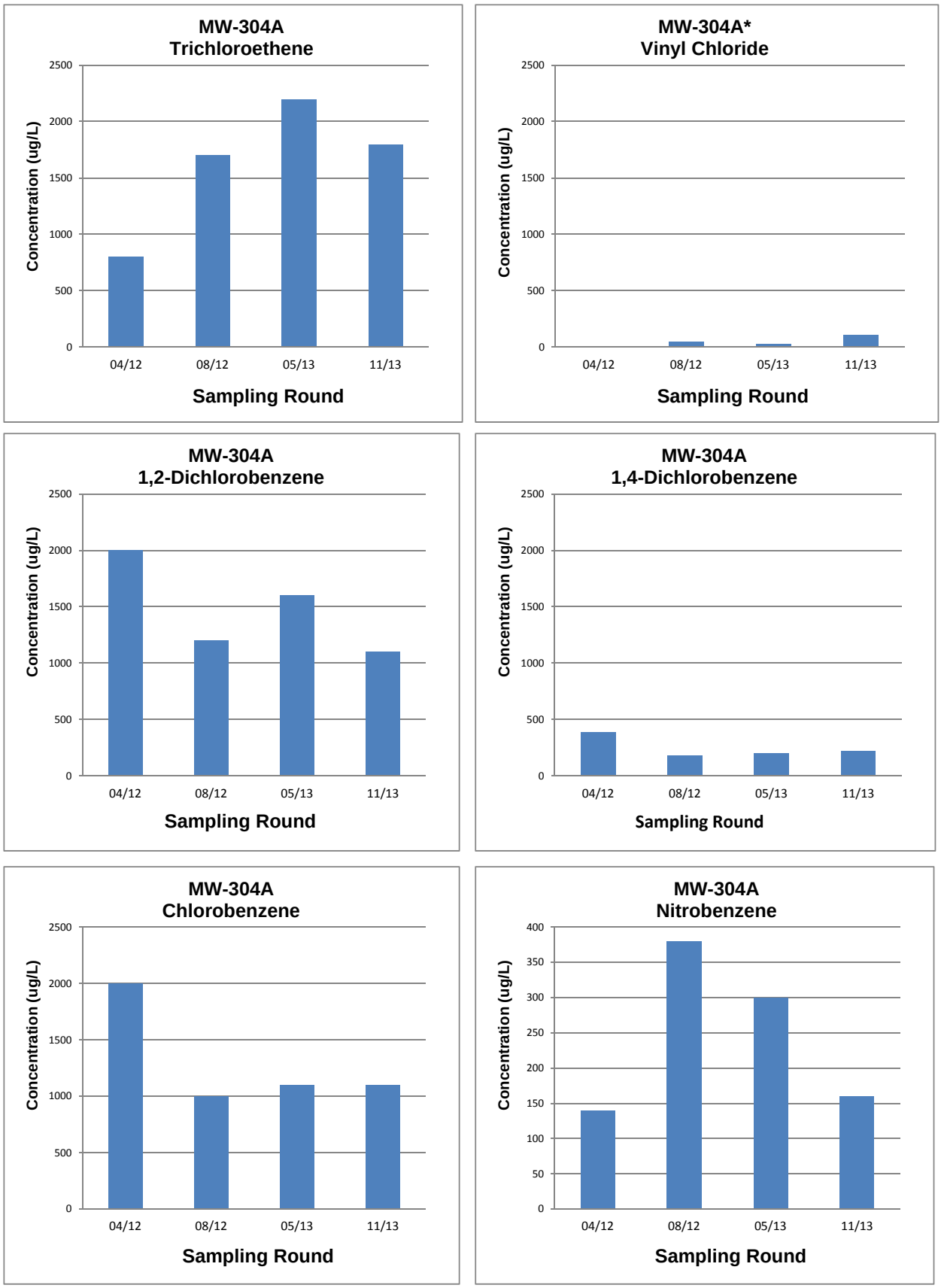






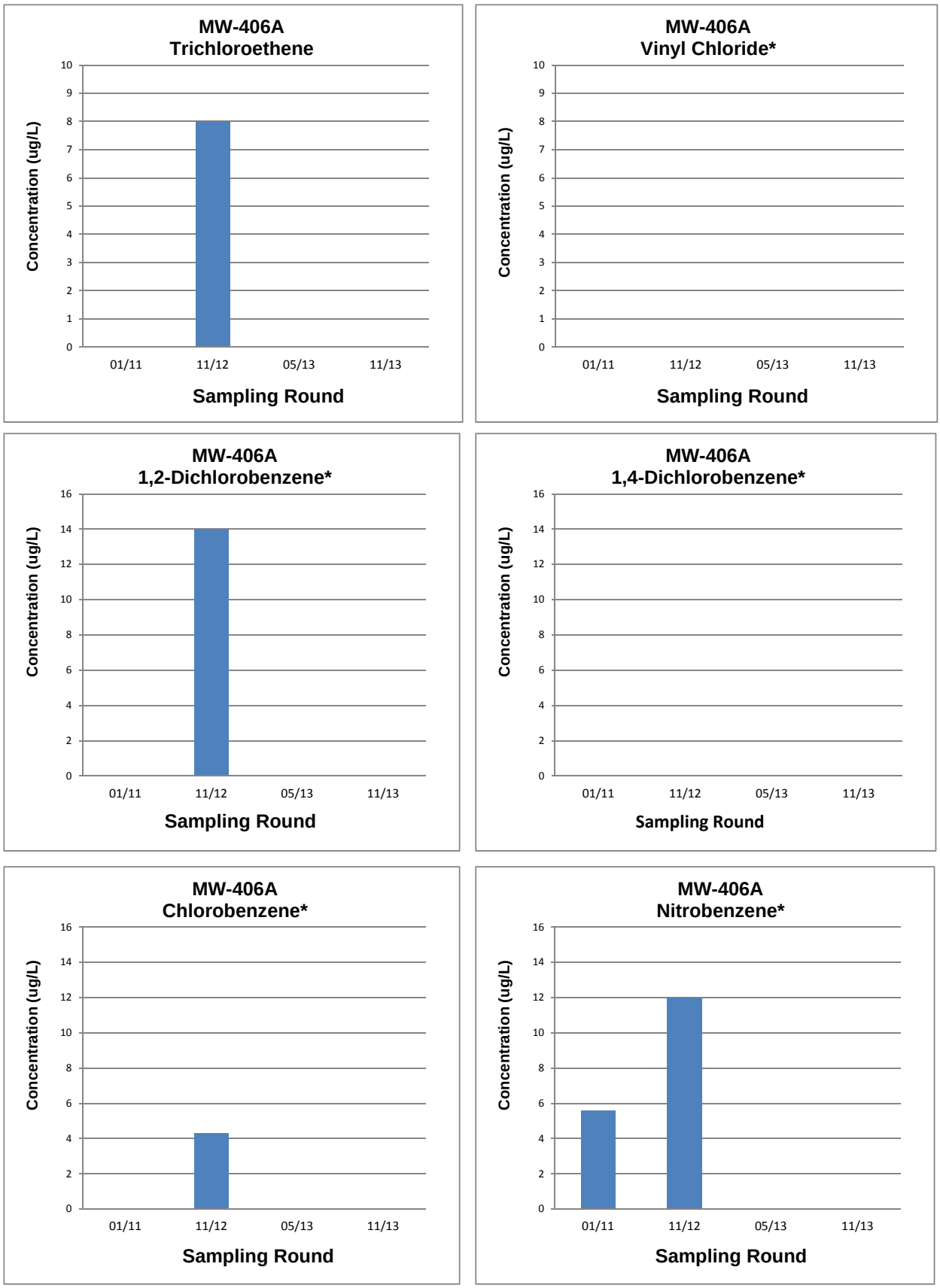
*nitrobenzene not detected in 2011 or 2012

Figure 4-5g
Concentration Trends in Plume Fringe Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts

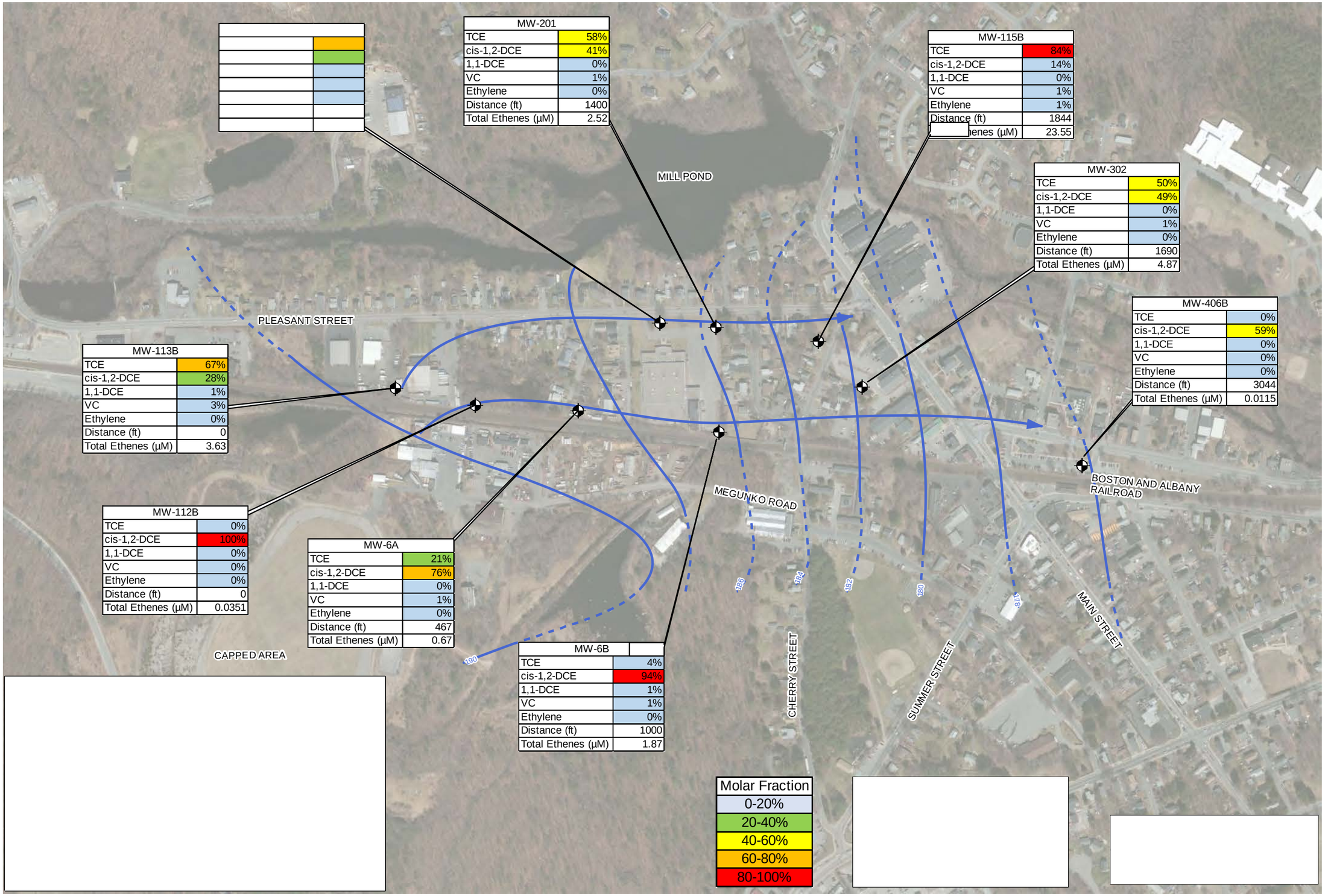


*vinyl chloride not detected in 2011

Figure 4-5h
Concentration Trends in Plume Fringe Wells
Nyanza Chemical Waste Dump Superfund Site - OU2
Ashland, Massachusetts



*vinyl chloride and 1,4-dichlorobenzene not detected. TCE, 1,2-dichlorobenzene and chlorobenzene not detected in 2011 or 2013. Nitrobenzene not detected in 2013.



N

DATE: APRIL 2014
PROJECT NO. 80022

PREPARED BY: JH
CHECKED BY: BA

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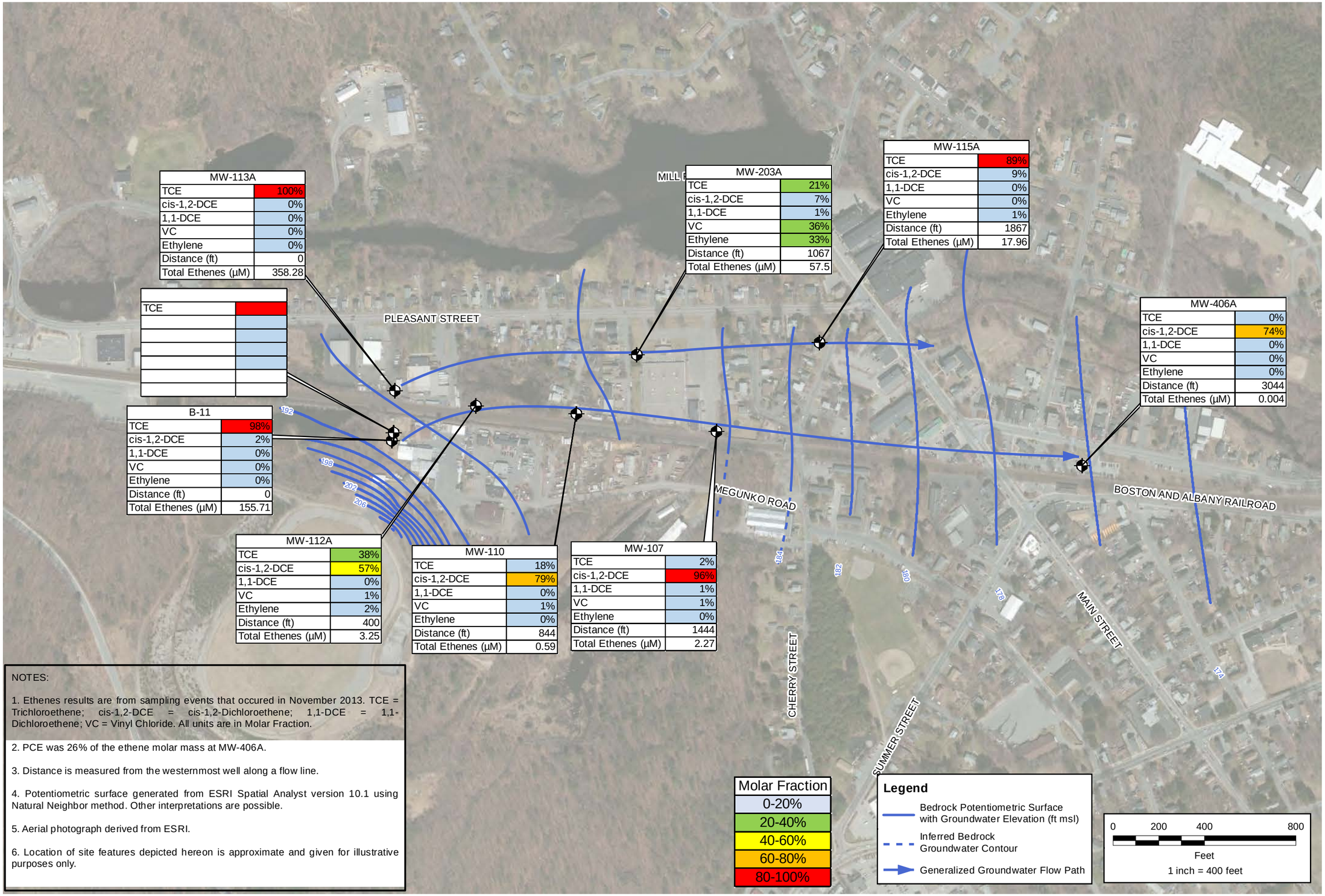
ASHLAND, MASSACHUSETTS

OVERBURDEN GROUNDWATER
CHLORINATED ETHENES MOLAR FRACTIONS
NOVEMBER, 2013

FIGURE
4-6

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\GW Geochemistry 2013\Fig_4-6_Nyanza_OB_Ethenes.mxd Date Printed: 5/16/2014



NOTES:

1. Ethenes results are from sampling events that occured in November 2013. TCE = Trichloroethene; cis-1,2-DCE = cis-1,2-Dichloroethene; 1,1-DCE = 1,1-Dichloroethene; VC = Vinyl Chloride. All units are in Molar Fraction.

2. PCE was 26% of the ethene molar mass at MW-406A.

3. Distance is measured from the westernmost well along a flow line.

4. Potentiometric surface generated from ESRI Spatial Analyst version 10.1 using Natural Neighbor method. Other interpretations are possible.

5. Aerial photograph derived from ESRI.

6. Location of site features depicted hereon is approximate and given for illustrative purposes only.

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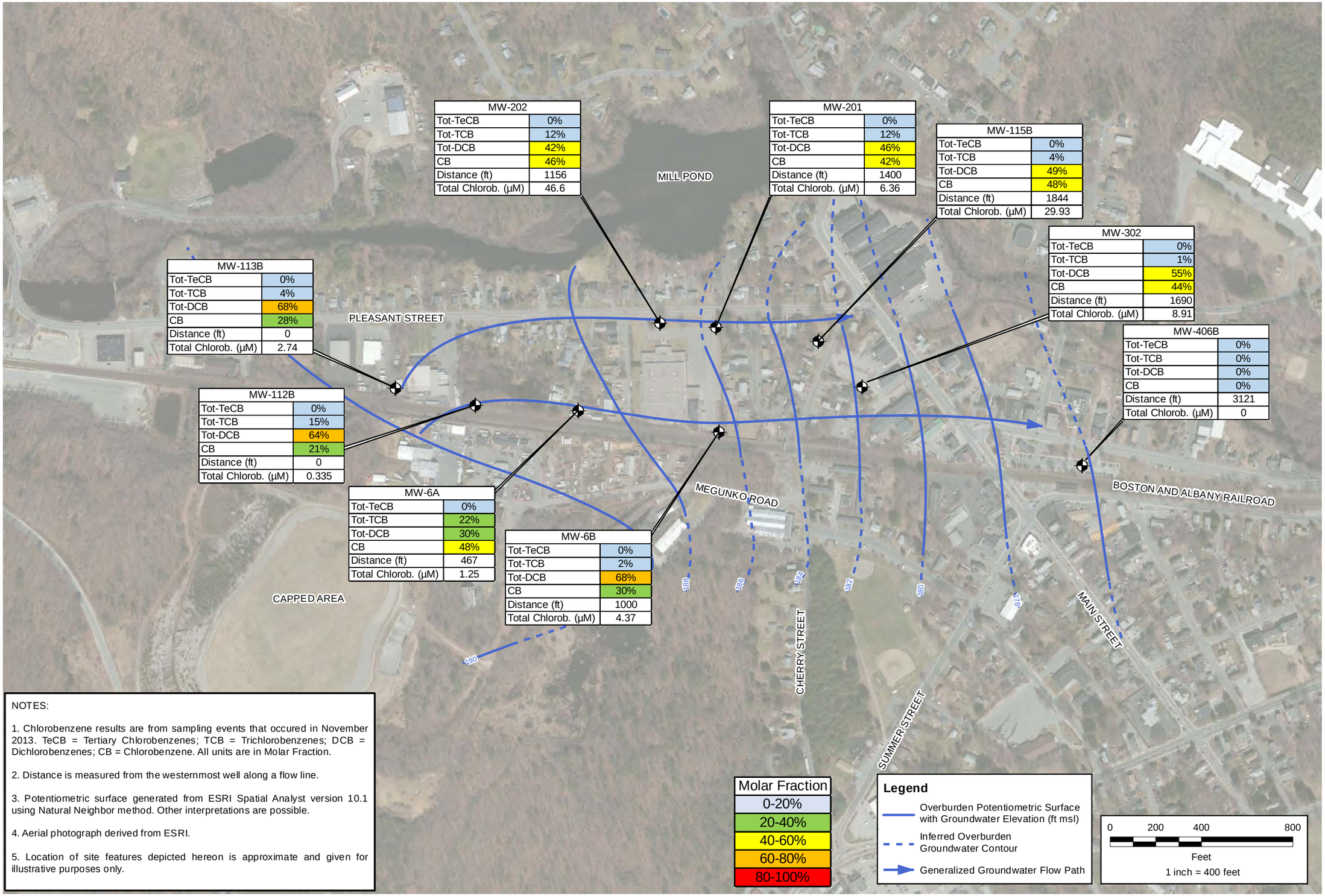
ASHLAND, MASSACHUSETTS

BEDROCK GROUNDWATER
CHLORINATED ETHENES MOLAR FRACTIONS
NOVEMBER, 2013

FIGURE
4-7

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\GW Geochemistry 2013\Fig_4-7_Nyanza_BR_Ethenes.mxd Date Printed: 5/16/2014



MW-202	
Tot-TeCB	0%
Tot-TCB	12%
Tot-DCB	42%
CB	46%
Distance (ft)	1156
Total Chlorob. (µM)	46.6

MW-201	
Tot-TeCB	0%
Tot-TCB	12%
Tot-DCB	46%
CB	42%
Distance (ft)	1400
Total Chlorob. (µM)	6.36

MW-115B	
Tot-TeCB	0%
Tot-TCB	4%
Tot-DCB	49%
CB	48%
Distance (ft)	1844
Total Chlorob. (µM)	29.93

MW-302	
Tot-TeCB	0%
Tot-TCB	1%
Tot-DCB	55%
CB	44%
Distance (ft)	1690
Total Chlorob. (µM)	8.91

MW-406B	
Tot-TeCB	0%
Tot-TCB	0%
Tot-DCB	0%
CB	0%
Distance (ft)	3121
Total Chlorob. (µM)	0

MW-113B	
Tot-TeCB	0%
Tot-TCB	4%
Tot-DCB	68%
CB	28%
Distance (ft)	0
Total Chlorob. (µM)	2.74

MW-112B	
Tot-TeCB	0%
Tot-TCB	15%
Tot-DCB	64%
CB	21%
Distance (ft)	0
Total Chlorob. (µM)	0.335

MW-6A	
Tot-TeCB	0%
Tot-TCB	22%
Tot-DCB	30%
CB	48%
Distance (ft)	467
Total Chlorob. (µM)	1.25

MW-6B	
Tot-TeCB	0%
Tot-TCB	2%
Tot-DCB	68%
CB	30%
Distance (ft)	1000
Total Chlorob. (µM)	4.37

NOTES:

1. Chlorobenzene results are from sampling events that occured in November 2013. TeCB = Tertiary Chlorobenzenes; TCB = Trichlorobenzenes; DCB = Dichlorobenzenes; CB = Chlorobenzene. All units are in Molar Fraction.

2. Distance is measured from the westernmost well along a flow line.

3. Potentiometric surface generated from ESRI Spatial Analyst version 10.1 using Natural Neighbor method. Other interpretations are possible.

4. Aerial photograph derived from ESRI.

5. Location of site features depicted hereon is approximate and given for illustrative purposes only.

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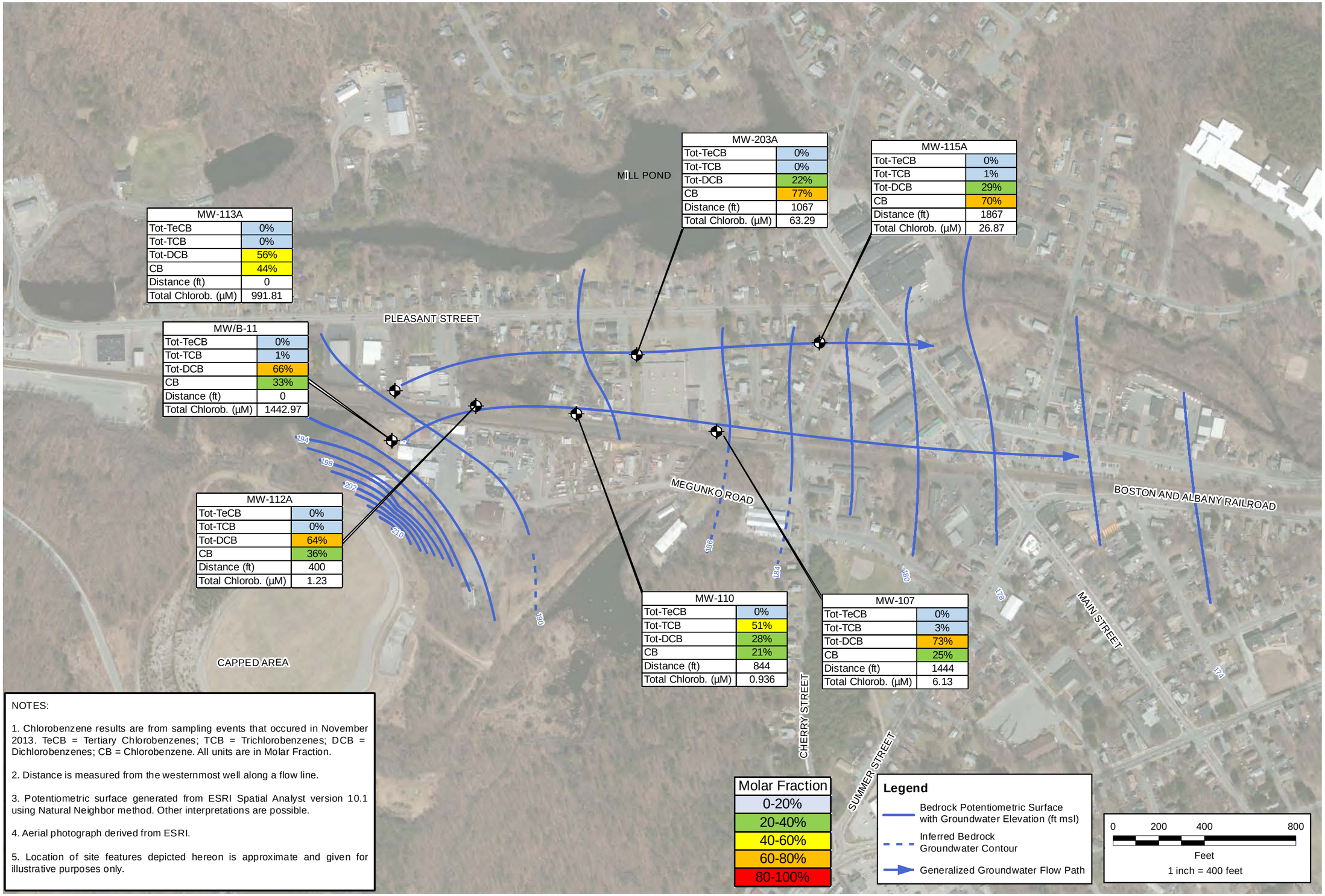
OVERBURDEN GROUNDWATER
CHLORINATED BENZENES MOLAR FRACTIONS
NOVEMBER, 2013

FIGURE 4-8

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\GW Geochemistry 2013\Fig_4-8_Nyanza_OB_Chlorobenzenes.mxd Date Printed: 5/16/2014



NOTES:

1. Chlorobenzene results are from sampling events that occured in November 2013. TeCB = Tertiary Chlorobenzenes; TCB = Trichlorobenzenes; DCB = Dichlorobenzenes; CB = Chlorobenzene. All units are in Molar Fraction.

2. Distance is measured from the westernmost well along a flow line.

3. Potentiometric surface generated from ESRI Spatial Analyst version 10.1 using Natural Neighbor method. Other interpretations are possible.

4. Aerial photograph derived from ESRI.

5. Location of site features depicted hereon is approximate and given for illustrative purposes only.

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BEDROCK GROUNDWATER
CHLORINATED BENZENES MOLAR FRACTIONS
NOVEMBER, 2013

FIGURE
4-9

Path: R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2013 GW Summary Report\GW Geochemistry 2013\Fig_4-9_Nyanza_BR_Chlorobenzenes.mxd Date Printed: 5/16/2014

APPENDIX A

Nobis
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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 1/15/13 Page 1 of 1 **Well ID :** MADEP- MW-1
Field Personnel JNB Purging Start Time :
Well Depth as installed (ft.): 15 Measured Well Depth (ft.): N/A
Screen Length in ft. 5 Screen Depth in ft. 10 - 15 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): N/A From: N/A Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 14.5 From: TOR Total Volume Purged, Including Drawdown (gallons): N/A
Sample Designation Time at Purge Completion:
Sample Time 1525 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) PERISTALTIC - NOBIS
Multimeter model and serial number N/A Turbidity meter model and serial number N/A
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) MICRO WELL TOO SMALL FOR WLM PROBE

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
												VOC BOTTLES ONLY
												WC IN WELL / GROUNDWATER
												YIELD TOO LOW TO
												FILL ANYTHING ELSE.

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions. VOC SAMPLES ONLY

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2

Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/6/13 Page 1 of 1
Field Personnel A. Arsenault
Well Depth as installed (ft.): 55
Screen Length in ft. 15 Screen Depth in ft. 36 (top)
Depth to GW (ft.): 6.31 From: PVC
Pump/Tubing Intake set (ft.): 33 From: PVC
Sample Designation
Sample Time 1525

Well ID : RW-1
Purging Start Time : 1455
Measured Well Depth (ft.): 40.20
Parameter Stabilization: (Circle) Yes / No
Two Hour Time Limit Reached ? (Circle) Yes / No
Total Volume Purged, Including Drawdown (gallons): 2.0
Time at Purge Completion: 1540
Signature:

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Perri
Multimeter model and serial number YSI 600 XLM 01C0134AA Turbidity meter model and serial number HACH 2100Q 13060C026015
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) 0.4 ppm on PID in bucket

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1457		150	6.41			13.85	944	5.74	103.8	2.28	44.9	
1502		150	6.45	0.04	0.04	13.78	943	5.63	111.7	0.74	14.3	
1507		150	6.45	0.00	0.04	13.73	942	5.62	109.3	0.62	19.6	
1512		150	6.46	0.01	0.05	13.63	949	5.62	114.1	0.57	10.9	
1517		150	6.48	0.02	0.07	13.61	951	5.62	114.9	0.53	11.3	
1522		150	6.50	0.02	0.09	13.63	952	5.62	114.7	0.53	11.7	
1525												SAMPLE

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/4/13 Page 1 of 7 **Well ID :** MW-4A
Field Personnel A. Arsenault Purging Start Time : 1245
Well Depth as installed (ft.): 24.0 Measured Well Depth (ft.): 20.95
Screen Length in ft. 20.0 Screen Depth in ft. 24.0 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 8.89 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 14.0 From: PVC Total Volume Purged, Including Drawdown (gallons): 3.0
Sample Designation Time at Purge Completion: 1300
Sample Time 1415 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Perc.
Multimeter model and serial number YSI 600XLM 07C0134AA Turbidity meter model and serial number HACH 2100Q 11090C012226
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1250		100	8.87									Fill flow through cell
1258		100	8.87	0.00	0.00	11.34	145	6.64	71.3	0.85	45.4	Purge water clear, orange silt
1303		100	8.87	0.00	0.00	11.43	106	6.26	90.0	0.47	43.8	
1308		100	8.87	0.00	0.00	11.52	100	6.14	98.6	0.43	40.1	
1313		100	8.87	0.00	0.00	11.59	98	6.08	105.3	0.40	34.3	Increase purge to 150 mL/min
1318		150	8.87	0.00	0.00	11.66	94	6.03	111.4	0.35	25.6	
1323		150	8.87	0.00	0.00	11.70	93	5.99	114.8	0.30	24.3	
1328		150	8.87	0.00	0.00	11.71	95	5.95	120.9	0.29	20.2	
1333		150	8.87	0.00	0.00	11.69	94	5.93	121.6	0.30	15.9	
1338		150	8.87	0.00	0.00	11.64	92	5.88	125.8	0.33	14.1	
1343		150	8.87	0.00	0.00	11.69	92	5.86	129.2	0.34	12.3	
1348		150	8.87	0.00	0.00	11.67	93	5.86	128.2	0.34	9.09	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/4/13 Page 2 of 2 **Well ID :** MW-4A
Field Personnel A. Arsenault
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

SEE ATTACHED

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1353		150	8.87	0.00	0.00	11.64	93	5.87	127.1	0.33	7.38	
1358		150	8.87	0.00	0.00	11.61	93	5.87	127.8	0.31	5.91	
1403		150	8.87	0.00	0.00	11.61	93	5.85	128.1	0.29	4.42	
1408		150	8.87	0.00	0.00	11.63	93	5.86	127.1	0.28	4.24	
1413		150	8.87	0.00	0.00	11.65	94	5.86	126.2	0.27	3.01	
1415												SAMPLE

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003	Attachment B, Page 1 of 1
Date: Mar. 2010	Rev.: 2
Prepared by:	S. Bonis
Approved by:	M. Summerlin

Date : 11/4/13 Page 1 of 2 **Well ID :** MW-04B
Field Personnel S. McDowell Purging Start Time : 1252
Well Depth as installed (ft.): 68 Measured Well Depth (ft.): 67.11 Top of casing
Screen Length in ft. 20 Screen Depth in ft. 48 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 49.7 From: TOC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 58 From: TOC Total Volume Purged, Including Drawdown (gallons): 3
Sample Designation Time at Purge Completion: 1305
Sample Time 1442 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600XL 04C 2846 AD Turbidity meter model and serial number HACH 2100Q S/N 1306000026015
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1255		80	50.1	–	–	16.25	1051	6.25	107.9	2.04	20.5	
1300		80	50.14	.04	.04	11.19	1092	6.25	125.0	0.98	15.3	
1305		60	50.0	(-.14)	(-.1)	11.28	1094	6.25	135.9	0.81	20.5	
1310		80	50.3	.3	.2	11.17	1097	6.25	137.5	0.62	11.4	
1315		80	50.3	.0	.2	11.33	1094	6.25	138.6	0.56	23.1	
1320		80	50.32	.02	.22	11.09	1095	6.25	141.8	0.50	13.3	
1325		70	50.25	(-.07)	.15	11.21	1091	6.25	142.6	0.48	8.22	
1330		70	50.45	.2	.35	11.32	1091	6.25	143.0	0.47	16.3	
1335		70	50.43	(-.02)	.33	11.46	1088	6.25	142.9	0.47	34.3	
1340		70	50.44	.01	.34	11.34	1087	6.25	143.7	0.47	13.6	
1345		70	50.44	.00	.34	11.34	1082	6.25	147.0	0.47	24.7	
1350		70	50.44	.00	.34	11.19	1085	6.25	148.9	0.47	13.7	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/4/13 Page 2 of 2 **Well ID :** MW-04B
Field Personnel S. McDowell Purging Start Time : 1252
Well Depth as installed (ft.): 68 Measured Well Depth (ft.): 67.11
Screen Length in ft. 20 Screen Depth in ft. 48 Parameter Stabilization: (Circle) (Yes) / No
Depth to GW (ft.): 49.7 From: TOC Two Hour Time Limit Reached ? (Circle) Yes / (No)
Pump/Tubing Intake set (ft.): 58 From: TOC Total Volume Purged, Including Drawdown (gallons): 3
Sample Designation Time at Purge Completion: 1508
Sample Time 1442 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Ari
Multimeter model and serial number YSI 6000XL 04C2866.AD Turbidity meter model and serial number HACH 2100Q S/N 13060C026015
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1355		70	50.44	.00	.34	11.13	1086	6.25	150.2	0.48	14.6	
1400		70	50.44	.00	.34	11.07	1087	6.25	151.3	0.49	9.13	
1405		70	50.45	.01	.35	11.05	1087	6.25	151.8	0.50	9.13	
1410		70	50.15	(-.3)	.05	10.80	1088	6.25	153.0	0.39	14.9	Battery to pump died, restarted pumping
1415		100	50.31	.16	.21	10.89	1087	6.25	152.6	0.36	18.3	
1420		100	50.30	(-.01)	.2	10.86	1088	6.25	152.7	0.35	3.54	
1425		100	50.31	.01	.21	10.90	1087	6.25	152.5	0.35	5.88	
1430		100	50.31	.00	.21	10.82	1088	6.25	152.6	0.35	4.15	
1435		100	50.31	.00	.21	10.85	1088	6.25	152.7	0.35	2.94	
1440		100	50.32	.01	.22	10.82	1088	6.25	152.7	0.35	5.01	
–		–	–	–	–	–	–	–	–	–	–	
–		–	–	–	–	–	–	–	–	–	–	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/4/13 Page 1 of 2 **Well ID :** MW-01C
Field Personnel J. Dikowski Purging Start Time : 12:50
Well Depth as installed (ft.): 78 Measured Well Depth (ft.): 77.6
Screen Length in ft. 5 Screen Depth in ft. 73-78 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 8.52 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 75.5 From: tubing in place Total Volume Purged, Including Drawdown (gallons): 3.5
Sample Designation MW-01C Time at Purge Completion: 15:25
Sample Time 14:50 Signature: [signature]
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number 600 XLM YSI 01109351 Turbidity meter model and serial number Hach 2100Q 13050C 027790
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1300	/	70	10.41	1.89	1.89	10.21	527	6.45	201.3	1.16	8.30	
1305	/	70	10.62	0.21	2.10	10.06	529	6.46	206.1	0.96	7.44	pumping rate lowered
1310	/	50	10.50	0.18	2.28	9.81	533	6.44	209.6	0.86	8.95	to 50 mL/min due to drawdown
1315	/	50	10.90	0.10	2.38	9.87	531	6.44	216.9	0.82	21.8	
1320	/	50	11.05	0.15	2.53	9.59	541	6.46	220.1	0.76	10.5	
1325	/	50	11.15	0.10	2.63	9.45	540	6.47	219.2	0.72	21.2	
1330	/	50	11.24	0.11	2.74	9.51	543	6.50	218.9	0.69	14.2	
1335	/	50	11.35	0.09	2.83	9.66	545	6.51	216.0	0.66	12.6	
1340	/	50	11.41	0.06	2.89	9.46	556	6.52	212.4	0.63	9.39	
1345	/	50	11.49	0.03	2.97	9.58	567	6.54	202.5	0.58	9.09	
1350	/	50	11.55	0.06	3.03	9.59	583	6.57	179.6	0.54	7.57	
1355	/	50	11.60	0.05	3.08	9.57	601	6.61	155.2	0.52	12.8	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/4/13 Page 2 of 2 **Well ID :** MW-01C
Field Personnel J Olkowski Purging Start Time : 12:50
Well Depth as installed (ft.): 76 Measured Well Depth (ft.): 77.6
Screen Length in ft. 5 Screen Depth in ft. 73-78 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 3.52 From: PVC Two Hour Time Limit Reached ? (Circle) Yes No
Pump/Tubing Intake set (ft.): 75.5 From: tubing in place Total Volume Purged, Including Drawdown (gallons): 3.5
Sample Designation MW-01C Time at Purge Completion: 1525
Sample Time 1450 Signature: Jonathan Olkowski
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number YSI 556 MPS 11C085147 Turbidity meter model and serial number Hach 2100Q 13050C027790
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1400		50	11.62	0.02	3.10	9.56	624	6.64	133.0	0.45	7.14	
1405		50	11.65	0.03	3.13	9.54	646	6.68	104.3	0.46	5.82	
1410		50	11.67	0.02	3.15	9.27	662	6.70	88.8	0.44	12.4	
1415		50	11.71	0.04	3.19	9.55	665	6.73	82.1	0.42	6.48	
1420		50	11.74	0.02	3.21	9.44	667	6.74	78.5	0.42	8.32	
1425		50	11.75	0.01	3.22	9.39	669	6.77	76.2	0.42	5.32	
1430		50	11.75	0	3.22	9.03	680	6.79	74.9	0.41	12.5	
1435		50	11.76	0.01	3.23	9.18	687	6.83	79.0	0.40	4.23	
1440		50	11.76	0	3.23	9.55	688	6.85	79.9	0.41	3.02	
1445		50	11.76	0	3.23	9.01	692	6.87	78.3	0.39	3.01	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/5 Page 1 of _____ **Well ID :** BMW5 MW B-5
Field Personnel M. Carbonneau Purging Start Time : 1337
Well Depth as installed (ft.): 47 Measured Well Depth (ft.): 46.25
Screen Length in ft. 7 Screen Depth in ft. 39-46 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 5.71 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): designated From: as set Total Volume Purged, Including Drawdown (gallons): 4.5 (4.5)
Sample Designation _____ Time at Purge Completion: 2:28 (1428
Sample Time 1430 Signature: Michelle Carbonneau
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number 600 XLM YSI 01108574F Turbidity meter model and serial number 2100Q 13060C0240 15
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) PID reading; breathing zone - 0.0 ppm
bucket/water - 3 ppm

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1340		325	5.90	.19	0.19	11.25	273	5.97	49.8	.70	12.8	
1345		325	5.90	0	0.19	11.19	1603	6.32	4.7	.39	73.1	
1350		325	5.92	.02	0.21	11.17	1509	6.29	14.0	0.30	35.7	
1355		325	5.93	.01	0.22	11.13	1438	6.25	52.1	0.27	16.5	
1400 ~~1360~~		325	5.93	0	0.22	11.12	1431	6.27	67.7	0.25	11.3	
1405		325	5.93	0	0.22	11.12	1430	6.27	69.8	0.25	6.39	
1410		325	5.93	0	0.22	11.10	1427	6.26	76.3	0.25	6.34	
1415		325	5.93	0	0.22	11.09	1426	6.26	80.1	0.25	3.52	
1420		325	5.93	0	0.22	11.09	1427	6.26	81.2	0.24	3.28	
1425		325	5.93	0	0.22	11.08	1424	6.28	82.7	0.24	1.48	→ stop purging
												sample at 2:30 pm

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2

Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/6/13 Page 1 of 2 **Well ID :** MW-06A
Field Personnel A. Arsenault Purging Start Time : 1150
Well Depth as installed (ft.): 12 Measured Well Depth (ft.): 11.78
Screen Length in ft. 5 Screen Depth in ft. 7 (top) Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 5.27 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 9.5 From: PVC Total Volume Purged, Including Drawdown (gallons): 2.5
Sample Designation Time at Purge Completion: 1310
Sample Time 1255 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peristaltic
Multimeter model and serial number YSI 600 XLM 01C0134AA Turbidity meter model and serial number HACH 2100 Q 13060026015
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1156		150	5.30									Fill flow through cell
1158		150	5.30	0.00	0.00	15.39	672	6.29	24.7	2.69	42.3	Purge water clear, slight odor
1203		150	5.30	0.00	0.00	15.36	626	5.81	43.5	0.67	15.2	
1208		150	5.30	0.00	0.00	15.32	589	5.75	43.3	0.62	32.2	
1213		150	5.30	0.00	0.00	15.34	560	5.73	40.8	0.57	16.5	
1218		150	5.30	0.00	0.00	15.36	529	5.74	37.8	0.53	5.78	
1223		150	5.30	0.00	0.00	15.34	513	5.74	35.3	0.50	8.31	
1228		150	5.30	0.00	0.00	15.30	500	5.75	32.4	0.46	5.96	
1233		150	5.30	0.00	0.00	15.33	491	5.75	30.1	0.44	5.29	
1238		175	5.30	0.00	0.00	15.32	490	5.75	28.6	0.42	5.23	
1243		175	5.30	0.00	0.00	15.27	469	5.76	24.8	0.39	5.26	
1248		175	5.30	0.00	0.00	15.28	460	5.77	23.2	0.38	4.20	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: M. Summerlin

Date : 11/6/13 Page 2 of 2 **Well ID :** MW-06A
Field Personnel A. Arsenault Purging Start Time : _____
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

ATTACHED

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1253		175	5.30	0.00	0.00	15.24	459	5.77	22.1	0.39	2.09	
1255												SAMPLE

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/7/13 Page 1 of 1 **Well ID :** MW-6B
Field Personnel A. Arsenault Purging Start Time : 850
Well Depth as installed (ft.): 18 Measured Well Depth (ft.): 18.18
Screen Length in ft. 10 Screen Depth in ft. 8 (bgs) Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 6.23 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 13 From: PVC Total Volume Purged, Including Drawdown (gallons): 2.0
Sample Designation Time at Purge Completion: 1000
Sample Time 940 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Perri
Multimeter model and serial number YSI 600 XLM 01C0134AA Turbidity meter model and serial number HACH 2100Q 13080C027787
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
855		150	7.45									Fill flow through cell
858		150	7.74	0.29	0.29	14.81	1912	5.90	5.5	2.52	52.7	Purge water brown, silty, no odor
903		150	8.32	0.58	0.87	14.77	1923	5.78	10.0	1.48	48.2	Reduce flow to 100 ml/min
908		100	8.56	0.24	1.11	14.85	1929	5.79	12.4	1.46	56.3	
913		100	8.75	0.19	1.30	14.89	1934	5.80	15.3	1.37	51.6	
918		100	8.96	0.21	1.51	14.86	1948	5.80	16.2	1.35	34.8	
923		100	9.15	0.19	1.70	14.87	1962	5.81	16.2	1.36	33.2	
928		100	9.33	0.18	1.88	14.83	1976	5.82	15.8	1.30	36.3	
933		100	9.51	0.18	2.06	14.95	1984	5.83	15.1	1.33	38.4	
938		100	9.66			14.94	1988	5.84	15.6	1.35	37.3	
940												SAMPLE

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2

Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/6/13 Page 1 of 2 **Well ID :** MW-9A
Field Personnel A. Arsenault Purging Start Time : 903
Well Depth as installed (ft.): 33 Measured Well Depth (ft.): 28.26
Screen Length in ft. 27.5 ft Screen Depth in ft. 5.5 (TOP) Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 7.63 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 25.0 From: PVC Total Volume Purged, Including Drawdown (gallons): 3.0
Sample Designation Time at Purge Completion: 1025
Sample Time 1010 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600 XLM 01C0134AA Turbidity meter model and serial number HACH 2100 Q 13060C026015
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
906		150	7.64									Fill flow through cell
908		150	7.64	0.00	0.00	13.71	1494	6.19	-67.1	2.01	154	Purge water silty
913		150	7.64	0.00	0.00	13.71	1496	6.25	-77.2	0.64	119	
918		150	7.65	0.01	0.01	13.69	1492	6.28	-79.2	0.56	91.5	
923		175	7.65	0.00	0.01	13.56	1488	6.31	-80.9	0.47	80.2	
928		175	7.65	0.00	0.01	13.62	1486	6.33	-81.8	0.44	64.6	
933		175	7.65	0.00	0.01	13.66	1484	6.34	-82.0	0.43	58.9	
938		175	7.65	0.00	0.01	13.65	1482	6.36	-82.1	0.41	59.5	
943		175	7.65	0.00	0.01	13.74	1481	6.37	-82.2	0.40	55.7	
948		175	7.66	0.01	0.02	13.80	1478	6.38	-82.0	0.40	45.4	
953		175	7.66	0.00	0.02	13.87	1475	6.38	-82.1	0.39	51.1	
958		175	7.66	0.00	0.02	13.93	1472	6.39	-81.8	0.39	40.4	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ Alice Arsenault
Approved by: M. Summerlin

Date : 11/6/13 Page 2 of 2 **Well ID :** MW-9A
Field Personnel A. Arsenault Purging Start Time : _____
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

SEE ATTACHED

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1003		175	7.67	0.01	0.03	13.90	1468	6.40	-81.6	0.39	40.4	
1008		175	7.67	0.01	0.03	13.95	1466	6.40	-81.5	0.38	38.1	
1010												SAMPLE

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003	Attachment B, Page 1 of 1
Date: Mar. 2010	Rev.: 2
Prepared by:	S. Bonis
Approved by:	M. Summerlin

Date : 11/6/13 Page 1 of 2 **Well ID :** MW-09B
Field Personnel S. McDonell Purging Start Time : 0858
Well Depth as installed (ft.): 41.7 Measured Well Depth (ft.): 40.88
Screen Length in ft. ~~38.7 SM~~ 7 Screen Depth in ft. 34.7-41.7 Parameter Stabilization: (Circle) Yes / (No)
Depth to GW (ft.): 7.4 From: PVC Two Hour Time Limit Reached ? (Circle) (Yes) / No
Pump/Tubing Intake set (ft.): 38.2 From: PVC Total Volume Purged, Including Drawdown (gallons): 4.5
Sample Designation Time at Purge Completion: 1108
Sample Time 1057 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600XL 04C2866 AD Turbidity meter model and serial number HACH 2100Q S/N 13080C027788
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
0900		125	7.83	–	–	13.84	1111	6.61	205.4	8.67	143	
0905		125	7.88	0.05	0.05	13.92	1128	6.64	-6.4	8.71	90.5	
0910		100	7.85	(-.03)	0.02	13.78	1129	6.73	-12.5	9.04	71.0	
0915		100	7.87	0.02	0.04	13.86	1127	6.73	-19.9	8.92	47.0	
0920		100	7.91	0.04	0.08	13.81	1127	6.73	-29.5	8.84	38.4	
0925		100	7.92	0.01	0.09	13.63	1124	6.73	-34.8	8.82	31.5	
0930		100	7.93	0.01	0.10	13.95	1122	6.73	-38.1	8.70	45.4	
0935		100	7.97	0.04	0.14	14.05	1119	6.73	-40.3	8.66	26.5	
0940		100	8.00	0.03	0.17	14.18	1115	6.73	-42.0	8.78	24.6	
0945		100	8.01	0.01	0.18	14.36	1110	6.72	-43.6	8.71	21.3	
0950		100	8.05	0.04	0.22	14.43	1107	6.72	-43.8	8.51	21.4	
0955		100	8.06	0.01	0.23	14.56	1103	6.70	-43.3	8.60	27.9	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/6/13 Page 2 of 2 **Well ID :** MW-09B
Field Personnel S. McDowell Purging Start Time : 0858
Well Depth as installed (ft.): 41.7 Measured Well Depth (ft.): 40.88
Screen Length in ft. 7 Screen Depth in ft. 34.7-41.7 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 7.4 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 38.2 From: PVC Total Volume Purged, Including Drawdown (gallons): 4.5
Sample Designation Time at Purge Completion: 1108
Sample Time 10:57 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600XL 04C2866AD Turbidity meter model and serial number HACH 2100Q S/N 13080C027788
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1000	/	100	8.04	(-.02)	0.21	14.64	1099	6.71	-45.2	8.56	17.7	
1005	/	100	8.04	0.0	0.21	14.60	1096	6.70	-44.6	8.54	13.5	
1010	/	100	8.04	0.0	0.21	15.06	1092	6.69	-44.9	8.44	12.0	
1015	/	100	8.05	0.01	0.22	14.64	1088	6.69	-44.6	8.48	11.0	
1020	/	100	8.05	0.0	0.22	14.35	1084	6.69	-43.4	8.55	10.0	
1025	/	100	8.05	0.0	0.22	14.38	1080	6.68	-40.6	8.20	6.68	
1030	/	100	8.05	0.0	0.22	14.68	1078	6.67	-39.7	8.10	10.8	
1035	/	100	8.05	0.0	0.22	14.06	1074	6.62	-33.5	7.27	7.74	
1040	/	100	8.15	0.1	0.32	14.20	1073	6.60	-31.5	7.01	8.54	
1045	/	100	8.28	0.13	0.45	14.16	1071	6.60	-29.9	6.92	10.1	
1050	/	100	8.42	0.14	0.59	14.18	1070	6.59	-28.9	6.91	13.5	
1055	/	100	8.49	0.07	0.66	14.22	1070	6.59	-29.0	6.93	12.3	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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1 WV = 2.32 :1

4.63 = 2WV

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Low-Flow Field Log

SOP No: SA-003	Attachment B, Page 1 of 1
Date: Mar. 2010	Rev.: 2
Prepared by:	S. Bonis
Approved by:	M. Summerlin

Date : 11/6/13 Page 1 of 1 Well ID : B/MW-11

Field Personnel JNB/MLC Purging Start Time :

Well Depth as installed (ft.): 27.9 Measured Well Depth (ft.): ~~27.47~~ 26.30

Screen Length in ft. 10 Screen Depth in ft. 11.25 - 21.25 Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): 12.41 From: TOR Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): From: TOR Total Volume Purged, Including Drawdown (gallons):

Sample Designation Time at Purge Completion:

Sample Time 1230 Signature:

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments)

Multimeter model and serial number Turbidity meter model and serial number

1 well vol = 2.54 GALS

Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

.5 gals = 2WV

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
			WATER SAMPLE COLLECTED OFF OF TREATMENT SYSTEM PUMP									
			SAMPLING PERFORMED CONCURRENTLY W/ O&M									
		CYCLE 1:	ENABLED TO CLEAR DRAIN									
			1 CYCLE = DTW 12.41 → 14.10 DTW									
			1 CYCLE TRIGGERS 3 & 4 PUMP SESSIONS									
			1 CYCLE = 0.28 GALS PURGED									
		17	CYCLES	ACTIVATED	PRIOR	TO	SAMPLE	COLLECTION				

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

19.2 cycles/5 vol

10 30 TALK W/ BOYD - PURGE 2 WELL VOLUMES & SAMPLE OFF PUMP
PURGE INTO TANK.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/6/13 Page 1 of 1 **Well ID :** ~~RMW~~ MW - 104 A
Field Personnel S. Olkowski Purging Start Time : 0857
Well Depth as installed (ft.): 40.1 Measured Well Depth (ft.): 42.25
Screen Length in ft. 5 Screen Depth in ft. 35.1 - 40.1 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 11.66 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 37.6 From: tubing in place Total Volume Purged, Including Drawdown (gallons): 3
Sample Designation MW-104A Time at Purge Completion: 10:15
Sample Time 0950 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number YSI 600 XL 01D0036AA Turbidity meter model and serial number Hach 2100Q 13080C027787
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
0910		150	11.95	0.29	0.29	13.28	1400	7.13	-8.8	0.79	1.57	
0915		150	12.0	0.05	0.34	13.96	1391	7.11	-4.5	0.71	1.94	
0920		150	12.02	0.02	0.36	13.47	1402	7.08	3.1	0.80	1.77	
0925		150	12.03	0.01	0.37	13.53	1410	7.08	4.1	0.57	2.27	pumping rate lowered to
0930		125	12.05	0.02	0.39	13.89	1432	7.06	5.2	0.55	1.76	stabilize drawdown
0935		125	12.07	0.02	0.41	14.07	1454	7.05	10.7	0.46	1.32	
0940		125	12.07	0	0.41	13.91	1467	7.04	16.3	0.44	1.80	
0945		125	12.09	0.02	0.43	13.94	1479	7.03	16.1	0.47	1.29	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003	Attachment B, Page 1 of 1
Date: Mar. 2010	Rev.: 2
Prepared by:	S. Bonis
Approved by:	M. Summerlin

Date : November 6, 2013 Page 1 of _____ **Well ID :** MW-104B
Field Personnel Ayon Majmundar Purging Start Time : 9:07 AM
Well Depth as installed (ft.): 15.4 Measured Well Depth (ft.): 19.82
Screen Length in ft. 5 Screen Depth in ft. 10.4 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 12.55 From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 12.9 From: _____ Total Volume Purged, Including Drawdown (gallons): 6.5
Sample Designation _____ Time at Purge Completion: 10:30 AM
Sample Time 10:00 AM Signature: Ayon Majmundar
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri Pump
Multimeter model and serial number YSI 600 XL Turbidity meter model and serial number HACH 2100Q
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
0917		195	12.57	0.02	0.02	-	-	-	-	-	-	Establishing flow rate
0922		100	12.56	-0.01	0.01	-	-	-	-	-	-	Establishing flow rate
0927		100	12.57	0.01	0.02	14.49	755	6.31	-41.7	0.65	63.3	
0932		125	12.57	0.00	0.02	14.42	747	6.26	-42.7	0.46	70.8	
0937		150	12.57	0.00	0.02	14.47	741	6.28	-40.1	0.37	50.1	
0942		100	12.57	0.00	0.02	14.70	742	6.29	-37.7	0.33	33.5	
0947		125	12.57	0.00	0.02	14.81	741	6.29	-36.9	0.32	29.7	
0952		100	12.57	0.00	0.02	14.85	740	6.29	-36.6	0.32	27.2	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/5/13 Page 1 of 1 **Well ID :** WP105
Field Personnel M Carbonneau Purging Start Time : 12:21
Well Depth as installed (ft.): 11 Measured Well Depth (ft.): 12.69
Screen Length in ft. 2 Screen Depth in ft. 9-11 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 7.28 From: metal casing Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): designated tubing From: as set Total Volume Purged, Including Drawdown (gallons): 2.5 gallons
Sample Designation Time at Purge Completion: 12:56
Sample Time 1300 Signature: Michelle Carbonneau
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristatic
Multimeter model and serial number YSI 600XLM 01108511AF Turbidity meter model and serial number 2100Q Hach 13060C026025
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1225		300	7.41	.13	.13	13.51	450	6.48	-20.8	1.01	9.14	
1230		300	7.41	0	0.13	13.58	456	6.49	-34.5	0.51	3.60	
1235		300	7.41	0	0.13	13.63	456	6.48	-39.5	.43	2.21	
1240		325	7.41	0	0.13	13.54	474	6.47	-43.4	0.38	1.36	
1245		300	7.41	0	.13	13.64	475	6.47	-45.8	.35	1.63	
1250		340	7.41	0	0.13	13.67	476	6.46	-48.0	.33	0.97	
1255		325	7.41	0	0.13	13.73	478	6.45	-49.1	0.32	0.71	purge complete
												1300 sample time

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003
Date: Mar. 2010
Attachment B, Page 1 of 1
Rev.: 2

Prepared by: ~~B. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/7/13 Page 1 of 2
Field Personnel A. Arsenault
Well Depth as installed (ft.): 35.9
Screen Length in ft. 5 Screen Depth in ft. 30.9 (top)
Depth to GW (ft.): 7.25 From: PVC
Pump/Tubing Intake set (ft.): 33.4 From: PVC
Sample Designation
Sample Time 1100

Well ID : MW-107
Purging Start Time : 947
Measured Well Depth (ft.): 38.21
Parameter Stabilization: (Circle) Yes / No
Two Hour Time Limit Reached ? (Circle) Yes / No
Total Volume Purged, Including Drawdown (gallons): 2.5
Time at Purge Completion: 1115
Signature:

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Perm
Multimeter model and serial number YSI 600XLM 01C0134AA Turbidity meter model and serial number HACH 2100Q 13080C027787
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
953		125	7.30									Fill flow through cell
955		125	7.27	+0.03	+0.03	15.00	2005	5.95	26.5	1.50	658	
1000		125	7.28	0.01	+0.02	14.51	1972	5.85	40.3	1.24	131	
1005		150	7.28	0.00	+0.02	14.42	1974	5.84	43.0	1.20	109	
1010		150	7.28	0.00	+0.02	14.27	1974	5.84	43.4	1.33	64.5	
1015		200	7.28	0.00	+0.02	14.25	1972	5.84	45.4	1.28	29.9	
1020		200	7.28	0.00	+0.02	14.09	1967	5.83	45.7	1.16	16.7	
1025		200	7.28	0.00	+0.02	14.11	1962	5.83	45.5	1.17	35.2	
1030		200	7.28	0.00	+0.02	14.22	1963	5.83	47.4	1.15	22.8	
1035		200	7.28	0.00	+0.02	14.27	1961	5.83	48.3	0.96	16.8	
1040		200	7.28	0.00	+0.02	14.18	1962	5.83	47.9	1.13	4.64	
1045		200	7.28	0.00	+0.02	14.17	1962	5.83	48.8	1.00	5.42	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/7/13 Page 2 of 2 **Well ID :** MW-107
Field Personnel A. Arsenault Purging Start Time : _____
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

ATTACHED

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1050		200	7.28	0.00	+0.02	14.13	1959	5.83	48.3	1.03	5.78	
1055		200	7.28	0.00	+0.02	14.06	1959	5.83	47.1	1.04	5.51	
1100												SAMPLE

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/6/13 Page 1 of 1 **Well ID :** MW-110
Field Personnel S. McDowell Purging Start Time : 1153
Well Depth as installed (ft.): 69.1 Measured Well Depth (ft.): 68.98
Screen Length in ft. 5 Screen Depth in ft. 64.1 - 69.1 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 5.35 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 66.5 From: PVC Total Volume Purged, Including Drawdown (gallons): 2.5
Sample Designation Time at Purge Completion: 1303
Sample Time 1247 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600XL 04C2846AD Turbidity meter model and serial number HACH 2100Q S/N 13080C027788
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1155		200	5.9	–	–	13.41	255	6.60	-6.9	0.91	15.6	
1200		150	5.96	0.06	0.06	13.70	254	6.41	-0.2	0.41	5.6	
1205		150	5.95	(-.01)	0.05	14.05	254	6.34	0.6	0.37	4.25	
1210		150	5.95	0.0	0.05	14.01	254	6.33	0.5	0.34	3.46	
1215		150	6.07	0.12	0.17	14.07	254	6.30	0.2	0.31	13.3	
1220		150	6.01	(-.06)	0.11	13.86	254	6.29	0.3	0.29	15.4	
1225		150	5.99	(-.02)	0.09	13.66	253	6.29	-0.9	0.27	8.52	
1230		150	6.00	.01	0.10	13.60	253	6.28	-1.8	0.26	~~9.68~~ 8.07	
1235		150	6.00	0.0	0.10	13.80	253	6.28	-3.2	0.25	8.40	
1240		150	6.00	0.0	0.10	13.78	253	6.28	-3.9	0.25	7.91	
1245		150	6.00	0.0	0.10	13.70	253	6.28	-4.7	0.25	7.98	
–		–	–	–	–	–	–	–	–	–	–	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arseneault
Approved by: ~~M. Summerlin~~

Date : 11/5/13 Page 1 of 1 **Well ID :** MW-112 A
Field Personnel A. Arseneault Purging Start Time : 1415
Well Depth as installed (ft.): 43 Measured Well Depth (ft.): 46.45
Screen Length in ft. 5 Screen Depth in ft. 38 (top) Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 8.61 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 40.5 From: PVC Total Volume Purged, Including Drawdown (gallons): 2.0
Sample Designation Time at Purge Completion: 1535
Sample Time 1512 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600XLM 01C0134AA Turbidity meter model and serial number HACH 2100Q 1109C012226
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1419		150	9.41									Fill flow through cell
1420		150	9.61	0.40	0.40	13.22	6605	6.02	27.7	0.85	40.1	Purge water slightly orange
1425		150	10.84	1.03	1.43	13.08	5831	6.13	-5.3	0.45	34.0	Reduce rate to 100 ml/min
1430		100	11.73	0.89	2.32	13.24	4909	6.25	-20.7	1.23	31.6	
1435		100	12.56	0.83	3.15	13.13	3584	6.41	-40.4	0.59	38.6	Crank up pump to reduce head
1440		100	13.67	1.11	4.26	12.69	1782	6.54	-46.6	0.39	35.0	
1445		100	14.14	0.47	4.73	13.07	1833	6.54	-41.0	0.38	39.8	
1450		100	14.61	0.47	5.20	12.94	1811	6.52	-35.8	0.39	28.6	
1455		100	15.02	0.41	5.61	12.98	1765	6.53	-35.5	0.38	29.5	
1500		100	15.43	0.41	6.02	12.95	1752	6.53	-33.8	0.37	31.1	
1505		100	15.85	0.42	6.44	12.91	1752	6.52	-32.1	0.38	30.3	
1510		100	16.13			12.90	1760	6.51	-31.3	0.39	31.4	

Notes: All depths in feet below top of PVC unless specified.
1512 NR = No Reading — SAMPLE
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/5/13 Page 1 of 1 **Well ID :** MW-112B
Field Personnel S. McDowell Purging Start Time : 1422
Well Depth as installed (ft.): 30 Measured Well Depth (ft.): 31.51
Screen Length in ft. 5 Screen Depth in ft. 25-30 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 9.3 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 27.5 From: PVC Total Volume Purged, Including Drawdown (gallons): 1.5
Sample Designation Time at Purge Completion: 1529
Sample Time 1507 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600XL 04C2866AD Turbidity meter model and serial number HACH 2100Q SN 13080C02 7790
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1425		170	9.24	-	-	13.16	623	6.24	-16.0	2.26	404	
1430		100	10.25	1.01	1.01	13.15	561	6.36	-40.0	0.61	86.8	
1435		100	10.47	0.22	1.23	13.26	559	6.41	-49.4	0.52	62.0	
1440		100	10.74	0.27	1.50	13.20	543	6.43	-53.7	0.45	46.5	
1445		100	11.00	0.26	1.76	13.28	542	6.43	-55.1	0.42	115	
1450		400+	12.10	1.1	2.86	12.67	540	6.44	-57.8	0.24	97.7	Increased rate to attempt to stabilize drawdown
1455		100	12.10	0.0	2.86	13.07	528	6.45	-57.6	0.37	67.5	
1500		100	12.10	0.0	2.86	13.13	525	6.43	-56.9	0.38	66.1	
1505		100	12.10	0.0	2.86	13.06	526	6.42	-52.5	0.39	64.1	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2

Prepared by: _____
Reviewed by: _____

Date : 11/6/13 Page 1 of 1 **Well ID :** MW-113A
Field Personnel JNB/MLC Purging Start Time : _____
Well Depth as installed (ft.): 51 Measured Well Depth (ft.): 53.81
Screen Length in ft. 5 Screen Depth in ft. 46-51 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 5.73 From: TOR Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 53 From: TOR Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time 1715 Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) N/A
Multimeter model and serial number N/A Turbidity meter model and serial number N/A
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)
SYSTEM BLDG INTERIOR MONITORED W/PID DURING O&M & SAMPLING.
NOBIS USED RESPIRATORS DURING SAMPLING.

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
			53.81									
		-	5.73			SAMPLE COLLECTED OFF OF TREATMENT						
		WC	48.08				SYSTEM PUMP					
		1WV	8.01									
		2WV	16.02	GALS TO BE PURGED								
		1 PUMPING CYCLE = ~0.35 GALS										
			46 CYCLES PURGED TO PUMP 2 WELL VOLUMES (WV) PRIOR									
			TO SAMPLING.									

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

2 WV TO BE PURGED AS PER B. ALLEN.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/6/13 Page 1 of 1
Field Personnel M. Carbonneau
Well Depth as installed (ft.): 29.5
Screen Length in ft. 5 Screen Depth in ft. 24.5-29.5
Depth to GW (ft.): 5.21 From: PVC
Pump/Tubing Intake set (ft.): designated tubing From: as set
Sample Designation
Sample Time 1520

Well ID : MW113B
Purging Start Time : 1432
Measured Well Depth (ft.): 32.09
Parameter Stabilization: (Circle) Yes / No
Two Hour Time Limit Reached ? (Circle) Yes / No
Total Volume Purged, Including Drawdown (gallons): 2.5
Time at Purge Completion: 1517
Signature: Michele Carbonneau

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number YSI 600XLM 01109STAF Turbidity meter model and serial number Hach 2100Q 10090001226
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)
PID reading 0.0 ppm

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1435	/	200	5.35	0.14	0.14	11.72	486	6.01	85.5	1.04	2.95	
1440	/	200	5.35	0	0.14	11.68	509	6.02	63.6	0.69	3.83	
1445	/	200	5.35	0	0.14	11.61	507	5.99	61.9	0.53	1.79	
1450	/	200	5.35	0	0.14	11.57	508	5.98	60.7	0.46	0.66	
1455	/	200	5.35	0	0.14	11.53	506	6.00	60.7	0.43	0.52	
1500	/	200	5.35	0	0.14	11.57	513	5.97	60.1	0.42	2.93	
1505	/	200	5.37	.02	0.16	11.52	517	5.94	59.3	0.41	1.63	
1510	/	200	5.37	0	0.16	11.51	522	5.95	59.2	0.40	0.78	
	/											→ Stable
	/											
	/											
	/											

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2

Prepared by:
Reviewed by:

Date : 11/5/13 Page 1 of 1 **Well ID :** MW-115A
Field Personnel J. Olkowski Purging Start Time : 10:05
Well Depth as installed (ft.): 91 Measured Well Depth (ft.): 91.55
Screen Length in ft. 5 Screen Depth in ft. 86-91 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 9.33 From: PVC Two Hour Time Limit Reached ? (Circle) Yes (No)
Pump/Tubing Intake set (ft.): 88.5 From: tubing in place Total Volume Purged, Including Drawdown (gallons): 3
Sample Designation MW-115A Time at Purge Completion: 12:53
Sample Time 1150 Signature: [signature]
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number 600 XL YSI; 01100360 AP Turbidity meter model and serial number Hach 2100Q 13050027758
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) PUPI collected; PID screen 0 ppm

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1015		100	10.47	1.44	1.44	12.33	10285	5.89	-14.4	0.92	11.5	
1020		100	10.51	0.04	1.48	12.33	10285	5.89	-14.4	0.92	6.45	pumping lowered to ~~70~~ 60 (SMO) L/min
1030		60	10.51	0	1.48	12.38	11642	6.29	-35.0	0.70	4.43	due to drawdown
1040		60	10.58	0.07	1.55	12.50	12191	6.46	-38.1	0.56	4.46	
1050		60	10.58	0	1.55	12.41	11825	6.38	-38.4	0.66	3.27	
1100		60	10.56	-0.02	1.53	12.46	11904	6.41	-39.4	0.61	2.69	
1110		60	10.57	0.01	1.54	12.47	11903	6.42	-40.7	0.63	5.06	
1120		60	10.57	0	1.54	12.45	11862	6.42	-42.8	0.63	3.82	
1130		60	10.57	0	1.54	12.48	11841	6.43	-40.7	0.64	2.85	
1140		60	10.58	0.01	1.55	12.55	11802	6.42	-39.3	0.66	2.52	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : November 5, 2013 Page 1 of 2 **Well ID :** MW-115B
Field Personnel Ayan Majmudar Purging Start Time : 10:10 AM
Well Depth as installed (ft.): 45.88 Measured Well Depth (ft.):
Screen Length in ft. 5 Screen Depth in ft. 43.5 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 10.95 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 46 From: Total Volume Purged, Including Drawdown (gallons): 3.75
Sample Designation Time at Purge Completion: 12:30 PM
Sample Time 12:00 PM Signature: Ayan Majmudar
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri Pump
Multimeter model and serial number YSI 600 XL Turbidity meter model and serial number HACH 2100Q
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)
PID Screening is zero

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1015		150	12.02	1.07	1.07	–	–	–	–	–	–	Establishing flow rate
1020		150	12.16	0.14	1.21	–	–	–	–	–	–	Establishing flow rate
1025		100	12.18	0.02	1.23	–	–	–	–	–	–	Establishing flow rate
1030		100	12.21	0.03	1.26	12.83	7380	5.98	-42.0	0.46	++++	Turbidity overrange
1037		100	12.28	0.07	1.33	12.77	7336	6.00	-46.6	0.34	++++	Turbidity overrange
1042		125	12.32	0.04	1.37	12.75	7326	6.00	-42.4	0.27	####	Detector signal too low
1048		150	12.34	0.02	1.39	12.64	7327	6.00	-39.7	0.25	####	Detector signal too low
1053		150	12.35	0.01	1.40	12.79	7293	6.00	-40.0	0.23	####	Detector signal too low
1100		100	12.40	0.05	1.45	12.60	7045	6.00	-35.5	0.22	80.2	Lifted tubing up
1105		125	12.37	-0.03	1.42	12.35	7184	5.98	-27.7	0.22	61.3	
1110		100	12.37	0.00	1.42	12.46	7268	6.00	-28.1	0.22	64.2	
1115		100	12.36	-0.01	1.41	12.48	7280	6.01	-25.2	0.23	48.8	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : _____ Page 2 of 2 **Well ID :** MW-115B
Field Personnel _____ Purging Start Time : _____
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1120		125	12.38	0.02	1.43	12.54	7292	6.01	-22.7	0.23	48.8	
1125		125	12.41	0.03	1.46	12.54	7284	6.01	-22.8	0.24	25.4	
1130		150	12.45	0.04	1.50	12.53	7285	6.01	-23.1	0.27	24.5	
1135		150	12.49	0.02	1.52	12.56	7276	6.01	-21.6	0.39	19.4	
1140		150	12.47	0.00	1.52	12.53	7308	6.01	-20.8	0.31	16.0	
1145		150	12.46	-0.01	1.51	12.54	7308	6.01	-19.4	0.34	12.7	
1150		125	12.46	0.00	1.51	12.57	7315	6.01	-18.7	0.27	14.0	
1155		150	12.48	0.02	1.53	12.54	7313	6.02	-17.3	0.31	12.8	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2

Prepared by: Josh Stewart
Reviewed by:

Date : 11-4-13 Page 1 of 1 **Well ID :** RMW-116A
Field Personnel J. Stewart Purging Start Time : 1100
Well Depth as installed (ft.): Measured Well Depth (ft.): 38.90
Screen Length in ft. Screen Depth in ft. Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 5.39 From: Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): From: Total Volume Purged, Including Drawdown (gallons): 6
Sample Designation Time at Purge Completion: 1235
Sample Time 1335 on 11/6 Signature: Josh
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri Pump
Multimeter model and serial number YSI 600XL 01D0036A Turbidity meter model and serial number HACH 2100Q 13080C027787
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) Full Drawdown to purge well Dry with collect sample after recharge

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1105		100	6.51	1.12	1.12							Adjust Flow
1110		100	7.07	0.56	1.68							Fill Cell
1115		100	7.80	0.73	2.41	12.43	240	7.44	212.6	4.92	0.40	
1120		100	8.73	0.93	3.34	12.53	238	7.52	175.5	4.94	0.48	
1125		100	9.67	0.94	4.28	12.57	237	7.58	157.6	4.91	0.42	
1130		100	10.30	0.63	4.91	12.41	238	7.61	146.1	4.89	0.39	
1135		100	11.15	0.85	5.76	12.29	239	7.64	133.1	4.99	0.37	
1140		100	11.98	0.83	6.59	12.46	238	7.67	123.0	4.97	0.35	
1145		100	12.75	0.77	7.36	12.31	238	7.68	115.9	4.98	0.41	
1150		100	13.93	1.18	8.54	12.21	238	7.70	113.4	5.00	0.40	
1155		100	14.62	0.69	9.23	12.14	238	7.70	109.5	5.02	0.39	
1200		Begin	Purging		well	Dry						

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

31.55 @ 14:28 11/5/13
31.21 @ 13:35 11/6/13

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : November 4, 2013 Page 1 of 2 **Well ID :** MW-201
Field Personnel Ayan Majmudar Purging Start Time : 10:48 AM
Well Depth as installed (ft.): 25 Measured Well Depth (ft.):
Screen Length in ft. 5 Screen Depth in ft. 20 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 14.24 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 22.5 From: Total Volume Purged, Including Drawdown (gallons): 4.0
Sample Designation Time at Purge Completion: 12:22 PM
Sample Time 12:00 PM Signature: Ayan Majmudar
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri pump
Multimeter model and serial number YSI 600 XL Turbidity meter model and serial number HACH 2100Q
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1050		150	14.25	0.01	0.01	–	–	–	–	–	–	Establishing flow rate
1055		175	14.26	0.01	0.02	–	–	–	–	–	–	Establishing flow rate
1100		150	14.26	0.00	0.02	15.14	1333	5.71	40.6	0.54	9.21	
1105		175	14.26	0.00	0.02	15.18	1316	5.68	61.9	0.49	12.3	
1110		175	14.26	0.00	0.02	15.12	1311	5.67	72.8	0.46	9.56	
1115		175	14.26	0.00	0.02	15.06	1305	5.66	80.8	0.43	9.71	
1120		175	14.26	0.00	0.02	15.37	1299	5.65	89.0	0.42	8.78	
1125		200	14.26	0.00	0.02	15.40	1298	5.64	96.6	0.41	10.9	
1130		175	14.26	0.00	0.02	15.53	1296	5.62	105.5	0.42	9.58	
1135		200	14.26	0.00	0.02	15.62	1295	5.62	109.9	0.43	10.6	
1140		200	14.26	0.00	0.02	15.74	1292	5.61	114.6	0.43	9.05	
1145		200	14.26	0.00	0.02	15.55	1286	5.59	118.2	0.42	7.50	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

See sheet 1

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : _____ Page 2 of 2 **Well ID :** 201
Field Personnel _____ Purging Start Time : _____
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1150		200	14.26	0.00	0.02	15.63	1288	5.59	122.4	0.44	7.39	
1155		200	14.26	0.00	0.02	15.83	1283	5.59	124.5	0.43	6.66	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/14/13 Page 1 of 2 **Well ID :** MW-202
Field Personnel M Cuccio, M Cay, J. Olkowski Purging Start Time : 933 am
Well Depth as installed (ft.): 28.08 25 Measured Well Depth (ft.): 28.08
Screen Length in ft. 5 Screen Depth in ft. 25 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 11.44 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 22.5 From: tubing in place Total Volume Purged, Including Drawdown (gallons): 3.5
Sample Designation MW-202 Time at Purge Completion: 11:45
Sample Time 11:20 Signature: Jerome Olkowski
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peristaltic
Multimeter model and serial number YSI 600XLM; 0110851 Turbidity meter model and serial number 13080C027790 Hach 2100Q
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
9:37		100	12.47	.81	0.81	13.44	2501	5.52	130.6	1.31	54.1	
9:42		100	12.58	0.11	0.92	13.21	2484	5.51	154.0	.86	94.7	
9:50		100	12.64	0.06	0.98	13.48	2476	5.48	165.7	0.72	62.8	
9:55		100	12.66	0.04	1.02	13.37	2480	5.48	180.2	0.70	54.2	
10:00		100	12.68	0	1.02	13.25	2480	5.47	180.4	0.60	39.2	
10:05		100	12.70	0.02	1.04	13.29	2472	5.46	188.4	0.56	21.6	
10:10		100	12.70	0	1.04	13.57	2474	5.46	190.6	0.54	15.3	
10:15		100	12.73	.03	1.07	13.41	2471	5.45	190.4	0.49	11.3	
10:20		100	12.74	0.01	1.08	13.34	2473	5.45	192.2	0.47	7.99	
10:25		100	12.74	0	1.08	13.35	2469	5.45	194.0	0.46	6.42	
10:30		100	12.75	0.01	1.09	13.39	2475	5.44	190.4	0.44	8.44	
10:35		100	12.77	0.02	1.11	13.58	2458	5.44	189.2	0.41	3.97	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/14/13 Page 2 of 2 **Well ID :** MW-202
Field Personnel M. Carbonneau J. Gaskill Purging Start Time : 933
Well Depth as installed (ft.): 25 Measured Well Depth (ft.): 25.05
Screen Length in ft. 5 Screen Depth in ft. 20-25 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 11.66 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 22.5 From: tubing in place Total Volume Purged, Including Drawdown (gallons): 3.5
Sample Designation MW-202 Time at Purge Completion: 11:45
Sample Time 11:20 Signature: [signature]
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number YSI 6600 XLM YSI 01C9S1AF Turbidity meter model and serial number 13080C027790 Hach 2100Q
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1040		100	12.77	0	1.11	13.30	2471	5.41	191.3	0.40	2.50	
1045		100	12.78	0.01	1.12	13.50	2455	5.44	190.8	0.39	2.41	
1050		100	12.79	0.01	1.13	13.86	2455	5.43	193.1	0.39	3.19	
1055		100	12.80	0.01	1.14	14.01	2460	5.42	193.1	0.39	2.16	
1100		100	12.81	0.01	1.15	13.96	2454	5.41	193.5	0.38	2.40	
1105		100	12.82	0.01	1.16	14.01	2449	5.40	194.0	0.38	1.79	
1115		100	12.33	0.01	1.12	14.19	2450	5.38	193.8	0.37	1.82	

JMO

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/4/13 Page 1 of 2
Field Personnel A. Arsenault
Well Depth as installed (ft.): 78.7
Screen Length in ft. 5 Screen Depth in ft. 78.7
Depth to GW (ft.): 6.73 From: PVC
Pump/Tubing Intake set (ft.): 76.2 From: pvc
Sample Designation
Sample Time 1143

Well ID : MW-203A
Purging Start Time : 943
Measured Well Depth (ft.): 78.41
Parameter Stabilization: (Circle) Yes (No)
Two Hour Time Limit Reached ? (Circle) Yes / (No)
Total Volume Purged, Including Drawdown (gallons): 3.75
Time at Purge Completion: 1210
Signature:

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Ferri
Multimeter model and serial number YSI 600XLM 01C0134AA Turbidity meter model and serial number HACH 2100Q 1109600122226
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
945		150	7.85									Fill flow through cell
948		150	8.28			11.08	5854	6.89	-173.5	2.06		Reduce rate to 125 ml/min
953		125	9.10	0.82	0.82	11.29	5646	7.14	-188.4	0.50		Purge water cloudy/tan/odor
958		125	9.79	0.69	1.51	12.12	5507	7.23	-197.7	0.39		Reduce rate to 100 ml/min
1003		100	10.35	0.56	2.07	11.55	5482	7.27	-201.6	0.31		
1008		100	10.75	0.40	2.47	11.86	5587	7.13	-179.9	0.74	6.85	
1013		100	11.30	0.65	3.12	11.97	5444	7.22	-192.7	0.37	5.13	
1018		100	11.64	0.34	3.46	11.89	5458	7.26	-198.8	0.31	6.22	
1023		100	12.03	0.39	3.85	11.90	5567	7.30	-203.6	0.23	3.93	
1028		100	12.46	0.43	4.28	12.31	5616	7.33	-212.6	0.15	3.64	
1033		100	12.80	0.34	4.62	11.98	5860	7.36	-215.0	0.13	3.22	Crank up pump to reduce head
1038		100	13.53	0.73	5.35	12.15	5790	7.40	-223.6	0.11	3.15	and attempt to stabilize DTW

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/4/13 Page 2 of 2 **Well ID :** MW-203A
Field Personnel A. Arsenault Purging Start Time : 943
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ ~~Two Hour Time Limit Reached ? (Circle) Yes / No~~
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

SEE ATTACHED

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1043		100	13.90	0.37	5.72	11.49	6613	7.38	-222.9	0.09	4.30	
1048		100	14.22	0.32	6.04	11.87	6878	7.41	-226.3	0.08	4.11	
1053		100	14.50	0.28	6.32	11.66	7694	7.42	-229.0	0.08	4.08	
1058		100	14.71	0.21	6.53	12.31	9097	7.42	-232.6	0.07	5.03	
1103		100	14.92	0.21	6.74	12.11	11696	7.43	-239.1	0.07	4.72	
1108		100	15.09	0.17	6.91	11.94	13563	7.43	-244.9	0.07	5.02	
1113		100	15.28	0.19	7.10	12.60	14264	7.44	-250.9	0.06	4.36	
1118		100	15.43	0.15	7.25	12.17	15800	7.44	-257.6	0.07	5.37	
1123		100	15.58	0.15	7.40	12.35	15784	7.46	-264.8	0.06	5.75	
1128		100	15.79	0.21	7.61	12.50	16340	7.47	-271.7	0.06	8.54	
1135		100	15.89	0.10	7.71	12.56	16771	7.46	-274.8	0.06	9.11	
1140		100	16.02	0.13	7.84	12.14	17094	7.48	-278.7	0.07	9.83	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

1143 SAMPLE

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/4/13 Page 1 of 2 **Well ID :** MW-203B
Field Personnel S. McDowell Purging Start Time : 0955
Well Depth as installed (ft.): ~~31.6~~ SM 32 Measured Well Depth (ft.): 31.6
Screen Length in ft. 5 Screen Depth in ft. 27 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 8.67 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 27.5 From: PVC Total Volume Purged, Including Drawdown (gallons): 5
Sample Designation Time at Purge Completion: 1210
Sample Time 1152 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600XL 04C266AD Turbidity meter model and serial number HACH 2100Q S/N 13060C026015
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
0 1000		150	9.21	–	–	12.54	2046	6.36	-76.6	.47	87.6	
1005		150	9.21	–	–	13.10	2045	6.35	-63.5	.48	164	
1010		150	9.21	–	–	12.77	2003	6.33	-60.7	.32	177	
1015		150	9.21	–	–	12.68	1990	6.31	-59.0	.30	148	
1020		150	9.21	–	–	12.87	1978	6.31	-57.5	.27	121	
1025		150	9.21	–	–	12.59	1970	6.30	-56.4	.25	82.9	
1030		150	9.22	.01	.01	12.53	1959	6.30	-54.9	.23	54.9	
1035		150	9.23	.01	.02	12.59	1952	6.30	-53.4	.22	39.9	
1040		150	9.24	.01	.03	12.82	1943	6.29	-52.8	.22	29.6	
1045		150	9.26	.02	.05	12.67	1944	6.29	-53.1	.22	20.5	
1050		150	9.27	.01	.06	12.78	1939	6.30	-52.9	.20	20	
1055		150	9.28	.01	.07	12.97	1938	6.30	-52.7	.21	14.5	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/4/13 Page 2 of 2 **Well ID :** MW-203B
Field Personnel S. McDowell Purging Start Time : 0955
Well Depth as installed (ft.): 32 Measured Well Depth (ft.): 31.6
Screen Length in ft. 5 Screen Depth in ft. 27 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 8.67 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 29.5 From: PVC Total Volume Purged, Including Drawdown (gallons): 5
Sample Designation Time at Purge Completion: 1210
Sample Time 1152 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments)
Multimeter model and serial number YSI 600XL 04C2866 AD Turbidity meter model and serial number HACH 2100Q SN 13060C026015
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1100		150	9.29	0.01	.08	13.04	1931	6.30	-52.4	0.22	12.9	
1105		150	9.30	0.01	.09	13.22	1925	6.30	-51.9	0.22	13.2	
1110		150	9.30	0.01	.10	12.96	1926	6.29	-51.4	0.21	10.5	
1115		150	9.31	0.01	.11	13.10	1920	6.30	-51.3	0.22	7.28	
1120		150	9.32	0.01	.12	13.17	1918	6.29	-50.4	0.22	8.65	
1125		150	9.33	0.01	.13	12.82	1921	6.29	-49.3	0.21	5.82	
1130		150	9.33	0.00	.13	13.04	1917	6.30	-49.3	0.21	5.31	
1135		150	9.34	0.01	.14	12.97	1919	6.29	-49.4	0.22	6.12	
1140		150	9.34	0.00	.14	13.24	1919	6.30	-49.0	0.22	4.97	
1145		150	9.35	0.01	.15	13.05	1913	6.30	-48.0	0.23	3.96	
1150		150	9.36	0.01	.16	13.08	1909	6.29	-47.4	0.23	3.15	
—		—	—	—	—	—	—	—	—	—	—	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : November 6, 2013 Page 1 of 1 **Well ID :** ~~503-B~~ MW-204A
Field Personnel Ayan Mazumder Purging Start Time : 1315
Well Depth as installed (ft.): 52.6 Measured Well Depth (ft.): 49.17
Screen Length in ft. 5.0 Screen Depth in ft. 47.6 Parameter Stabilization: (Circle) (Yes) / No
Depth to GW (ft.): ~~30.98~~ 9.08 From: SS Two Hour Time Limit Reached ? (Circle) Yes / (No)
Pump/Tubing Intake set (ft.): From: tubing in place Total Volume Purged, Including Drawdown (gallons): 2.0
Sample Designation MW-204A Time at Purge Completion: 1420
Sample Time 1410 Signature: Ayan Mazumder
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peristaltic Pump
Multimeter model and serial number YSI 600 XL 01D0036AA Turbidity meter model and serial number HACH 21000 130800029990
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1320	/	80	9.61	0.53	0.53	17.53	3205	5.35	111.3	0.86	187	
1325	/	80	9.74	0.13	0.66	17.57	3226	5.29	115.0	0.75	216	
1330	/	90	9.77	0.03	0.69	17.71	3230	5.25	114.8	0.65	190	
1335	/	100	9.80	0.03	0.72	17.75	3204	5.29	106.9	0.61	189	
1340	/	100	9.82	0.02	0.74	17.74	3228	5.25	113.8	0.55	199	
1345	/	100	9.81	-0.01	0.73	17.51	3230	5.26	109.8	0.62	187	
1350	/	100	9.86	0.05	0.78	17.40	3229	5.29	111.9	0.50	263	
1355	/	100	9.86	0.00	0.78	17.11	3268	5.25	111.7	0.46	253	
1400	/	100	9.86	0.00	0.78	17.13	3279	5.26	110.8	0.46	233	
1405	/	100	9.86	0.00	0.78	17.17	3282	5.25	110.6	0.45	235	
	/											
	/											

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/5/13 Page 1 of 2 **Well ID :** 302
Field Personnel M. Carbonneau Purging Start Time : 9:48
Well Depth as installed (ft.): 25 Measured Well Depth (ft.): 24.26
Screen Length in ft. 5 Screen Depth in ft. 20-25' Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 11.51 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): as set From: Total Volume Purged, Including Drawdown (gallons): 2.5 gallons
Sample Designation Time at Purge Completion: 11:21 / finished sampling at
Sample Time 11:21 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number 600 XLM YSI Turbidity meter model and serial number Hach 2100Q 13060C026015
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) 1010851AF

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
950	/	125	12.35	.84	.84	13.88	3502	4.49	175.9	7.00		
955	/	100	12.98	.63	1.47	13.78	3383	4.49	207.2	5.54	18	
1000	/	80	13.30	.32	1.79	13.81	3322	4.53	222.7	4.42	13.9	
1005	/	90	13.44	.14	1.93	13.67	3270	4.56	231.7	3.82	10.5	
1010	/	80	13.58	.14	2.07	13.64	3258	4.60	235.5	3.09	29.7	
1015	/	80	13.53	.03	2.1	13.82	3231	4.61	246.2	2.66	12.6	
1020	/	80	13.57	.04	2.14	13.79	3243	4.61	243.5	2.23	9.60	
1025	/	80	13.64	.07	2.21	13.83	3276	4.59	241.2	1.85	4.12	
1030	/	80	13.68	.04	2.25	13.73	3300	4.61	242.4	1.60	3.87	
10:35	/	80	13.71	.03	2.28	13.73	3334	4.64	243.2	1.35	4.08	
10:40	/	75	13.71	0	2.28	13.62	3358	4.62	243.1	1.24	2.54	
10:45	/	75	13.71	0	2.28	13.69	3389	4.42	244.1	1.10	2.30	

All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

14.74
13.54
3288

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/15/13 Page 2 of 2 **Well ID :** 302
Field Personnel M. Carbonneau
Well Depth as installed (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____
Depth to GW (ft.): _____ From: _____
Pump/Tubing Intake set (ft.): _____ From: _____
Sample Designation _____
Sample Time _____
Purging Start Time : _____
Measured Well Depth (ft.): _____
Parameter Stabilization: (Circle) Yes / No
Two Hour Time Limit Reached ? (Circle) Yes / No
Total Volume Purged, Including Drawdown (gallons): _____
Time at Purge Completion: _____
Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1050		80	13.76	.05	2.33	13.64	3415	4.62	243.0	0.98	2.24	
1055		80	13.80	.04	2.34	13.73	3431	4.62	242.0	0.89	2.07	
1100		80	13.85	.05	2.39	13.72	3444	4.62	241.5	0.81	2.09	
1105		80	13.86	.01	2.40	13.69	3458	4.63	240.6	0.76	1.96	
1110		80	13.86	0	2.40	13.63	3475	4.60	240.7	0.71	1.38	
1115		80	13.86	0	2.40	13.68	3485	4.63	240.6	0.67	1.55	
1120		80	13.86	0	2.40	13.68	3496	4.63	240.2	.65	1.65	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : November 5, 2013 Page 1 of 1 **Well ID :** MW-304A
Field Personnel Ayan Majmudar Purging Start Time : 1:40 PM
Well Depth as installed (ft.): Measured Well Depth (ft.):
Screen Length in ft. Screen Depth in ft. Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 4.32 From: Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): From: Total Volume Purged, Including Drawdown (gallons): 2.25
Sample Designation Time at Purge Completion: 3:15 PM
Sample Time 2:45 PM Signature: Ayan Majmudar
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peristaltic Pump
Multimeter model and serial number YSI 600 XL Turbidity meter model and serial number HACH 2100Q
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)
PID Screening is zero

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1345		100	4.45	0.08	0.08	–	–	–	–	–	–	Establishing flow rate
1350		100	4.45	0.00	0.08	–	–	–	–	–	–	Establishing flow rate
1355		100	4.46	0.01	0.09	11.60	8728	6.34	-39.7	0.58	52.5	
1402		150	4.48	0.02	0.11	11.78	8685	6.44	-82.5	0.15	62.2	
1407		100	4.48	0.00	0.11	11.80	8760	6.43	-92.4	0.12	129	
1412		100	4.48	0.00	0.11	11.76	8873	6.43	-103.2	0.11	82.6	
1417		100	4.49	0.01	0.12	11.78	9012	6.55	-129.0	0.10	52.8	
1422		100	4.49	0.00	0.12	11.79	9042	6.58	-135.5	0.10	41.5	
1427		100	4.49	0.00	0.12	11.84	9043	6.59	-138.7	0.11	41.9	
1432		150	4.50	0.01	0.13	11.77	9048	6.59	-142.5	0.10	40.9	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/5/13 Page 1 of 1 **Well ID :** MW-304B
Field Personnel J Olkowski Purging Start Time : ~~1400~~ 1355
Well Depth as installed (ft.): 30.7 Measured Well Depth (ft.): 30.15
Screen Length in ft. 5 Screen Depth in ft. 25.7-30.7 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 4.40 From: Two Hour Time Limit Reached ? (Circle) Yes (No)
Pump/Tubing Intake set (ft.): 25.2 From: tubing in place Total Volume Purged, Including Drawdown (gallons): 3
Sample Designation MW-304B Time at Purge Completion: 1530
Sample Time 1510 Signature: Jessica Alcorso
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number 600XL YSI 01D0036017 Turbidity meter model and serial number Hach 2100Q 13080C027787
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) PID screen 00 ppm

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1405	/	~~4.91~~ 150	4.91	0.51	0.51	12.01	4310	6.74	-14.2	1.89	9.76	
1410	/	150	4.91	0	0.51	12.08	4247	6.72	-19.0	1.83	5.32	
1415	/	150	4.91	0	0.51	12.18	4178	6.67	-18.5	1.78	3.47	
1420	/	150	4.91	0	0.51	12.19	4091	6.64	-19.2	1.42	2.34	
1425	/	150	4.91	0	0.51	12.22	4016	6.62	-16.3	1.27	2.35	
1430	/	150	4.91	0	0.51	12.22	3946	6.58	-15.4	1.12	1.82	
1435	/	150	4.91	0	0.51	12.25	3885	6.57	-15.1	0.73	1.56	
1440	/	150	4.92	0.01	0.52	12.26	3841	6.56	-13.6	0.56	1.29	
1445	/	150	4.92	0	0.52	12.25	3820	6.54	-12.6	0.55	1.56	
1455	/	150	4.95	0.03	0.55	12.28	3758	6.52	-11.6	0.49	1.10	inconsistency in battery speed pump
1500	/	150	4.93	-0.02	0.53	12.21	3751	6.51	-12.2	0.50	1.42	up to 200 ml/min. Readjusted to 150 ml/min
1505	/	150	4.93	0	0.53	12.24	3719	6.50	-11.4	0.48	1.50	to prevent drawdown

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2

Prepared by:
Reviewed by:

Date : 11/6/13 Page 1 of
Field Personnel J. Olkowski
Well Depth as installed (ft.): 54
Screen Length in ft. 5 Screen Depth in ft. 49-54
Depth to GW (ft.): 7.77 From: top of steel
Pump/Tubing Intake set (ft.): 51.5 From: tubing in place
Sample Designation RMW-305A
Sample Time 1220

Well ID : RMW-305A
Purging Start Time : 1055
Measured Well Depth (ft.): 54.64
Parameter Stabilization: (Circle) Yes / No
Two Hour Time Limit Reached ? (Circle) Yes / No
Total Volume Purged, Including Drawdown (gallons): 4
Time at Purge Completion: 1240
Signature: Jessica Olkowski

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number YSI 600XL 01D0036AA Turbidity meter model and serial number Hach 2100Q 13030C027787
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1100	/	150	8.05	0.28	0.28	14.30	1147	6.87	-117.2	0.79	838	
1105	/	150	8.09	0.04	0.32	14.22	1182	6.92	-134.7	0.62	625	
1110	/	150	8.11	0.02	0.34	14.25	1163	~~9.30~~ 6.72	-108.0	0.64	74.9	
1115	/	150	8.11	0	0.34	14.26	1134	6.46	-65.6	0.60	33.8	
1120	/	150	8.11	0	0.34	14.24	1138	6.40	-53.8	0.57	21.4	
1125	/	150	8.11	0	0.34	14.27	1136	6.37	-49.7	0.54	23.4	
1130	/	150	8.11	0	0.34	14.30	1133	6.35	-47.7	0.50	11.8	
1135	/	150	8.12	0.01	0.35	14.21	1135	6.33	-44.0	0.43	9.81	
1140	/	150	8.13	0.01	0.36	14.20	1126	6.30	-41.1	0.43	10.9	
1145	/	150	8.14	0.01	0.37	14.19	1118	6.25	-37.9	0.43	9.67	
1150	/	150	8.14	0	0.37	14.19	1096	6.17	-30.1	0.41	6.79	
1155	/	150	8.14	0	0.37	14.16	1060	6.07	-18.9	0.41	7.04	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/6/13 Page 2 of
Field Personnel J. Olkaski
Well Depth as installed (ft.): 54
Screen Length in ft. 5 Screen Depth in ft. 49-54
Depth to GW (ft.): 7.77 From: top of steel
Pump/Tubing Intake set (ft.): 51.5 From: tubing in place
Sample Designation RMW-305A
Sample Time 1220

Well ID : ~~RMW~~ RMW-305A
Purging Start Time : 1055
Measured Well Depth (ft.): 54.64
Parameter Stabilization: (Circle) Yes / No
Two Hour Time Limit Reached ? (Circle) Yes / No
Total Volume Purged, Including Drawdown (gallons): 4
Time at Purge Completion: 1240
Signature: Jessica Olkaski

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number YSI 600 XL 01D0036AA Turbidity meter model and serial number Hach 2100Q 13080C027787
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1200		150	8.15	0.01	0.38	14.04	1031	5.98	-8.1	0.39	4.82	
1205		150	8.16	0.01	0.39	13.97	996	5.89	3.0	0.39	4.43	
1210		150	8.17	0.01	0.40	14.0	981	5.83	9.1	0.38	3.93	
1215		150	8.18	0.01	0.41	13.87	971	5.80	12.4	0.36	3.25	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : November 6, 2013 Page 1 of
Well ID : MW-305B
Field Personnel Ayan Majmudar
Purging Start Time : 11:00 AM
Well Depth as installed (ft.): 30.9
Measured Well Depth (ft.): 29.89
Screen Length in ft. 5 Screen Depth in ft. 25.9
Parameter Stabilization: (Circle) (Yes) / No
Depth to GW (ft.): 9.89 From: PVC
Two Hour Time Limit Reached ? (Circle) Yes / (No)
Pump/Tubing Intake set (ft.): 28.2 From:
Total Volume Purged, Including Drawdown (gallons): 2.25
Sample Designation
Time at Purge Completion: 12:45 PM
Sample Time 12:30 PM
Signature: Ayan Majmudar
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri Pump
Multimeter model and serial number YSI 600 XL Turbidity meter model and serial number HACH 2100Q
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)
Ran into an issue where the pump did not purge water initially.

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1135		150	9.86	0.01	0.01	–	–	–	–	–	–	Establishing flow rate
1140		150	9.86	0.00	0.01	–	–	–	–	–	–	Establishing flow rate
1145		150	9.86	0.00	0.01	14.59	212	5.21	238.8	0.97	2.89	
1150		150	9.86	0.00	0.01	14.40	206	4.83	306.1	0.42	1.36	
1155		150	9.86	0.00	0.01	14.44	206	4.80	320.6	0.40	1.29	
1200		150	9.86	0.00	0.01	14.36	206	4.77	334.9	0.35	1.18	
1205		150	9.86	0.00	0.01	14.37	205	4.76	343.8	0.33	0.69	
1210		150	9.86	0.00	0.01	14.35	205	4.76	351.3	0.33	0.53	
1215		150	9.86	0.00	0.01	14.36	205	4.76	355.7	0.34	0.38	
1220		150	9.86	0.00	0.01	14.36	205	4.76	358.4	0.34	0.31	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/15 Page 1 of 2 **Well ID :** MW-401
Field Personnel M Civbonneau Purging Start Time : 1502
Well Depth as installed (ft.): 98 Measured Well Depth (ft.): 97.82
Screen Length in ft. 15 Screen Depth in ft. 83-98' Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 6.76 From: N/C Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): designated From: set as Total Volume Purged, Including Drawdown (gallons): 23
Sample Designation Time at Purge Completion: 428
Sample Time 430 Signature: [illegible]
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number Leo Lum YSI 011085 Turbidity meter model and serial number 2100Q 13060C026015
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) PID reading: PID reading breathing zone: 0.0 ppm
well: 5 ppm

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1510	/					12.53	2672	7.59	-46.0	0.40		
1515	/	100	8.97	2.21	2.21	12.95	2658	7.62	-52.9	0.33	7.75	
1520	/	100	9.28	.31	2.52	12.98	2666	7.65	-58.9	0.32	5.12	
1525	/	80	9.47	0.19	2.71	13.01	2669	7.66	-62.0	0.30	3.92	
1530	/	80	9.65	0.18	2.89	13.00	2681	7.66	-66.3	0.29	2.65	
1535	/	80	9.95	.30	3.19	12.96	2763	7.60	-70	0.27	3.32	
1540	/	80	10.06	.11	3.30	13.05	2859	7.52	-85.5	.25	2.58	
1545	/	80	10.33	.27	3.57	12.98	2888	7.49	-85.1	0.24	2.24	
1550	/	80	10.41	.08	3.65	12.93	2936	7.45	-80.0	0.24	1.22	
1555	/	90	10.61	.20	3.85	12.85	2947	7.43	-78.8	0.24	2.36	
1600	/	90	10.69	.08	3.93	12.75	2964	7.41	-75.8	0.24	1.62	
1605	/	90	10.85	.16	4.09	12.69	2959	7.41	-73.0	0.24	2.42	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003	Attachment B, Page 1 of 1
Date: Mar. 2010	Rev.: 2
Prepared by:	S. Bonis
Approved by:	M. Summerlin

Date : 11/5/13 Page 2 of 2 **Well ID :** MW-401

Field Personnel M. Carbonneau Purging Start Time : _____

Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____

Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____

Sample Designation _____ Time at Purge Completion: _____

Sample Time _____ Signature: _____

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____

Multimeter model and serial number _____ Turbidity meter model and serial number _____

Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1610		90	11.0	.15	4.24	12.67	2969	7.40	-67.8	0.23	1.99	
1615		90	11.10	.10	4.34	12.72	2981	7.39	-64.1	0.23	1.37	
1620		90	11.18	.08	4.42	12.63	2995	7.37	-62.2	0.23	1.48	
1625		100	11.25	.07	4.49	12.55	3009	7.36	-58.1	0.24	1.62	→
												done purging
												sample at 16:30 pm

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by:
Reviewed by:

Date : 11/7/13 Page 1 of 1 **Well ID :** MW-402
Field Personnel M. Carbonneau Purging Start Time : 13:24
Well Depth as installed (ft.): 108.5 Measured Well Depth (ft.): 77.3 / 76.35 from PVC
Screen Length in ft. 15 Screen Depth in ft. 93.5-108.5 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 27.60 / w/ pump 26.91 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 75 From: PVC Total Volume Purged, Including Drawdown (gallons): 1
Sample Designation Time at Purge Completion: 1415
Sample Time 1420 Signature: Michelle Carlson
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Bladder pump
Multimeter model and serial number YSI 600 XLM 01108514F Turbidity meter model and serial number Hach 2100Q 11090000122 20
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1330	10 / 5	50	27.92	0.32	0.32	11.85	1981	6.78	120.9	5.43	25.3	
1340	10 / 5	↓	28.22									
1345	10 / 5		28.24			11.89	1984	6.77	88.5	3.01	21.1	
1350	10 / 5		28.33			11.80	1983	6.77	87.1	2.63	15.8	
1355	12 / 3		28.33			11.77	1983	6.78	85.8	2.23	17.3	
1400	↓		28.33			11.77	1980	6.78	85.0	2.02	16.1	
1405			28.35			11.74	1981	6.78	85.1	1.85	15.0	
1410			28.35			11.71	1980	6.79	84.3	1.77	16.2	
1415			28.35			11.68	1980	6.79	84.1	1.68	16.3	Stable
						Sample		cut	1420			

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: Josh Stewart
Reviewed by:

Date : 11-4-13 Page 1 of 2 **Well ID :** MW-403A
Field Personnel J. Stewart Purging Start Time : 1330
Well Depth as installed (ft.): Measured Well Depth (ft.):
Screen Length in ft. Screen Depth in ft. Parameter Stabilization: (Circle) Yes No
Depth to GW (ft.): 9.02 From: Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): From: Total Volume Purged, Including Drawdown (gallons):
Sample Designation Time at Purge Completion:
Sample Time 1455 Signature: Josh S
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri Pump
Multimeter model and serial number YSI 600XL 01D0036AA Turbidity meter model and serial number HACH 2100Q 13080C027787
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1335		100	9.07	0.05	0.05							Adjust Flow
1340		100	9.09	0.02	0.07							Fill Cell
1345		100	9.09	0.00	0.07	11.72	648	6.06	146.8	3.38	0.83	
1350		100	9.09	0.00	0.07	11.74	652	5.79	166.6	3.75	0.96	
1355		100	9.09	0.00	0.07	11.83	653	5.56	190.4	4.05	0.80	
1400		100	9.09	0.00	0.07	11.75	653	5.43	200.3	4.19	0.73	
1405		100	9.09	0.00	0.07	11.73	653	5.39	202.1	4.23	0.69	
1410		100	9.09	0.00	0.07	11.73	653	5.35	204.3	4.29	0.62	
1415		100	9.09	0.00	0.07	11.70	653	5.31	206.0	4.35	0.56	
1420		100	9.09	0.00	0.07	11.64	654	5.26	207.3	4.41	0.59	
1425		100	9.10	0.01	0.08	11.63	654	5.24	207.3	4.46	0.62	
1430		100	9.10	0.00	0.08	11.60	654	5.20	208.5	4.47	0.51	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: _____
Reviewed by: _____

Date : 11-4-11 Page 2 of 2 **Well ID :** MW-403A
Field Personnel _____ Purging Start Time : _____
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. See Pg 1 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1435		100	9.10	0.00	0.08	11.54	655	5.17	210.8	4.54	0.60	
1440		100	9.10	0.00	0.08	11.51	655	5.15	211.4	4.55	0.55	
1445		100	9.10	0.00	0.08	11.48	655	5.12	213.1	4.58	0.52	
1450		100	9.10	0.00	0.08	11.41	656	5.11	214.0	4.59	0.50	
1455					Sample							

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : November 4, 2013 Page 1 of 2 **Well ID :** RMW-405B
Field Personnel Ayan Majmudar Purging Start Time : 1:39 PM
Well Depth as installed (ft.): 19.5 Measured Well Depth (ft.): 19.50
Screen Length in ft. 5 Screen Depth in ft. 14.5 - 19.5 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 9.59 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 19 From: PVC Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: 2:52 PM
Sample Time 14:45 Signature: Ayan Majmudar
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peristaltic Pump
Multimeter model and serial number YSI 600 XL Turbidity meter model and serial number HACH 2100Q
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1340		200	10.61	1.02	1.02	–	–	–	–	–	–	Establishing flow rate
1345		175	11.85	1.16	2.18	–	–	–	–	–	–	Establishing flow rate
1350		175	13.02	1.17	3.35	13.44	777	6.22	61.0	0.50	4.44	
1355		150	14.49	1.47	4.82	13.66	762	6.22	65.0	1.05	6.87	
1400		150	15.62	1.13	5.95	13.69	755	6.26	59.0	2.41	5.11	
1405		150	18.51	0.89	6.84	13.56	756	6.28	55.4	2.61	11.6	
1410		150	17.44	0.93	7.77	13.58	756	6.28	52.3	2.60	6.93	
1415		150	18.44	1.00	8.77	13.58	761	6.28	43.8	2.42	9.21	
1420		–	–	–	–	–	–	–	–	–	–	Adjusting flow rate
1427		50	19.03	0.59	9.36	11.67	798	6.61	-19.7	8.46	20.7	Well seems dry
1432		25	19.03	0.00	9.36	11.13	800	6.62	-22.1	9.06	13.8	
1437		25	19.03	0.00	9.36	10.66	801	6.65	-24.0	9.41	11.6	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

9.58 @ 14:41 11/5
Pull sample

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Low-Flow Field Log

SOP No: SA-003	Attachment B, Page 1 of 1
Date: Mar. 2010	Rev.: 2
Prepared by:	S. Bonis
Approved by:	M. Summerlin

Date : _____ Page 2 of 2 **Well ID :** 463B

Field Personnel _____ Purging Start Time : _____

Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____

Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____

Sample Designation _____ Time at Purge Completion: _____

Sample Time _____ Signature: _____

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____

Multimeter model and serial number _____ Turbidity meter model and serial number _____

Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1442		25	19.09	0.06	9.42	10.45	802	6.68	-26.0	9.67	16.6	
1447		25	19.08	-0.01	9.41	10.27	802	6.90	-29.2	9.69	9.96	
1452		25	19.08	—	—	—	—	—	—	—	—	Well went dry. Sample tomorrow

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/5/13 Page 1 of 2 **Well ID :** 405A
Field Personnel A. Arsenault Purging Start Time : 1128
Well Depth as installed (ft.): 73.5 Measured Well Depth (ft.): 72.97
Screen Length in ft. 5 Screen Depth in ft. 68.5 (bgs) Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 2.08 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 71.0 From: PVC Total Volume Purged, Including Drawdown (gallons): 2.0
Sample Designation Time at Purge Completion: 1305
Sample Time 1230 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Perm.
Multimeter model and serial number YSI 600 XLM 01C0134AA Turbidity meter model and serial number HACH 2100Q 11090C012226
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1130		150	2.82									Fill flow through cell
1133		150	3.33			14.01	1690	7.91	-157.4	0.84	8.50	Purge water clear
1138		100	4.21	0.88	0.88	13.98	1693	8.01	-177.2	0.38	16.2	Reduce rate to 100 mL/min
1143		100	4.95	0.74	1.62	14.04	1692	8.06	-182.7	0.32	16.9	
1148		100	5.82	0.87	2.49	13.94	1692	8.10	-186.4	0.90	11.0	
1153		100	6.65	0.82	3.31	13.92	1692	8.10	-187.6	0.58	9.21	Cranked up pump for 2 min to
1158		100	7.81	1.16	4.47	13.52	1690	8.10	-188.1	0.27	14.7	relieve head and attempt to stabilize
1203		100	8.49	0.68	5.15	14.08	1686	8.08	-181.6	0.38	10.4	drawdown
1208		100	9.06	0.57	5.72	14.05	1686	8.08	-179.5	0.29	14.3	
1213		100	9.50	0.44	6.16	14.06	1684	8.06	-176.2	0.35	13.0	
1218		100	10.03	0.53	6.69	13.98	1683	8.06	-173.6	0.32	5.70	
1223		100	10.51	0.48	7.17	13.93	1683	8.04	-169.6	0.36	5.83	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/5/13 Page 2 of 2 **Well ID :** 425A
Field Personnel A. Arnault Purging Start Time : _____
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

ATTACHED

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1228		100	10.96	0.45	7.62	13.84	1680	8.03	-167.7	0.39	5.34	
1230												SAMPLE

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/5/13 Page 1 of 2 **Well ID :** MW-405B
Field Personnel S. McDowell Purging Start Time : 1132
Well Depth as installed (ft.): 45.5 Measured Well Depth (ft.): 45.97
Screen Length in ft. 5 Screen Depth in ft. 40.5-45.5 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 2.8 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 43 From: PVC Total Volume Purged, Including Drawdown (gallons): 4.5
Sample Designation Time at Purge Completion: 1325
Sample Time 1307 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600XL 04C286GAD Turbidity meter model and serial number HACH 2100Q S/N 13080C027790
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1135		150	3.04	–	–	13.56	11587	5.96	-63.9	0.39	Out of range	
1140		150	3.04	0.0	0.0	13.67	11959	5.90	-61.1	0.39	"	
1145		150	3.04	0.0	0.0	13.66	12013	5.89	-58.2	0.38	376	
1150		150	3.04	0.0	0.0	13.53	12044	5.89	-55.8	0.32	125	
1155		150	3.04	0.0	0.0	13.51	12021	5.89	-55.5	0.30	98.3	
1200		150	3.05	0.01	0.01	13.55	12052	5.89	-54.9	0.29	83.5	
1205		150	3.05	0.0	0.01	13.56	12039	5.89	-54.9	0.30	71.3	
1210		150	3.05	0.0	0.01	13.65	12039	5.89	-54.5	0.29	49.8	
1215		150	3.05	0.0	0.01	13.64	12057	5.89	-53.5	0.30	42.4	
1220		150	3.11	0.06	0.07	13.56	12078	5.89	-55.9	0.29	31.9	
1225		150	3.09	(-.02)	0.05	13.53	12093	5.90	-53.9	0.30	25.2	
1230		150	3.07	(-.02)	0.03	13.58	12103	5.89	-53.6	0.31	13.8	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/5/13 Page 2 of 2 **Well ID :** MW-405B
Field Personnel S. McDowell Purging Start Time : 11:32
Well Depth as installed (ft.): 45.5 Measured Well Depth (ft.): 45.97
Screen Length in ft. 5 Screen Depth in ft. 40.5 - 45.5 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 2.8 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 43 From: PVC Total Volume Purged, Including Drawdown (gallons): 4.5
Sample Designation Time at Purge Completion: 13:25
Sample Time 1307 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Air
Multimeter model and serial number YSI 600XL 4C2866 AD Turbidity meter model and serial number HACH 2100Q S/N 13080C027790
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1235		150	3.07	0.0	.03	13.65	12101	5.89	-53.2	0.31	15.9	
1240		150	3.07	0.0	.03	13.56	12109	5.89	-53.0	0.31	16.5	
1245		150	3.07	0.0	.03	13.56	12108	5.89	-52.8	0.31	13.0	
1250		150	3.07	0.0	.03	13.62	12114	5.89	-52.3	0.30	12.6	
1255		150	3.07	0.0	.03	13.60	12109	5.90	-52.6	0.30	9.94	
1300		150	3.07	0.0	.03	13.50	12128	5.90	-56.0	0.28	10.4	
1305		150	3.11	0.04	.07	13.58	12131	5.90	-54.1	0.27	9.88	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: ~~S. Bonis~~ A. Arsenault
Approved by: ~~M. Summerlin~~

Date : 11/5/13 Page 1 of 1 **Well ID :** 406A
Field Personnel A. Arsenault Purging Start Time : 947
Well Depth as installed (ft.): 66 Measured Well Depth (ft.): 62.60
Screen Length in ft. 5 Screen Depth in ft. 61 (top) Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 10.07 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 63.5 From: PVC Total Volume Purged, Including Drawdown (gallons): 2.0
Sample Designation Time at Purge Completion: 1105
Sample Time 1048 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Perri
Multimeter model and serial number YSI 600 XLM 01C0134AA Turbidity meter model and serial number HACH 2100Q 11090C012226
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
954		150	10.56									Fill flow through cell
956		150	10.65			15.32	634	7.06	54.4	1.59	3.74	Purge water clear
1001		150	10.77	0.12	0.12	15.29	610	7.38	-32.5	0.58	3.19	Reduce rate to 100 ml/min
1006		~~150~~ 100	10.67	+0.10	0.02	15.51	602	7.49	-57.8	0.45	2.75	
1011		~~150~~ 100	10.64	+0.03	+0.01	15.64	603	7.56	-74.8	0.43	1.40	
1016		100	10.64	0.00	+0.01	15.57	604	7.60	-83.0	0.38	2.25	
1021		100	10.64	0.00	+0.01	15.59	606	7.63	-91.5	0.35	1.20	
1026		100	10.66	0.02	0.01	15.63	606	7.66	-97.7	0.34	1.34	
1031		100	10.67	0.01	0.02	15.56	605	7.68	-103.3	0.30	3.38	
1036		100	10.68	0.01	0.03	15.32	605	7.70	-105.8	0.29	2.78	
1041		100	10.69	0.01	0.04	15.38	606	7.71	-108.4	0.29	1.68	
1046		100	10.69	0.00	0.04	15.31	610	7.71	-110.0	0.29	2.05	

Notes: All depths in feet below top of PVC unless specified.
1048 NR = No Reading
Use the back of the log to record additional observations and descriptions.

SAMPLE

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/5/13 Page 1 of 1 **Well ID :** MW-406B
Field Personnel S. McDowell Purging Start Time : 0950
Well Depth as installed (ft.): 43 Measured Well Depth (ft.): 40.92
Screen Length in ft. 5 Screen Depth in ft. 38-43 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 10.2 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 40.5 From: PVC Total Volume Purged, Including Drawdown (gallons): 1.5
Sample Designation Time at Purge Completion: 10:41
Sample Time 1027 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Peri
Multimeter model and serial number YSI 600XL OHC 2866 ~~7A~~ AD Turbidity meter model and serial number HACH 2100Q S/N 13080C027790
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
0950		150	10.25	-	-	15.25	853	6.74	96.5	0.77	0.91	
0955		100	10.25	0.0	0.0	15.17	840	6.90	37.1	0.46	1.23	
1000		100	10.25	0.0	0.0	15.04	834	6.99	17.0	0.36	0.80	
1005		150	10.25	0.0	0.0	14.81	829	7.04	5.4	0.33	1.52	
1010		150	10.25	0.0	0.0	15.07	828	7.08	-3.6	0.30	5.41	
1015		150	10.25	0.0	0.0	14.91	824	7.13	-4.8	0.27	3.6	
1020		170	10.27	0.02	0.02	14.91	821	7.15	-6.3	0.25	2.91	
1025		170	10.29	0.02	0.04	14.81	820	7.16	-6.9	0.26	2.11	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

MS MSD collected @ 10:45

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Low-Flow Field Log

SOP No: SA-003
Date: Mar. 2010
Attachment B, Page 1 of 1
Rev.: 2

Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/7/13 Page 1 of 2
Field Personnel M. Carbonneau
Well Depth as installed (ft.): 31
Screen Length in ft. 10 Screen Depth in ft. 21-31
Depth to GW (ft.): 31.31 From: PVC
Pump/Tubing Intake set (ft.): 32.5 From: ~~Teflon~~ PVC
Sample Designation
Sample Time 11:45

Well ID : 503B
Purging Start Time : 10:06
Measured Well Depth (ft.): 33.38
Parameter Stabilization: (Circle) Yes / No
Two Hour Time Limit Reached ? (Circle) Yes / No
Total Volume Purged, Including Drawdown (gallons): 2
Time at Purge Completion: 11:44
Signature: Michelle Adair

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) bladder pump
Multimeter model and serial number YSI 600XLM 01108 51AF Turbidity meter model and serial number Hach 2100Q 11090C012226

Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) PID readings: ambient air 2.9 well: high: 19ppm / sustained at 10

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1010	10 / 5	75	31.33	.02	.02	13.47	1249	7.01	245.5	10.72	33.1	
1015		75	31.33	0	0.02	13.59	1178	7.01	273.9	10.64	29.5	
1020		75	31.33	0	0.02	13.62	1179	7.05	285.3	10.80	23.8	
1025		75	31.33	0	0.02	13.57	1182	6.99	297.7	10.57	20.0	
1030		75	31.33	0	0.02	13.69	1195	7.06	311.8	10.79	18.2	
1040		75	31.33	0	0.02	13.70	1214	7.06	324.6	10.98	15.0	
1045		75	31.33	0	0.02	13.77	1223	7.07	336.1	11.09	11.5	
1050		75	31.33	0	0.02	13.72	1232	7.04	345.2	10.92	10.5	
1055		75	31.33	0	0.02	13.70	1243	7.11	349.7	11.24	10.6	12.01
1100		75	31.33	0	0.02	13.34	1245	7.16	351.6	11.47	9.00	
1105		75	31.33	0	0.02	13.24	1255	7.11	355	11.23	8.35	
1110		75	31.33	0	0.02	13.09	1265	7.08	358	11.15	6.93	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003
Date: Mar. 2010
Attachment B, Page 1 of 1
Rev.: 2

Prepared by: _____
Reviewed by: _____

Date : 11/7/13 Page 2 of 2 **Well ID :** 503B.
Field Personnel M. Carbonneau Purging Start Time : _____
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1115	10 / 5	75	31.33	0	0.02	1294	12066	7.02	363.8	10.88	8.24	
11:20		75	31.33	0	0.02	1286	12666	7.03	365.2	10.92	5.85	
11:25		75	31.33	0	0.02	1276	1268	7.02	364.1	10.78	5.66	
11:30		75	31.33	0	0.02	1273	1264	7.04	360.8	10.86	4.33	
1135		75	31.33	0	0.02	1266	1263	7.03	357.8	10.76	3.99	
1140		75	31.33	0	0.02	1261	1260	7.06	354.5	10.87	4.08	— Stable.
						Sample	at	11:45	am			

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : 11/6/13 Page 1 of 2 **Well ID :** SB-600
Field Personnel M Carbonneau / J Brunelle Purging Start Time : 10:08
Well Depth as installed (ft.): — Measured Well Depth (ft.): ~~46.97~~ 44.91
Screen Length in ft. — Screen Depth in ft. — Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 11.25 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 41 From: Top Total Volume Purged, Including Drawdown (gallons): 10
Sample Designation Time at Purge Completion: 12:55
Sample Time 12:30 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments): GeoPump 469
Multimeter model and serial number YSI 600XLM 01108551AF Turbidity meter model and serial number Hach 2100Q 1109000226
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)
PID 0.1 @ STAND PIPE BREATHING ZONE / AMBIENT 0.1 - 0.2 PPM
PID 0.6 @ BUCKET

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
10:08		220	11.25	—	—	FILL	CELL,	ADJUST	RATE			
10:11		220	11.30	0.05	0.05	13.05	2584	6.55	20.1	1.31		
10:15		200	11.31	0.01	0.06	12.54	2584	6.58	-21.0	0.66		
10:20		200	11.31	0.00	0.06	12.73	2582	6.62	-42.1	0.45		
10:30		250	11.31	0.0	0.06	12.62	2572	6.62	-27.8	0.39	194	
10:35		250	11.31	0.0	0.06	12.77	2563	6.58	-16.7	0.41	108	
10:40		250	11.31	0.0	0.06	12.72	2566	6.55	-13.4	0.41	102	
10:50		250	11.31	0.0	0.06	12.79	2565	6.52	-8.1	0.40	104	
10:55		250	11.31	0.0	0.06	12.75	2565	6.46	-0.7	0.39	99.9	
11:05		200	11.34	0.03	0.09	12.79	2561	6.50	9.0	0.42	98.5	
11:15		200	11.34	0.0	0.09	12.96	2560	6.49	13.1	0.41	87.1	
11:20		200	11.34	0.0	0.09	12.96	2561	6.48	23.5	0.42	42.7	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

CONDUCTIVITY READS ERRATICALLY

DNAPL ODOR

DUP-2 collected (12:35)

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Low-Flow Field Log

SOP No: SA-003 | Attachment B, Page 1 of 1
Date: Mar. 2010 | Rev.: 2
Prepared by: S. Bonis
Approved by: M. Summerlin

Date : _____ Page 2 of 2 **Well ID :** SB-600
Field Personnel _____ Purging Start Time : _____
Well Depth as installed (ft.): _____ Measured Well Depth (ft.): _____
Screen Length in ft. _____ Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation _____ Time at Purge Completion: _____
Sample Time _____ Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number _____ Turbidity meter model and serial number _____
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting	Purge Rate	Depth to Water	Draw down	Cum. Draw down	Temp. +/- 3%	Spec. Cond. +/- 3%	pH +/- 0.1	ORP +/-10	DO +/- 10% if >0.5 mg/L	Turbidity +/- 10% if > 5 NTU	Comments / Gas Pressure / Observations
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
11:25		200	11.35	0.01	0.10	12.97	2575	6.52	27.6	0.41	—	
11:30		200	11.35	0.00	0.10	13.07	2574	6.54	31.2	0.41	30.2	
11:35		250	11.35	0.0	0.10	13.14	2567	6.58	34.8	0.41	26.5	
11:40		250	11.35	0.0	0.10	13.08	2582	6.59	43.8	0.42	29.6	
11:45		250	11.35	0.0	0.10	13.06	2583	6.60	44.7	0.41	31.2	
11:50		250	11.35	0.0	0.10	13.12	2578	6.59	50.00	0.41	20.3	
11:55		225	11.35	0	0.10	12.97	2580	6.58	52.7	0.41	16.4	
12:00		225	11.35	0	0.10	12.92	2581	6.56	54.5	0.41	16.9	
12:05		225	11.35	0	0.10	13.06	2577	6.56	55.9	0.41	12.1	
12:10		225	11.35	0	0.10	12.99	2574	6.55	57.3	0.41	16.5	
12:15		225	11.35	0	0.10	13.09	2573	6.55	59.0	0.41	11.3	
12:20		200	11.35	0	0.10	13.13	2570	6.56	59.2	0.41	11.9	

Notes: All depths in feet below top of PVC unless specified.
NR = No Reading
Use the back of the log to record additional observations and descriptions.

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APPENDIX B

Engineering a Sustainable Future

December 19, 2013
Nobis File No. 80022

Mr. Dan Keefe
EPA Site Manager
EPA-New England Region I
5 Post Office Square
Suite 100, Mailcode OSRR07-4
Boston, MA 02109-3912

Re: Contract No. EP-S1-06-03
Task Order No. 0022-RA-RA-0115
Case No. 43906, Sample Delivery Group (SDG) No. A4B70
ALS Group (DATAC), Salt Lake City, UT
Nyanza Chemical Waste Dump, OU2 Superfund Site
Ashland, Massachusetts
CERCLIS No.: MAD990685422

Tier I Plus Organic Data Validation with Stage 2B Electronic Qualification (S2BVEM)

Low Level Volatiles and Semi-volatiles:
20/Groundwater: A4B70-A4B88, A4B92
1/Field Duplicate: A4B82/A4B83
2/PE Samples: A4B97 (SV0293); A4B99 (VLM0754)

Dear Mr. Keefe:

Nobis Engineering, Inc. performed a Tier I plus data validation in accordance with the *Region I, EPA-NE Environmental Data Review Supplement for Regional Data Review Elements and Superfund Specific Guidance/Procedures,* (April 2013) on the organic analytical data for 20 groundwater samples and two performance evaluation samples (PEs) collected by Nobis Engineering, Inc. at the Nyanza Chemical Waste Dump, OU2 Superfund Site located in Ashland, Massachusetts. The samples were analyzed for low level volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) under the Contract Laboratory Program Routine Analytical Services (CLP RAS) program using the CLP SOM01.2 Statement of Work. A Tier I plus data validation was deemed sufficient at this time.

Stage 2B electronic qualification was performed through EPA's Environmental Data Exchange and Evaluation System (EXES) Data Manager (EDMS) which uses *USEPA's Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review*, (June 2008) criteria for automated validation. EXES Data Review Report #3 indicates data of non-compliance that resulted in qualification based on field and laboratory blank contamination and calibration criteria for VOCs and blank contamination, internal standard criteria, and matrix spike recoveries for SVOCs.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues (Manual)

Nobis Engineering, Inc.
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

*	•	Data Completeness (EDMS and Manual)
*	•	Preservation and Technical Holding Times (EDMS)
	•	Initial and Continuing Calibrations (EDMS)
	•	Laboratory Blanks (EDMS)
*	•	Field Blanks (Manual)
*	•	Deuterated Monitoring Compounds (DMC)/Surrogate Compounds (EDMS)
NA	•	Laboratory Control Samples (EDMS)
	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) (EDMS and Manual)
*	•	Field Duplicates (Manual)
	•	Internal Standards (EDMS)
*	•	Performance Evaluation (PE) Sample Results (Manual)
*	•	Reported Quantitation Limits (EDMS)

* All criteria were met for this parameter.
NA – Not applicable.

Overall Evaluation of Data and Potential Usability Issues

The objectives of the groundwater and DNAPL sampling at the site are to provide a comprehensive evaluation of the shallow and deep groundwater contaminants at the site and to evaluate the feasibility of implementing monitored natural attenuation (MNA) as a remedial alternative for the site.

Data are usable for the purposes of the project except for non-detected 1,4-dioxane results, which were rejected due to calibration non-conformance and associated SVOC analytes in samples A4B82, 83, 84, and 85 were rejected due to internal standard failure.

Data Completeness

The data package is complete. Page 621, Form III, MS/MSD Summary, was found at page 21 and was placed in the hardcopy package in the correct position. The complete SDG file (CSF) inventory sheet documents details of the package reviewed. The contract compliance screening (CCS) report did not identify any issues with the data package.

Data presented in the Summary Tables include qualifiers assigned by EDMS. Qualifications for these parameters were assessed under the Stage 2B Validation Electronic (S2BVE) scenario. Qualification was performed by EDMS or manually based on parameters identified above.

Initial and Continuing Calibrations

EDMS identified the following initial and continuing calibration criteria failures requiring qualification of the data:

VOCs

The relative response factors were outside control limits in the initial and continuing calibrations for 1,4-dioxane. Detected compounds are qualified as estimated (J) and non-detected compounds are qualified as rejected (R).

Blanks

EDMS identified the following laboratory blank contamination requiring qualification of data:

VOCs

Methylene chloride, chloroform, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, and trichloroethene results were negated (qualified U) in several samples due to method blank contamination. See EXES Report #3 for details.

SVOCs:

Bis(2-ethylhexyl)phthalate was negated (qualified U) in several samples due to method blank contamination. See EXES Report #3 for details.

A trip blank associated with this set of samples was submitted for VOC analysis (A4B94 in SDG A4B89). The trip blank exhibited trace level concentrations of acetone, chloroform, trichloroethene, chlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, and 1,2,4-trichlorobenzene. However, no additional qualification of the data was required.

MS/MSD Results

Sample A4B92 was analyzed as a MS/MSD for VOCs and SVOCs. EDMS identified the following MS/MSD recovery failures requiring qualification of data:

SVOCs:

4-Nitrophenol was recovered above the upper control limits in the MSD. EDMS only qualified the A4B92MSD detections (J). Because this analyte was non-detect in the parent sample (A4B92), no action was necessary.

Internal Standards

EDMS identified the following internal standard criteria failures requiring qualification of data:

SVOCs:

Internal standard area counts are outside the lower control limits for perylene-d12 in samples A4B82, A4B82RE, A4B83, A4B83RE, A4B84, A4B84RE, A4B85, and A4B85RE. Associated analytes (benzo(a)pyrene, benzo(b)fluroanthene, benzo(ghi)perylene, benzo(k)flouranthene, di-n-octylphthalate, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were qualified (J) for detected analytes and rejected (R) for non-detected analytes. The reanalysis confirmed matrix interference. Both sets of samples were reported, however, the second set of results was manually removed as to only report one set of data per sample.

PE Sample Results

PE sample VLM0754 (A4B99) and SV0293 (A4B97) were submitted for VOCs and SVOCs analyses, respectively. The sample results were scored by EPA. The results were evaluated and manually qualified as follows:

VOCs:

All analytes received passing scores. 1,2,4-Trimethylbenzene was a tentatively identified compound (TIC), which was missed. As this is not a target analyte and no sample TICs were reported, no qualification was necessary.

SVOCs:

All target analytes received passing scores. Two TICs were reported in the PE that were not spiked. However, the TICs were only identified in the PE samples; therefore, there is no impact to the data.

Reported Quantitation Limits

Several samples were analyzed for VOCs and SVOCs with dilutions to obtain target analytes within the calibration range. Reporting limits were adjusted accordingly. Duplicate results were manually removed so that only one analyte result was reported for each sample.

Please contact me at (978) 703-6021 or gderuzzo@nobiseng.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS ENGINEERING, INC.

Gail DeRuzzo
Lead Chemist

Tables: Data Summary Tables

Enclosures: PE Sample Results
EXES Report #3
CCS Reports
CSF Audit (DC-2 Forms)

Cc: Steve Remaley, US EPA Region IX (via email- Memo and PE scores)
Vicki Maynard, RSCC (via email – Memo and Data Summary)

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B70	A4B71	A4B72	A4B73	A4B74	A4B75	A4B76
Location ID	MW-04A	MW-04B	MW-04C	MW-201	MW-202	MW-203A	MW-203B
Station ID	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-201-110413A	MW-202-110413A	MW-203A-110413A	MW-203B-110413A
Sample Date	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13
Volatiles (ug/L)							
1,1,1-Trichloroethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
1,1,2-Trichloroethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
1,1-Dichloroethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
1,1-Dichloroethene	5 U	5 U	5 U	1 J	5.6 J	36 J	5.8 J
1,2,3-Trichlorobenzene	5 U	5 U	5 U	25	180	50 U	140
1,2,4-Trichlorobenzene	5 U	5 U	5 U	110	830	52	660
1,2-Dibromo-3-Chloropropane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
1,2-Dibromoethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
1,2-Dichlorobenzene	5 U	5 U	5 U	360	2400	1800	1900
1,2-Dichloroethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
1,2-Dichloropropane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
1,3-Dichlorobenzene	5 U	5 U	5 U	8.6	52	50 U	44
1,4-Dichlorobenzene	5 U	5 U	5 U	65	450	280	360
1,4-Dioxane	R	R	R	R	R	R	R
2-Butanone	10 U	10 U	10 U	10 U	50 U	100 U	50 U
2-Hexanone	10 U	10 U	10 U	10 U	50 U	100 U	50 U
4-Methyl-2-Pentanone	10 U	10 U	10 U	10 U	50 U	100 U	50 U
Acetone	10 U	10 U	10 U	10 U	50 U	100 U	50 U
Benzene	5 U	5 U	5 U	6.5	50	140	31
Bromochloromethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Bromodichloromethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Bromoform	5 U	5 U	5 U	5 U	25 U	50 U	25 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B70	A4B71	A4B72	A4B73	A4B74	A4B75	A4B76
Location ID	MW-04A	MW-04B	MW-04C	MW-201	MW-202	MW-203A	MW-203B
Station ID	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-201-110413A	MW-202-110413A	MW-203A-110413A	MW-203B-110413A
Sample Date	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13
Bromomethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Carbon Disulfide	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Carbon Tetrachloride	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Chlorobenzene	5 U	5 U	5 U	300	2400	5500	1700
Chloroethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Chloroform	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Chloromethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
cis-1,2-Dichloroethene	5 U	5.7	6.3	100	420	390	500
cis-1,3-Dichloropropene	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Cyclohexane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Dibromochloromethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Dichlorodifluoromethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Ethylbenzene	5 U	5 U	5 U	0.33 J	11 J	1.5 J	14 J
Isopropylbenzene	5 U	5 U	5 U	5 U	25 U	50 U	25 U
m,p-Xylene	5 U	5 U	5 U	5 U	1 J	4.3 J	1 J
Methyl Acetate	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Methyl Tert-Butyl Ether	5 U	5 U	5 U	0.61 J	2.4 J	50 U	1.9 J
Methylcyclohexane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Methylene Chloride	5 U	5 U	5 U	5 U	25 U	50 U	1 J
o-Xylene	5 U	5 U	5 U	5 U	2 J	5 J	1.6 J
Styrene	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Tetrachloroethene	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Toluene	5 U	5 U	5 U	0.21 J	1.6 J	37 J	2.5 J
trans-1,2-Dichloroethene	5 U	5 U	5 U	0.72 J	4.3 J	36 J	4.3 J
trans-1,3-Dichloropropene	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Trichloroethene	5 U	75	81	190	1400	1600	900

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B70	A4B71	A4B72	A4B73	A4B74	A4B75	A4B76
Location ID	MW-04A	MW-04B	MW-04C	MW-201	MW-202	MW-203A	MW-203B
Station ID	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-201-110413A	MW-202-110413A	MW-203A-110413A	MW-203B-110413A
Sample Date	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13
Trichlorofluoromethane	5 U	5 U	5 U	5 U	25 U	50 U	25 U
Vinyl Chloride	5 U	5 U	5 U	1.4 J	9.1 J	1300	7.6 J
Semivolatiles (ug/L)							
1,1'-Biphenyl	5 U	5 U	5 U	0.45 J	2.5 J	15 U	25 U
1,2,4,5-Tetrachlorobenzene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
2,2'-Oxybis(1-Chloropropane)	5 U	5 U	5 U	5 U	15 U	15 U	25 U
2,3,4,6-Tetrachlorophenol	5 U	5 U	5 U	5 U	15 U	15 U	25 U
2,4,5-Trichlorophenol	5 U	5 U	5 U	0.44 J	15 U	15 U	2.3 J
2,4,6-Trichlorophenol	5 U	5 U	5 U	5 U	15 U	15 U	25 U
2,4-Dichlorophenol	5 U	5 U	5 U	5 U	15 U	15 U	2.6 J
2,4-Dimethylphenol	5 U	5 U	5 U	5 U	15 U	15 U	25 U
2,4-Dinitrophenol	10 U	10 U	10 U	10 U	30 U	30 U	50 U
2,4-Dinitrotoluene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
2,6-Dinitrotoluene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
2-Chloronaphthalene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
2-Chlorophenol	5 U	5 U	5 U	5 U	1.8 J	13 J	12 J
2-Methylnaphthalene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
2-Methylphenol	5 U	5 U	5 U	5 U	15 U	3.4 J	25 U
2-Nitroaniline	10 U	10 U	10 U	10 U	30 U	30 U	50 U
2-Nitrophenol	5 U	5 U	5 U	5 U	15 U	15 U	25 U
3,3'-Dichlorobenzidine	5 U	5 U	5 U	5 U	15 U	15 U	25 U
3-Nitroaniline	10 U	10 U	10 U	10 U	30 U	30 U	50 U
4,6-Dinitro-2-Methylphenol	10 U	10 U	10 U	10 U	30 U	30 U	50 U
4-Bromophenyl-Phenylether	5 U	5 U	5 U	5 U	15 U	15 U	25 U
4-Chloro-3-Methylphenol	5 U	5 U	5 U	5 U	15 U	15 U	25 U
4-Chloroaniline	5 U	5 U	5 U	5 U	1.9 J	15 U	25 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B70	A4B71	A4B72	A4B73	A4B74	A4B75	A4B76
Location ID	MW-04A	MW-04B	MW-04C	MW-201	MW-202	MW-203A	MW-203B
Station ID	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-201-110413A	MW-202-110413A	MW-203A-110413A	MW-203B-110413A
Sample Date	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13
4-Chlorophenyl-Phenylether	5 U	5 U	5 U	5 U	15 U	15 U	25 U
4-Methylphenol	5 U	5 U	5 U	5 U	15 U	18	25 U
4-Nitroaniline	10 U	10 U	10 U	10 U	30 U	30 U	50 U
4-Nitrophenol	10 U	10 U	10 U	10 U	30 U	30 U	50 U
Acenaphthene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Acenaphthylene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Acetophenone	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Anthracene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Atrazine	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Benzaldehyde	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Benzo(a)anthracene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Benzo(a)pyrene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Benzo(b)fluoranthene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Benzo(g,h,i)perylene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Benzo(k)fluoranthene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Bis(2-Chloroethoxy)Methane	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Bis(2-Chloroethyl)Ether	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Bis(2-ethylhexyl)phthalate	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Butylbenzylphthalate	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Caprolactam	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Carbazole	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Chrysene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Dibenz(a,h)Anthracene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Dibenzofuran	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Diethylphthalate	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Dimethylphthalate	5 U	5 U	5 U	5 U	15 U	15 U	25 U

U - Not Detected; J - Estimated; R - Rejected

Sample Name	A4B70	A4B71	A4B72	A4B73	A4B74	A4B75	A4B76
Location ID	MW-04A	MW-04B	MW-04C	MW-201	MW-202	MW-203A	MW-203B
Station ID	MW-4A-110413A	MW-4B-110413A	MW-4C-110413A	MW-201-110413A	MW-202-110413A	MW-203A-110413A	MW-203B-110413A
Sample Date	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13
Di-N-Butyl Phthalate	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Di-N-Octyl Phthalate	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Fluoranthene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Fluorene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Hexachlorobenzene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Hexachlorobutadiene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Hexachlorocyclopentadiene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Hexachloroethane	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Indeno(1,2,3-cd)Pyrene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Isophorone	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Naphthalene	5 U	5 U	5 U	5 U	15 U	9.7 J	25 U
Nitrobenzene	5 U	5 U	1.3 J	5 U	15 U	15 U	25 U
N-Nitroso-Di-N-Propylamine	5 U	5 U	5 U	5 U	15 U	15 U	25 U
N-Nitrosodiphenylamine	5 U	5 U	5 U	5 U	2.4 J	15 U	2.2 J
Pentachlorophenol	10 U	10 U	10 U	10 U	1.2 J	30 U	50 U
Phenanthrene	5 U	5 U	5 U	5 U	15 U	15 U	25 U
Phenol	5 U	5 U	5 U	0.69 J	15 U	3.8 J	2.4 J
Pyrene	5 U	5 U	5 U	5 U	15 U	15 U	25 U

Qualifier Actions:

1,4-dioxane J/R for calibration failures.

Analytes associated with ISTD perylene-d12 J/R in samples A4B82, A4B83, A4B84, A4B85.

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B77	A4B78	A4B79	A4B80	A4B81	A4B82	A4B83
Location ID	MW-403A	MW-B5	WP-105	MW-112A	MW-112B	MW-115A	MW-115A
Station ID	MW-403A-110413A	MW-B5-110513A	WP-105-10513A	MW-112A-110513A	MW-112B-110513A	MW-115A-110513A	FDUP-01-110513A
Sample Date	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
Volatiles (ug/L)							
1,1,1-Trichloroethane	5 U	13 J	5 U	5 U	5 U	25 U	25 U
1,1,2,2-Tetrachloroethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
1,1,2-Trichloroethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
1,1-Dichloroethane	5 U	250 U	5 U	0.36 J	5 U	25 U	25 U
1,1-Dichloroethene	5 U	250 U	5 U	1.5 J	5 U	5 J	5 J
1,2,3-Trichlorobenzene	5 U	250 U	5 U	5 U	5 U	25 U	25 U
1,2,4-Trichlorobenzene	5 U	280	5 U	5 U	9.1	50	58
1,2-Dibromo-3-Chloropropane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
1,2-Dibromoethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
1,2-Dichlorobenzene	5 U	31000	5 U	100	26	1000	1000
1,2-Dichloroethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
1,2-Dichloropropane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
1,3-Dichlorobenzene	5 U	1100	5 U	5 U	5 U	25 U	25 U
1,4-Dichlorobenzene	5 U	6400	5 U	15	5.5	160	160
1,4-Dioxane	R	R	R	R	R	R	R
2-Butanone	10 U	500 U	10 U	10 U	10 U	50 U	50 U
2-Hexanone	10 U	500 U	10 U	10 U	10 U	50 U	50 U
4-Methyl-2-Pentanone	10 U	500 U	10 U	10 U	10 U	50 U	50 U
Acetone	10 U	500 U	10 U	10 U	10 U	50 U	50 U
Benzene	5 U	60 J	5 U	2.1 J	5 U	37	37
Bromochloromethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Bromodichloromethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Bromoform	5 U	250 U	5 U	5 U	5 U	25 U	25 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B77	A4B78	A4B79	A4B80	A4B81	A4B82	A4B83
Location ID	MW-403A	MW-B5	WP-105	MW-112A	MW-112B	MW-115A	MW-115A
Station ID	MW-403A-110413A	MW-B5-110513A	WP-105-10513A	MW-112A-110513A	MW-112B-110513A	MW-115A-110513A	FDUP-01-110513A
Sample Date	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
Bromomethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Carbon Disulfide	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Carbon Tetrachloride	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Chlorobenzene	5 U	21000	5 U	50	7.9	2100	2100
Chloroethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Chloroform	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Chloromethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
cis-1,2-Dichloroethene	5 U	72 J	5 U	180	3.4 J	150	150
cis-1,3-Dichloropropene	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Cyclohexane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Dibromochloromethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Dichlorodifluoromethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Ethylbenzene	5 U	250 U	5 U	0.35 J	5 U	25 U	0.87 J
Isopropylbenzene	5 U	250 U	5 U	5 U	5 U	25 U	25 U
m,p-Xylene	5 U	250 U	5 U	5 U	5 U	1.1 J	1.2 J
Methyl Acetate	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Methyl Tert-Butyl Ether	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Methylcyclohexane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Methylene Chloride	5 U	250 U	5 U	5 U	5 U	25 U	16 J
o-Xylene	5 U	250 U	5 U	5 U	5 U	2.1 J	2.1 J
Styrene	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Tetrachloroethene	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Toluene	5 U	18 J	0.16 J	0.56 J	5 U	2.6 J	2.8 J
trans-1,2-Dichloroethene	5 U	250 U	5 U	3.4 J	5 U	1.2 J	1.2 J
trans-1,3-Dichloropropene	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Trichloroethene	5 U	18000	5 U	160	5 U	2100	2100

U - Not Detected; J - Estimated; R - Rejected

Sample Name	A4B77	A4B78	A4B79	A4B80	A4B81	A4B82	A4B83
Location ID	MW-403A	MW-B5	WP-105	MW-112A	MW-112B	MW-115A	MW-115A
Station ID	MW-403A-110413A	MW-B5-110513A	WP-105-10513A	MW-112A-110513A	MW-112B-110513A	MW-115A-110513A	FDUP-01-110513A
Sample Date	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
Trichlorofluoromethane	5 U	250 U	5 U	5 U	5 U	25 U	25 U
Vinyl Chloride	5 U	250 U	5 U	2.6 J	5 U	4.3 J	5 J
Semivolatiles (ug/L)							
1,1'-Biphenyl	5 U	15 U	5 U	10 U	10 U	10 U	15 U
1,2,4,5-Tetrachlorobenzene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2,2'-Oxybis(1-Chloropropane)	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2,3,4,6-Tetrachlorophenol	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2,4,5-Trichlorophenol	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2,4,6-Trichlorophenol	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2,4-Dichlorophenol	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2,4-Dimethylphenol	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2,4-Dinitrophenol	10 U	30 U	10 U	20 U	20 U	21 U	30 U
2,4-Dinitrotoluene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2,6-Dinitrotoluene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2-Chloronaphthalene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2-Chlorophenol	5 U	15 U	5 U	10 U	10 U	1.3 J	1.4 J
2-Methylnaphthalene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2-Methylphenol	5 U	15 U	5 U	10 U	10 U	10 U	15 U
2-Nitroaniline	10 U	30 U	10 U	20 U	20 U	21 U	30 U
2-Nitrophenol	5 U	9.9 J	5 U	10 U	10 U	10 U	15 U
3,3'-Dichlorobenzidine	5 U	15 U	5 U	10 U	10 U	10 U	15 U
3-Nitroaniline	10 U	1.4 J	10 U	20 U	20 U	21 U	30 U
4,6-Dinitro-2-Methylphenol	10 U	30 U	10 U	20 U	20 U	21 U	30 U
4-Bromophenyl-Phenylether	5 U	15 U	5 U	10 U	10 U	10 U	15 U
4-Chloro-3-Methylphenol	5 U	15 U	5 U	10 U	10 U	10 U	15 U
4-Chloroaniline	5 U	15 U	5 U	10 U	10 U	10 U	15 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B77	A4B78	A4B79	A4B80	A4B81	A4B82	A4B83
Location ID	MW-403A	MW-B5	WP-105	MW-112A	MW-112B	MW-115A	MW-115A
Station ID	MW-403A-110413A	MW-B5-110513A	WP-105-10513A	MW-112A-110513A	MW-112B-110513A	MW-115A-110513A	FDUP-01-110513A
Sample Date	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
4-Chlorophenyl-Phenylether	5 U	15 U	5 U	10 U	10 U	10 U	15 U
4-Methylphenol	5 U	15 U	5 U	10 U	10 U	10 U	15 U
4-Nitroaniline	10 U	30 U	10 U	20 U	20 U	21 U	30 U
4-Nitrophenol	10 U	9 J	10 U	20 U	20 U	21 U	30 U
Acenaphthene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Acenaphthylene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Acetophenone	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Anthracene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Atrazine	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Benzaldehyde	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Benzo(a)anthracene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Benzo(a)pyrene	5 U	15 U	5 U	10 U	10 U	R	R
Benzo(b)fluoranthene	5 U	15 U	5 U	10 U	10 U	R	R
Benzo(g,h,i)perylene	5 U	15 U	5 U	10 U	10 U	R	R
Benzo(k)fluoranthene	5 U	15 U	5 U	10 U	10 U	R	R
Bis(2-Chloroethoxy)Methane	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Bis(2-Chloroethyl)Ether	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Bis(2-ethylhexyl)phthalate	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Butylbenzylphthalate	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Caprolactam	5 U	15 U	5 U	10 U	10 U	0.95 J	15 U
Carbazole	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Chrysene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Dibenz(a,h)Anthracene	5 U	15 U	5 U	10 U	10 U	R	R
Dibenzofuran	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Diethylphthalate	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Dimethylphthalate	5 U	15 U	5 U	10 U	10 U	10 U	15 U

U - Not Detected; J - Estimated; R - Rejected

Sample Name	A4B77	A4B78	A4B79	A4B80	A4B81	A4B82	A4B83
Location ID	MW-403A	MW-B5	WP-105	MW-112A	MW-112B	MW-115A	MW-115A
Station ID	MW-403A-110413A	MW-B5-110513A	WP-105-10513A	MW-112A-110513A	MW-112B-110513A	MW-115A-110513A	FDUP-01-110513A
Sample Date	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
Di-N-Butyl Phthalate	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Di-N-Octyl Phthalate	5 U	15 U	5 U	10 U	10 U	R	R
Fluoranthene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Fluorene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Hexachlorobenzene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Hexachlorobutadiene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Hexachlorocyclopentadiene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Hexachloroethane	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Indeno(1,2,3-cd)Pyrene	5 U	15 U	5 U	10 U	10 U	R	R
Isophorone	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Naphthalene	5 U	3.3 J	5 U	10 U	10 U	2.4 J	2.9 J
Nitrobenzene	5 U	540000	10	10 U	10 U	10 U	15 U
N-Nitroso-Di-N-Propylamine	5 U	15 U	5 U	10 U	10 U	10 U	15 U
N-Nitrosodiphenylamine	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Pentachlorophenol	10 U	4.4 J	10 U	20 U	20 U	21 U	30 U
Phenanthrene	5 U	15 U	5 U	10 U	10 U	10 U	15 U
Phenol	5 U	28	5 U	10 U	10 U	10 U	15 U
Pyrene	5 U	15 U	5 U	10 U	10 U	10 U	15 U

Qualifier Actions:

1,4-dioxane J/R for calibration failures.

Analytes associated with ISTD perylene-d12 J/R in samples A4B82, A4B83, A4B84, A4B85.

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B84	A4B85	A4B86	A4B87	A4B88	A4B92
Location ID	MW-115B	MW-302	MW-304A	MW-304B	MW-401	MW-406B
Station ID	MW-115B-110513A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-401-110513A	MW-406B-110513A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
Volatiles (ug/L)						
1,1,1-Trichloroethane	25 U	10 U	25 U	5 U	250 U	5 U
1,1,2,2-Tetrachloroethane	25 U	10 U	25 U	5 U	250 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	25 U	10 U	25 U	5 U	250 U	5 U
1,1,2-Trichloroethane	25 U	10 U	25 U	5 U	250 U	5 U
1,1-Dichloroethane	25 U	10 U	25 U	5 U	250 U	5 U
1,1-Dichloroethene	6.1 J	1.9 J	7.1 J	2.1 J	41 J	5 U
1,2,3-Trichlorobenzene	28	10 U	25 U	5.5	250 U	5 U
1,2,4-Trichlorobenzene	190	19	33	30	250 U	5 U
1,2-Dibromo-3-Chloropropane	25 U	10 U	25 U	5 U	250 U	5 U
1,2-Dibromoethane	25 U	10 U	25 U	5 U	250 U	5 U
1,2-Dichlorobenzene	1800	640	1100	320	4400	5 U
1,2-Dichloroethane	25 U	0.61 J	25 U	5 U	250 U	5 U
1,2-Dichloropropane	25 U	10 U	25 U	5 U	250 U	5 U
1,3-Dichlorobenzene	31	10 U	31	8.2	250 U	5 U
1,4-Dichlorobenzene	310	80	220	57	850	5 U
1,4-Dioxane	R	R	R	R	R	R
2-Butanone	50 U	20 U	50 U	10 U	500 U	10 U
2-Hexanone	50 U	20 U	50 U	10 U	500 U	10 U
4-Methyl-2-Pentanone	50 U	20 U	50 U	10 U	500 U	10 U
Acetone	50 U	20 U	50 U	10 U	500 U	10 U
Benzene	28	46	32	2.4 J	49 J	5 U
Bromochloromethane	25 U	10 U	25 U	5 U	250 U	5 U
Bromodichloromethane	25 U	10 U	25 U	5 U	250 U	5 U
Bromoform	25 U	10 U	25 U	5 U	250 U	5 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B84	A4B85	A4B86	A4B87	A4B88	A4B92
Location ID	MW-115B	MW-302	MW-304A	MW-304B	MW-401	MW-406B
Station ID	MW-115B-110513A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-401-110513A	MW-406B-110513A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
Bromomethane	25 U	10 U	25 U	5 U	250 U	5 U
Carbon Disulfide	25 U	10 U	25 U	5 U	250 U	5 U
Carbon Tetrachloride	25 U	10 U	25 U	5 U	250 U	5 U
Chlorobenzene	1600	440	1100	130	5500	5 U
Chloroethane	25 U	10 U	25 U	5 U	250 U	5 U
Chloroform	25 U	10 U	25 U	5 U	250 U	5 U
Chloromethane	25 U	10 U	25 U	5 U	250 U	5 U
cis-1,2-Dichloroethene	310	230	510	220	130 J	0.65 J
cis-1,3-Dichloropropene	25 U	10 U	25 U	5 U	250 U	5 U
Cyclohexane	25 U	1.7 J	25 U	5 U	250 U	5 U
Dibromochloromethane	25 U	10 U	25 U	5 U	250 U	5 U
Dichlorodifluoromethane	25 U	10 U	25 U	5 U	250 U	5 U
Ethylbenzene	25 U	7.4 J	3.2 J	0.89 J	250 U	5 U
Isopropylbenzene	25 U	10 U	25 U	5 U	250 U	5 U
m,p-Xylene	2.2 J	1 J	1.3 J	5 U	250 U	5 U
Methyl Acetate	25 U	10 U	25 U	5 U	250 U	5 U
Methyl Tert-Butyl Ether	1.7 J	16	25 U	0.34 J	250 U	5 U
Methylcyclohexane	25 U	10 U	25 U	5 U	250 U	5 U
Methylene Chloride	25 U	10 U	25 U	5 U	250 U	5 U
o-Xylene	2.2 J	9.9 J	1.7 J	5 U	250 U	5 U
Styrene	25 U	10 U	25 U	5 U	250 U	5 U
Tetrachloroethene	25 U	0.68 J	25 U	5 U	250 U	0.79 J
Toluene	7.8 J	1.4 J	5.8 J	0.34 J	9.5 J	5 U
trans-1,2-Dichloroethene	2.4 J	0.7 J	14 J	1.6 J	250 U	5 U
trans-1,3-Dichloropropene	25 U	10 U	25 U	5 U	250 U	5 U
Trichloroethene	2600	320	1800	140	14000	5 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B84	A4B85	A4B86	A4B87	A4B88	A4B92
Location ID	MW-115B	MW-302	MW-304A	MW-304B	MW-401	MW-406B
Station ID	MW-115B-110513A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-401-110513A	MW-406B-110513A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
Trichlorofluoromethane	25 U	10 U	25 U	5 U	250 U	5 U
Vinyl Chloride	8.4 J	1.7 J	110	8.3	250 U	5 U
Semivolatiles (ug/L)						
1,1'-Biphenyl	25 U	25 U	5 U	5 U	15 U	5 U
1,2,4,5-Tetrachlorobenzene	25 U	25 U	5 U	5 U	15 U	5 U
2,2'-Oxybis(1-Chloropropane)	25 U	25 U	5 U	5 U	15 U	5 U
2,3,4,6-Tetrachlorophenol	25 U	25 U	5 U	5 U	1.6 J	5 U
2,4,5-Trichlorophenol	25 U	25 U	0.78 J	5 U	15 U	5 U
2,4,6-Trichlorophenol	25 U	25 U	5 U	5 U	1.2 J	5 U
2,4-Dichlorophenol	25 U	25 U	0.79 J	5 U	15 U	5 U
2,4-Dimethylphenol	25 U	25 U	5 U	5 U	15 U	5 U
2,4-Dinitrophenol	50 U	50 U	10 U	10 U	30 U	10 U
2,4-Dinitrotoluene	25 U	25 U	5 U	5 U	15 U	5 U
2,6-Dinitrotoluene	25 U	25 U	5 U	5 U	15 U	5 U
2-Chloronaphthalene	25 U	25 U	5 U	5 U	15 U	5 U
2-Chlorophenol	25 U	25 U	1.5 J	5 U	15 U	5 U
2-Methylnaphthalene	25 U	25 U	5 U	5 U	15 U	5 U
2-Methylphenol	25 U	25 U	5 U	5 U	15 U	5 U
2-Nitroaniline	50 U	50 U	10 U	10 U	30 U	10 U
2-Nitrophenol	25 U	25 U	5 U	5 U	15 U	5 U
3,3'-Dichlorobenzidine	25 U	25 U	5 U	5 U	15 U	5 U
3-Nitroaniline	50 U	50 U	10 U	10 U	30 U	10 U
4,6-Dinitro-2-Methylphenol	50 U	50 U	10 U	10 U	30 U	10 U
4-Bromophenyl-Phenylether	25 U	25 U	5 U	5 U	15 U	5 U
4-Chloro-3-Methylphenol	25 U	25 U	5 U	5 U	15 U	5 U
4-Chloroaniline	25 U	25 U	0.48 J	0.41 J	15 U	5 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B84	A4B85	A4B86	A4B87	A4B88	A4B92
Location ID	MW-115B	MW-302	MW-304A	MW-304B	MW-401	MW-406B
Station ID	MW-115B-110513A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-401-110513A	MW-406B-110513A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
4-Chlorophenyl-Phenylether	25 U	25 U	5 U	5 U	15 U	5 U
4-Methylphenol	25 U	25 U	0.74 J	5 U	15 U	5 U
4-Nitroaniline	50 U	50 U	10 U	10 U	30 U	10 U
4-Nitrophenol	50 U	50 U	10 U	10 U	5.2 J	10 U
Acenaphthene	25 U	25 U	5 U	5 U	15 U	5 U
Acenaphthylene	25 U	25 U	5 U	5 U	15 U	5 U
Acetophenone	25 U	25 U	5 U	5 U	15 U	5 U
Anthracene	25 U	25 U	5 U	5 U	15 U	5 U
Atrazine	25 U	25 U	5 U	5 U	15 U	5 U
Benzaldehyde	25 U	25 U	5 U	5 U	24	5 U
Benzo(a)anthracene	25 U	25 U	5 U	5 U	15 U	5 U
Benzo(a)pyrene	R	R	5 U	5 U	15 U	5 U
Benzo(b)fluoranthene	R	R	5 U	5 U	15 U	5 U
Benzo(g,h,i)perylene	R	R	5 U	5 U	15 U	5 U
Benzo(k)fluoranthene	R	R	5 U	5 U	15 U	5 U
Bis(2-Chloroethoxy)Methane	25 U	25 U	5 U	5 U	15 U	5 U
Bis(2-Chloroethyl)Ether	25 U	25 U	5 U	5 U	15 U	5 U
Bis(2-ethylhexyl)phthalate	25 U	25 U	5 U	5 U	15 U	5 U
Butylbenzylphthalate	25 U	25 U	5 U	5 U	15 U	5 U
Caprolactam	25 U	25 U	1.2 J	5 U	15 U	5 U
Carbazole	25 U	25 U	5 U	5 U	15 U	5 U
Chrysene	25 U	25 U	5 U	5 U	15 U	5 U
Dibenz(a,h)Anthracene	R	R	5 U	5 U	15 U	5 U
Dibenzofuran	25 U	25 U	5 U	5 U	15 U	5 U
Diethylphthalate	25 U	25 U	5 U	5 U	15 U	5 U
Dimethylphthalate	25 U	25 U	5 U	5 U	15 U	5 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B70
Volatiles in Groundwater

Sample Name	A4B84	A4B85	A4B86	A4B87	A4B88	A4B92
Location ID	MW-115B	MW-302	MW-304A	MW-304B	MW-401	MW-406B
Station ID	MW-115B-110513A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-401-110513A	MW-406B-110513A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
Di-N-Butyl Phthalate	25 U	25 U	5 U	5 U	15 U	5 U
Di-N-Octyl Phthalate	R	R	5 U	5 U	15 U	5 U
Fluoranthene	25 U	25 U	5 U	5 U	15 U	5 U
Fluorene	25 U	25 U	5 U	5 U	15 U	5 U
Hexachlorobenzene	25 U	25 U	5 U	5 U	15 U	5 U
Hexachlorobutadiene	25 U	25 U	5 U	5 U	15 U	5 U
Hexachlorocyclopentadiene	25 U	25 U	5 U	5 U	15 U	5 U
Hexachloroethane	25 U	25 U	5 U	5 U	15 U	5 U
Indeno(1,2,3-cd)Pyrene	R	R	5 U	5 U	15 U	5 U
Isophorone	25 U	25 U	5 U	5 U	15 U	5 U
Naphthalene	100	25 J	2.9 J	5 U	2 J	5 U
Nitrobenzene	25 U	33	160	0.67 J	14000	5 U
N-Nitroso-Di-N-Propylamine	25 U	25 U	5 U	5 U	15 U	5 U
N-Nitrosodiphenylamine	25 U	25 U	5 U	5 U	15 U	5 U
Pentachlorophenol	50 U	50 U	10 U	10 U	7.4 J	10 U
Phenanthrene	25 U	25 U	5 U	5 U	15 U	5 U
Phenol	25 U	25 U	1.6 J	0.85 J	5.1 J	5 U
Pyrene	25 U	25 U	5 U	5 U	15 U	5 U

Qualifier Actions:

1,4-dioxane J/R for calibration failures.

Analytes associated with ISTD perylene-d12 J/R in samples A4B82, A4B83, A4B84, A4B85.

PES SCORING EVALUATION REPORT

PES VLM0754 Rev: 1 EPA Sample No.: A4B99 Report Date: 12/20/2013

Lab Name: ALS Laboratory Group - DataChem
Lab Code: DATAC
Contract: EPW11037
Case No.: 43906
SAS/Client No.: NA
SDG No.: A4B70
Matrix: Water
Lab Sample ID: 1331163024
Lab File ID: JR40C024
Date Received: 11/07/2013
Date Analyzed: 11/11/2013
Sample Wt./Vol. (g/mL): 5.0 mL
Level: Low
% Moisture (not dec.): NA
Purge Volume (mL): 5.0
GC Column: RTX-VMS
ID (mm): 0.25
Length (m): NA
Soil Extract. Vol. (uL): NA
Soil Aliquot Vol. (uL): NA
Dilution Factor: 1.0
Units: ug/L

Analysis Method: SOM01.2
Scoring Method: SOM01.2
Comments:

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
75-71-8	Dichlorodifluoromethane	20		PASS	Within Limits
74-87-3	Chloromethane	41		PASS	Within Limits
74-83-9	Bromomethane	11		PASS	Within Limits
75-69-4	Trichlorofluoromethane	28		PASS	Within Limits
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	27		PASS	Within Limits
75-15-0	Carbon Disulfide	28		PASS	Within Limits
156-60-5	trans-1,2-Dichloroethene	48		PASS	Within Limits
1634-04-4	Methyl tert-Butyl Ether	96		PASS	Within Limits
67-66-3	Chloroform	39	B	PASS	Within Limits
71-55-6	1,1,1-Trichloroethane	19		PASS	Within Limits
56-23-5	Carbon Tetrachloride	51		PASS	Within Limits
107-06-2	1,2-Dichloroethane	39		PASS	Within Limits
108-87-2	Methylcyclohexane	25		PASS	Within Limits
10061-01-5	cis-1,3-Dichloropropene	32		PASS	Within Limits
108-10-1	4-Methyl-2-pentanone	92		PASS	Within Limits
108-88-3	Toluene	47		PASS	Within Limits
79-00-5	1,1,2-Trichloroethane	25		PASS	Within Limits
124-48-1	Dibromochloromethane	45		PASS	Within Limits
106-93-4	1,2-Dibromoethane	36		PASS	Within Limits
179601-23-1	m,p-Xylene	33		PASS	Within Limits
100-42-5	Styrene	34		PASS	Within Limits
79-34-5	1,1,2,2-Tetrachloroethane	22		PASS	Within Limits
106-46-7	1,4-Dichlorobenzene	29	B	PASS	Within Limits
96-12-8	1,2-Dibromo-3-chloropropane	26		PASS	Within Limits
87-61-6	1,2,3-Trichlorobenzene	45	B	PASS	Within Limits
123-91-1	1,4-Dioxane	360		PASS	Within Limits
95-63-6	1,2,4-Trimethylbenzene	0		FAIL	TIC Missed
****	END Main Analytes	**********	****	****	**********
75-09-2	Methylene Chloride	0.56	J	PASS	Less Than CRQL
156-59-2	cis-1,2-Dichloroethene	0.25	J	PASS	Less Than CRQL
79-01-6	Trichloroethene	0.81	J	PASS	Less Than CRQL
127-18-4	Tetrachloroethene	0.27	J	PASS	Less Than CRQL
75-25-2	Bromoform	0.47	J	PASS	Less Than CRQL
108-67-8	Mesitylene	35		N.E.	Non-spiked TIC
****	END All Analytes	**********	****	****	**********

PES SCORING EVALUATION REPORT

PES SV0293 Rev: 1 EPA Sample No.: A4B97 Report Date: 12/20/2013

Lab Name: ALS Laboratory Group - DataChem
Lab Code: DATAC
Contract: EPW11037
Case No.: 43906
SAS/Client No.: NA
SDG No.: A4B70
Matrix: Water
Lab Sample ID: 1331163023
Lab File ID: DJT14C23
Date Received: 11/07/2013
Date Extracted: 11/07/2013
Date Analyzed: 11/12/2013
Sample Wt./Vol. (g/mL): 1000 mL
Level: Low
% Moisture: NA
Decanted: N/A
Conc. Extract Vol. (uL): 1000 uL
Injection Vol. (uL): 1.0
GPC Cleanup: No
pH: NA
Dilution Factor: 1.0
Extraction Type: CONT
Units: ug/L

Analysis Method: SOM01.2
Scoring Method: SOM01.2
Comments:

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
100-52-7	Benzaldehyde	35		PASS	Within Limits
95-57-8	2-Chlorophenol	35		PASS	Within Limits
108-60-1	2,2'-oxybis(1-Chloropropane)	50		PASS	Within Limits
98-86-2	Acetophenone	37		PASS	Within Limits
67-72-1	Hexachloroethane	15		PASS	Within Limits
98-95-3	Nitrobenzene	57		PASS	Within Limits
88-75-5	2-Nitrophenol	46		PASS	Within Limits
120-83-2	2,4-Dichlorophenol	24		PASS	Within Limits
91-20-3	Naphthalene	15		PASS	Within Limits
106-47-8	4-Chloroaniline	5.0	U	N.E.	Not Evaluated
59-50-7	4-Chloro-3-methylphenol	36		PASS	Within Limits
88-06-2	2,4,6-Trichlorophenol	32		PASS	Within Limits
92-52-4	1,1'-Biphenyl	39		PASS	Within Limits
88-74-4	2-Nitroaniline	63		PASS	Within Limits
606-20-2	2,6-Dinitrotoluene	42		PASS	Within Limits
208-96-8	Acenaphthylene	47		PASS	Within Limits
100-02-7	4-Nitrophenol	55		PASS	Within Limits
132-64-9	Dibenzofuran	21		PASS	Within Limits
121-14-2	2,4-Dinitrotoluene	50		PASS	Within Limits
84-66-2	Diethylphthalate	49		PASS	Within Limits
86-73-7	Fluorene	8.9		PASS	Within Limits
86-30-6	N-Nitrosodiphenylamine	54		PASS	Within Limits
95-94-3	1,2,4,5-Tetrachlorobenzene	20		PASS	Within Limits
118-74-1	Hexachlorobenzene	41		PASS	Within Limits
1912-24-9	Atrazine	5.0	U	N.E.	Not Evaluated
87-86-5	Pentachlorophenol	37		PASS	Within Limits
85-01-8	Phenanthrene	34		PASS	Within Limits
84-74-2	Di-n-butylphthalate	43		PASS	Within Limits
129-00-0	Pyrene	17		PASS	Within Limits
91-94-1	3,3'-Dichlorobenzidine	3.6	J	PASS	Within Limits
56-55-3	Benzo(a)anthracene	42		PASS	Within Limits
117-84-0	Di-n-octylphthalate	30		PASS	Within Limits
205-99-2	Benzo(b)fluoranthene	35		PASS	Within Limits
50-32-8	Benzo(a)pyrene	21		PASS	Within Limits
53-70-3	Dibenzo(a,h)anthracene	50		PASS	Within Limits
191-24-2	Benzo(g,h,i)perylene	24		PASS	Within Limits
90-12-0	1-Methylnaphthalene	44	JN	PASS	TIC Found

PES SCORING EVALUATION REPORT

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
****	END Main Analytes	**********	****	****	**********
83-32-9	Acenaphthene	4.6	J	PASS	Less Than CRQL
1000255-97-9	4-Carbethoxy-3-chloropyrrolidine	3.0	JN	N.E.	Non-spiked TIC
1610-17-9	Atraton	3.4	JN	N.E.	Non-spiked TIC
****	END All Analytes	**********	****	****	**********

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1 of 3

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4B99

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B70

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331163024

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: JR40C024

Level: (TRACE/LOW/MED) LOW Date Received: 11/07/2013

% Moisture: not dec. Date Analyzed: 11/11/2013

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	20.	
74-87-3	Chloromethane	41.	
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	11.	
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	28.	
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	27.	
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	28.	
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	0.56	J
156-60-5	trans-1,2-Dichloroethene	48.	
1634-04-4	Methyl tert-butyl ether	96.	
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	0.25	J
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	39.	B
71-55-6	1,1,1-Trichloroethane	19.	
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	51.	
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	39.	
123-91-1	1,4-Dioxane	360	

Report 1,4-Dioxane for Low-Medium VOA analysis only

VLM0754
2013

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4B99

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B70

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331163024

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: JR40C024

Level: (TRACE/LOW/MED) LOW Date Received: 11/07/2013

% Moisture: not dec. Date Analyzed: 11/11/2013

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.81	J
108-87-2	Methylcyclohexane	25.	
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	32.	
108-10-1	4-Methyl-2-Pentanone	92.	
108-88-3	Toluene	47.	
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	25.	
127-18-4	Tetrachloroethene	0.27	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	45.	
106-93-4	1,2-Dibromoethane	36.	
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	33.	
100-42-5	Styrene	34.	
75-25-2	Bromoform	0.47	J
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	22.	
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	29.	B
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	26.	
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	45.	B

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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
A4B99

Lab Name: ALS Environmental Contract: EPW11037
Lab Code: DATAC Case No.: 43906 Mod. Ref No.: _____ SDG No.: A4B70
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331163024
Sample wt/vol: 5.00 (g/mL) mL Lab File ID: JR40C024
Level: (TRACE or LOW/MED) LOW Date Received: 11/07/2013
% Moisture: not dec. _____ Date Analyzed: 11/11/2013
GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	108-67-8	Mesitylene	12.79	35.	JN
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

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1 of 3

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4B97

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B70

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331163023

Sample wt/vol: 1000 (g/mL) mL Lab File ID: DJT14C23

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 11/07/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 11/07/2013

Injection Volume: 1.0 (uL) GPC Factor: Date Analyzed: 11/12/2013

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
100-52-7	Benzaldehyde	35.	
108-95-2	Phenol	5.0	U
111-44-4	Bis(2-chloroethyl)ether	5.0	U
95-57-8	2-Chlorophenol	35.	
95-48-7	2-Methylphenol	5.0	U
108-60-1	2,2'-Oxybis(1-chloropropane)	50.	
98-86-2	Acetophenone	37.	
106-44-5	4-Methylphenol	5.0	U
621-64-7	N-Nitroso-di-n-propylamine	5.0	U
67-72-1	Hexachloroethane	15.	
98-95-3	Nitrobenzene	57.	
78-59-1	Isophorone	5.0	U
88-75-5	2-Nitrophenol	46.	
105-67-9	2,4-Dimethylphenol	5.0	U
111-91-1	Bis(2-chloroethoxy)methane	5.0	U
120-83-2	2,4-Dichlorophenol	24.	
91-20-3	Naphthalene	15.	
106-47-8	4-Chloroaniline	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
105-60-2	Caprolactam	5.0	U
59-50-7	4-Chloro-3-methylphenol	36.	
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U
88-06-2	2,4,6-Trichlorophenol	32.	
95-95-4	2,4,5-Trichlorophenol	5.0	U
92-52-4	1,1'-Biphenyl	39.	
91-58-7	2-Chloronaphthalene	5.0	U
88-74-4	2-Nitroaniline	63.	
131-11-3	Dimethylphthalate	5.0	U
606-20-2	2,6-Dinitrotoluene	42.	
208-96-8	Acenaphthylene	47.	
99-09-2	3-Nitroaniline	10.	U
83-32-9	Acenaphthene	4.6	J

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1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4B97

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B70

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331163023

Sample wt/vol: 1000 (g/mL) mL Lab File ID: DJT14C23

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 11/07/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 11/07/2013

Injection Volume: 1.0 (uL) GPC Factor: Date Analyzed: 11/12/2013

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10.	U
100-02-7	4-Nitrophenol	55.	
132-64-9	Dibenzofuran	21.	
121-14-2	2,4-Dinitrotoluene	50.	
84-66-2	Diethylphthalate	49.	
86-73-7	Fluorene	8.9	
7005-72-3	4-Chlorophenyl-phenylether	5.0	U
100-01-6	4-Nitroaniline	10.	U
534-52-1	4,6-Dinitro-2-methylphenol	10.	U
86-30-6	N-Nitrosodiphenylamine[1]	54.	
95-94-3	1,2,4,5-Tetrachlorobenzene	20.	
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	41.	
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	37.	
85-01-8	Phenanthrene	34.	
120-12-7	Anthracene	5.0	U
86-74-8	Carbazole	5.0	U
84-74-2	Di-n-butylphthalate	43.	
206-44-0	Fluoranthene	5.0	U
129-00-0	Pyrene	17.	
85-68-7	Butylbenzylphthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	3.6	J
56-55-3	Benzo(a)anthracene	42.	
218-01-9	Chrysene	5.0	U
117-81-7	Bis(2-ethylhexyl)phthalate	7.1	B
117-84-0	Di-n-octylphthalate	30.	
205-99-2	Benzo(b)fluoranthene	35.	
207-08-9	Benzo(k)fluoranthene	5.0	U
50-32-8	Benzo(a)pyrene	21.	
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
53-70-3	Dibenzo(a,h)anthracene	50.	
191-24-2	Benzo(g,h,i)perylene	24.	
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

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1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A4B97

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B70

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331163023

Sample wt/vol: 1000 (g/mL) mL Lab File ID: DJT14C23

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 11/07/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 11/07/2013

Injection Volume: 1.0 (uL) GPC Factor: Date Analyzed: 11/12/2013

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CONCENTRATION UNITS:(ug/L or ug/kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown Cyclohexane-1,2,3-trione-1,3-dioxime	6.47	3.7	J
02	90-12-0	Naphthalene, 1-methyl-	7.25	44.	JN
03	1000255-97-9	4-Carbethoxy-3-chloropyrrolidine	9.42	3.0	JN
04		Unknown 2,2,4-Trimethyl-1,3-pentanediol diisobut	9.52	3.2	JB
05		Unknown 2-Methyl-1,4,5,8-tetraza-phenanthrene	10.20	4.3	J
06	1610-17-9	Atraton	10.97	3.4	JN
07		Unknown 2-Dimethylamino-3-methyl(phenyl)amino-1,	16.18	8.6	J
08		Unknown Phthalic anhydride	18.77	24.	JB
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

Engineering a Sustainable Future

December 20, 2013
Nobis File No. 80022

Mr. Dan Keefe
EPA Site Manager
EPA-New England Region I
5 Post Office Square
Suite 100, Mailcode OSRR07-4
Boston, MA 02109-3912

Re: Contract No. EP-S1-06-03
Task Order No. 0022-RA-RA-0115
Case No. 43906, Sample Delivery Group (SDG) No. A4B89
ALS Group (DATAC), Salt Lake City, UT
Nyanza Chemical Waste Dump, OU2 Superfund Site
Ashland, Massachusetts
CERCLIS No.: MAD990685422

Tier 1 Plus Organic Data Validation with Stage 2B Electronic Qualification (S2BVEM)

Low Level Volatiles and Semi-volatiles:
18/Groundwater: A4B89-A4B91, A4B93, A4B95, A4BA2-A4BA9, A4BB0-A4BB4
1/Field Duplicate: A4BB3/A4BB4
2/Trip Blanks: A4B94, A4BA1
2/PE Samples: A4B96 (SV0303); A4BA0 (VLM0855)

Dear Mr. Keefe:

Nobis Engineering, Inc. performed a Tier 1 plus data validation in accordance with the *Region I, EPA-NE Environmental Data Review Supplement for Regional Data Review Elements and Superfund Specific Guidance/Procedures,* (April 2013) on the organic analytical data for 18 groundwater samples, two trip blanks, and two performance evaluation samples (PEs) collected by Nobis Engineering, Inc. at the Nyanza Chemical Waste Dump, OU2 Superfund Site located in Ashland, Massachusetts. The samples were analyzed for low level volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) under the Contract Laboratory Program Routine Analytical Services (CLP RAS) program using the CLP SOM01.2 Statement of Work. A Tier I plus data validation was deemed sufficient at this time.

Stage 2B electronic qualification was performed through EPA's Environmental Data Exchange and Evaluation System (EXES) Data Manager (EDMS) which uses *USEPA's Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review*, (June 2008) criteria for automated validation. EXES Data Review Report #3 indicates data of non-compliance that resulted in qualification based on field and laboratory blank contamination, calibration criteria, and surrogate recoveries for VOCs and blank contamination and internal standard criteria for SVOCs.

Nobis Engineering, Inc.
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

The data were evaluated based on the following parameters:

*	•	Overall Evaluation of Data and Potential Usability Issues (Manual)
*	•	Data Completeness (EDMS and Manual)
*	•	Preservation and Technical Holding Times (EDMS)
	•	Initial and Continuing Calibrations (EDMS)
	•	Laboratory Blanks (EDMS)
	•	Field Blanks (Manual)
	•	Deuterated Monitoring Compounds (DMC)/Surrogate Compounds (EDMS)
NA	•	Laboratory Control Samples (EDMS)
*	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) (EDMS and Manual)
*	•	Field Duplicates (Manual)
	•	Internal Standards (EDMS)
*	•	Performance Evaluation (PE) Sample Results (Manual)
*	•	Reported Quantitation Limits (EDMS)

* All criteria were met for this parameter.
NA – Not applicable.

Overall Evaluation of Data and Potential Usability Issues

The objectives of the groundwater and DNAPL sampling at the site are to provide a comprehensive evaluation of the shallow and deep groundwater contaminants at the site and to evaluate the feasibility of implementing monitored natural attenuation (MNA) as a remedial alternative for the site.

Data are usable for the purposes of the project except for non-detected 1,4-dioxane results, which were rejected due to calibration non-conformance and associated SVOC analytes in sample A4B90 were rejected due to internal standard failure.

Data Completeness

The data package is complete. The complete SDG file (CSF) inventory sheet documents details of the package reviewed. The contract compliance screening (CCS) report did not identify any issues with the data package. Sample A4B93 was analyzed for VOCs only.

Data presented in the Summary Tables include qualifiers assigned by EDMS. Qualifications for these parameters were assessed under the Stage 2B Validation Electronic (S2BVE) scenario. Qualification was performed by EDMS or manually based on parameters identified above.

Initial and Continuing Calibrations

EDMS identified the following initial and continuing calibration criteria failures requiring qualification of the data:

VOCs:

The relative response factors were outside control limits in the initial and continuing calibrations for 1,4-dioxane. Detected compounds are qualified as estimated (J) and non-detected compounds are qualified as rejected (R).

Blanks

EDMS identified the following laboratory blank contamination requiring qualification of data:

VOCs:

Chloroform, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2,3-trichlorobenzene, and 1,2,4-trichlorobenzene results were negated (qualified U) in several samples due to method blank contamination. See EXES Report #3 for details.

SVOCs:

Bis(2-ethylhexyl)phthalate was negated (qualified U) in several samples due to method blank contamination. See EXES Report #3 for details.

Trip Blank A4B94 exhibited trace level detections of acetone, chloroform, trichloroethene, chlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, and 1,2,4-trichlorobenzene. Associated samples (A4B89-91, A4B93, and A4B95) with detections for these analytes less than the CRQL are qualified as non-detect (U) at the CRQL. Qualifications are summarized in the Data Review Qualification Actions table.

Trip Blank A4BA1 exhibited trace level detections of acetone, methylene chloride, 2-butanone, chloroform, trichloroethene, toluene, chlorobenzene, 1,3-dichlorobenzene, and 1,2-dichlorobenzene. Associated samples (A4BA2-A9 and A4BB0-B4) with detections for these analytes less than the CRQL are qualified as non-detect (U) at the CRQL. Qualifications are summarized in the Data Review Qualification Actions table.

Deuterated Monitoring Compounds (DMCs)

VOCs:

The DMC 1,1,2,2-tetrachloroethane-d2 was biased low in sample analysis of A4B93. Results for 1,1,2,2-tetrachloroethane and 1,2-dibromo-2-chloropropane were qualified as estimated (UJ).

Internal Standards

EDMS identified the following internal standard criteria failures requiring qualification of data:

SVOCs:

Internal standard area counts are outside the lower control limits for perylene-d12 in samples A4B90 and A4B90RE. Associated analytes (benzo(a)pyrene, benzo(b)fluroanthene, benzo(ghi)perylene, benzo(k)flouranthene, di-n-octylphthalate, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were qualified (J) for detected analytes and rejected (R) for non-detected analytes. The reanalysis confirmed matrix interference. Both sets of samples were reported, however, the second set of results was manually removed as to only report one set of data per sample.

PE Sample Results

PE sample VLM0855 (A4BA0) and SV0303 (A4B96) were submitted for VOCs and SVOCs analyses, respectively. The sample results were scored by EPA. The results were evaluated and manually qualified as follows:

VOCs:

All analytes received passing scores. 1,2,4-Trimethylbenzene was a tentatively identified compound (TIC), which was missed. As this is not a target analyte and no sample TICs were reported, no qualification was necessary.

SVOCs:

All target analytes received passing scores. Three TICs were reported in the PE that were not spiked. However, the TICs were only identified in the PE sample; therefore, there is no impact to the data.

Reported Quantitation Limits

Several samples were analyzed for VOCs and SVOCs with dilutions to obtain target analytes within the calibration range. Reporting limits were adjusted accordingly. Duplicate results were manually removed so that only one analyte result was reported for each sample.

Please contact me at (978) 703-6021 or gderuzzo@nobiseng.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS ENGINEERING, INC.

Gail DeRuzzo
Lead Chemist

Tables: Data Summary Tables

Enclosures: PE Sample Results
EXES Report #3
CCS Reports
CSF Audit (DC-2 Forms)

Cc: Steve Remaley, US EPA Region IX (via email- Memo and PE scores)
Vicki Maynard, RSCC (via email – Memo and Data Summary)

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Groundwater

Sample Name	A4B89	A4B90	A4B91	A4B93	A4B95	A4BA2
Location ID	MW-405A	MW-405B	MW-406A	MADEP-MW-1	MW-403B	MW-113A
Station ID	MW-405A-110513A	MW-405B-110513A	MW-406A-110513A	DEP-MW1-110513A	MW-403B-110513A	MW-113A-110613A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/06/13
Volatiles (ug/L)						
1,1,1-Trichloroethane	5 U	25 U	5 U	5 U	5 U	500 U
1,1,2,2-Tetrachloroethane	5 U	25 U	5 U	5 UJ	5 U	500 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5 U	25 U	5 U	5 U	5 U	500 U
1,1,2-Trichloroethane	5 U	25 U	5 U	5 U	5 U	500 U
1,1-Dichloroethane	5 U	25 U	5 U	5 U	5 U	500 U
1,1-Dichloroethene	0.9 J	9.4 J	5 U	5 U	5 U	500 U
1,2,3-Trichlorobenzene	5 U	25 U	5 U	5 U	5 U	500 U
1,2,4-Trichlorobenzene	5 U	140	5 U	6.6	5 U	510
1,2-Dibromo-3-Chloropropane	5 U	25 U	5 U	5 UJ	5 U	500 U
1,2-Dibromoethane	5 U	25 U	5 U	5 U	5 U	500 U
1,2-Dichlorobenzene	73	1800	5 U	15	5 U	64000
1,2-Dichloroethane	5 U	25 U	5 U	5 U	5 U	500 U
1,2-Dichloropropane	5 U	25 U	5 U	5 U	5 U	500 U
1,3-Dichlorobenzene	5 U	29	5 U	5 U	5 U	2500
1,4-Dichlorobenzene	11	320	5 U	5 U	5 U	15000
1,4-Dioxane	R	R	R	R	R	R
2-Butanone	10 U	50 U	10 U	20	10 U	1000 U
2-Hexanone	10 U	50 U	10 U	10 U	10 U	1000 U
4-Methyl-2-Pentanone	10 U	50 U	10 U	10 U	10 U	1000 U
Acetone	10 U	50 U	10 U	94	10 U	1000 U
Benzene	2.2 J	35	5 U	5 U	5 U	140 J
Bromochloromethane	5 U	25 U	5 U	5 U	5 U	500 U
Bromodichloromethane	5 U	25 U	5 U	5 U	5 U	500 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Groundwater

Sample Name	A4B89	A4B90	A4B91	A4B93	A4B95	A4BA2
Location ID	MW-405A	MW-405B	MW-406A	MADEP-MW-1	MW-403B	MW-113A
Station ID	MW-405A-110513A	MW-405B-110513A	MW-406A-110513A	DEP-MW1-110513A	MW-403B-110513A	MW-113A-110613A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/06/13
Bromoform	5 U	25 U	5 U	5 U	5 U	500 U
Bromomethane	5 U	25 U	5 U	5 U	5 U	500 U
Carbon Disulfide	5 U	25 U	5 U	0.33 J	5 U	500 U
Carbon Tetrachloride	5 U	25 U	5 U	5 U	5 U	500 U
Chlorobenzene	160	2400	5 U	5 U	5 U	49000
Chloroethane	5 U	25 U	5 U	5 U	5 U	500 U
Chloroform	5 U	25 U	5 U	8.7	5 U	500 U
Chloromethane	5 U	25 U	5 U	5 U	5 U	500 U
cis-1,2-Dichloroethene	49	1500	0.3 J	1.8 J	5 U	27 J
cis-1,3-Dichloropropene	5 U	25 U	5 U	5 U	5 U	500 U
Cyclohexane	5 U	25 U	5 U	5 U	5 U	500 U
Dibromochloromethane	5 U	25 U	5 U	5 U	5 U	500 U
Dichlorodifluoromethane	5 U	25 U	5 U	5 U	5 U	500 U
Ethylbenzene	5 U	1.6 J	5 U	5 U	5 U	500 U
Isopropylbenzene	5 U	25 U	5 U	5 U	5 U	500 U
m,p-Xylene	5 U	2.1 J	5 U	5 U	5 U	500 U
Methyl Acetate	5 U	25 U	5 U	5 U	5 U	500 U
Methyl Tert-Butyl Ether	5 U	25 U	5 U	0.6 J	5 U	500 U
Methylcyclohexane	5 U	25 U	5 U	5 U	5 U	500 U
Methylene Chloride	5 U	25 U	5 U	5 U	5 U	500 U
o-Xylene	5 U	3.1 J	5 U	5 U	5 U	500 U
Styrene	5 U	25 U	5 U	5 U	5 U	500 U
Tetrachloroethene	5 U	25 U	0.18 J	5 U	5 U	500 U
Toluene	0.33 J	7.9 J	5 U	5 U	5 U	500 U
trans-1,2-Dichloroethene	5 U	1.7 J	5 U	5 U	5 U	500 U
trans-1,3-Dichloropropene	5 U	25 U	5 U	5 U	5 U	500 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Groundwater

Sample Name	A4B89	A4B90	A4B91	A4B93	A4B95	A4BA2
Location ID	MW-405A	MW-405B	MW-406A	MADEP-MW-1	MW-403B	MW-113A
Station ID	MW-405A-110513A	MW-405B-110513A	MW-406A-110513A	DEP-MW1-110513A	MW-403B-110513A	MW-113A-110613A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/06/13
Trichloroethene	120	1400	5 U	5 U	5 U	47000
Trichlorofluoromethane	5 U	25 U	5 U	5 U	5 U	500 U
Vinyl Chloride	0.4 J	7.1 J	5 U	5 U	5 U	500 U
Semivolatiles (ug/L)						
1,1'-Biphenyl	25 U	50 U	25 U		25 U	250 U
1,2,4,5-Tetrachlorobenzene	25 U	50 U	25 U		25 U	250 U
2,2'-Oxybis(1-Chloropropane)	25 U	50 U	25 U		25 U	250 U
2,3,4,6-Tetrachlorophenol	25 U	50 U	25 U		25 U	250 U
2,4,5-Trichlorophenol	25 U	50 U	25 U		25 U	250 U
2,4,6-Trichlorophenol	25 U	50 U	25 U		25 U	250 U
2,4-Dichlorophenol	25 U	50 U	25 U		25 U	250 U
2,4-Dimethylphenol	25 U	50 U	25 U		25 U	250 U
2,4-Dinitrophenol	50 U	100 U	50 U		50 U	500 U
2,4-Dinitrotoluene	25 U	50 U	25 U		25 U	250 U
2,6-Dinitrotoluene	25 U	50 U	25 U		25 U	250 U
2-Chloronaphthalene	25 U	50 U	25 U		25 U	250 U
2-Chlorophenol	25 U	50 U	25 U		25 U	250 U
2-Methylnaphthalene	25 U	50 U	25 U		25 U	250 U
2-Methylphenol	25 U	50 U	25 U		25 U	250 U
2-Nitroaniline	50 U	100 U	50 U		50 U	500 U
2-Nitrophenol	25 U	50 U	25 U		25 U	250 U
3,3'-Dichlorobenzidine	25 U	50 U	25 U		25 U	21 J
3-Nitroaniline	50 U	100 U	50 U		50 U	500 U
4,6-Dinitro-2-Methylphenol	50 U	100 U	50 U		50 U	500 U
4-Bromophenyl-Phenylether	25 U	50 U	25 U		25 U	250 U
4-Chloro-3-Methylphenol	25 U	50 U	25 U		25 U	250 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Groundwater

Sample Name	A4B89	A4B90	A4B91	A4B93	A4B95	A4BA2
Location ID	MW-405A	MW-405B	MW-406A	MADEP-MW-1	MW-403B	MW-113A
Station ID	MW-405A-110513A	MW-405B-110513A	MW-406A-110513A	DEP-MW1-110513A	MW-403B-110513A	MW-113A-110613A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/06/13
4-Chloroaniline	25 U	50 U	25 U		25 U	250 U
4-Chlorophenyl-Phenylether	25 U	50 U	25 U		25 U	250 U
4-Methylphenol	25 U	50 U	25 U		25 U	250 U
4-Nitroaniline	50 U	100 U	50 U		50 U	500 U
4-Nitrophenol	50 U	100 U	50 U		50 U	500 U
Acenaphthene	25 U	50 U	25 U		25 U	250 U
Acenaphthylene	25 U	50 U	25 U		25 U	250 U
Acetophenone	25 U	50 U	25 U		25 U	250 U
Anthracene	25 U	50 U	25 U		25 U	250 U
Atrazine	25 U	50 U	25 U		25 U	250 U
Benzaldehyde	25 U	50 U	25 U		25 U	250 U
Benzo(a)anthracene	25 U	50 U	25 U		25 U	250 U
Benzo(a)pyrene	25 U	R	25 U		25 U	250 U
Benzo(b)fluoranthene	25 U	R	25 U		25 U	250 U
Benzo(g,h,i)perylene	25 U	R	25 U		25 U	250 U
Benzo(k)fluoranthene	25 U	R	25 U		25 U	250 U
Bis(2-Chloroethoxy)Methane	25 U	50 U	25 U		25 U	250 U
Bis(2-Chloroethyl)Ether	25 U	50 U	25 U		25 U	250 U
Bis(2-ethylhexyl)phthalate	25 U	50 U	25 U		25 U	250 U
Butylbenzylphthalate	25 U	50 U	25 U		25 U	250 U
Caprolactam	25 U	4.8 J	25 U		25 U	250 U
Carbazole	25 U	50 U	25 U		25 U	250 U
Chrysene	25 U	50 U	25 U		25 U	250 U
Dibenz(a,h)Anthracene	25 U	R	25 U		25 U	250 U
Dibenzofuran	25 U	50 U	25 U		25 U	250 U
Diethylphthalate	25 U	50 U	25 U		25 U	250 U

U - Not Detected; J - Estimated; R - Rejected

Sample Name	A4B89	A4B90	A4B91	A4B93	A4B95	A4BA2
Location ID	MW-405A	MW-405B	MW-406A	MADEP-MW-1	MW-403B	MW-113A
Station ID	MW-405A-110513A	MW-405B-110513A	MW-406A-110513A	DEP-MW1-110513A	MW-403B-110513A	MW-113A-110613A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/06/13
Dimethylphthalate	25 U	50 U	25 U		25 U	250 U
Di-N-Butyl Phthalate	25 U	50 U	25 U		25 U	250 U
Di-N-Octyl Phthalate	25 U	R	25 U		25 U	250 U
Fluoranthene	25 U	50 U	25 U		25 U	250 U
Fluorene	25 U	50 U	25 U		25 U	250 U
Hexachlorobenzene	25 U	50 U	25 U		25 U	250 U
Hexachlorobutadiene	25 U	50 U	25 U		25 U	250 U
Hexachlorocyclopentadiene	25 U	50 U	25 U		25 U	250 U
Hexachloroethane	25 U	50 U	25 U		25 U	250 U
Indeno(1,2,3-cd)Pyrene	25 U	R	25 U		25 U	250 U
Isophorone	25 U	50 U	25 U		25 U	250 U
Naphthalene	25 U	11 J	25 U		25 U	32 J
Nitrobenzene	25 U	50 U	25 U		25 U	280000
N-Nitroso-Di-N-Propylamine	25 U	50 U	25 U		25 U	250 U
N-Nitrosodiphenylamine	25 U	50 U	25 U		25 U	250 U
Pentachlorophenol	50 U	100 U	50 U		50 U	500 U
Phenanthrene	25 U	50 U	25 U		25 U	250 U
Phenol	25 U	50 U	25 U		25 U	250 U
Pyrene	25 U	50 U	25 U		25 U	250 U

Qualifier Actions:

1,4-dioxane J/R for calibration failures.

Analytes associated with ISTD perylene-d12 J/R in sample A4B90.

1,1,2,2-TCA and DBCP UJ in sample A4B93 due to DMC failure.

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Groundwater

Sample Name	A4BA3	A4BA4	A4BA5	A4BA6	A4BA7	A4BA8
Location ID	MW-113B	MW-104A	MW-104B	MW-305A	MW-204A	MW-305B
Station ID	MW-113B-110613A	MW-104A-110613A	MW-104B-110613A	MW-305A-110613A	MW-204A-110613A	MW-305B-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
Volatiles (ug/L)						
1,1,1-Trichloroethane	0.6 J	1 J	5 U	1.1 J	0.43 J	5 U
1,1,2,2-Tetrachloroethane	5 U	25 U	5 U	10 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5 U	25 U	5 U	10 U	5 U	5 U
1,1,2-Trichloroethane	5 U	25 U	5 U	10 U	5 U	5 U
1,1-Dichloroethane	5 U	25 U	0.34 J	0.38 J	0.24 J	5 U
1,1-Dichloroethene	2 J	5.6 J	5 U	2.7 J	1.2 J	5 U
1,2,3-Trichlorobenzene	5 U	25 U	5 U	10 U	5 U	5 U
1,2,4-Trichlorobenzene	20	25 U	5 U	78	7.4	5 U
1,2-Dibromo-3-Chloropropane	5 U	25 U	5 U	10 U	5 U	5 U
1,2-Dibromoethane	5 U	25 U	5 U	10 U	5 U	5 U
1,2-Dichlorobenzene	220	2700	5.4	880	84	5 U
1,2-Dichloroethane	5 U	25 U	5 U	10 U	5 U	5 U
1,2-Dichloropropane	5 U	25 U	5 U	10 U	5 U	5 U
1,3-Dichlorobenzene	10	25 U	5 U	33	5 U	5 U
1,4-Dichlorobenzene	44	220	5 U	190	17	5 U
1,4-Dioxane	R	R	R	R	R	R
2-Butanone	10 U	50 U	10 U	20 U	10 U	10 U
2-Hexanone	10 U	50 U	10 U	20 U	10 U	10 U
4-Methyl-2-Pentanone	10 U	50 U	10 U	20 U	10 U	10 U
Acetone	10 U	50 U	10 U	20 U	10 U	10 U
Benzene	0.81 J	25 U	5 U	1.8 J	1.4 J	5 U
Bromochloromethane	5 U	25 U	5 U	10 U	5 U	5 U
Bromodichloromethane	5 U	25 U	5 U	10 U	5 U	5 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Groundwater

Sample Name	A4BA3	A4BA4	A4BA5	A4BA6	A4BA7	A4BA8
Location ID	MW-113B	MW-104A	MW-104B	MW-305A	MW-204A	MW-305B
Station ID	MW-113B-110613A	MW-104A-110613A	MW-104B-110613A	MW-305A-110613A	MW-204A-110613A	MW-305B-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
Bromoform	5 U	25 U	5 U	10 U	5 U	5 U
Bromomethane	5 U	25 U	5 U	10 U	5 U	5 U
Carbon Disulfide	5 U	25 U	5 U	10 U	5 U	5 U
Carbon Tetrachloride	5 U	25 U	5 U	10 U	5 U	5 U
Chlorobenzene	86	34	5 U	360	38	5 U
Chloroethane	5 U	25 U	5 U	10 U	5 U	5 U
Chloroform	5 U	25 U	5 U	10 U	5 U	5 U
Chloromethane	5 U	25 U	5 U	10 U	5 U	5 U
cis-1,2-Dichloroethene	100	430	73	100	38	5 U
cis-1,3-Dichloropropene	5 U	25 U	5 U	10 U	5 U	5 U
Cyclohexane	5 U	25 U	5 U	10 U	5 U	5 U
Dibromochloromethane	5 U	25 U	5 U	10 U	5 U	5 U
Dichlorodifluoromethane	5 U	25 U	5 U	10 U	5 U	5 U
Ethylbenzene	5 U	25 U	5 U	10 U	5 U	5 U
Isopropylbenzene	5 U	25 U	5 U	10 U	5 U	5 U
m,p-Xylene	5 U	25 U	5 U	10 U	5 U	5 U
Methyl Acetate	5 U	25 U	5 U	10 U	5 U	5 U
Methyl Tert-Butyl Ether	5 U	25 U	5 U	10 U	5 U	5 U
Methylcyclohexane	5 U	25 U	5 U	10 U	5 U	5 U
Methylene Chloride	5 U	25 U	5 U	10 U	5 U	5 U
o-Xylene	5 U	25 U	5 U	10 U	5 U	5 U
Styrene	5 U	25 U	5 U	10 U	5 U	5 U
Tetrachloroethene	5 U	25 U	5 U	10 U	5 U	5 U
Toluene	5 U	25 U	5 U	10 U	5 U	5 U
trans-1,2-Dichloroethene	1.2 J	3.9 J	0.69 J	2.1 J	0.4 J	5 U
trans-1,3-Dichloropropene	5 U	25 U	5 U	10 U	5 U	5 U

U - Not Detected; J - Estimated; R - Rejected

Sample Name	A4BA3	A4BA4	A4BA5	A4BA6	A4BA7	A4BA8
Location ID	MW-113B	MW-104A	MW-104B	MW-305A	MW-204A	MW-305B
Station ID	MW-113B-110613A	MW-104A-110613A	MW-104B-110613A	MW-305A-110613A	MW-204A-110613A	MW-305B-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
Trichloroethene	320	990	17	1000	360	5 U
Trichlorofluoromethane	5 U	25 U	5 U	10 U	5 U	5 U
Vinyl Chloride	7.8	12 J	5 U	2.8 J	3.1 J	5 U
Semivolatiles (ug/L)						
1,1'-Biphenyl	50 U	50 U	25 U	50 U	25 U	25 U
1,2,4,5-Tetrachlorobenzene	50 U	50 U	25 U	50 U	25 U	25 U
2,2'-Oxybis(1-Chloropropane)	50 U	50 U	25 U	50 U	25 U	25 U
2,3,4,6-Tetrachlorophenol	50 U	50 U	25 U	50 U	25 U	25 U
2,4,5-Trichlorophenol	50 U	50 U	25 U	50 U	25 U	25 U
2,4,6-Trichlorophenol	50 U	50 U	25 U	50 U	25 U	25 U
2,4-Dichlorophenol	50 U	50 U	25 U	50 U	25 U	25 U
2,4-Dimethylphenol	50 U	50 U	25 U	50 U	25 U	25 U
2,4-Dinitrophenol	100 U	100 U	50 U	100 U	50 U	50 U
2,4-Dinitrotoluene	50 U	50 U	25 U	50 U	25 U	25 U
2,6-Dinitrotoluene	50 U	50 U	25 U	50 U	25 U	25 U
2-Chloronaphthalene	50 U	50 U	25 U	50 U	25 U	25 U
2-Chlorophenol	50 U	50 U	25 U	50 U	25 U	25 U
2-Methylnaphthalene	50 U	50 U	25 U	50 U	25 U	25 U
2-Methylphenol	50 U	50 U	25 U	50 U	25 U	25 U
2-Nitroaniline	100 U	100 U	50 U	100 U	50 U	50 U
2-Nitrophenol	50 U	50 U	25 U	50 U	25 U	25 U
3,3'-Dichlorobenzidine	50 U	50 U	25 U	50 U	25 U	25 U
3-Nitroaniline	100 U	100 U	50 U	100 U	50 U	50 U
4,6-Dinitro-2-Methylphenol	100 U	100 U	50 U	100 U	50 U	50 U
4-Bromophenyl-Phenylether	50 U	50 U	25 U	50 U	25 U	25 U
4-Chloro-3-Methylphenol	50 U	50 U	25 U	50 U	25 U	25 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Groundwater

Sample Name	A4BA3	A4BA4	A4BA5	A4BA6	A4BA7	A4BA8
Location ID	MW-113B	MW-104A	MW-104B	MW-305A	MW-204A	MW-305B
Station ID	MW-113B-110613A	MW-104A-110613A	MW-104B-110613A	MW-305A-110613A	MW-204A-110613A	MW-305B-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
4-Chloroaniline	50 U	50 U	25 U	50 U	25 U	25 U
4-Chlorophenyl-Phenylether	50 U	50 U	25 U	50 U	25 U	25 U
4-Methylphenol	50 U	50 U	25 U	50 U	25 U	25 U
4-Nitroaniline	100 U	100 U	50 U	100 U	50 U	50 U
4-Nitrophenol	100 U	100 U	50 U	100 U	50 U	50 U
Acenaphthene	50 U	50 U	25 U	50 U	25 U	25 U
Acenaphthylene	50 U	50 U	25 U	50 U	25 U	25 U
Acetophenone	50 U	50 U	25 U	50 U	25 U	25 U
Anthracene	50 U	50 U	25 U	50 U	25 U	25 U
Atrazine	50 U	50 U	25 U	50 U	25 U	25 U
Benzaldehyde	50 U	50 U	25 U	50 U	25 U	25 U
Benzo(a)anthracene	50 U	50 U	25 U	50 U	6 J	25 U
Benzo(a)pyrene	50 U	50 U	25 U	50 U	8.2 J	25 U
Benzo(b)fluoranthene	50 U	50 U	25 U	50 U	16 J	25 U
Benzo(g,h,i)perylene	50 U	50 U	25 U	50 U	7 J	25 U
Benzo(k)fluoranthene	50 U	50 U	25 U	50 U	5 J	25 U
Bis(2-Chloroethoxy)Methane	50 U	50 U	25 U	50 U	25 U	25 U
Bis(2-Chloroethyl)Ether	50 U	50 U	25 U	50 U	25 U	25 U
Bis(2-ethylhexyl)phthalate	50 U	50 U	25 U	50 U	25 U	25 U
Butylbenzylphthalate	50 U	50 U	25 U	50 U	25 U	25 U
Caprolactam	50 U	50 U	25 U	50 U	25 U	25 U
Carbazole	50 U	50 U	25 U	50 U	3.9 J	25 U
Chrysene	50 U	50 U	25 U	50 U	14 J	25 U
Dibenz(a,h)Anthracene	50 U	50 U	25 U	50 U	25 U	25 U
Dibenzofuran	50 U	50 U	25 U	50 U	25 U	25 U
Diethylphthalate	50 U	50 U	25 U	50 U	25 U	25 U

U - Not Detected; J - Estimated; R - Rejected

Sample Name	A4BA3	A4BA4	A4BA5	A4BA6	A4BA7	A4BA8
Location ID	MW-113B	MW-104A	MW-104B	MW-305A	MW-204A	MW-305B
Station ID	MW-113B-110613A	MW-104A-110613A	MW-104B-110613A	MW-305A-110613A	MW-204A-110613A	MW-305B-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
Dimethylphthalate	50 U	50 U	25 U	50 U	25 U	25 U
Di-N-Butyl Phthalate	50 U	50 U	25 U	50 U	25 U	25 U
Di-N-Octyl Phthalate	50 U	50 U	25 U	50 U	25 U	25 U
Fluoranthene	50 U	50 U	25 U	50 U	29	25 U
Fluorene	50 U	50 U	25 U	50 U	25 U	25 U
Hexachlorobenzene	50 U	50 U	25 U	50 U	25 U	25 U
Hexachlorobutadiene	50 U	50 U	25 U	50 U	25 U	25 U
Hexachlorocyclopentadiene	50 U	50 U	25 U	50 U	25 U	25 U
Hexachloroethane	50 U	50 U	25 U	50 U	25 U	25 U
Indeno(1,2,3-cd)Pyrene	50 U	50 U	25 U	50 U	7.4 J	25 U
Isophorone	50 U	50 U	25 U	50 U	25 U	25 U
Naphthalene	50 U	50 U	25 U	50 U	25 U	25 U
Nitrobenzene	59	38 J	25 U	78	16 J	25 U
N-Nitroso-Di-N-Propylamine	50 U	50 U	25 U	50 U	25 U	25 U
N-Nitrosodiphenylamine	50 U	50 U	25 U	50 U	25 U	25 U
Pentachlorophenol	100 U	100 U	50 U	100 U	50 U	50 U
Phenanthrene	50 U	50 U	25 U	50 U	15 J	25 U
Phenol	50 U	50 U	25 U	50 U	25 U	25 U
Pyrene	50 U	50 U	25 U	50 U	20 J	25 U

Qualifier Actions:

1,4-dioxane J/R for calibration failures.

Analytes associated with ISTD perylene-d12 J/R in sample A4B90.

1,1,2,2-TCA and DBCP UJ in sample A4B93 due to DMC failure.

Sample Name	A4BA9	A4BB0	A4BB1	A4BB2	A4BB3	A4BB4
Location ID	MW-09A	MW-6A	RW-1	MW-09B	SB-600	SB-600
Station ID	MW-9A-110613A	MW-6A-110613A	RW-1-110613A	MW-9B-110613A	SB-600-110613A	FDUP-02-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
Volatiles (ug/L)						
1,1,1-Trichloroethane	5 U	5 U	5.2 J	5 U	33 J	34 J
1,1,2,2-Tetrachloroethane	5 U	5 U	100 U	5 U	250 U	250 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5 U	5 U	100 U	5 U	250 U	250 U
1,1,2-Trichloroethane	5 U	5 U	100 U	5 U	250 U	250 U
1,1-Dichloroethane	5 U	5 U	100 U	5 U	250 U	250 U
1,1-Dichloroethene	5 U	5 U	100 U	5 U	54 J	52 J
1,2,3-Trichlorobenzene	5 U	13	100 U	5 U	250 U	250 U
1,2,4-Trichlorobenzene	5 U	37	180	5 U	250 U	250 U
1,2-Dibromo-3-Chloropropane	5 U	5 U	100 U	5 U	250 U	250 U
1,2-Dibromoethane	5 U	5 U	100 U	5 U	250 U	250 U
1,2-Dichlorobenzene	20	45	9900	74	1200	1200
1,2-Dichloroethane	5 U	5 U	100 U	5 U	250 U	250 U
1,2-Dichloropropane	5 U	5 U	100 U	5 U	250 U	250 U
1,3-Dichlorobenzene	5 U	5 U	400	5 U	250 U	250 U
1,4-Dichlorobenzene	7.4	11	2300	9	250 U	250 U
1,4-Dioxane	R	R	R	R	R	R
2-Butanone	10 U	10 U	200 U	10 U	500 U	500 U
2-Hexanone	10 U	10 U	200 U	10 U	500 U	500 U
4-Methyl-2-Pentanone	10 U	10 U	200 U	10 U	500 U	500 U
Acetone	10 U	10 U	200 U	10 U	500 U	500 U
Benzene	5 U	1.5 J	20 J	5 U	250 U	250 U
Bromochloromethane	5 U	5 U	100 U	5 U	250 U	250 U
Bromodichloromethane	5 U	5 U	100 U	5 U	250 U	250 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Groundwater

Sample Name	A4BA9	A4BB0	A4BB1	A4BB2	A4BB3	A4BB4
Location ID	MW-09A	MW-6A	RW-1	MW-09B	SB-600	SB-600
Station ID	MW-9A-110613A	MW-6A-110613A	RW-1-110613A	MW-9B-110613A	SB-600-110613A	FDUP-02-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
Bromoform	5 U	5 U	100 U	5 U	250 U	250 U
Bromomethane	5 U	5 U	100 U	5 U	250 U	250 U
Carbon Disulfide	5 U	5 U	100 U	5 U	250 U	250 U
Carbon Tetrachloride	5 U	5 U	100 U	5 U	250 U	250 U
Chlorobenzene	42	67	4500	5 U	250 U	250 U
Chloroethane	5 U	5 U	100 U	5 U	250 U	250 U
Chloroform	5 U	5 U	100 U	5 U	250 U	250 U
Chloromethane	5 U	5 U	100 U	5 U	250 U	250 U
cis-1,2-Dichloroethene	14	49	200	19	140 J	140 J
cis-1,3-Dichloropropene	5 U	5 U	100 U	5 U	250 U	250 U
Cyclohexane	5 U	5 U	100 U	5 U	250 U	250 U
Dibromochloromethane	5 U	5 U	100 U	5 U	250 U	250 U
Dichlorodifluoromethane	5 U	5 U	100 U	5 U	250 U	250 U
Ethylbenzene	5 U	0.93 J	100 U	5 U	250 U	250 U
Isopropylbenzene	5 U	5 U	100 U	5 U	250 U	250 U
m,p-Xylene	5 U	5 U	100 U	5 U	250 U	250 U
Methyl Acetate	5 U	5 U	100 U	5 U	250 U	250 U
Methyl Tert-Butyl Ether	5 U	5 U	100 U	5 U	250 U	250 U
Methylcyclohexane	5 U	5 U	100 U	5 U	250 U	250 U
Methylene Chloride	5 U	5 U	100 U	5 U	250 U	250 U
o-Xylene	5 U	5 U	100 U	5 U	250 U	250 U
Styrene	5 U	5 U	100 U	5 U	250 U	250 U
Tetrachloroethene	5 U	5 U	100 U	5 U	250 U	250 U
Toluene	5 U	5 U	100 U	5 U	250 U	250 U
trans-1,2-Dichloroethene	0.42 J	1.6 J	100 U	0.26 J	250 U	250 U
trans-1,3-Dichloropropene	5 U	5 U	100 U	5 U	250 U	250 U

U - Not Detected; J - Estimated; R - Rejected

Sample Name	A4BA9	A4BB0	A4BB1	A4BB2	A4BB3	A4BB4
Location ID	MW-09A	MW-6A	RW-1	MW-09B	SB-600	SB-600
Station ID	MW-9A-110613A	MW-6A-110613A	RW-1-110613A	MW-9B-110613A	SB-600-110613A	FDUP-02-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
Trichloroethene	5 U	18	6100	9.7	18000	20000
Trichlorofluoromethane	5 U	5 U	100 U	5 U	250 U	250 U
Vinyl Chloride	0.91 J	0.56 J	100 U	5 U	250 U	250 U
Semivolatiles (ug/L)						
1,1'-Biphenyl	25 U	25 U	100 U	25 U	50 U	25 U
1,2,4,5-Tetrachlorobenzene	25 U	25 U	100 U	25 U	50 U	25 U
2,2'-Oxybis(1-Chloropropane)	25 U	25 U	100 U	25 U	50 U	25 U
2,3,4,6-Tetrachlorophenol	25 U	25 U	100 U	25 U	50 U	25 U
2,4,5-Trichlorophenol	25 U	25 U	100 U	25 U	50 U	25 U
2,4,6-Trichlorophenol	25 U	25 U	100 U	25 U	50 U	25 U
2,4-Dichlorophenol	25 U	25 U	100 U	25 U	50 U	25 U
2,4-Dimethylphenol	25 U	25 U	100 U	25 U	50 U	25 U
2,4-Dinitrophenol	50 U	50 U	200 U	50 U	100 U	50 U
2,4-Dinitrotoluene	25 U	25 U	100 U	25 U	50 U	25 U
2,6-Dinitrotoluene	25 U	25 U	100 U	25 U	50 U	25 U
2-Chloronaphthalene	25 U	25 U	100 U	25 U	50 U	25 U
2-Chlorophenol	25 U	25 U	100 U	25 U	50 U	25 U
2-Methylnaphthalene	25 U	25 U	100 U	25 U	50 U	25 U
2-Methylphenol	25 U	25 U	100 U	25 U	50 U	25 U
2-Nitroaniline	50 U	50 U	200 U	50 U	100 U	50 U
2-Nitrophenol	25 U	25 U	100 U	25 U	50 U	2.5 J
3,3'-Dichlorobenzidine	25 U	25 U	100 U	25 U	50 U	25 U
3-Nitroaniline	50 U	50 U	200 U	50 U	100 U	50 U
4,6-Dinitro-2-Methylphenol	50 U	50 U	200 U	50 U	100 U	50 U
4-Bromophenyl-Phenylether	25 U	25 U	100 U	25 U	50 U	25 U
4-Chloro-3-Methylphenol	25 U	25 U	100 U	25 U	50 U	25 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Groundwater

Sample Name	A4BA9	A4BB0	A4BB1	A4BB2	A4BB3	A4BB4
Location ID	MW-09A	MW-6A	RW-1	MW-09B	SB-600	SB-600
Station ID	MW-9A-110613A	MW-6A-110613A	RW-1-110613A	MW-9B-110613A	SB-600-110613A	FDUP-02-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
4-Chloroaniline	25 U	25 U	100 U	25 U	50 U	25 U
4-Chlorophenyl-Phenylether	25 U	25 U	100 U	25 U	50 U	25 U
4-Methylphenol	25 U	25 U	100 U	25 U	50 U	25 U
4-Nitroaniline	50 U	50 U	200 U	50 U	100 U	50 U
4-Nitrophenol	50 U	50 U	200 U	50 U	9.1 J	11 J
Acenaphthene	25 U	25 U	100 U	25 U	50 U	25 U
Acenaphthylene	25 U	25 U	100 U	25 U	50 U	25 U
Acetophenone	25 U	25 U	100 U	25 U	50 U	25 U
Anthracene	25 U	25 U	100 U	25 U	50 U	25 U
Atrazine	25 U	25 U	100 U	25 U	50 U	25 U
Benzaldehyde	25 U	25 U	100 U	25 U	50 U	25 U
Benzo(a)anthracene	25 U	25 U	100 U	25 U	50 U	25 U
Benzo(a)pyrene	25 U	25 U	100 U	25 U	50 U	25 U
Benzo(b)fluoranthene	25 U	25 U	100 U	25 U	50 U	25 U
Benzo(g,h,i)perylene	25 U	25 U	100 U	25 U	50 U	25 U
Benzo(k)fluoranthene	25 U	25 U	100 U	25 U	50 U	25 U
Bis(2-Chloroethoxy)Methane	25 U	25 U	100 U	25 U	50 U	25 U
Bis(2-Chloroethyl)Ether	25 U	25 U	100 U	25 U	50 U	25 U
Bis(2-ethylhexyl)phthalate	25 U	25 U	100 U	25 U	50 U	25 U
Butylbenzylphthalate	25 U	25 U	100 U	25 U	50 U	25 U
Caprolactam	25 U	25 U	100 U	25 U	50 U	25 U
Carbazole	25 U	25 U	100 U	25 U	50 U	25 U
Chrysene	25 U	25 U	100 U	25 U	50 U	25 U
Dibenz(a,h)Anthracene	25 U	25 U	100 U	25 U	50 U	25 U
Dibenzofuran	25 U	25 U	100 U	25 U	50 U	25 U
Diethylphthalate	25 U	25 U	100 U	25 U	50 U	25 U

U - Not Detected; J - Estimated; R - Rejected

Sample Name	A4BA9	A4BB0	A4BB1	A4BB2	A4BB3	A4BB4
Location ID	MW-09A	MW-6A	RW-1	MW-09B	SB-600	SB-600
Station ID	MW-9A-110613A	MW-6A-110613A	RW-1-110613A	MW-9B-110613A	SB-600-110613A	FDUP-02-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
Dimethylphthalate	25 U	25 U	100 U	25 U	50 U	25 U
Di-N-Butyl Phthalate	25 U	25 U	100 U	25 U	50 U	25 U
Di-N-Octyl Phthalate	25 U	25 U	100 U	25 U	50 U	25 U
Fluoranthene	25 U	25 U	100 U	25 U	50 U	25 U
Fluorene	25 U	25 U	100 U	25 U	50 U	25 U
Hexachlorobenzene	25 U	25 U	100 U	25 U	50 U	25 U
Hexachlorobutadiene	25 U	25 U	100 U	25 U	50 U	25 U
Hexachlorocyclopentadiene	25 U	25 U	100 U	25 U	50 U	25 U
Hexachloroethane	25 U	25 U	100 U	25 U	50 U	25 U
Indeno(1,2,3-cd)Pyrene	25 U	25 U	100 U	25 U	50 U	25 U
Isophorone	25 U	25 U	100 U	25 U	50 U	25 U
Naphthalene	25 U	25 U	100 U	25 U	50 U	2.1 J
Nitrobenzene	25 U	25 U	15000	13 J	9700	10000
N-Nitroso-Di-N-Propylamine	25 U	25 U	100 U	25 U	50 U	25 U
N-Nitrosodiphenylamine	25 U	25 U	100 U	25 U	50 U	25 U
Pentachlorophenol	50 U	50 U	200 U	50 U	100 U	50 U
Phenanthrene	25 U	25 U	100 U	25 U	50 U	25 U
Phenol	25 U	25 U	100 U	25 U	50 U	2.8 J
Pyrene	25 U	25 U	100 U	25 U	50 U	25 U

Qualifier Actions:

1,4-dioxane J/R for calibration failures.

Analytes associated with ISTD perylene-d12 J/R in sample A4B90.

1,1,2,2-TCA and DBCP UJ in sample A4B93 due to DMC failure.

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Water

Sample Name	A4B94	A4BA1
Location ID	UNKNOWN	UNKNOWN
Station ID	TB-01-110613A	TB-02-110713A
Sample Date	11/06/13	11/07/13
Volatiles (ug/L)		
1,1,1-Trichloroethane	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5 U	5 U
1,1,2-Trichloroethane	5 U	5 U
1,1-Dichloroethane	5 U	5 U
1,1-Dichloroethene	5 U	5 U
1,2,3-Trichlorobenzene	5 U	5 U
1,2,4-Trichlorobenzene	0.33 J	5 U
1,2-Dibromo-3-Chloropropane	5 U	5 U
1,2-Dibromoethane	5 U	5 U
1,2-Dichlorobenzene	1.2 J	2 J
1,2-Dichloroethane	5 U	5 U
1,2-Dichloropropane	5 U	5 U
1,3-Dichlorobenzene	5 U	5 U
1,4-Dichlorobenzene	0.3 J	0.58 J
1,4-Dioxane	R	R
2-Butanone	3.7 J	4.4 J
2-Hexanone	10 U	10 U
4-Methyl-2-Pentanone	10 U	10 U
Acetone	8.2 J	8.2 J
Benzene	5 U	5 U
Bromochloromethane	5 U	5 U
Bromodichloromethane	5 U	5 U
Bromoform	5 U	5 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Water

Sample Name	A4B94	A4BA1
Location ID	UNKNOWN	UNKNOWN
Station ID	TB-01-110613A	TB-02-110713A
Sample Date	11/06/13	11/07/13
Bromomethane	5 U	5 U
Carbon Disulfide	5 U	5 U
Carbon Tetrachloride	5 U	5 U
Chlorobenzene	0.83 J	0.75 J
Chloroethane	5 U	5 U
Chloroform	2.3 J	1.4 J
Chloromethane	5 U	5 U
cis-1,2-Dichloroethene	5 U	5 U
cis-1,3-Dichloropropene	5 U	5 U
Cyclohexane	5 U	5 U
Dibromochloromethane	5 U	5 U
Dichlorodifluoromethane	5 U	5 U
Ethylbenzene	5 U	5 U
Isopropylbenzene	5 U	5 U
m,p-Xylene	5 U	5 U
Methyl Acetate	5 U	5 U
Methyl Tert-Butyl Ether	5 U	5 U
Methylcyclohexane	5 U	5 U
Methylene Chloride	5 U	0.26 J
o-Xylene	5 U	5 U
Styrene	5 U	5 U
Tetrachloroethene	5 U	5 U
Toluene	5 U	0.16 J
trans-1,2-Dichloroethene	5 U	5 U
trans-1,3-Dichloropropene	5 U	5 U
Trichloroethene	0.21 J	0.44 J

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B89
Volatiles in Water

Sample Name	A4B94	A4BA1
Location ID	UNKNOWN	UNKNOWN
Station ID	TB-01-110613A	TB-02-110713A
Sample Date	11/06/13	11/07/13
Trichlorofluoromethane	5 U	5 U
Vinyl Chloride	5 U	5 U

Qualifier Actions:

1,4-dioxane J/R for calibration failures.

PES SCORING EVALUATION REPORT

PES VLM0855 Rev: 1 EPA Sample No.: A4BA0 Report Date: 12/23/2013

Lab Name: ALS Laboratory Group - DataChem
Lab Code: DATAC
Contract: EPW11037
Case No.: 43906
SAS/Client No.: NA
SDG No.: A4B89
Matrix: Water
Lab Sample ID: 1331234002
Lab File ID: JR87C002
Date Received: 11/08/2013
Date Analyzed: 11/12/2013
Sample Wt./Vol. (g/mL): 5.0 mL
Level: Low
% Moisture (not dec.): NA
Purge Volume (mL): 5.0 mL
GC Column: RTX-VMS
ID (mm): 0.25
Length (m): NA
Soil Extract. Vol. (uL): NA
Soil Aliquot Vol. (uL): NA
Dilution Factor: 1.0
Units: ug/L

Analysis Method: SOM01.2
Scoring Method: SOM01.2
Comments:

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
75-71-8	Dichlorodifluoromethane	20		PASS	Within Limits
74-87-3	Chloromethane	41		PASS	Within Limits
74-83-9	Bromomethane	10		PASS	Within Limits
75-69-4	Trichlorofluoromethane	27		PASS	Within Limits
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	25		PASS	Within Limits
75-15-0	Carbon Disulfide	27		PASS	Within Limits
156-60-5	trans-1,2-Dichloroethene	45		PASS	Within Limits
1634-04-4	Methyl tert-Butyl Ether	89		PASS	Within Limits
67-66-3	Chloroform	38	B	PASS	Within Limits
71-55-6	1,1,1-Trichloroethane	19		PASS	Within Limits
56-23-5	Carbon Tetrachloride	49		PASS	Within Limits
107-06-2	1,2-Dichloroethane	37		PASS	Within Limits
108-87-2	Methylcyclohexane	24		PASS	Within Limits
10061-01-5	cis-1,3-Dichloropropene	31		PASS	Within Limits
108-10-1	4-Methyl-2-pentanone	91		PASS	Within Limits
108-88-3	Toluene	45		PASS	Within Limits
79-00-5	1,1,2-Trichloroethane	23		PASS	Within Limits
124-48-1	Dibromochloromethane	43		PASS	Within Limits
106-93-4	1,2-Dibromoethane	35		PASS	Within Limits
179601-23-1	m,p-Xylene	31		PASS	Within Limits
100-42-5	Styrene	32		PASS	Within Limits
79-34-5	1,1,2,2-Tetrachloroethane	22		PASS	Within Limits
106-46-7	1,4-Dichlorobenzene	27	B	PASS	Within Limits
96-12-8	1,2-Dibromo-3-chloropropane	27		PASS	Within Limits
87-61-6	1,2,3-Trichlorobenzene	43	B	PASS	Within Limits
123-91-1	1,4-Dioxane	370		PASS	Within Limits
95-63-6	1,2,4-Trimethylbenzene	0		FAIL	TIC Missed
****	END Main Analytes	**********	****	****	**********
75-09-2	Methylene Chloride	0.56	J	PASS	Less Than CRQL
156-59-2	cis-1,2-Dichloroethene	0.27	J	PASS	Less Than CRQL
75-25-2	Bromoform	0.45	J	PASS	Less Than CRQL
95-50-1	1,2-Dichlorobenzene	0.29	JB	PASS	Less Than CRQL
108-67-8	Mesitylene	34	JN	N.E.	Non-spiked TIC
****	END All Analytes	**********	****	****	**********

PES SCORING EVALUATION REPORT

PES SV0303 Rev: 1 EPA Sample No.: A4B96 Report Date: 12/23/2013

Lab Name: ALS Laboratory Group - DataChem
Lab Code: DATAC
Contract: EPW11037
Case No.: 43906
SAS/Client No.: NA
SDG No.: A4B89
Matrix: Water
Lab Sample ID: 1331234001
Lab File ID: DJW07C01
Date Received: 11/08/2013
Date Extracted: 11/08/2013
Date Analyzed: 11/18/2013
Sample Wt./Vol. (g/mL): 1000 mL
Level: Low
% Moisture: NA
Decanted: N/A
Conc. Extract Vol. (uL): 1000
Injection Vol. (uL): 1.0
GPC Cleanup: No
pH: NA
Dilution Factor: 1.0
Extraction Type: CONT
Units: ug/L

Analysis Method: SOM01.2
Scoring Method: SOM01.2
Comments:

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
100-52-7	Benzaldehyde	36		PASS	Within Limits
95-57-8	2-Chlorophenol	35		PASS	Within Limits
108-60-1	2,2'-oxybis(1-Chloropropane)	53		PASS	Within Limits
98-86-2	Acetophenone	38		PASS	Within Limits
67-72-1	Hexachloroethane	14		PASS	Within Limits
98-95-3	Nitrobenzene	57		PASS	Within Limits
88-75-5	2-Nitrophenol	44		PASS	Within Limits
120-83-2	2,4-Dichlorophenol	24		PASS	Within Limits
91-20-3	Naphthalene	15		PASS	Within Limits
106-47-8	4-Chloroaniline	1.7	J	N.E.	Not Evaluated
59-50-7	4-Chloro-3-methylphenol	46		PASS	Within Limits
88-06-2	2,4,6-Trichlorophenol	31		PASS	Within Limits
92-52-4	1,1'-Biphenyl	39		PASS	Within Limits
88-74-4	2-Nitroaniline	66		PASS	Within Limits
606-20-2	2,6-Dinitrotoluene	42		PASS	Within Limits
208-96-8	Acenaphthylene	49		PASS	Within Limits
100-02-7	4-Nitrophenol	63		PASS	Within Limits
132-64-9	Dibenzofuran	21		PASS	Within Limits
121-14-2	2,4-Dinitrotoluene	50		PASS	Within Limits
84-66-2	Diethylphthalate	49		PASS	Within Limits
86-73-7	Fluorene	8.8		PASS	Within Limits
86-30-6	N-Nitrosodiphenylamine	57		PASS	Within Limits
95-94-3	1,2,4,5-Tetrachlorobenzene	20		PASS	Within Limits
118-74-1	Hexachlorobenzene	41		PASS	Within Limits
1912-24-9	Atrazine	5.0	U	N.E.	Not Evaluated
87-86-5	Pentachlorophenol	40		PASS	Within Limits
85-01-8	Phenanthrene	35		PASS	Within Limits
84-74-2	Di-n-butylphthalate	43		PASS	Within Limits
129-00-0	Pyrene	17		PASS	Within Limits
91-94-1	3,3'-Dichlorobenzidine	8.0		PASS	Within Limits
56-55-3	Benzo(a)anthracene	42		PASS	Within Limits
117-84-0	Di-n-octylphthalate	32		PASS	Within Limits
205-99-2	Benzo(b)fluoranthene	35		PASS	Within Limits
50-32-8	Benzo(a)pyrene	21		PASS	Within Limits
53-70-3	Dibenzo(a,h)anthracene	51		PASS	Within Limits
191-24-2	Benzo(g,h,i)perylene	27		PASS	Within Limits
90-12-0	1-Methylnaphthalene	42	JN	PASS	TIC Found

PES SCORING EVALUATION REPORT

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
****	END Main Analytes	**********	****	****	**********
83-32-9	Acenaphthene	4.6	J	PASS	Less Than CRQL
117-81-7	bis(2-Ethylhexyl)phthalate	2.4	JB	PASS	Less Than CRQL
88499-96-1	2,4-Dimethyl-7-chloroquinoline	2.1	JN	N.E.	Non-spiked TIC
1000255-97-9	4-Carbethoxy-3-chloropyrrolidine	8.2	JN	N.E.	Non-spiked TIC
1610-17-9	Atraton	7.9	JN	N.E.	Non-spiked TIC
****	END All Analytes	**********	****	****	**********

VLM0855
1 of 3

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4BA0

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B89

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331234002

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: JR87C002

Level: (TRACE/LOW/MED) LOW Date Received: 11/08/2013

% Moisture: not dec. Date Analyzed: 11/12/2013

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	20.	
74-87-3	Chloromethane	41.	
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	10.	
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	27.	
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	25.	
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	27.	
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	0.56	J
156-60-5	trans-1,2-Dichloroethene	45.	
1634-04-4	Methyl tert-butyl ether	89.	
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	0.27	J
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	38.	B
71-55-6	1,1,1-Trichloroethane	19.	
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	49.	
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	37.	
123-91-1	1,4-Dioxane	370	

Report 1,4-Dioxane for Low-Medium VOA analysis only

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1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4BA0

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B89

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331234002

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: JR87C002

Level: (TRACE/LOW/MED) LOW Date Received: 11/08/2013

% Moisture: not dec. Date Analyzed: 11/12/2013

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.74	J
108-87-2	Methylcyclohexane	24.	
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	31.	
108-10-1	4-Methyl-2-Pentanone	91.	
108-88-3	Toluene	45.	
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	23.	
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	43.	
106-93-4	1,2-Dibromoethane	35.	
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	31.	
100-42-5	Styrene	32.	
75-25-2	Bromoform	0.45	J
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	22.	
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	27.	B
95-50-1	1,2-Dichlorobenzene	0.29	JB
96-12-8	1,2-Dibromo-3-chloropropane	27.	
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	43.	B

VLM0855
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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
A4BA0

Lab Name: ALS Environmental Contract: EPW11037
Lab Code: DATAC Case No.: 43906 Mod. Ref No.: _____ SDG No.: A4B89
Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331234002
Sample wt/vol: 5.00 (g/mL) mL Lab File ID: JR87C002
Level: (TRACE or LOW/MED) LOW Date Received: 11/08/2013
% Moisture: not dec. _____ Date Analyzed: 11/12/2013
GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	108-67-8	Mesitylene	12.79	34.	JN
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

SV0303
(1 of 3)

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4B96

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: _____ SDG No.: A4B89

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331234001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: DJW07C01

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 11/08/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 11/08/2013

Injection Volume: 1.0 (uL) GPC Factor: _____ Date Analyzed: 11/18/2013

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
100-52-7	Benzaldehyde	36.	
108-95-2	Phenol	5.0	U
111-44-4	Bis(2-chloroethyl)ether	5.0	U
95-57-8	2-Chlorophenol	35.	
95-48-7	2-Methylphenol	5.0	U
108-60-1	2,2'-Oxybis(1-chloropropane)	53.	
98-86-2	Acetophenone	38.	
106-44-5	4-Methylphenol	5.0	U
621-64-7	N-Nitroso-di-n-propylamine	5.0	U
67-72-1	Hexachloroethane	14.	
98-95-3	Nitrobenzene	57.	
78-59-1	Isophorone	5.0	U
88-75-5	2-Nitrophenol	44.	
105-67-9	2,4-Dimethylphenol	5.0	U
111-91-1	Bis(2-chloroethoxy)methane	5.0	U
120-83-2	2,4-Dichlorophenol	24.	
91-20-3	Naphthalene	15.	
106-47-8	4-Chloroaniline	1.7	J
87-68-3	Hexachlorobutadiene	5.0	U
105-60-2	Caprolactam	5.0	U
59-50-7	4-Chloro-3-methylphenol	46.	
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U
88-06-2	2,4,6-Trichlorophenol	31.	
95-95-4	2,4,5-Trichlorophenol	5.0	U
92-52-4	1,1'-Biphenyl	39.	
91-58-7	2-Chloronaphthalene	5.0	U
88-74-4	2-Nitroaniline	66.	
131-11-3	Dimethylphthalate	5.0	U
606-20-2	2,6-Dinitrotoluene	42.	
208-96-8	Acenaphthylene	49.	
99-09-2	3-Nitroaniline	10.	U
83-32-9	Acenaphthene	4.6	J

SV0303
(2of3)

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4B96

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B89

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331234001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: DJW07C01

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 11/08/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 11/08/2013

Injection Volume: 1.0 (uL) GPC Factor: Date Analyzed: 11/18/2013

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10.	U
100-02-7	4-Nitrophenol	63.	
132-64-9	Dibenzofuran	21.	
121-14-2	2,4-Dinitrotoluene	50.	
84-66-2	Diethylphthalate	49.	
86-73-7	Fluorene	8.8	
7005-72-3	4-Chlorophenyl-phenylether	5.0	U
100-01-6	4-Nitroaniline	10.	U
534-52-1	4,6-Dinitro-2-methylphenol	10.	U
86-30-6	N-Nitrosodiphenylamine[1]	57.	
95-94-3	1,2,4,5-Tetrachlorobenzene	20.	
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	41.	
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	40.	
85-01-8	Phenanthrene	35.	
120-12-7	Anthracene	5.0	U
86-74-8	Carbazole	5.0	U
84-74-2	Di-n-butylphthalate	43.	
206-44-0	Fluoranthene	5.0	U
129-00-0	Pyrene	17.	
85-68-7	Butylbenzylphthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	8.0	
56-55-3	Benzo(a)anthracene	42.	
218-01-9	Chrysene	5.0	U
117-81-7	Bis(2-ethylhexyl)phthalate	2.4	JB
117-84-0	Di-n-octylphthalate	32.	
205-99-2	Benzo(b)fluoranthene	35.	
207-08-9	Benzo(k)fluoranthene	5.0	U
50-32-8	Benzo(a)pyrene	21.	
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
53-70-3	Dibenzo(a,h)anthracene	51.	
191-24-2	Benzo(g,h,i)perylene	27.	
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

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(3 of 3)

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A4B96

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: _____ SDG No.: A4B89

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331234001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: DJW07C01

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 11/08/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 11/08/2013

Injection Volume: 1.0 (uL) GPC Factor: _____ Date Analyzed: 11/18/2013

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CONCENTRATION UNITS:(ug/L or ug/kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	90-12-0	Naphthalene, 1-methyl-	7.08	42.	JN
02	1000255-97-9	4-Carbethoxy-3-chloropyrrolidine	9.18	8.2	JN
03	88499-96-1	2,4-Dimethyl-7-chloroquinoline	9.73	2.1	JN
04	1610-17-9	Atraton	10.58	7.9	JN
05		Unknown 2-Chloro-6-methoxyquinoline-4-carboxylic	13.68	2.1	J
06		Unknown 2-Dimethylamino-3-methyl(phenyl)amino-1,	15.98	14.	J
07		Unknown 1,2-Benzenedicarboxylic acid	18.45	8.4	J
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

Blanks

Blanks	**VOA_Low_Med**
VLB12	The following volatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.
	A4B89, A4B90, A4B90DL, A4B91, A4B93, A4B95, A4BA0, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL
√	**Chloroform** A4B89, A4B90, A4B90DL, A4B91, A4B95, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL
√	**1,2-Dichlorobenzene** A4B91, A4B95, A4BA0, A4BA8
√	**1,2,3-Trichlorobenzene** A4B89, A4B90, A4B90DL, A4B93, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB1, A4BB1DL, A4BB2
√	**1,4-Dichlorobenzene** A4B91, A4B93, A4BA5, A4BA7DL, A4BA8, A4BB3, A4BB3DL, A4BB4, A4BB4DL
√	**1,2,4-Trichlorobenzene** A4B89, A4BA2DL, A4BA4, A4BA4DL, A4BA5, A4BA7DL, A4BA8, A4BA9, A4BB1DL, A4BB2, A4BB3, A4BB4
√	**1,3-Dichlorobenzene** A4B89, A4B90DL, A4B93, A4BA2DL, A4BA4, A4BA4DL, A4BA5, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB0, A4BB1DL, A4BB2, A4BB3, A4BB4
Blanks	**VOA_Low_Med**
VLB13	The following volatile samples have analyte concentrations reported greater than or equal to the CRQL. The associated method blank is less than the concentration criteria. Detected and nondetected compounds are not qualified.
	A4B89, A4B90, A4B90DL, A4B93, A4BA0, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL
	Chloroform A4B93, A4BA0
	1,2-Dichlorobenzene A4B89, A4B90, A4B90DL, A4B93, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL
	1,2,3-Trichlorobenzene A4BA0, A4BB0
	1,4-Dichlorobenzene A4B89, A4B90, A4B90DL, A4BA0, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA6, A4BA6DL, A4BA7, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2
	1,2,4-Trichlorobenzene A4B90, A4B90DL, A4B93, A4BA2, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA6, A4BA6DL, A4BA7, A4BB0, A4BB1
	1,3-Dichlorobenzene A4B90, A4BA2, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA6, A4BB1
Blanks	**VOA_Low_Med**
VLB47	The following volatile samples have analyte concentrations reported less than the CRQL. The associated storage blank concentration is less than the concentration criteria. Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.
	A4B89, A4B90, A4B90DL, A4B91, A4B93, A4B95, A4BA0, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL
√	**Chloroform** A4B89, A4B90, A4B90DL, A4B91, A4B95, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL
√	**1,2-Dichlorobenzene** A4B91, A4B95, A4BA0, A4BA8
√	**1,4-Dichlorobenzene** A4B91, A4B93, A4BA5, A4BA7DL, A4BA8, A4BB3, A4BB3DL, A4BB4, A4BB4DL
√	**1,3-Dichlorobenzene** A4B89, A4B90DL, A4B93, A4BA2DL, A4BA4, A4BA4DL, A4BA5, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB0, A4BB1DL, A4BB2, A4BB3, A4BB4

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

Blanks

Blanks	**VOA_Low_Med**
Blanks	**VOA_Low_Med**
VLB48	The following volatile samples have analyte concentrations reported greater than or equal to the CRQL. The associated storage blank is less than the concentration criteria. Detected and nondetected compounds are not qualified.
	A4B89, A4B90, A4B90DL, A4B93, A4BA0, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL
	Chloroform A4B93, A4BA0
	1,2-Dichlorobenzene A4B89, A4B90, A4B90DL, A4B93, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL
	1,4-Dichlorobenzene A4B89, A4B90, A4B90DL, A4BA0, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA6, A4BA6DL, A4BA7, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2
	1,3-Dichlorobenzene A4B90, A4BA2, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA6, A4BB1

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

Blanks

Blanks	BNA
BLB14	The following semivolatile samples have common contaminant concentrations reported less than 5x the CRQL. The associated method blank concentration is less than 5x the concentration criteria. Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrationshave been elevated to the CRQL.
	A4B89, A4B90, A4B90RE, A4B95, A4B96, A4BA4, A4BA5, A4BA6, A4BB0, A4BB1, A4BB2, A4BB3
	Bis(2-ethylhexyl)phthalate A4B89, A4B90, A4B90RE, A4B95, A4B96, A4BA4, A4BA5, A4BA6, A4BB0, A4BB1, A4BB2, A4BB3

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

Continuing Calibration Verification

Continuing Calibration Verification	**VOA_Low_Med**
VC14	The following volatile samples are associated with a CCV with relative response factors (RRF50) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified R.
	A4B89, A4B90, A4B90DL, A4B91, A4B93, A4B94, A4B95, A4BA0, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, ~~A4BA4DL, A4BA5,~~ A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL, VBLKW4, VBLKW5, VHBLKW1
	1,4-Dioxane VSTD050W6, VSTD050W7, VSTD050W8, VSTD050W9
	A4B89, A4B90, A4B90DL, A4B91, A4B93, A4B94, A4B95, A4BA0, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL, VBLKW4, VBLKW5, VHBLKW1

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

DMC/Surrogate

DMC/Surrogate	**VOA_Low_Med**
VDSS3	The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4BA3MSD
	1,1-Dichloroethene-d2 A4BA3MSD
	1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene
DMC/Surrogate	**VOA_Low_Med**
VDSS4	The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ.
	A4B93
	1,1,2,2-Tetrachloroethane-d2 A4B93
	1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

Detection Limit

Detection Limit	VOA_Low_Med
VDL1	The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B89, A4B90, A4B90DL, A4B91, A4B93, A4B94, A4B95, A4BA0, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL, VBLKW4, VBLKW5, VHBLKW1
	1,1-Dichloroethane A4BA5, A4BA6, A4BA7
	Chlorobenzene A4B91, A4B93, A4B94, A4B95, A4BA1, A4BA4DL, A4BA5, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL
	Toluene A4B89, A4B90, A4B90DL, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA4, A4BA5, A4BA6, A4BA9, A4BB0, A4BB1
	1,4-Dichlorobenzene A4B91, A4B93, A4B94, A4BA1, A4BA5, A4BA7DL, A4BA8, A4BB3, A4BB3DL, A4BB4, A4BB4DL, VBLKW4, VBLKW5, VHBLKW1
	2-Butanone A4B94, A4BA1
	Benzene A4B89, A4B90DL, A4BA2, A4BA3, A4BA6, A4BA7, A4BB0, A4BB1
	Carbon disulfide A4B93
	Chloroform A4B89, A4B90, A4B90DL, A4B91, A4B94, A4B95, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL, VBLKW4, VBLKW5, VHBLKW1
	cis-1,2-Dichloroethene A4B91, A4B93, A4BA0, A4BA2, A4BB1DL, A4BB3, A4BB3DL, A4BB4, A4BB4DL
	1,2-Dichlorobenzene A4B91, A4B94, A4B95, A4BA0, A4BA1, A4BA8, VBLKW4, VBLKW5, VHBLKW1
	1,2,4-Trichlorobenzene A4B89, A4B94, A4BA2DL, A4BA4, A4BA4DL, A4BA5, A4BA7DL, A4BA8, A4BA9, A4BB1DL, A4BB2, A4BB3, A4BB4, VBLKW4, VBLKW5
	Vinyl chloride A4B89, A4B90, A4B90DL, A4BA3DL, A4BA4, A4BA4DL, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB0
	Bromoform A4BA0
	Trichloroethene A4B91, A4B93, A4B94, A4BA0, A4BA1, A4BA8, A4BA9
	Tetrachloroethene A4B91
	1,2,3-Trichlorobenzene A4B89, A4B90, A4B90DL, A4B93, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB1, A4BB1DL, A4BB2, VBLKW4, VBLKW5
	m,p-Xylene A4B90
	1,1-Dichloroethene A4B89, A4B90, A4B90DL, A4BA3, A4BA3DL, A4BA4, A4BA6, A4BA7, A4BB3, A4BB4
	Methyl tert-butyl ether A4B93
	Ethylbenzene A4B90, A4BB0
	Acetone A4B94, A4BA1
	o-Xylene A4B90
	1,3-Dichlorobenzene A4B89, A4B90DL, A4B93, A4BA2DL, A4BA4, A4BA4DL, A4BA5, A4BA6DL, A4BA7, A4BA7DL, A4BA9, A4BB0, A4BB1DL, A4BB2, A4BB3, A4BB4, VBLKW4, VBLKW5, VHBLKW1
	1,1,1-Trichloroethane A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA6, A4BA7, A4BB1, A4BB3, A4BB4, A4BB4DL

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

Detection Limit

Detection Limit	VOA_Low_Med
	trans-1,2-Dichloroethene A4B90, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA9, A4BB0, A4BB2
	Methylene chloride A4BA0, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA7, A4BB3, A4BB4

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

Detection Limit

Detection Limit	BNA
BDL1	The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B89, A4B90, A4B90RE, A4B95, A4B96, A4BA2, A4BA3MS, A4BA3MSD, A4BA4, A4BA5, A4BA6, A4BA7, A4BB0, A4BB1, A4BB2, A4BB3, A4BB4, SBLK82
	Benzo(k)fluoranthene A4BA7
	4-Chloro-3-methylphenol A4BA3MS, A4BA3MSD
	4-Nitrophenol A4BA3MS, A4BA3MSD, A4BB3, A4BB4
	Caprolactam A4B90, A4B90RE
	Benzo(g,h,i)perylene A4BA7
	Nitrobenzene A4BA4, A4BA7, A4BB2
	Naphthalene A4B90, A4B90RE, A4BA2, A4BB4
	Phenol A4BA3MS, A4BA3MSD, A4BB4
	Pyrene A4BA3MS, A4BA3MSD, A4BA7
	Indeno(1,2,3-cd)pyrene A4BA7
	Benzo(a)anthracene A4BA7
	Chrysene A4BA7
	2-Nitrophenol A4BB4
	Phenanthrene A4BA7
	2-Chlorophenol A4BA3MS, A4BA3MSD
	Acenaphthene A4B96, A4BA3MS, A4BA3MSD
	Carbazole A4BA7
	4-Chloroaniline A4B96
	Benzo(b)fluoranthene A4BA7
	2,4-Dinitrotoluene A4BA3MS, A4BA3MSD
	Benzo(a)pyrene A4BA7
	3,3'-Dichlorobenzidine A4BA2
	N-Nitroso-di-n-propylamine A4BA3MS, A4BA3MSD
	Pentachlorophenol A4BA3MS, A4BA3MSD
	Bis(2-ethylhexyl)phthalate A4B89, A4B90, A4B90RE, A4B95, A4B96, A4BA4, A4BA5, A4BA6, A4BB0, A4BB1, A4BB2, A4BB3, SBLK82

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

Initial Calibration

Initial Calibration	**VOA_Low_Med**
VC15	The following volatile samples are associated with an initial calibration with relative response factors (RRFs) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified R.
	A4B89, A4B90, A4B90DL, A4B91, A4B93, A4B94, A4B95, A4BA0, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL, VBLKW4, VBLKW5, VHBLKW1
	1,4-Dioxane VSTD005SJ, VSTD010SJ, VSTD050SJ, VSTD100SJ, VSTD200SJ
	A4B89, A4B90, A4B90DL, A4B91, A4B93, A4B94, A4B95, A4BA0, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL, VBLKW4, VBLKW5, VHBLKW1
Initial Calibration	**VOA_Low_Med**
VC20	The following volatile samples are associated with an initial calibration in which a DMC did not meet relative response factor (RRF) criteria. Detected and nondetected compounds are not qualified.
	A4B89, A4B90, A4B90DL, A4B91, A4B93, A4B94, A4B95, A4BA0, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL, VBLKW4, VBLKW5, VHBLKW1
	1,4-Dioxane-d8 VSTD005SJ, VSTD010SJ, VSTD050SJ, VSTD100SJ, VSTD200SJ
	A4B89, A4B90, A4B90DL, A4B91, A4B93, A4B94, A4B95, A4BA0, A4BA1, A4BA2, A4BA2DL, A4BA3, A4BA3DL, A4BA3MS, A4BA3MSD, A4BA4, A4BA4DL, A4BA5, A4BA6, A4BA6DL, A4BA7, A4BA7DL, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4, A4BB4DL, VBLKW4, VBLKW5, VHBLKW1

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

Internal Standard

Internal Standard	**BNA**
BIS21	The following semivolatile samples have internal standard area counts that are outside the lower limit of primary criteria. Detected compounds are qualified J. Nondetected compounds are qualified R.
	A4B90, A4B90RE
	Perylene-d12 A4B90, A4B90RE
	Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Di-n-octylphthalate, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene

8D - FORM VIII SV-2
SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B89

EPA Sample No.(SSTD020##): SSTD020DW Date Analyzed: 11/18/2013

Lab File ID (Standard): DJW04S20 Time Analyzed: 11:16

Instrument ID: 5975-D GC Column: DB5MS ID: 0.32 (mm)

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	1301010	11.24	1551486	15.43	1225019	17.88
	UPPER LIMIT	2602020	11.74	3102972	15.93	2450038	18.38
	LOWER LIMIT	650505	10.74	775743	14.93	612510	17.38
	EPA SAMPLE NO.						
01	SBLK82	1162581	11.24	1423306	15.43	1188887	17.88
02	A4B96	1146472	11.24	1330893	15.43	1120709	17.87
03	A4B89	1214098	11.24	1412928	15.42	1146739	17.87
04	A4B90	1296135	11.24	1502055	15.42	419135*	17.87
05	A4B91	1174158	11.24	1386745	15.42	1124818	17.87
06	A4B95	1157979	11.24	1333124	15.42	1081962	17.87
07	A4BA3	1272245	11.24	1438134	15.42	1156833	17.87
08	A4BA3MS	1241495	11.24	1502449	15.42	1217454	17.87
09	A4BA3MSD	1300217	11.24	1525532	15.42	1238537	17.87
10	A4BA4	1260277	11.24	1448809	15.42	1135770	17.87
11	A4BA6	1170588	11.24	1480025	15.42	1214819	17.87
12	A4BB3	1214292	11.24	1410988	15.42	1136560	17.87
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8D - FORM VIII SV-2
SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B89

EPA Sample No.(SSTD020##): SSTD020DX Date Analyzed: 11/19/2013

Lab File ID (Standard): DJX01S20 Time Analyzed: 08:20

Instrument ID: 5975-D GC Column: DB5MS ID: 0.32 (mm)

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	1210925	11.14	1437061	15.34	1163459	17.71
	UPPER LIMIT	2421850	11.64	2874122	15.84	2326918	18.21
	LOWER LIMIT	605463	10.64	718531	14.84	581730	17.21
	EPA SAMPLE NO.						
01	A4B90RE	1080092	11.14	1295648	15.34	183600 *	17.71
02	A4BB3DL	1133451	11.14	1315876	15.34	1082097	17.71
03	A4BB4DL	1022989	11.14	1259018	15.34	1048300	17.70
04	A4BB1DL	1012894	11.14	1212335	15.34	1004124	17.70
05	A4BA5	1068317	11.14	1305846	15.34	1086432	17.70
06	A4BA7	1110848	11.14	1309416	15.34	1066305	17.71
07	A4BA8	1047616	11.14	1303660	15.34	1085308	17.70
08	A4BA9	1061090	11.14	1302055	15.34	1071582	17.70
09	A4BB0	1053271	11.14	1299479	15.34	1077303	17.70
10	A4BB2	1081391	11.14	1280359	15.34	1066979	17.70
11	A4BA2DL	1092016	11.14	1362996	15.34	1124391	17.70
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

TIC

TIC	**VOA_Low_Med**
VTIC1	A library search indicates a match at or above 85% for a TIC compound in the volatile sample Detected compounds are qualified NJ. Nondetected compounds are not qualified.
	A4BA0
	Mesitylene A4BA0
TIC	**VOA_Low_Med**
VTIC2	A library search indicates a match below 85% for a TIC compound in the volatile sample Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B89, A4B93
	Unknown Acetaldehyde A4B93
	Unknown Heptyl isobutyl carbonate A4B89

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

TIC

TIC	BNA
BTIC1	A library search indicates a match at or above 85% for a TIC compound in the semivolatile sample Detected compounds are qualified NJ. Nondetected compounds are not qualified.
	A4B90, A4B90RE, A4B96, A4BA2, A4BA9, A4BB2, SBLK82
	Benzene, 1-methyl-2-nitro- A4BA2
	p-Benzoquinone A4BA9, A4BB2
	Cyclotetrasiloxane, octamethyl- A4B90
	9,10-Anthracenedione, 2-methyl- A4BA2
	Phenyl para-toluenesulfonate A4BA9
	Hexylene glycol SBLK82
	9(10H)-Anthracenone, 1-chloro- A4BA2
	2,4-Dimethyl-7-chloroquinoline A4B96
	Benzenesulfonamide A4B90RE
	Aniline, N-methyl- A4B90, A4B90RE
	Naphthalene, 1-methyl- A4B96
	Atraton A4B96
	6H-Benz[de]anthracen-6-one A4BA2
	9,10-Anthracenedione, 1,4-dihydroxy- A4BA2
	1,4-Naphthalenedione, 2-hydroxy- A4BA9, A4BB2
	4-Carbethoxy-3-chloropyrrolidine A4B96
	Benzene, 1,3,5-trichloro- A4BA2
	3-Chloro-1-methylanthraquinone A4BA2
	o-Chloroaniline A4B90, A4B90RE
TIC	**BNA**
BTIC2	A library search indicates a match below 85% for a TIC compound in the semivolatile sample Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B89, A4B90, A4B90RE, A4B95, A4B96, A4BA2DL, A4BA5, A4BA6, A4BA7, A4BA8, A4BA9, A4BB0, A4BB1, A4BB1DL, A4BB2, A4BB3, A4BB3DL, A4BB4DL, SBLK82
	Unknown 2-Dimethylamino-3-methyl(phenyl)amino-1,4-naphth A4B96
	Unknown 3-Dimethylaminodiphenylmethane A4B90
	Unknown Dithianone SBLK82

National Functional Guidelines Report #03

Lab DATAC(ALS Environmental) **SDG** A4B89 **Case** 43906 **Contract** EPW11037 **Region** 1 **DDTID** 187914 **SOW** SOM01.2

Data Review Reports

TIC

TIC	BNA
	Unknown 1,12-Dicarbadodecarborane, 2-indol-1-yl- A4B90RE
	Unknown 1-Hydroxyinden-3-one-1-carboxylic acid A4B90, A4B90RE
	Unknown Propanoic acid, 2-methyl-, 1-(1,1-dimethylethyl) A4BA5
	Unknown Phthalic anhydride A4B89, A4B90, A4B90RE, A4B95, A4BA5, A4BA6, A4BB0, A4BB1, A4BB2, A4BB3, SBLK82
	Unknown 2-Chloro-6-methoxyquinoline-4-carboxylic acid A4B96
	Unknown Butanoic acid, 2-butoxy-1-methyl-2-oxoethyl este A4B90RE, A4BB1DL
	Unknown Butanoic acid, 2-propenyl ester A4BA9
	Unknown Fumaric acid, nonyl tetrahydrofurfuryl ester A4BA8
	Unknown 1,2-Benzenedicarboxylic acid A4B96
	Unknown Pentanoic acid, 2,2,4-trimethyl-3-carboxyisoprop A4BA7, A4BB0, A4BB3DL, A4BB4DL
	Unknown Butyric acid, thio-, S-decyl ester A4BB2
	Unknown Diethylmalonic acid, monochloride, tetrahydrofur A4BA2DL
	Unknown 4-Propylbiphenyl-4'-carboxylic acid A4B90RE
	Unknown 2,5-Dimethyl-4-(2,5-dimethylphenyl)pyridine A4B90RE

Data Review Qualification Actions

Case: 43906
SDG: A4B89

Analyte	Samples	Evaluation Criteria	Action Needed	Comments
1,4-dioxane	all	ICAL	R non-detects - remove values	
E analytes	VOCs: A4B90, A2-A4, A6, A7, B1, B3, B4; SVOCS: A4BA2, B1, B3, B4	dilutions	Turn off E analytes	
Non-D analytes	VOCs: A4B90, A2-A4, A6, A7, B1, B3, B4; SVOCS: A4BA2, B1, B3, B4	dilutions	Turn off non-D analytes	
Reanalzyed (RE) SVOCs	A4B90	ISTD	Turn off RE analytes	
ISTD SVOCs	A4B90	ISTD	R non-detects - remove values	
Chlorobenzene	A4B91, 93, 95	Trip Blank - A4B94	change to CRQL U	
Trichloroethene	A4B91, A4B93	Trip Blank - A4B94	change to CRQL U	
MeCl2	A4BA2, A3, A4, A5, A7, B3, B4	Trip Blank - A4BA1	change to CRQL U	
Toluene	A4BA2, A3, A4, A5, A6, A9, B0, B1	Trip Blank - A4BA1	change to CRQL U	
Chlorobenzene	A5, B2, B3, B4	Trip Blank - A4BA1	change to CRQL U	
Trichloroethene	A4BA8, A9	Trip Blank - A4BA1	change to CRQL U	
changes made				

Regional CCS Defect Report

16:13 Thu, Dec 5, 2013

SDG A4B89 **Lab** DATAC **Case** 43906 **Contract** EPW11037 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 187914 **Version** 8.055
DRD 11/29/2013 **LRD** 11/08/2013 **Mailed** 12/05/2013 **Submission Type** First Submission **Screening Type** Semi-Automated

Sample Summary and Lab Receipt Date

Sample/Number	VOA Trace	VOA SIM	VOA	BNA	BNA SIM	PEST	AROCLOR	Automated	Manual
A4B89			11/07/2013	11/07/2013					
A4B90			11/07/2013	11/07/2013					
A4B90DL			11/07/2013						
A4B90RE				11/07/2013					
A4B91			11/07/2013	11/07/2013					
A4B93			11/07/2013						
A4B94			11/07/2013						
A4B95			11/07/2013	11/07/2013					
A4B96				11/08/2013					
A4BA0			11/08/2013						
A4BA1			11/08/2013						
A4BA2			11/08/2013	11/08/2013					
A4BA2DL			11/08/2013	11/08/2013					
A4BA3			11/08/2013	11/08/2013					
A4BA3DL			11/08/2013						
A4BA3MS			11/08/2013	11/08/2013					
A4BA3MSD			11/08/2013	11/08/2013					
A4BA4			11/08/2013	11/08/2013					
A4BA4DL			11/08/2013						
A4BA5			11/08/2013	11/08/2013					
A4BA6			11/08/2013	11/08/2013					
A4BA6DL			11/08/2013						
A4BA7			11/08/2013	11/08/2013					
A4BA7DL			11/08/2013						
A4BA8			11/08/2013	11/08/2013					
A4BA9			11/08/2013	11/08/2013					
A4BB0			11/08/2013	11/08/2013					
A4BB1			11/08/2013	11/08/2013					
A4BB1DL			11/08/2013	11/08/2013					
A4BB2			11/08/2013	11/08/2013					
A4BB3			11/08/2013	11/08/2013					
A4BB3DL			11/08/2013	11/08/2013					
A4BB4			11/08/2013	11/08/2013					
A4BB4DL			11/08/2013	11/08/2013					
Totals	**0**	**0**	**32**	**25**	**0**	**0**	**0**		

Regional CCS Defect Report

16:13 Thu, Dec 5, 2013

SDG A4B89 **Lab** DATAC **Case** 43906 **Contract** EPW11037 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 187914 **Version** 8.055

DRD 11/29/2013 **LRD** 11/08/2013 **Mailed** 12/05/2013 **Submission Type** First Submission **Screening Type** Semi-Automated

Regional CCS Defect Report

16:13 Thu, Dec 5, 2013

SDG A4B89 **Lab** DATAC **Case** 43906 **Contract** EPW11037 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 187914 **Version** 8.055

DRD 11/29/2013 **LRD** 11/08/2013 **Mailed** 12/05/2013 **Submission Type** First Submission **Screening Type** Semi-Automated

Regional Defect Detail

NONE FOUND

Regional CCS Defect Report

16:13 Thu, Dec 5, 2013

SDG A4B89 **Lab** DATAC **Case** 43906 **Contract** EPW11037 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 187914 **Version** 8.055

DRD 11/29/2013 **LRD** 11/08/2013 **Mailed** 12/05/2013 **Submission Type** First Submission **Screening Type** Semi-Automated

General Comments

NONE FOUND

DG/ESAT

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET

FORM DC-2

Nyanza Chemical NOBIS

LABORATORY NAME	ALS Laboratory Group		
CITY/STATE	Salt Lake City, UT 84123		
CASE NO.	43906	SDG NO.:	A4B89
SDG NOs. TO FOLLOW	N/A		
MOD. REF. NO.	N/A		
CONTRACT NO.	EP-W-11-037		
SOW NO.	SOM01.2		

DEC 02 2013

All documents delivered in the Complete SDG File (csf) must be original documents where possible.

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK USEPA
1. **Inventory Sheet** (DC-2) (Do not number)			✓	✓
2. **SDG Case Narrative**	1	11	✓	✓
3. **SDG Cover Sheet/Traffic Report**	12	20	✓	✓
4. **Trace Volatiles Data**				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II VOA-1 and VOA-2)	NA		✓	NA
Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA) (if requested by USEPA Region)			✓	
Method Blank Summary (Form IV VOA)			✓	
GC/MS Instrument Performance Check (Form V VOA)			✓	
Internal Standard Area and RT Summary (Form VIII VOA)			✓	
b. Sample Data				
TCL Results - Organics Analysis Data Sheet(Form I VOA-1 and VOA-2)			✓	
Tentatively Identified Compounds (Form I VOA-TIC)			✓	
Reconstructed total ion chromatograms (RIC) for each sample			✓	
For each sample:				
Raw spectra and background-subtracted mass spectra of target compounds identified			✓	
Quantitation reports			✓	
Mass spectra of all reported TICs with three best library matches			✓	
c. Standards Data (All Instruments)				
Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3)			✓	
RICs and Quantitation Reports for all Standards			✓	
Continuing Calibration Data (Form VII VOA-1, VOA-2, VOA-3)			✓	
RICs and Quantitation Reports for all Standards			✓	
d. Raw/Quality Control (QC) Data			✓	
BFB			✓	
Blank Data			✓	✓

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET

FORM DC-2

CASE NO.	43906	SDG NO.:	A4B89
SDG NOs. TO FOLLOW	N/A		
MOD. REF. NO.	N/A		

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK USEPA
Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region	NA		✓	NA
e. Trace SIM Data (Place at the end of the Trace Volatiles Section)	1		✓	✓
[Form I VOA-SIM; Form II VOA-SIM1 and VOA-SIM2; Form IV-VOA-SIM; Form VI VOA-SIM; Form VII VOA-SIM; Form VIII VOA-SIM; and all raw data for QC, Samples, and Standards.]				
5. Low/Med Volatiles Data				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II VOA-1, VOA-2, VOA-3, VOA-4)	21	24	✓	✓
Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA-1, VOA-2)(if requested by USEPA Region)	25	25	✓	✓
Method Blank Summary (Form IV VOA)	26	27	✓	✓
GC/MS Instrument Performance Check (Form V VOA)	28	30	✓	✓
Internal Standard Area and RT Summary (Form VIII VOA)	31	32	✓	✓
b. Sample Data	33	410		
TCL Results - Organics Analysis Data Sheet (Form I VOA-1 and VOA-2)			✓	✓
Tentatively Identified Compounds (Form I VOA-TIC)			✓	✓
Recontructed total ion chromatograms (RIC) for each sample			✓	✓
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds identified			✓	✓
Quantitation reports			✓	✓
Mass Spectra of all reported TICs with three best library matches			✓	✓
c. Standards Data (All Instruments)	411	452		
Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3)			✓	✓
RICs and Quantitation Reports for all Standards			✓	✓
Continuing Calibration Data (Form VII VOA-1, VOA-2, VOA-3)			✓	✓
RICs and Quantitation Reports for all Standards			✓	✓
d. Raw/Quality Control (QC) Data				
BFB	453	458	✓	✓
Blank Data	459	486	✓	✓

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET

FORM DC-2 (CON'T)

CASE NO.	43906	SDG NO.:	A4B89
SDG NOs. TO FOLLOW	N/A		
MOD. REF. NO.	N/A		

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK for USEPA
Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region	487	496	✓	✓
6. Semivolatiles Data				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II SV-1 and SV-2, SV-3, SV-4)	497	498	✓	✓
Matrix Spike/Matrix Spike Duplicate Recovery Summary (Form III SV-1 and SV-2) (if requested by USEPA Region)	499	499	✓	✓
Method Blank Summary (Form IV SV)	500	500	✓	✓
GC/MS Instrument Performance Check (Form V SV)	501	504	✓	✓
Internal Standard Area and RT Summary (Form VIII SV-1 and SV-2)	505	510	✓	✓
b. Sample Data	511	787		
TCL Results - Organics Analysis Data Sheet (Form I SV-1 and SV-2)			✓	✓
Tentatively Identified Compounds (Form I SV-TIC)			✓	✓
Reconstructed total ion chromatograms (RICs) for each sample			✓	✓
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds			✓	✓
Quantitation reports			✓	✓
Mass Spectra of TICs with three best library matches			✓	✓
GPC chromatograms (if GPC is required)			✓	✓
c. Standards Data (All Instruments)	788	850		
Initial Calibration Data (Form VI SV-1, SV-2, SV-3)			✓	✓
RICs and Quantitation Reports for all Standards			✓	✓
Continuing Calibration Data (Form VII SV-1, SV-2, SV-3)			✓	✓
RICs and Quantitation Reports for all Standards			✓	✓
d. Raw QC Data				
DFTPP	851	862	✓	✓
Blank Data	863	872	✓	✓
MS/MSD Data (if requested by USEPA Region)	873	880	✓	✓
e. Raw GPC Data	NA		✓	NA

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO.	43906	SDG NO.:	A4B89
SDG NOs. TO FOLLOW	N/A		
MOD. REF. NO.	N/A		

	PAGE NOs FROM	TO	CHECK LAB	CHECK USEPA
f. Semivolatile SIM Data [Form I SV-SIM; Form II SV-SIM1 and SV-SIM2; Form III SV-SIM1 and SV-SIM2 (if required); Form IV SV-SIM; Form VI-SIM; Form VII SV-SIM; Form VIII SV-SIM1 and SV-SIM2; and all raw data for QC, Samples, and Standards.]	NA		✓	NA
7. Pesticides Data				
a. QC Summary				
Surrogate Recovery Summary (Form II PEST-1 and PEST-2)	NA		✓	NA
Matrix Spike/Matrix Spike Duplicate Recovery Summary (Form III PEST-1 and PEST-2)			✓	
Laboratory Control Sample Recovery (Form III Pest-3 and PEST-4)			✓	
Method Blank Summary (Form IV PEST)			✓	
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I PEST)			✓	
Chromatograms (Primary Column)			✓	
Chromatograms from second GC column confirmation			✓	
GC Integration report or data system printout			✓	
Manual work sheets			✓	
For pesticides by GC/MS				
Copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)			✓	
c. Standards Data				
Initial Calibration of Single Component Analytes (Form VI PEST-1 and PEST-2)			✓	
Toxaphene Initial Calibration (Form VI PEST-3 and PEST-4)			✓	
Analyte Resolution Summary (Form VI PEST-5, per column)			✓	
Performance Evaluation Mixture (Form VI PEST-6)			✓	
Individual Standard Mixture A (Form VI PEST-7)			✓	
Individual Standard Mixture B (Form VI PEST-8)			✓	
Individual Standard Mixture C (Form VI PEST-9 and PEST-10)			✓	
Calibration Verification Summary (Form VII PEST-1)			✓	
Calibration Verification Summary (Form VII PEST-2)			✓	
Calibration Verification Summary (Form VII PEST-3)			✓	

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO.	43906	SDG No	A4B89
SDG NOs. TO FOLLOW	N/A		
MOD. REF. NO.	N/A		

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK USEPA
Calibration Verification Summary (Form VII PEST-4)			✓	NA
Analytical Sequence (Form VIII PEST)			✓	
Florisil Cartridge Check (Form IX PEST-1)			✓	
Pesticide GPC Calibration (Form IX PEST-2)			✓	
Identification Summary for Single Component Analytes (Form X PEST-1)			✓	
Identification Summary for Toxaphene (Form X PEST-2)			✓	
Chromatograms and data system printouts				
A printout of Retention Times and corresponding peak areas or peak heights			✓	✓
d. Raw QC Data	NA			
Blank Data			✓	NA
Matrix Spike/Matrix Spike Duplicate Data			✓	
Laboratory Control Sample Data			✓	
e. Raw GPC Data			✓	
f. Raw Florisil Data			✓	✓
8. **Aroclor Data**				
a. QC Summary				
Surrogate Recovery Summary (Form II ARO-1 and ARO-2)	NA		✓	NA
Matrix Spike/Matrix Spike Duplicate Summary (Form III ARO-1 and ARO-2)			✓	
Laboratory Control Sample Recovery (Form III ARO-3 and ARO-4)			✓	
Method Blank Summary (Form IV ARO)			✓	
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I ARO)			✓	
Chromatograms (Primary Column)			✓	
Chromatograms from second GC column confirmation			✓	
GC Integration report or data system printout			✓	
Manual work sheets			✓	
For Aroclors by GC/MS				
Copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)			✓	✓

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO.	43906	SDG NO.:	A4B89
SDG NOs. TO FOLLOW	N/A		
MOD. REF. NO.	N/A		

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK USEPA (BR)
c. Standards Data	NA			
Aroclors Initial Calibration (Form VI ARO-1, ARO-2 and ARO-3)			✓	NA
Calibration Verification Summary (Form VII ARO-1)			✓	
Analytical Sequence (Form VIII ARO)			✓	
Identification Summary for Multicomponent Analytes (Form X ARO)			✓	
Chromatograms and data system printouts				
A printout of Retention Times and corresponding peak areas or peak heights			✓	
d. Raw QC Data				
Blank Data			✓	
Matrix Spike/Matrix Spike Duplicate Data			✓	
Laboratory Control Sample (LCS) Data			✓	
e. Raw GPC Data (if performed)			✓	✓
9. **Miscellaneous Data**				
Original preparation and analysis forms or copies of preparation and analysis logbook pages	883	914	✓	✓
Internal sample and sample extract transfer chain-of-custody records	915	921	✓	✓
Screening records	922	975	✓	✓
All instrument output, including strip charts from screening activities (describe or list)				
Method Check/QC Reports/LCS	NA		✓	NA
Percent Solids Determinations	NA		✓	NA
10. **EPA Shipping/Receiving Documents**				
Airbills (no. of shipments _____)	970	983	✓	✓
Chain of Custody Records (Copies)	984	988	✓	✓
Sample Tags	989	989	✓	✓
Sample Log-in Sheet (Lab & DC-1)	990	999	✓	✓
Miscellaneous Shipping/Receiving Records (describe or list)				
DCL Cooler Receipt Checklist	NA		✓	NA
DCL Sample Work Orders	NA		✓	✓

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET

FORM DC-2 (CON'T)

CASE NO.	43906	SDG NO.:	A4B89
SDG NOs. TO FOLLOW	N/A		
MOD. REF. NO.	N/A		

	PAGE NOs FROM	TO	CHECK LAB	CHECK FOR USEPA
11. **Internal Lab Sample Transfer Records and Tracking Sheets** (describe or list)				
DCL Documentation Checking Forms	1000	1001	✓	✓
DCL Non-conformance/Corrective Action Reports	NA		✓	NA
12. **Other Records** (describe or list)				
Telephone Communication Log	NA		✓	NA
E-mail Communications	1002	1005	✓	✓
			✓	

13. **Comments**

Completed by: (CLP Lab) (Signature) Melissa Duggan/DCO (Printed Name/Title) 11/27/13 (Date)

Verified by: (CLP Lab) Lilia Warda for (Signature) Roxanne Olson/Manager (Printed Name/Title) 11/27/13 (Date)

Audited by: (USEPA) (Signature) Gail DeRuzzo/Lead Chemist (Printed Name/Title) 12/20/13 (Date)

NOBIS

Engineering a Sustainable Future

December 23, 2013
Nobis File No. 80022

Mr. Dan Keefe
EPA Site Manager
EPA-New England Region I
5 Post Office Square
Suite 100, Mailcode OSRR07-4
Boston, MA 02109-3912

Re: Contract No. EP-S1-06-03
Task Order No. 0022-RA-RA-0115
Case No. 43906, Sample Delivery Group (SDG) No. A4B98
ALS Group (DATAC), Salt Lake City, UT
Nyanza Chemical Waste Dump, OU2 Superfund Site
Ashland, Massachusetts
CERCLIS No.: MAD990685422

Tier I Plus Organic Data Validation with Stage 2B Electronic Qualification (S2BVEM)

Low Level Volatiles and Semi-volatiles:
7/Groundwater: A4BB5-A4BB9, A4BC0-A4BC1
1/PE Samples: A4B98 (SV0399)

Dear Mr. Keefe:

Nobis Engineering, Inc. performed a Tier I plus data validation in accordance with the *Region I, EPA-NE Environmental Data Review Supplement for Regional Data Review Elements and Superfund Specific Guidance/Procedures,* (April 2013) on the organic analytical data for 7 groundwater samples and one performance evaluation sample (PE) collected by Nobis Engineering, Inc. at the Nyanza Chemical Waste Dump, OU2 Superfund Site located in Ashland, Massachusetts. The samples were analyzed for low level volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) under the Contract Laboratory Program Routine Analytical Services (CLP RAS) program using the CLP SOM01.2 Statement of Work. A Tier I plus data validation was deemed sufficient at this time.

Stage 2B electronic qualification was performed through EPA's Environmental Data Exchange and Evaluation System (EXES) Data Manager (EDMS) which uses *USEPA's Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review*, (June 2008) criteria for automated validation. EXES Data Review Report #3 indicates data of non-compliance that resulted in qualification based on field and laboratory blank contamination and calibration criteria for VOCs and blank contamination for SVOCs.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues (Manual)
* • Data Completeness (EDMS and Manual)
* • Preservation and Technical Holding Times (EDMS)

Nobis Engineering, Inc.
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

- Initial and Continuing Calibrations (EDMS)
- Laboratory Blanks (EDMS)
- Field Blanks (Manual)
- Deuterated Monitoring Compounds (DMC)/Surrogate Compounds (EDMS)
- NA Laboratory Control Samples (EDMS)
- * Matrix Spike/Matrix Spike Duplicate (MS/MSD) (EDMS and Manual)
- NA Field Duplicates (Manual)
- * Internal Standards (EDMS)
- * Performance Evaluation (PE) Sample Results (Manual)
- * Reported Quantitation Limits (EDMS)

* All criteria were met for this parameter.
NA – Not applicable.

Overall Evaluation of Data and Potential Usability Issues

The objectives of the groundwater and DNAPL sampling at the site are to provide a comprehensive evaluation of the shallow and deep groundwater contaminants at the site and to evaluate the feasibility of implementing monitored natural attenuation (MNA) as a remedial alternative for the site.

Data are usable for the purposes of the project except for non-detected 1,4-dioxane results, which were rejected due to calibration non-conformance.

Data Completeness

The data package is complete. The complete SDG file (CSF) inventory sheet documents details of the package reviewed. The contract compliance screening (CCS) report did not identify any issues with the data package.

Data presented in the Summary Tables include qualifiers assigned by EDMS. Qualifications for these parameters were assessed under the Stage 2B Validation Electronic (S2BVE) scenario. Qualification was performed by EDMS or manually based on parameters identified above.

Initial and Continuing Calibrations

EDMS identified the following initial and continuing calibration criteria failures requiring qualification of the data:

VOCs:

The relative response factors were outside control limits in the initial and continuing calibrations for 1,4-dioxane. Detected compounds are qualified as estimated (J) and non-detected compounds are qualified as rejected (R).

Blanks

EDMS identified the following laboratory blank contamination requiring qualification of data:

VOCs:

Chloroform, 1,2-dichlorobenzene, 1,4-dichlorobenzene, cyclohexane, 1,2,3-trichlorobenzene, and 1,2,4-trichlorobenzene results were negated (qualified U) in several samples due to method blank contamination. See EXES Report #3 for details.

SVOCs:

Bis(2-ethylhexyl)phthalate was negated (qualified U) in several samples due to method blank contamination. See EXES Report #3 for details.

Trip Blank A4BA1 (in SDG A4B89) exhibited trace level detections of acetone, methylene chloride, 2-butanone, chloroform, trichloroethene, toluene, chlorobenzene, 1,3-dichlorobenzene, and 1,2-dichlorobenzene. Associated samples (A4BB5-B9 and A4BC0-C1) with detections for these analytes less than the CRQL are qualified as non-detect (U) at the CRQL. Qualifications are summarized in the Data Review Qualification Actions table.

Deuterated Monitoring Compounds (DMCs)

VOCs:

The DMC 1,1-dichloroethane-d2 was biased high in sample analysis of A4BC0 MS and MSD only. Results for 1,1-dichloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene were qualified as estimated (J).

PE Sample Results

PE sample SV0399 (A4B98) was submitted for SVOCs analyses. The sample results were scored by EPA. The results were evaluated and manually qualified as follows:

SVOCs:

All target analytes received passing scores. Two TICs were reported in the PE that were not spiked. However, the TICs were only identified in the PE samples; therefore, there is no impact to the data.

Reported Quantitation Limits

Several samples were analyzed for VOCs and SVOCs with dilutions to obtain target analytes within the calibration range. Reporting limits were adjusted accordingly. Duplicate results were manually removed so that only one analyte result was reported for each sample.

Please contact me at (978) 703-6021 or gderuzzo@nobiseng.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS ENGINEERING, INC.

Gail DeRuzzo
Lead Chemist

Tables: Data Summary Tables

Enclosures: PE Sample Results
EXES Report #3
CCS Reports
CSF Audit (DC-2 Forms)

Cc: Steve Remaley, US EPA Region IX (via email- Memo and PE scores)
Vicki Maynard, RSCC (via email – Memo and Data Summary)

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B98
Semivolatiles in Groundwater

Sample Name	A4BB5	A4BB6	A4BB7	A4BB8	A4BB9	A4BC0	A4BC1
Location ID	MW-110	B-11	MW-06B	MW-107	MW-503B	RMW-116A	MW-402
Station ID	MW-110-110613A	B-11-110613A	MW-6B-110713A	MW-107-110713A	MW-503B-110713A	MW-116A-110613A	MW-402-110713A
Sample Date	11/06/13	11/06/13	11/07/13	11/07/13	11/07/13	11/06/13	11/07/13
Volatiles (ug/L)							
1,1,1-Trichloroethane	5 U	1000 U	5 U	5 U	43 J	5 U	57 J
1,1,2,2-Tetrachloroethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
1,1,2-Trichloroethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
1,1-Dichloroethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
1,1-Dichloroethene	5 U	1000 U	0.96 J	1.2 J	19 J	5 U	36 J
1,2,3-Trichlorobenzene	18	1000 U	5 U	5 U	100 U	5 U	200 U
1,2,4-Trichlorobenzene	69	1700	16	28	100 U	5 U	200 U
1,2-Dibromo-3-Chloropropane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
1,2-Dibromoethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
1,2-Dichlorobenzene	33	110000	380	570	260	5 U	760
1,2-Dichloroethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
1,2-Dichloropropane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
1,3-Dichlorobenzene	5 U	4200	5.2	7.4	100 U	5 U	200 U
1,4-Dichlorobenzene	5.6	26000	48	78	100 U	5 U	200 U
1,4-Dioxane	R	R	R	R	R	R	R
2-Butanone	10 U	2000 U	10 U	10 U	200 U	10 U	400 U
2-Hexanone	10 U	2000 U	10 U	10 U	200 U	10 U	400 U
4-Methyl-2-Pentanone	10 U	2000 U	10 U	10 U	200 U	10 U	400 U
Acetone	10 U	2000 U	10 U	10 U	200 U	10 U	400 U
Benzene	5 U	140 J	17	2.1 J	100 U	5 U	200 U
Bromochloromethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Bromodichloromethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Bromoform	5 U	1000 U	5 U	5 U	100 U	5 U	200 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B98
Semivolatiles in Groundwater

Sample Name	A4BB5	A4BB6	A4BB7	A4BB8	A4BB9	A4BC0	A4BC1
Location ID	MW-110	B-11	MW-06B	MW-107	MW-503B	RMW-116A	MW-402
Station ID	MW-110-110613A	B-11-110613A	MW-6B-110713A	MW-107-110713A	MW-503B-110713A	MW-116A-110613A	MW-402-110713A
Sample Date	11/06/13	11/06/13	11/07/13	11/07/13	11/07/13	11/06/13	11/07/13
Bromomethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Carbon Disulfide	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Carbon Tetrachloride	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Chlorobenzene	22	54000	150	170	100 U	5 U	200 U
Chloroethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Chloroform	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Chloromethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
cis-1,2-Dichloroethene	45	360 J	170	210	92 J	5 U	530
cis-1,3-Dichloropropene	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Cyclohexane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Dibromochloromethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Dichlorodifluoromethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Ethylbenzene	0.46 J	1000 U	5.6	0.25 J	100 U	5 U	200 U
Isopropylbenzene	5 U	1000 U	0.21 J	5 U	100 U	5 U	200 U
m,p-Xylene	5 U	1000 U	0.32 J	0.15 J	100 U	5 U	200 U
Methyl Acetate	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Methyl Tert-Butyl Ether	5 U	1000 U	8.8	0.64 J	100 U	5 U	200 U
Methylcyclohexane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Methylene Chloride	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
o-Xylene	5 U	1000 U	6.8	0.35 J	100 U	5 U	200 U
Styrene	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Tetrachloroethene	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Toluene	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
trans-1,2-Dichloroethene	1.2 J	1000 U	1.4 J	0.65 J	100 U	5 U	200 U
trans-1,3-Dichloropropene	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Trichloroethene	14	20000	10	7.3	7900	5 U	14000

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B98
Semivolatiles in Groundwater

Sample Name	A4BB5	A4BB6	A4BB7	A4BB8	A4BB9	A4BC0	A4BC1
Location ID	MW-110	B-11	MW-06B	MW-107	MW-503B	RMW-116A	MW-402
Station ID	MW-110-110613A	B-11-110613A	MW-6B-110713A	MW-107-110713A	MW-503B-110713A	MW-116A-110613A	MW-402-110713A
Sample Date	11/06/13	11/06/13	11/07/13	11/07/13	11/07/13	11/06/13	11/07/13
Trichlorofluoromethane	5 U	1000 U	5 U	5 U	100 U	5 U	200 U
Vinyl Chloride	0.5 J	1000 U	1.1 J	1.3 J	100 U	5 U	200 U
Semivolatiles (ug/L)							
1,1'-Biphenyl	25 U	100 U	50 U	25 U	15 U	15 U	15 U
1,2,4,5-Tetrachlorobenzene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2,2'-Oxybis(1-Chloropropane)	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2,3,4,6-Tetrachlorophenol	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2,4,5-Trichlorophenol	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2,4,6-Trichlorophenol	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2,4-Dichlorophenol	25 U	12 J	50 U	25 U	15 U	15 U	15 U
2,4-Dimethylphenol	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2,4-Dinitrophenol	50 U	200 U	100 U	50 U	30 U	30 U	30 U
2,4-Dinitrotoluene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2,6-Dinitrotoluene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2-Chloronaphthalene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2-Chlorophenol	25 U	27 J	50 U	25 U	15 U	15 U	15 U
2-Methylnaphthalene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2-Methylphenol	25 U	100 U	50 U	25 U	15 U	15 U	15 U
2-Nitroaniline	50 U	200 U	100 U	50 U	30 U	30 U	1.7 J
2-Nitrophenol	25 U	100 U	50 U	25 U	2.2 J	15 U	1.5 J
3,3'-Dichlorobenzidine	25 U	17 J	50 U	25 U	15 U	15 U	15 U
3-Nitroaniline	50 U	200 U	100 U	50 U	30 U	30 U	30 U
4,6-Dinitro-2-Methylphenol	50 U	200 U	100 U	50 U	30 U	30 U	2 J
4-Bromophenyl-Phenylether	25 U	100 U	50 U	25 U	15 U	15 U	15 U
4-Chloro-3-Methylphenol	25 U	100 U	50 U	25 U	15 U	15 U	15 U
4-Chloroaniline	25 U	22 J	50 U	2.3 J	15 U	15 U	15 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B98
Semivolatiles in Groundwater

Sample Name	A4BB5	A4BB6	A4BB7	A4BB8	A4BB9	A4BC0	A4BC1
Location ID	MW-110	B-11	MW-06B	MW-107	MW-503B	RMW-116A	MW-402
Station ID	MW-110-110613A	B-11-110613A	MW-6B-110713A	MW-107-110713A	MW-503B-110713A	MW-116A-110613A	MW-402-110713A
Sample Date	11/06/13	11/06/13	11/07/13	11/07/13	11/07/13	11/06/13	11/07/13
4-Chlorophenyl-Phenylether	25 U	100 U	50 U	25 U	15 U	15 U	15 U
4-Methylphenol	25 U	100 U	50 U	25 U	15 U	15 U	15 U
4-Nitroaniline	50 U	18 J	100 U	50 U	30 U	30 U	2.4 J
4-Nitrophenol	50 U	200 U	100 U	50 U	3.2 J	30 U	3.8 J
Acenaphthene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Acenaphthylene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Acetophenone	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Anthracene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Atrazine	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Benzaldehyde	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Benzo(a)anthracene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Benzo(a)pyrene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Benzo(b)fluoranthene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Benzo(g,h,i)perylene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Benzo(k)fluoranthene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Bis(2-Chloroethoxy)Methane	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Bis(2-Chloroethyl)Ether	25 U	100 U	50 U	25 U	15 U	15 U	22
Bis(2-ethylhexyl)phthalate	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Butylbenzylphthalate	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Caprolactam	25 U	8.4 J	50 U	25 U	39	15 U	8.5 J
Carbazole	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Chrysene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Dibenz(a,h)Anthracene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Dibenzofuran	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Diethylphthalate	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Dimethylphthalate	25 U	100 U	50 U	25 U	15 U	15 U	15 U

U - Not Detected; J - Estimated; R - Rejected

Nyanza Chemical Waste Dump
Case: 43906; SDG: A4B98
Semivolatiles in Groundwater

Sample Name	A4BB5	A4BB6	A4BB7	A4BB8	A4BB9	A4BC0	A4BC1
Location ID	MW-110	B-11	MW-06B	MW-107	MW-503B	RMW-116A	MW-402
Station ID	MW-110-110613A	B-11-110613A	MW-6B-110713A	MW-107-110713A	MW-503B-110713A	MW-116A-110613A	MW-402-110713A
Sample Date	11/06/13	11/06/13	11/07/13	11/07/13	11/07/13	11/06/13	11/07/13
Di-N-Butyl Phthalate	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Di-N-Octyl Phthalate	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Fluoranthene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Fluorene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Hexachlorobenzene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Hexachlorobutadiene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Hexachlorocyclopentadiene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Hexachloroethane	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Indeno(1,2,3-cd)Pyrene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Isophorone	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Naphthalene	25 U	100 U	50 U	25 U	15 U	15 U	1.7 J
Nitrobenzene	25 U	92000	11 J	25 U	17000	15 U	1600
N-Nitroso-Di-N-Propylamine	25 U	100 U	50 U	25 U	15 U	15 U	15 U
N-Nitrosodiphenylamine	2.1 J	100 U	50 U	25 U	15 U	15 U	15 U
Pentachlorophenol	50 U	20 J	100 U	50 U	30 U	30 U	1.2 J
Phenanthrene	25 U	100 U	50 U	25 U	15 U	15 U	15 U
Phenol	25 U	57 J	50 U	25 U	29	15 U	15 U
Pyrene	25 U	100 U	50 U	25 U	15 U	15 U	15 U

Qualifier Actions:

1,4-dioxane J/R for calibration failures.

U - Not Detected; J - Estimated; R - Rejected

PES SCORING EVALUATION REPORT

Lab Name: ALS Laboratory Group - DataChem
Lab Code: DATAC
Contract: EPW11037
Case No.: 43906
SAS/Client No.: NA
SDG No.: A4B98
Matrix: Water
Lab Sample ID: 1331237001
Lab File ID: GVM04C01
Date Received: 11/08/2013
Date Extracted: 11/11/2013
Date Analyzed: 11/13/2013
Sample Wt./Vol. (g/mL): 1000 mL
Level: Low
% Moisture: NA
Decanted: N/A
Conc. Extract Vol. (uL): 1000
Injection Vol. (uL): 1.0
GPC Cleanup: No
pH: NA
Dilution Factor: 1.0
Extraction Type: CONT
Units: ug/L

Analysis Method: SOM01.2
Scoring Method: SOM01.2
Comments:

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
100-52-7	Benzaldehyde	31		PASS	Within Limits
95-57-8	2-Chlorophenol	31		PASS	Within Limits
108-60-1	2,2'-oxybis(1-Chloropropane)	47		PASS	Within Limits
98-86-2	Acetophenone	35		PASS	Within Limits
67-72-1	Hexachloroethane	12		PASS	Within Limits
98-95-3	Nitrobenzene	51		PASS	Within Limits
88-75-5	2-Nitrophenol	42		PASS	Within Limits
120-83-2	2,4-Dichlorophenol	22		PASS	Within Limits
91-20-3	Naphthalene	13		PASS	Within Limits
106-47-8	4-Chloroaniline	1.4	J	N.E.	Not Evaluated
59-50-7	4-Chloro-3-methylphenol	50		PASS	Within Limits
88-06-2	2,4,6-Trichlorophenol	32		PASS	Within Limits
92-52-4	1,1'-Biphenyl	36		PASS	Within Limits
88-74-4	2-Nitroaniline	67		PASS	Within Limits
606-20-2	2,6-Dinitrotoluene	43		PASS	Within Limits
208-96-8	Acenaphthylene	48		PASS	Within Limits
100-02-7	4-Nitrophenol	69		PASS	Within Limits
132-64-9	Dibenzofuran	21		PASS	Within Limits
121-14-2	2,4-Dinitrotoluene	53		PASS	Within Limits
84-66-2	Diethylphthalate	51		PASS	Within Limits
86-73-7	Fluorene	8.8		PASS	Within Limits
86-30-6	N-Nitrosodiphenylamine	64		PASS	Within Limits
95-94-3	1,2,4,5-Tetrachlorobenzene	18		PASS	Within Limits
118-74-1	Hexachlorobenzene	42		PASS	Within Limits
1912-24-9	Atrazine	5.0	U	N.E.	Not Evaluated
87-86-5	Pentachlorophenol	43		PASS	Within Limits
85-01-8	Phenanthrene	35		PASS	Within Limits
84-74-2	Di-n-butylphthalate	44		PASS	Within Limits
129-00-0	Pyrene	17		PASS	Within Limits
91-94-1	3,3'-Dichlorobenzidine	13		PASS	Within Limits
56-55-3	Benzo(a)anthracene	43		PASS	Within Limits
117-84-0	Di-n-octylphthalate	29		PASS	Within Limits
205-99-2	Benzo(b)fluoranthene	34		PASS	Within Limits
50-32-8	Benzo(a)pyrene	21		PASS	Within Limits
53-70-3	Dibenzo(a,h)anthracene	50		PASS	Within Limits
191-24-2	Benzo(g,h,i)perylene	26		PASS	Within Limits
90-12-0	1-Methylnaphthalene	41	JN	PASS	TIC Found

PES SCORING EVALUATION REPORT

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
****	END Main Analytes	**********	****	****	**********
83-32-9	Acenaphthene	4.4	J	PASS	Less Than CRQL
117-81-7	bis(2-Ethylhexyl)phthalate	1.4	JB	PASS	Less Than CRQL
40941-53-5	Quinoline,7-chloro-4-methyl-	4.8	JN	N.E.	Non-spiked TIC
556-71-8	Cyclononasiloxane,octadecamethyl-	3.5	JN	N.E.	Non-spiked TIC
****	END All Analytes	**********	****	****	**********

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1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4B98

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B98

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331237001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: GVM04C01

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 11/08/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 11/11/2013

Injection Volume: 1.0 (uL) GPC Factor: Date Analyzed: 11/13/2013

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
100-52-7	Benzaldehyde	31.	
108-95-2	Phenol	5.0	U
111-44-4	Bis(2-chloroethyl)ether	5.0	U
95-57-8	2-Chlorophenol	31.	
95-48-7	2-Methylphenol	5.0	U
108-60-1	2,2'-Oxybis(1-chloropropane)	47.	
98-86-2	Acetophenone	35.	
106-44-5	4-Methylphenol	5.0	U
621-64-7	N-Nitroso-di-n-propylamine	5.0	U
67-72-1	Hexachloroethane	12.	
98-95-3	Nitrobenzene	51.	
78-59-1	Isophorone	5.0	U
88-75-5	2-Nitrophenol	42.	
105-67-9	2,4-Dimethylphenol	5.0	U
111-91-1	Bis(2-chloroethoxy)methane	5.0	U
120-83-2	2,4-Dichlorophenol	22.	
91-20-3	Naphthalene	13.	
106-47-8	4-Chloroaniline	1.4	J
87-68-3	Hexachlorobutadiene	5.0	U
105-60-2	Caprolactam	5.0	U
59-50-7	4-Chloro-3-methylphenol	50.	
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U
88-06-2	2,4,6-Trichlorophenol	32.	
95-95-4	2,4,5-Trichlorophenol	5.0	U
92-52-4	1,1'-Biphenyl	36.	
91-58-7	2-Chloronaphthalene	5.0	U
88-74-4	2-Nitroaniline	67.	
131-11-3	Dimethylphthalate	5.0	U
606-20-2	2,6-Dinitrotoluene	43.	
208-96-8	Acenaphthylene	48.	
99-09-2	3-Nitroaniline	10.	U
83-32-9	Acenaphthene	4.4	J

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1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A4B98

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: _____ SDG No.: A4B98

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331237001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: GVM04C01

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 11/08/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 11/11/2013

Injection Volume: 1.0 (uL) GPC Factor: _____ Date Analyzed: 11/13/2013

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10.	U
100-02-7	4-Nitrophenol	69.	
132-64-9	Dibenzofuran	21.	
121-14-2	2,4-Dinitrotoluene	53.	
84-66-2	Diethylphthalate	51.	
86-73-7	Fluorene	8.8	
7005-72-3	4-Chlorophenyl-phenylether	5.0	U
100-01-6	4-Nitroaniline	10.	U
534-52-1	4,6-Dinitro-2-methylphenol	10.	U
86-30-6	N-Nitrosodiphenylamine[1]	64.	
95-94-3	1,2,4,5-Tetrachlorobenzene	18.	
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	42.	
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	43.	
85-01-8	Phenanthrene	35.	
120-12-7	Anthracene	5.0	U
86-74-8	Carbazole	5.0	U
84-74-2	Di-n-butylphthalate	44.	
206-44-0	Fluoranthene	5.0	U
129-00-0	Pyrene	17.	
85-68-7	Butylbenzylphthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	13.	
56-55-3	Benzo(a)anthracene	43.	
218-01-9	Chrysene	5.0	U
117-81-7	Bis(2-ethylhexyl)phthalate	1.4	JB
117-84-0	Di-n-octylphthalate	29.	
205-99-2	Benzo(b)fluoranthene	34.	
207-08-9	Benzo(k)fluoranthene	5.0	U
50-32-8	Benzo(a)pyrene	21.	
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
53-70-3	Dibenzo(a,h)anthracene	50.	
191-24-2	Benzo(g,h,i)perylene	26.	
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

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3 of 3

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

A4B98

Lab Name: ALS Environmental Contract: EPW11037

Lab Code: DATAC Case No.: 43906 Mod. Ref No.: SDG No.: A4B98

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 1331237001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: GVM04C01

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 11/08/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 11/11/2013

Injection Volume: 1.0 (uL) GPC Factor: Date Analyzed: 11/13/2013

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CONCENTRATION UNITS:(ug/L or ug/kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	90-12-0	Naphthalene, 1-methyl-	7.60	41.	JN
02	40941-53-5	Quinoline, 7-chloro-4-methyl-	9.73	4.8	JN
03		Unknown Benzenemethanesulfonamide, 4-chloro-	10.57	6.2	J
04		Unknown 3,5-Dibromopyridine	14.18	2.4	J
05		Unknown 2-Dimethylamino-3-methyl(phenyl)amino-1,	16.56	16.	J
06	556-71-8	Cyclononasiloxane, octadecamethyl-	17.60	2.5	JN
07		Unknown 1,2-Benzenedicarboxylic acid	19.52	3.4	J
08		Unknown Acetamide, N-cycloheptyl-2,2-diphenyl-	19.80	2.3	J
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

Engineering a Sustainable Future

July 3, 2013
Nobis File No. 80022

Mr. Dan Keefe
EPA Site Manager
EPA-New England Region I
5 Post Office Square
Suite 100, Mailcode OSRR07-4
Boston, MA 02109-3912

Re: Contract No. EP-S1-06-03
Task Order No. 0022-RA-RA-0115
Case No. E018S, Sample Delivery Group (SDG) No.: EP0951
Laboratory Report Nos.: 13050020, 13050023, 13050025
Region I OEME Laboratory, North Chelmsford, Massachusetts 01863
Nyanza Chemical Waste Dump, OU2 Superfund Site
Ashland, Massachusetts
CERCLIS No.: MAD990685422

Tier I Modified Inorganic Data Validation

Anions: 20/Aqueous/ EP0951-EP0969
Field Duplicate: (EP0959/EP0960)

Dear Mr. Keefe:

Nobis Engineering, Inc. performed a Tier I data validation in accordance with the *Region I, EPA-NE Environmental Data Review Supplement for Regional Data Review Elements and Superfund Specific Guidance/Procedures* (April 2013) on the inorganic analytical data for 20 aqueous groundwater samples collected by Nobis Engineering, Inc. at the Nyanza Chemical Waste Dump, OU2 Superfund Site located in Ashland, Massachusetts. The samples were analyzed for anions (chloride, sulfate, nitrate, and nitrite) by EPA method 300.0. A Tier I modified data validation was deemed sufficient at this time.

The data were evaluated based on the following parameters:

*	• Overall Evaluation of Data and Potential Usability Issues
*	• Data Completeness
	• Preservation and Technical Holding Times
NE	• Initial and Continuing Calibrations
*	• Blanks
*	• Laboratory Control Samples
	• Matrix Spike/Matrix Spike Duplicate (MS/MSD)
	• Field Duplicates
*	• Laboratory Duplicates
NA	• Performance Evaluation (PE) Sample Results
	• Reported Quantitation Limits

Nobis Engineering, Inc.
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

* All criteria were met for this parameter.
NA – Not applicable.
NE – Not evaluated.

Overall Evaluation of Data and Potential Usability Issues

The objectives of the groundwater sampling at the site are to provide a comprehensive evaluation of the shallow and deep groundwater contaminants at the site and to evaluate the feasibility of implementing monitored natural attenuation (MNA) as a remedial alternative for the site.

Data are usable for the purposes of the project except as noted below.

Data Completeness

Three data reports were submitted: 13050020; 13050023; and 13050025. All submitted samples were analyzed and reported.

Preservation and Holding Time

The nitrate and nitrite holding time was exceeded for sample EP0959 and EP0961 by 19 days. Sample results for these two samples are qualified as estimated (J/UJ) and should be considered biased low.

Matrix Spike/Matrix Spike Duplicates

Chloride spike results were not evaluated in three spike samples (EP0952, EP0964, and EP0968) because the sample concentrations were greater than 4 times the spike amount. Nitrate spike result was not evaluated in spike sample EP0964 and was noted that this was because the sample concentration was greater than 4 times the spike amount. However, the sample concentration was not greater than 4 times the spike amount and the spike recovery was calculated by the validated and was within the acceptable range of recovery.

Field Duplicates

Samples EP0959 and EP0960 were analyzed as field duplicates. All analytes were within in acceptance criteria (30% RPD), except for nitrate. Sample EP0959 was analyzed outside the holding time and indicates a lower result than sample EP0960, which was analyzed within holding time. The result for EP0959 is biased low and is already qualified with a J flag. No other action would be taken.

Reporting Limits

All samples required dilution for one or more analytes. Reporting limits were raised accordingly.

Please contact me at (978) 703-6021 or gderuzzo@nobiseng.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS ENGINEERING, INC.

Gail DeRuzzo
Lead Chemist

Tables: Data Summary Tables

Enclosure: Data Review Checklist

Generic Data Review Checklist

Project: Nyanza OU2
Project #: 80022
Case#: E018S
Date: 7/3/13
Methods: Anions, 300.0
Laboratory: OEME
SDG: 13050020, 13050023, 13050025
Reviewer:

1. Case Narrative and Data Package Completeness (COC and Analyte List Review)

EP0959-965 (collected 5/21) – SDG 23
EP0951-958 (collected 5/20) – SDG 20
EP0966-969 (collected 5/22) – SDG 25

2. Holding Time and Sample Preservation Compliance

No analytical times are recorded, only days. Assume within 48 hrs if within 2 days of collection.
EP0959, 961 – NO3/NO2 out of HT and estimated on dilution. Run 21 days from collection. NO3 positives are J; NO2 NDs should be R but will leave as UJ.

3. Lab and Field Blanks

OK

4. Laboratory Control Samples

OK

5. Field Duplicate Precision

EP0959/EP0960 – nitrate values exceeded 30% RPD (40%). Results should be estimated. EP0959 nitrate was run out of HT and is lower. EP0960 result in HT and may be more representative.

6. Laboratory Duplicate Precision

EP0951 - ok
EP0962 – ok
EP0966 - ok

7. Matrix Spikes

EP0952 – Cl R flag – conc >4x spike.
EP0964 – Cl and NO3 R flags; however, NO3 sample conc is NOT 4x spike added (2.3 in sample; spike added = 50). Recovery = 46 ->87% recovery which is acceptable.

EP0968 – Cl R flag

8. Surrogate Spikes
NA

9. Internal Standards
NA

10. Performance Evaluation Samples
NA

11. Reporting Limits

Samples reported from 4x 968; 10x dilution 951-958, 962-967, 969; 20x 959, 961 NO3/NO2; 25x 960 NO3/NO2; 25x 965, 967 Cl/SO4; 50x dilution 954 (Cl/SO4); 100x dilution 955, 957, 959, 960, 961 (Cl/SO4).

12. Calibration Issues
NA

13. Other

DATA SUMMARY TABLE Anions Analysis
Aqueous - mg/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

Sample Location	MW-403A	MW-406B	MW-406A	MW-115B	MW-115A	RMW-405A	RMW-406B	RMW-403B	F-DUP01 (MW-304A)	MW-304A
Sample ID	EP0951	EP0952	EP0953	EP0954	EP0955	EP0956	EP0957	EP0958	EP0959	EP0960
Sample Date & Time	5/20/2013 10:25:00 AM	5/20/2013 11:20:00 AM	5/20/2013 11:46:00 AM	5/20/2013 13:40:00 PM	5/20/2013 14:33:00 PM	5/20/2013 14:35:00 PM	5/20/2013 13:15:00 PM	5/20/2013 15:45:00 PM	5/21/2013 12:10:00 PM	5/21/2013 11:55:00 AM
Chemical Name									Duplicate	
Chloride	140	320	230	1700	3300	320	3000	180	2500	2500
Nitrate	9.2	1.6	1.6	0.50 U	0.20 U	0.97	0.50 U	0.51	1.6 J	2.4
Nitrate as Nitrogen	2.1	0.36	0.36	0.11 U	0.05 U	0.22	0.11 U	0.12	0.36 J	0.54
Nitrite	0.50 U	0.50 U	0.50 U	0.50 U	0.20 U	0.50 U	0.50 U	0.50 U	1.0 UJ	1.2 U
Nitrite as Nitrogen	0.15 U	0.15 U	0.15 U	0.15 U	0.06 U	0.15 U	0.15 U	0.15 U	0.3 UJ	0.38 U
Sulfate	28	25	28	1600	1800	160	2300	32	1400	1300

Data Qualifier Definitions:

U=analyte not detected; reported to RL.

J=associated result is an estimated quantity.

UJ=analyte not detected; quantitation limit is an estimated quantitty.

R=data are rejected; unusable.

DATA SUMMARY TABLE Anions Analysis
Aqueous - mg/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

Sample Location	MW-203A	RMW-305A	MW-203B	MW-305B	MW-304B	MW-06A	MW-302	MW-113B	MW-110
Sample ID	EP0961	EP0962	EP0963	EP0964	EP0965	EP0966	EP0967	EP0968	EP0969
Sample Date & Time	5/21/2013 15:50:00 PM	5/21/2013 15:50:00 PM	5/21/2013 12:07:00 AM	5/21/2013 15:23:00 PM	5/21/2013 11:00:00 AM	5/22/2013 11:53:00 AM	5/22/2013 13:00:00 PM	5/22/2013 11:15:00 AM	5/22/2013 12:25:00 PM
Chemical Name									
Chloride	4800	97	290	92	910	130	910	62	16
Nitrate	1.32 J	0.50 U	0.50 U	2.3	0.85	0.50 U	0.50 U	0.20 U	0.50 U
Nitrate as Nitrogen	0.30 J	0.11 U	0.11 U	0.52	0.19	0.11 U	0.11 U	0.05 U	0.11 U
Nitrite	1.0 UJ	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.20 U	0.50 U
Nitrite as Nitrogen	0.3 UJ	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.06 U	0.15 U
Sulfate	2600	260	480	42	570	24	580	120	24

Data Qualifier Definitions:

U=analyte not detected; reported to RL.

J=associated result is an estimated quantity.

UJ=analyte not detected; quantitation limit is an estimated quantitty.

R=data are rejected; unusable.

Engineering a Sustainable Future

December 23, 2013
Nobis File No. 80022

Mr. Dan Keefe
EPA Site Manager
EPA-New England Region I
5 Post Office Square
Suite 100, Mailcode OSRR07-4
Boston, MA 02109-3912

Re: Contract No. EP-S1-06-03
Task Order No. 0022-RA-RA-0115
Case No. E020S, Sample Delivery Group (SDG) No.: EP1580
Laboratory Report Nos.: 13110005, 13110010, 13110013, 13110015
Region I OEME Laboratory, North Chelmsford, Massachusetts 01863
Nyanza Chemical Waste Dump, OU2 Superfund Site
Ashland, Massachusetts
CERCLIS No.: MAD990685422

Tier 1 Modified Inorganic Data Validation

Anions: 44/Aqueous/ EP1580-EP1623
Field Duplicates: (EP1588/EP1589) and (EP1605/EP1618)

Dear Mr. Keefe:

Nobis Engineering, Inc. performed a Tier 1 modified data review in accordance with the *Region I, EPA-NE Environmental Data Review Supplement for Regional Data Review Elements and Superfund Specific Guidance/Procedures* (April 2013) on the inorganic analytical data for 44 aqueous groundwater samples collected by Nobis Engineering, Inc. at the Nyanza Chemical Waste Dump, OU2 Superfund Site located in Ashland, Massachusetts. The samples were analyzed for anions (chloride, sulfate, nitrate, and nitrite) by EPA method 300.0. A Tier 1 modified data review was deemed sufficient at this time.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness
• Preservation and Technical Holding Times
* • Blanks
* • Laboratory Control Samples
• Matrix Spike/Matrix Spike Duplicate (MS/MSD)
* • Field Duplicates
• Laboratory Duplicates
• Reported Quantitation Limits

* All criteria were met for this parameter.
NA – Not applicable.

Nobis Engineering, Inc.
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

Overall Evaluation of Data and Potential Usability Issues

The objectives of the groundwater sampling at the site are to provide a comprehensive evaluation of the shallow and deep groundwater contaminants at the site and to evaluate the feasibility of implementing monitored natural attenuation (MNA) as a remedial alternative for the site.

Data are usable for the purposes of the project except as noted below.

Data Completeness

Four data reports were submitted: 13110005; 13110010; 13110013; and 13110015. All submitted samples were analyzed and reported.

Preservation and Holding Time

Samples in laboratory report 13110010 were received at elevated temperature (18°C). Samples in laboratory reports 13110011 and 13110015 were received at elevated temperature (8°C). Sample results may be biased low in laboratory report 13110010 due to temperature excursion. Qualifiers were not added for this occurrence.

The nitrate and nitrite holding time was exceeded for samples EP1588, 1589, 1594, 1600, 1604, 1611, 1612, 1617, and 1618. The nitrite holding time was exceeded for samples EP1593 and 1601. The nitrate holding time was exceeded for sample 1603. Sample results for these samples are qualified as estimated (J/UJ) and should be considered biased low.

Matrix Spike/Matrix Spike Duplicates

Chloride spike results were not evaluated in all spike samples (EP1581, 1593, 1601, 1606, 1613, and 1618) because the sample concentrations were greater than 4 times the spike amount. Sulfate spike results were not evaluated in spike samples EP1593, and EP1613 because the sample concentration was greater than 4 times the spike amount.

Laboratory Duplicates

All laboratory duplicate results were within acceptance limits except for nitrate in sample EP1623. The result for this analyte in sample EP1623 should be considered estimated.

Reporting Limits

Most samples required dilution for one or more analytes. Reporting limits were raised accordingly.

Please contact me at (978) 703-6021 or gderuzzo@nobiseng.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS ENGINEERING, INC.

Gail DeRuzzo
Lead Chemist

Tables: Data Summary Tables

Enclosure: Data Review Checklist
COCs

DATA SUMMARY TABLE
Tier 1 Modified Validated Data
Anions - mg/L

Laboratory Sample ID	AB44664	AB44665	AB44666	AB44667	AB44668	AB44669	AB44670
Location ID	MW-04A	MW-04B	MW-403A	MW-203B	MW-203A	MW-202	MW-201
Station ID	MW-4A-110413A	MW-4B-110413A	MW-403A-110413A	MW-203B-110413A	MW-203A-110413A	MW-202-110413A	MW-201-110413A
Sample Date	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13	11/04/13
General Chemistry (mg/L)							
Chloride	9.6	200	160	260	6100	420	270
Nitrate	0.05 U	0.27	12	0.32	5 U	0.42	0.44
Nitrate as Nitrogen	0.011 U	0.06	2.71	0.07	1.1 U	0.09	0.09
Nitrite	0.05 U	0.05 U	0.05 U	0.05 U	5 U	1 U	0.05 U
Nitrite as Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	1.5 U	0.015 U	0.015 U
Sulfate	6.8	200	27	480	3200	670	190

U - Not Detected; J - Estimated; R - Rejected

DATA SUMMARY TABLE
Tier 1 Modified Validated Data
Anions - mg/L

Laboratory Sample ID	AB44671	AB44748	AB44749	AB44750	AB44751	AB44752	AB44753
Location ID	MW-04C	MW-115A	MW-115A	MW-B5	WP-105	MW-112A	MW-406B
Station ID	MW-4C-110413A	MW-115A-110513A	FDUP-01-110513A	MW-B5-110513A	WP-105-10513A	MW-112A-110513A	MW-406B-110513A
Sample Date	11/04/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
General Chemistry (mg/L)							
Chloride	93	3700	3600	240	120	300	190
Nitrate	0.22	5 UJ	5 UJ	3.6	0.05 U	0.19	0.05 U
Nitrate as Nitrogen	0.05	1.12 UJ	1.12 UJ	0.81	0.011 U	0.04	0.011 U
Nitrite	0.05 U	5 UJ	5 UJ	0.05 U	0.05 U	0.05 U	0.5 UJ
Nitrite as Nitrogen	0.015 U	1.52 UJ	1.52 UJ	0.015 U	0.015 U	0.015 U	0.15 UJ
Sulfate	160	2000	2000	300	0.19	330	35

U - Not Detected; J - Estimated; R - Rejected

DATA SUMMARY TABLE
Tier 1 Modified Validated Data
Anions - mg/L

Laboratory Sample ID	AB44754	AB44755	AB44756	AB44757	AB44758	AB44759	AB44760
Location ID	MW-115B	MW-302	MW-304A	MW-304B	MW-401	MW-405A	MW-405B
Station ID	MW-115B-110513A	MW-302-110513A	MW-304A-110513A	MW-304B-110513A	MW-401-110513A	MW-405A-110513A	MW-405B-110513A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13
General Chemistry (mg/L)							
Chloride	1800	900	2700	920	750	4000	3400
Nitrate	5 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	5 UJ
Nitrate as Nitrogen	1.1 UJ	0.011 U	0.011 U	0.011 U	0.015 U	0.011 U	1.1 UJ
Nitrite	5 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	5 UJ
Nitrite as Nitrogen	1.52 UJ	0.015 U	0.015 U	0.015 U	0.011 U	0.015 U	1.5 UJ
Sulfate	1800	580	1400	600	560	2200	2700

U - Not Detected; J - Estimated; R - Rejected

DATA SUMMARY TABLE
Tier 1 Modified Validated Data
Anions - mg/L

Laboratory Sample ID	AB44761	AB44762	AB44763	AB44789	AB44790	AB44791	AB44792
Location ID	MW-406A	MW-112B	MW-403B	B-11	SB-600	MW-104A	MW-104B
Station ID	MW-406A-110513A	MW-112B-110513A	MW-403B-110513A	B-11-110613A	FDUP-02-110613A	MW-104A-110613A	MW-104B-110613A
Sample Date	11/05/13	11/05/13	11/05/13	11/06/13	11/06/13	11/06/13	11/06/13
General Chemistry (mg/L)							
Chloride	150	110	180	150	520	230	9.2
Nitrate	0.5 U	0.05 U	0.31 J	0.54 J	0.48 J	0.2	0.06
Nitrate as Nitrogen	0.011 U	0.011 U	0.07 J	0.12 J	0.11 J	0.05	0.01
Nitrite	0.5 UJ	0.05 U	0.05 U	0.5 UJ	1 UJ	0.5 U	0.5 U
Nitrite as Nitrogen	0.15 UJ	0.015 U	0.015 U	0.15 UJ	0.3 UJ	0.15 U	0.15 U
Sulfate	19	22	33	810	480	350	290

U - Not Detected; J - Estimated; R - Rejected

DATA SUMMARY TABLE
Tier 1 Modified Validated Data
Anions - mg/L

Laboratory Sample ID	AB44793	AB44794	AB44795	AB44796	AB44797	AB44798	AB44799
Location ID	MW-110	MW-113A	MW-113B	MW-204A	MW-305A	MW-305B	MW-6A
Station ID	MW-110-110613A	MW-113A-110613A	MW-113B-110613A	MW-204A-110613A	MW-305A-110613A	MW-305B-110613A	MW-6A-110613A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13	11/06/13
General Chemistry (mg/L)							
Chloride	40	25	70	1100	110	32	94
Nitrate	0.05 U	0.05 U	0.2	3.4 J	0.17 J	1.9	0.05 U
Nitrate as Nitrogen	0.011 U	0.011 U	0.05 J	0.77 J	0.04 J	0.43	0.011 U
Nitrite	0.05 U	0.05 U	0.5 U	5 UJ	0.5 UJ	0.05 U	0.05 U
Nitrite as Nitrogen	0.015 U	0.015 U	0.15 UJ	1.5 UJ	0.15 UJ	0.015 U	0.015 U
Sulfate	26	51	130	2800	290	44	32

U - Not Detected; J - Estimated; R - Rejected

DATA SUMMARY TABLE
Tier 1 Modified Validated Data
Anions - mg/L

Laboratory Sample ID	AB44800	AB44801	AB44802	AB44803	AB44847	AB44848	AB44849
Location ID	MW-09A	MW-09B	RW-1	SB-600	MW-107	MW-402	MW-503B
Station ID	MW-9A-110613A	MW-9B-110613A	RW-1-110613A	SB-600-110613A	MW-107-110713A	MW-402-110713A	MW-503B-110713A
Sample Date	11/06/13	11/06/13	11/06/13	11/06/13	11/07/13	11/07/13	11/07/13
General Chemistry (mg/L)							
Chloride	140	23	140	520	350	220	100
Nitrate	0.5 U	0.72	0.3 J	0.62 J	0.05 U	5.2	5.5
Nitrate as Nitrogen	0.11 U	0.16	0.07 J	0.14 J	0.011 U	1.17	1.24
Nitrite	0.5 U	0.5 U	0.5 UJ	1 UJ	0.05 U	0.05 U	0.05 U
Nitrite as Nitrogen	0.15 U	0.15 U	0.15 UJ	0.3 UJ	0.015 U	0.015 U	0.015 U
Sulfate	410	220	230	470	460	610	290

U - Not Detected; J - Estimated; R - Rejected

DATA SUMMARY TABLE
Tier 1 Modified Validated Data
Anions - mg/L

Laboratory Sample ID	AB44850	AB44851
Location ID	MW-06B	RMW-116A
Station ID	MW-6B-110713A	MW-116A-110613A
Sample Date	11/07/13	11/06/13
General Chemistry (mg/L)		
Chloride	460	12
Nitrate	0.05 U	0.94 J
Nitrate as Nitrogen	0.011 U	0.21 J
Nitrite	0.05 U	0.05 U
Nitrite as Nitrogen	0.015 U	0.015 U
Sulfate	300	22

U - Not Detected; J - Estimated; R - Rejected

Generic Data Review Checklist

Project: Nyanza OU2
Project #: 80022
Case#: E020S
Date: 12/23/13
Methods: Anions, 300.0
Laboratory: OEME
SDG: 13110005, 13110010, 13110013, 13110015
Reviewer:

1. Case Narrative and Data Package Completeness (COC and Analyte List Review)

EP1580-EP1587 (collected 11/4) – SDG 13110005 (8 samples)
EP1588-EP1603 (collected 11/5) – SDG 13110010 (16 samples)
EP1604-EP1618 (collected 11/6) – SDG 13110013 (15 samples)
EP1619-EP1623 (collected 11/7) – SDG 13110015 (5 samples)

2. Holding Time and Sample Preservation Compliance

No analytical times are recorded, only days. Assume within 48 hrs if within 2 days of collection.
13110010 – received at elevated temp (18 C).
Missed HT in sample EP1588, and 1589, 1594, 1600, 1604, 1611, 1612, 1617, 1618 for NO3 and NO2. Results qualified by lab with J.
Missed HT in sample EP1593, EP1601, EP1603 for NO2.
13110013 and 13110015 – received at elevated temp (8 C)

3. Lab and Field Blanks

OK

4. Laboratory Control Samples

OK

5. Field Duplicate Precision

EP1589/EP1588 - ok
EP1605/EP1618 - ok

6. Laboratory Duplicate Precision

13110005 – EP1581 – ok
13110010 – EP1593 and EP1601 – ok
13110013 – EP1606 and EP1613 - ok
13110015 – (851) – EP1623 – NO3 outside 20%RPD - qualify

7. Matrix Spikes
13110005 – EP1581 – ok except Cl parent sample >4x spike amount
13110010 – EP1593 – ok except Cl and SO4 parent sample >4x spike amount
13110010 – EP1601 - ok except Cl parent sample >4x spike amount
13110013 – EP1606 – (791) ok except Cl parent sample >4x spike amount
13110013 – EP1613 – (798) ok except Cl and SO4 parent sample >4x spike amount
13110015 – EP1618 - ok except Cl parent sample >4x spike amount

8. Surrogate Spikes
NA

9. Internal Standards
NA

10. Performance Evaluation Samples
NA

11. Reporting Limits
Cl, NO3, SO4 run at 10 x dilution EP1582, EP1586, EP1592; 20x EP1583, EP1585, EP1620, EP1621
EP1582 – CL 10x
Cl and SO4 EP1584, EP1595, EP1596, EP1597, EP1598, EP1599 (100x)
NO3 and SO4 EP1587 (10x)
Cl and SO4 EP1590, EP1619, EP1622 (10x)
All analytes 100x (EP1588, EP1589, EP1594, EP1600, EP1611)
All analytes 10x (EP1604, EP1606, EP1612, EP1615, EP1616, EP1617)
All analytes 20x (EP1605, EP1618)
Cl 10x EP1591, EP1602, EP1603
Cl and NO2 10x (EP1593, EP1601)
NO3,NO2, SO4 10x (EP1607, EP1610)

12. Calibration Issues
NA

13. Other

PN: 13110005

USEPA CLP Generic COC (LAB COPY)

DateShipped: 11/5/2013
CarrierName: Nobis
AirbillNo:

CHAIN OF CUSTODY RECORD

Project Code: 80022
Cooler #:

No: 1-110513-113209-0023

Lab: New England Regional Laboratory
Lab Contact: Dan Boudreau
Lab Phone: 8883727341

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
MW-4A-110413A	EP1580	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	1 (4 C) (1)	MW-4A	11/04/2013 14:15	
MW-4B-110413A	EP1581	Ground Water/ Sean McDowell	Grab	Anion OEME(2)	7 (4 C) (1)	MW-4B	11/04/2013 14:42	
MW-403A-110413A	EP1582	Ground Water/ Josh Stewart	Grab	Anion OEME(2)	49 (4 C) (1)	MW-403A	11/04/2013 14:55	
MW-203B-110413A	EP1583	Ground Water/ Sean McDowell	Grab	Anion OEME(2)	41 (4 C) (1)	MW-203B	11/04/2013 11:52	
MW-203A-110413A	EP1584	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	33 (4 C) (1)	MW-203A	11/04/2013 11:43	
MW-202-110413A	EP1585	Ground Water/ Jessica Olkowski	Grab	Anion OEME(2)	27 (4 C) (1)	MW-202	11/04/2013 11:20	
MW-201-110413A	EP1586	Ground Water/ Ayan Majmudar	Grab	Anion OEME(2)	19 (4 C) (1)	MW-201	11/04/2013 12:00	
MW-4C-110413A	EP1587	Ground Water/ Jessica Olkowski	Grab	Anion OEME(2)	13 (4 C) (1)	MW-4C	11/04/2013 14:50	

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: Anion OEME=Anions OEME	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Shipping	(NOBIS)	11-5-13	ESAT	11/5/13 12:10	4°C

PN: 1311001D

USEPA CLP Generic COC (LAB COPY)

DateShipped: 11/6/2013
CarrierName: Nobis
AirbillNo:

CHAIN OF CUSTODY RECORD

Project Code: 80022
Cooler #:

No: 1-110613-095722-0026

Lab: New England Regional Laboratory
Lab Contact: Dan Boudreau
Lab Phone: 8883727341

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
MW-115A-110513A	EP1588	Ground Water/ Jessica Olkowski	Grab	Anion OEME(2)	85 (4 C) (1)	MW-115A	11/05/2013 11:50	
FDup-01-110513A	EP1589	Ground Water/ Jessica Olkowski	Grab	Anion OEME(2)	93 (4 C) (1)	MW-115A	11/05/2013 11:55	
MW-B5-110513A	EP1590	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	55 (4 C) (1)	MW-B5	11/05/2013 14:30	
WP-105-10513A	EP1591	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	63 (4 C) (1)	WP-105	11/05/2013 13:00	
MW-112A-110513A	EP1592	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	69 (4 C) (1)	MW-112A	11/05/2013 15:12	
MW-406B-110513A	EP1593	Ground Water/ Sean McDowell	Grab	Anion OEME(2)	155 (4 C), 161 (4 C), 162 (4 C) (3)	MW-406B	11/05/2013 10:27	
MW-115B-110513A	EP1594	Ground Water/ Ayan Majmudar	Grab	Anion OEME(2)	101 (4 C) (1)	MW-115B	11/05/2013 12:00	
MW-302-110513A	EP1595	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	109 (4 C) (1)	MW-302	11/05/2013 11:21	

Sample(s) to be used for Lab QC: MW-406B-110513A Tag 155, MW-406B-110513A Tag 161, MW-406B-110513A Tag 162.	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: Anion OEME=Anions OEME	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Shipping	Jose S (NOBIS)	11-6-13	[signature] ESAT	11/6/13	18°C

PN: 13110010

USEPA CLP Generic COC (LAB COPY)

DateShipped: 11/6/2013
CarrierName: Nobis
AirbillNo:

CHAIN OF CUSTODY RECORD

Project Code: 80022
Cooler #:

No: 1-110613-095722-0026

Lab: New England Regional Laboratory
Lab Contact: Dan Boudreau
Lab Phone: 8883727341

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
MW-304A-110513A	EP1596	Ground Water/ Ayan Majmudar	Grab	Anion OEME(2)	115 (4 C) (1)	MW-304A	11/05/2013 14:45	
MW-304B-110513A	EP1597	Ground Water/ Jessica Olkowski	Grab	Anion OEME(2)	121 (4 C) (1)	MW-304B	11/05/2013 15:10	
MW-401-110513A	EP1598	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	127 (4 C) (1)	MW-401	11/05/2013 16:30	
MW-405A-110513A	EP1599	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	133 (4 C) (1)	MW-405A	11/05/2013 12:30	
MW-405B-110513A	EP1600	Ground Water/ Sean McDowell	Grab	Anion OEME(2)	141 (4 C) (1)	MW-405B	11/05/2013 13:07	
MW-406A-110513A	EP1601	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	149 (4 C) (1)	MW-406A	11/05/2013 10:48	
MW-112B-110513A	EP1602	Ground Water/ Sean McDowell	Grab	Anion OEME(2)	77 (4 C) (1)	MW-112B	11/05/2013 15:07	
MW-403B-110513A	EP1603	Ground Water/ Ayan Majmudar	Grab	Anion OEME(2)	178 (4C) (1)	MW-403B	~~11-05-13~~ 14:41 11-05-13	

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #

Analysis Key: Anion OEME=Anions OEME

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Shipping	Josh S (NOBIS)	11-6-13	ESAT	11/6/13	18 °C

PN: 1311 0015

USEPA CLP Generic COC (LAB COPY)

DateShipped: 11/7/2013
CarrierName: Nobis
AirbillNo:

CHAIN OF CUSTODY RECORD

Case #: E020S
Cooler #:

No: 1-110713-150450-0029

Lab: New England Regional Laboratory
Lab Contact: Dan Boudreau
Lab Phone: 8883727341

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
MW-107-110713A	EP1619	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	300 (4 C) (1)	MW-107	11/07/2013 11:00	
MW-402-110713A	EP1620	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	318 (4 C) (1)	MW-402	11/07/2013 14:20	
MW-503B-110713A	EP1621	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	306 (4 C) (1)	MW-503B	11/07/2013 11:45	
MW-6B-110713A	EP1622	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	294 (4 C) (1)	MW-6B	11/07/2013 09:40	
MW-116A-110613A	EP1623	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	312 (4 C) (1)	MW-116A	11/06/2013 13:35	

Special Instructions:	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: Anion OEME=Anions OEME	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Shipping	Josh (NOBLS)	11-7-13	GSH	11/7/13 17:00	8°C

PN: 13110013

USEPA CLP Generic COC (LAB COPY)

CHAIN OF CUSTODY RECORD

No: 1-110713-095319-0027

DateShipped: 11/7/2013
CarrierName: Nobis
AirbillNo:

Case #: E020S
Cooler #:

Lab: New England Regional Laboratory
Lab Contact: Dan Boudreau
Lab Phone: 8883727341

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
B-11-110613A	EP1604	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	288 (4 C) (1)	B-11	11/06/2013 12:30	
FDup-02-110613A	EP1605	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	276 (4 C) (1)	SB-600	11/06/2013 12:35	
MW-104A-110613A	EP1606	Ground Water/ Jessica Olkowski	Grab	Anion OEME(2)	216 (4 C) (1)	MW-104A	11/06/2013 09:50	
MW-104B-110613A	EP1607	Ground Water/ Ayan Majmudar	Grab	Anion OEME(2)	222 (4 C) (1)	MW-104B	11/06/2013 10:00	
MW-110-110613A	EP1608	Ground Water/ Sean McDowell	Grab	Anion OEME(2)	282 (4 C) (1)	MW-110	11/06/2013 12:47	
MW-113A-110613A	EP1609	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	192 (4 C) (1)	MW-113A	11/06/2013 17:15	
MW-113B-110613A	EP1610	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	198 (4 C), 204 (4 C), 205 (4 C) (3)	MW-113B	11/06/2013 15:20	
MW-204A-110613A	EP1611	Ground Water/ Ayan Majmudar	Grab	Anion OEME(2)	234 (4 C) (1)	MW-204A	11/06/2013 14:10	

Sample(s) to be used for Lab QC: MW-113B-110613A Tag 198, MW-113B-110613A Tag 204, MW-113B-110613A Tag 205
Sample EP 1609 High Levels of Organic Contaminants

Shipment for Case Complete? N
Samples Transferred From Chain of Custody #

Analysis Key: Anion OEME=Anions OEME

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Shipping	(NOBIS)	11-7-13	ESAT	11/7/13 11:30	8°C

PN: 131100 13

USEPA CLP Generic COC (LAB COPY)

DateShipped: 11/7/2013
CarrierName: Nobis
AirbillNo:

CHAIN OF CUSTODY RECORD

Case #: E020S
Cooler #:

No: 1-110713-095319-0027

Lab: New England Regional Laboratory
Lab Contact: Dan Boudreau
Lab Phone: 8883727341

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
MW-305A-110613A	EP1612	Ground Water/ Jessica Olkowski	Grab	Anion OEME(2)	228 (4 C) (1)	MW-305A	11/06/2013 12:20	
MW-305B-110613A	EP1613	Ground Water/ Ayan Majmudar	Grab	Anion OEME(2)	240 (4 C) (1)	MW-305B	11/06/2013 12:30	
MW-6A-110613A	EP1614	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	252 (4 C) (1)	MW-6A	11/06/2013 12:55	
MW-9A-110613A	EP1615	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	246 (4 C) (1)	MW-9A	11/06/2013 10:10	
MW-9B-110613A	EP1616	Ground Water/ Sean McDowell	Grab	Anion OEME(2)	264 (4 C) (1)	MW-9B	11/06/2013 10:57	
RW-1-110613A	EP1617	Ground Water/ Alice Arsenault	Grab	Anion OEME(2)	258 (4 C) (1)	RW-1	11/06/2013 15:25	
SB-600-110613A	EP1618	Ground Water/ Michelle Carbonneau	Grab	Anion OEME(2)	270 (4 C) (1)	SB-600	11/06/2013 12:30	

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: Anion OEME=Anions OEME	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Shipping	(NOBIS)	11-7-13	ESAT	11/7/13 11:30	8°C

Engineering a Sustainable Future

December 23, 2013
Nobis File No. 80022

Mr. Dan Keefe
EPA Site Manager
EPA-New England Region I
5 Post Office Square
Suite 100, Mailcode OSRR07-4
Boston, MA 02109-3912

Re: Contract No. EP-S1-06-03
Task Order No. 0022-RA-RA-0115
Case No. 0126S, Laboratory Report No. M2184, SDG No. D05761
Spectrum Analytical, Inc., Warwick, Rhode Island
Nyanza Chemical Waste Dump, OU2 Superfund Site
Ashland, Massachusetts
CERCLIS No.: MAD990685422

Tier 1 Modified Organic Data Validation

Dissolved Gases: 11/Aqueous/ D05761-D05771
Field Duplicate: D05761/D05762

Dear Mr. Keefe:

Nobis Engineering, Inc. performed a Tier 1 modified data review in accordance with the *Region I, EPA-NE Environmental Data Review Supplement for Regional Data Review Elements and Superfund Specific Guidance/Procedures,* (April 2013) on the organic analytical data for 11 aqueous groundwater samples collected by Nobis Engineering, Inc. at the Nyanza Chemical Waste Dump, OU2 Superfund Site located in Ashland, Massachusetts. The samples were analyzed for dissolved gases (methane, ethane, and ethene) by RSK 175 using gas chromatography-flame ionization detection. A Tier 1 modified data review was deemed sufficient at this time.

The data were evaluated based on the following parameters:

*	•	Overall Evaluation of Data and Potential Usability Issues
*	•	Data Completeness
*	•	Preservation and Technical Holding Times
*	•	Blanks
*	•	Laboratory Control Samples
NA	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD)
	•	Field Duplicates
	•	Laboratory Duplicates
*	•	Reported Quantitation Limits

* All criteria were met for this parameter.

Nobis Engineering, Inc.
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

NA – Not applicable.

Overall Evaluation of Data and Potential Usability Issues

The objectives of the groundwater sampling at the site are to provide a comprehensive evaluation of the shallow and deep groundwater contaminants at the site and to evaluate the feasibility of implementing monitored natural attenuation (MNA) as a remedial alternative for the site.

Data are usable for the purposes of the project except as noted below.

Data Completeness

The data report was completed (laboratory report number M2184). All submitted samples were analyzed and reported.

Field Duplicate

Sample MW-115A-110513A (D05761) was collected as a field duplicate (FDUP-01-110513 [D05762]). Methane and ethene results exceeded the 30 percent relative percent difference for precision criteria. This may be due to loss of gases during the second collection. Results for these two analytes in the two samples should be considered estimated (J).

Laboratory Duplicate

Sample MW-203A-110413A (D05767) was analyzed two times because of dilution. Results for ethane and ethene were compared for precision at two different dilutions. There is a potential of loss of gases during the dilution analysis. Results for these two analytes should be considered estimated (J).

Reporting Limits

Sample MW-203A-110413A (D05767) was analyzed at a dilution due to methane exceeding the calibration range. The reporting limits were adjusted accordingly.

Please contact me at (978) 703-6021 or gderuzzo@nobiseng.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS ENGINEERING, INC.

Gail DeRuzzo
Lead Chemist

Tables: Data Summary Tables

Enclosure: Chain-of-Custody

DATA SUMMARY TABLE
Tier 1 Modified Validated Data

Sample Name	D05761	D05762	D05763	D05764	D05765	D05766	D05767
Location ID	MW-115A	MW-115A	MW-112A	MW-112B	MW-115B	MW-201	MW-203A
Station ID	MW-115A-110513A	FDUP-01-110513A	MW-112A-110513A	MW-112B-110513A	MW-115B-110513A	MW-201-110413A	MW-203A-110413A
Sample Date	11/05/13	11/05/13	11/05/13	11/05/13	11/05/13	11/04/13	11/04/13
Dissolved Gases (ug/L)							
Ethane	2.5	1.3 U	1.2 U	1.2 U	2.0	1.2 U	17 J
Ethene	5.4 J	2.3 J	2.2	1.5 U	7.4	1.5 U	540 J
Methane	310 J	200 J	330	120	800	170	1800

J qualifiers due to duplicate imprecision.

U - Not Detected; J - Estimated; R - Rejected

DATA SUMMARY TABLE
Tier 1 Modified Validated Data

Sample Name	D05768	D05769	D05770	D05771
Location ID	MW-203B	MW-405A	MW-405B	MW-B5
Station ID	MW-203B-110413A	MW-405A-110513A	MW-405B-110513A	MW-B5-110513A
Sample Date	11/04/13	11/05/13	11/05/13	11/05/13
Dissolved Gases (ug/L)				
Ethane	1.8	3.7	3.0	33
Ethene	32	3.5	7.7	18
Methane	430	55	1000	790

U - Not Detected; J - Estimated; R - Rejected

USEPA CLP Generic COC (REGION COPY)

DateShipped: 11/8/2013
CarrierName: FedEx
AirbillNo: 871462838054

CHAIN OF CUSTODY RECORD

Nyanza/MA
Case #: 0126S
Cooler #:

No: 1-110513-141542-0025

Lab: Spectrum Analytical Inc.
Lab Contact:
Lab Phone: 401-732-3400

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
MW-115A-110513A	D05761	Ground Water/ Jessica Olkowski	Grab	Dis.Gas(14)	91 (HCl), 92 (HCl) (2)	MW-115A	11/05/2013 11:50	Field Duplicate 01
FDup-01-110513A	D05762	Ground Water/ Jessica Olkowski	Grab	Dis.Gas(14)	100 (HCl), 99 (HCl) (2)	MW-115A	11/05/2013 11:55	Field Duplicate 01
MW-112A-110513A	D05763	Ground Water/ Alice Arsenault	Grab	Dis.Gas(14)	75 (HCl), 76 (HCl) (2)	MW-112A	11/05/2013 15:12	Field Sample
MW-112B-110513A	D05764	Ground Water/ Sean McDowell	Grab	Dis.Gas(14)	83 (HCl), 84 (HCl) (2)	MW-112B	11/05/2013 15:07	Field Sample
MW-115B-110513A	D05765	Ground Water/ Ayan Majmudar	Grab	Dis.Gas(14)	107 (HCl), 108 (HCl) (2)	MW-115B	11/05/2013 12:00	Field Sample
MW-201-110413A	D05766	Ground Water/ Ayan Majmudar	Grab	Dis.Gas(14)	25 (HCl), 26 (HCl) (2)	MW-201	11/04/2013 12:00	Field Sample
MW-203A-110413A	D05767	Ground Water/ Alice Arsenault	Grab	Dis.Gas(14)	39 (HCl), 40 (HCl) (2)	MW-203A	11/04/2013 11:43	Field Sample
MW-203B-110413A	D05768	Ground Water/ Sean McDowell	Grab	Dis.Gas(14)	47 (HCl), 48 (HCl) (2)	MW-203B	11/04/2013 11:52	Field Sample
MW-405A-110513A	D05769	Ground Water/ Alice Arsenault	Grab	Dis.Gas(14)	139 (HCl), 140 (HCl) (2)	MW-405A	11/05/2013 12:30	Field Sample

Special Instructions:	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: Dis.Gas=Dissolved Gasses	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP Generic COC (REGION COPY)

DateShipped: 11/8/2013
CarrierName: FedEx
AirbillNo: 871462838054

CHAIN OF CUSTODY RECORD

Nyanza/MA
Case #: 0126S
Cooler #:

No: 1-110513-141542-0025

Lab: Spectrum Analytical Inc.
Lab Contact:
Lab Phone: 401-732-3400

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
MW-405B-110513A	D05770	Ground Water/ Sean McDowell	Grab	Dis.Gas(14)	147 (HCl), 148 (HCl) (2)	MW-405B	11/05/2013 13:07	Field Sample
MW-B5-110513A	D05771	Ground Water/ Michelle Carbonneau	Grab	Dis.Gas(14)	61 (HCl), 62 (HCl) (2)	MW-B5	11/05/2013 14:30	Field Sample

Special Instructions:	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: Dis.Gas=Dissolved Gasses	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

June 19, 2013
Nobis File No. 80022

Mr. Dan Keefe
EPA Site Manager
EPA-New England Region I
5 Post Office Square
Suite 100, Mailcode OSRR07-4
Boston, MA 02109-3912

Re: Contract No. EP-S1-06-03
Task Order No. 0022-RA-RA-0115
Case No. 43512, Sample Delivery Group (SDG) No. A4B61
KAP Technologies, Inc., The Woodlands, TX
Nyanza Chemical Waste Dump, OU2 Superfund Site
Ashland, Massachusetts
CERCLIS No.: MAD990685422

Tier I Plus Organic Data Validation with Stage 2A Electronic Qualification

Low Level Volatiles and Semi-volatiles:
19/Groundwater: A4B61-A4B75, A4B78-A4B81
1/Field Duplicate: A4B73/A4B74
1/Trip Blank: A4B82
2/PE Samples: A4B76 (SV0503); A4B77 (VLM0824)

Dear Mr. Keefe:

Nobis Engineering, Inc. performed a Tier I plus data validation in accordance with the *Region I, EPA-NE Environmental Data Review Supplement for Regional Data Review Elements and Superfund Specific Guidance/Procedures,*(April 2013) on the organic analytical data for 19 groundwater samples, one trip blank, and two performance evaluation samples (PEs) collected by Nobis Engineering, Inc. at the Nyanza Chemical Waste Dump, OU2 Superfund Site located in Ashland, Massachusetts. The samples were analyzed for low level volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) under the Contract Laboratory Program Routine Analytical Services (CLP RAS) program using the CLP SOM01.2 Statement of Work. A Tier I modified data validation was deemed sufficient at this time.

Stage 2A electronic qualification was performed through EPA's Environmental Data Exchange and Evaluation System (EXES) Data Manager (EDMS) which uses *USEPA's Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review*, (June 2008) criteria for automated validation. EXES Data Review Report #3 indicates data of non-compliance that resulted in qualification based on blank contamination, surrogate recoveries, calibration criteria, and matrix spike recoveries for VOCs and surrogate recoveries, calibration criteria, internal standard criteria, and matrix spike recoveries for SVOCs.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues (Manual)

Nobis Engineering, Inc.
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

*	•	Data Completeness (EDMS and Manual)
*	•	Preservation and Technical Holding Times (EDMS)
	•	Initial and Continuing Calibrations (EDMS)
	•	Laboratory Blanks (EDMS)
*	•	Field Blanks (Manual)
	•	Deuterated Monitoring Compounds (DMC)/Surrogate Compounds (EDMS)
NA	•	Laboratory Control Samples (EDMS)
	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) (EDMS and Manual)
*	•	Field Duplicates (Manual)
	•	Internal Standards (EDMS)
	•	Performance Evaluation (PE) Sample Results (Manual)
*	•	Reported Quantitation Limits (EDMS)

* All criteria were met for this parameter.
NA – Not applicable.

Overall Evaluation of Data and Potential Usability Issues

The objectives of the groundwater and DNAPL sampling at the site are to provide a comprehensive evaluation of the shallow and deep groundwater contaminants at the site and to evaluate the feasibility of implementing monitored natural attenuation (MNA) as a remedial alternative for the site.

Data are usable for the purposes of the project except as noted below.

Data Completeness

The data package is complete. The complete SDG file (CSF) inventory sheet documents details of the package reviewed. The contract compliance screening (CCS) report did not identify any issues with the data package.

Data presented in the Summary Tables include qualifiers assigned by EDMS. Qualifications for these parameters were assessed under the Stage 2A Validation Electronic (S2AVE) scenario. Qualification was performed by EDMS or manually based on parameters identified above.

Initial and Continuing Calibrations

EDMS identified the following initial and continuing calibration criteria failures requiring qualification the data:

VOCs

The percent relative standard deviations (%RSDs) were outside acceptance criteria for toluene and bromomethane for the initial calibration associated with all sample analyses. Detected compounds were qualified (J).

SVOCs

The %RSDs were outside acceptance criteria for pentachlorophenol for the initial calibration associated with all sample analyses. Detected compounds were qualified (J).

The percent difference (%D) for continuing calibration verification (CCV) standard was outside acceptance criteria for pentachlorophenol associated with all several samples (see EXES Report #3). Detected compounds were qualified (J) and non-detected compounds were qualified (UJ).

Blanks
EDMS identified the following laboratory blank contamination requiring qualification of data:
VOCs
Methylene chloride, 1,2,3-trichlorobenzene, and 1,2,4-trichlorobenzene results were negated (qualified U) in several samples (see EXES Report #3) due to method blank contamination.

The trip blank (A4B82) was non-detect for all analytes; therefore, no action was needed.

Surrogate Recoveries
EDMS identified the following DMC/Surrogate compound failures requiring qualification of data:
VOCs
One or more surrogate recoveries were less than the lower limit of the criteria window. Detected compounds are qualified (J) and non-detected compounds are qualified (UJ) in the following samples: A4B61, A4B62, A4B63, A4B65, A4B70, A4B72, A4B75, A4B80.

SVOCs
One or more surrogate recoveries were greater than the upper limit of the criteria window. Detected compounds are qualified (J) in the following samples: A4B64, A4B65, A4B72.

One or more surrogate recoveries were less than the lower limit of the criteria window. Detected compounds are qualified (J) and non-detected compounds are qualified (UJ) in the following samples: A4B64, A4B65, A4B72.

MS/MSD Results
Sample A4B61 was analyzed as a MS/MSD for VOCs and SVOCs. EDMS identified the following MS/MSD recovery failures requiring qualification of data:
VOCs
Trichloroethene was recovered below the lower control limit in the MS. EDMS only qualified the A4B61MS detect (J) and non-detect (UJ). The parent sample A4B61 was manually qualified (J/UJ) as a result of the low recovery.
SVOCs:
Phenol, pentachlorophenol, 4-chloro-3-methylphenol, and 4-nitrophenol were recovered above the upper control limits in the MS/MSD. EDMS only qualified the A4B61MS/MSD detections (J). Because these analytes were non-detect in the parent sample (A4B61), no action was necessary.

Field Duplicates
Samples A4B73 and A4B74 were collected as field duplicates and submitted for VOC and SVOC analyses. The sample results were evaluated to see if precision criterion of less than 30 percent was met for all positive detections greater than two times the reporting limit. The criterion was met; no action was needed.

Internal Standards
EDMS identified the following internal standard criteria failures requiring qualification of data:
SVOCs:
Internal standard area counts are outside the lower control limits, which lead to detected compounds being qualified (J) and non-detected compounds being rejected (R) for the following

samples: A4B81 and A4B81RE. The reanalysis confirmed matrix interference. Both samples were reported. The second set of results was manually removed as to only report one set of data per sample.

PE Sample Results

PE sample VLM0824 (A4B77) and SV0503 (A4B76) were submitted for VOCs and SVOCs analyses, respectively. The sample results were scored by EPA. The results were evaluated and manually qualified as follows:

VOCs:

All analytes received passing scores. No qualification was necessary.

SVOCs:

All target analytes received passing scores. However, the tentatively identified compound (TIC) was mis-identified as 1,2,3-trimethylbenzene instead of 1,2,4-trimethylbenzene. If these analytes were reported as TICs, the identification may be suspect. However, since these analytes were not identified as TICs, no action was required.

Reported Quantitation Limits

Several samples were analyzed for VOCs and SVOCs with dilutions to obtain target analytes within the calibration range. Reporting limits were adjusted accordingly. Duplicate results were manually removed so that only one analyte result was reported for each sample.

Please contact me at (978) 703-6021 or gderuzzo@nobiseng.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS ENGINEERING, INC.

Gail DeRuzzo
Lead Chemist

Tables: Data Summary Tables

Enclosures: PE Sample Results
EXES Report #3
CCS Reports
CSF Audit (DC-2 Forms)

Cc: Raymond Flores, US EPA Region VI (via email)

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

	Sample Name	A4B61	A4B62	A4B63	A4B64	A4B65	A4B66	A4B67
	Sample Location	MW-403A	MW-406B	MW-406A	RMW-405B	MW-115B	MW-115A	RMW-403B
	Lab Sample ID	S-5749.01	S-5749.02	S-5749.03	S-5749.04	S-5749.05	S-5749.06	S-5749.07
	Station ID	MW-403A-052013A	MW-406B-052013A	MW-406A-052013A	RMW-405B-052013A	MW-115B-052013A	MW-115A-052013A	RMW-403B-052013A
	Dilution Factor	1	1	1	10/40	5/40	1	1
	Sample Date	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13
	Date Analyzed	28 May 13	28 May 13	28 May 13	30 May 13/31 May 13	28 May 13/29 May 13	28 May 13	28 May 13
Chemical	CRQL							
1,1,1-Trichloroethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	5 UJ	5 UJ	5 U	50 U	25 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
1,2,3-Trichlorobenzene	5	5 U	5 U	5 U	50 U	22 J	5 U	5 U
1,2,4-Trichlorobenzene	5	5 U	5 U	5 U	130	160	5 U	5 U
1,2-Dibromo-3-chloropropane	5	5 UJ	5 UJ	5 U	50 U	25 U	5 U	5 U
1,2-Dibromoethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
1,2-Dichlorobenzene	5	5 U	5 U	5 U	2000	1700	5 U	5 U
1,2-Dichloroethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
1,2-Dichloropropane	5	5 U	5 U	5 U	50 U	25 UJ	5 U	5 U
1,3-Dichlorobenzene	5	5 U	5 U	5 U	320	22 J	5 U	5 U
1,4-Dichlorobenzene	5	5 U	5 U	5 U	280	250	5 U	5 U
1,4-Dioxane	100	100 UJ	100 UJ	100 UJ	1000 U	500 U	100 U	100 U
2-Butanone	10	10 U	10 U	10 U	100 U	50 U	10 U	10 U
2-Hexanone	10	10 U	10 U	10 U	100 U	50 U	10 U	10 U
4-Methyl-2-pentanone	10	10 U	10 U	10 U	100 U	50 U	10 U	10 U
Acetone	10	10 U	10 U	10 U	100 U	50 U	10 U	10 U
Benzene	5	5 U	5 U	5 U	50 U	23 J	5 U	5 U
Bromochloromethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Bromodichloromethane	5	5 U	5 U	5 U	50 U	25 UJ	5 U	5 U
Bromoform	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Bromomethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Carbon disulfide	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Carbon tetrachloride	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Chlorobenzene	5	5 U	5 U	5 U	2400	2100	5 U	5 U
Chloroethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Chloroform	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Chloromethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
cis-1,2-Dichloroethene	5	5 U	5 U	5 U	1200	230	5 U	5 U
cis-1,3-Dichloropropene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Cyclohexane	5	5 U	5 U	5 U	50 U	25 UJ	5 U	5 U
Dibromochloromethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Dichlorodifluoromethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Ethylbenzene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Isopropylbenzene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
m,p-Xylene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Methyl acetate	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

Sample Name		A4B61	A4B62	A4B63	A4B64	A4B65	A4B66	A4B67
Sample Location		MW-403A	MW-406B	MW-406A	RMW-405B	MW-115B	MW-115A	RMW-403B
Lab Sample ID		S-5749.01	S-5749.02	S-5749.03	S-5749.04	S-5749.05	S-5749.06	S-5749.07
Station ID		MW-403A-052013A	MW-406B-052013A	MW-406A-052013A	RMW-405B-052013A	MW-115B-052013A	MW-115A-052013A	RMW-403B-052013A
Dilution Factor		1	1	1	10/40	5/40	1	1
Sample Date		20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13
Date Analyzed		28 May 13	28 May 13	28 May 13	30 May 13/31 May 13	28 May 13/29 May 13	28 May 13	28 May 13
Chemical	CRQL							
Methyl tert-butyl ether	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Methylcyclohexane	5	5 U	5 U	5 U	50 U	25 UJ	5 U	5 U
Methylene chloride	5	5 U	5 U	5 U	50 U	7.6 J	1.2 J	1.8 J
o-Xylene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Styrene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Tetrachloroethene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Toluene	5	5 U	5 U	5 U	50 U	8 J	5 U	5 U
trans-1,2-Dichloroethene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
trans-1,3-Dichloropropene	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Trichloroethene	5	5 UJ	5 U	5 U	1700	2100	5 U	5 U
Trichlorofluoromethane	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
Vinyl chloride	5	5 U	5 U	5 U	50 U	25 U	5 U	5 U
					1,2-DCB and CB from dilution.	1,2-DCB, CB, and TCE from dilution.		

Data Qualifier Definitions:
U=analyte not detected; reported to CRQL.
J=associated result is an estimated quantity.
UJ=analyte not detected; quantitation limit is an
R=data are rejected; unusable.

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

	Sample Name	A4B68	A4B69	A4B70	A4B71	A4B72	A4B73	A4B74
	Sample Location	RMW-405A	MW-305B	MW-203B	RMW-305A	MW-203A	MW-304A	MW-304A
	Lab Sample ID	S-5749.08	S-5749.09	S-5749.10	S-5749.11	S-5749.12	S-5749.13	S-5749.14
	Station ID	RMW-405A-0520A	MW-305B-052113A	MW-203B-052113A	RMW-305A-052113A	MW-203A-052113A	MW-304A-052113A	F-DUP01-052113A
	Dilution Factor	1	1	2/25	4/10	5/100	5/25	1/20
	Sample Date	20 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13
	Date Analyzed	30 May 13	01 Jun 13	29 May 13	30 May 13/29 May 13	29 May 13	29 May 13	29 May 13/31 May 13
Chemical	CRQL							
1,1,1-Trichloroethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
1,1-Dichloroethane	5	5 U	5 U	10 U	20 U	25 U	25 U	1.4 J
1,1-Dichloroethene	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
1,2,3-Trichlorobenzene	5	5 U	2.9 J	130	20 U	25 U	25 U	7.3
1,2,4-Trichlorobenzene	5	5 U	5 U	760	75	75	41	49
1,2-Dibromo-3-chloropropane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
1,2-Dibromoethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
1,2-Dichlorobenzene	5	5 U	5 U	2100	1000	2700	1600 J	1200
1,2-Dichloroethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
1,2-Dichloropropane	5	5 U	5 U	10 UJ	20 U	25 UJ	25 U	5 U
1,3-Dichlorobenzene	5	5 U	5 U	29	24	29	23 J	22
1,4-Dichlorobenzene	5	5 U	5 U	290	170	370	200	200
1,4-Dioxane	100	100 U	100 U	200 U	400 U	500 U	500 U	100 U
2-Butanone	10	10 U	10 U	20 U	40 U	50 U	50 U	10 U
2-Hexanone	10	10 U	10 U	20 U	40 U	50 U	50 U	10 U
4-Methyl-2-pentanone	10	10 U	10 U	20 U	40 U	50 U	50 U	10 U
Acetone	10	10 U	10 U	20 U	40 U	50 U	50 U	10 U
Benzene	5	5 U	5 U	26	20 U	110	28	26
Bromochloromethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Bromodichloromethane	5	5 U	5 U	10 UJ	20 U	25 UJ	25 U	5 U
Bromoform	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Bromomethane	5	5 U	5 U	4.2 J	20 U	25 U	25 U	5 U
Carbon disulfide	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Carbon tetrachloride	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Chlorobenzene	5	5 U	5 U	1700	340	5700	1100 J	940
Chloroethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Chloroform	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Chloromethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
cis-1,2-Dichloroethene	5	5 U	5 U	380	80	350	470	500
cis-1,3-Dichloropropene	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Cyclohexane	5	5 U	5 U	10 UJ	20 U	25 UJ	25 U	5 U
Dibromochloromethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Dichlorodifluoromethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Ethylbenzene	5	5 U	5 U	8.4 J	20 U	25 U	25 U	2 J
Isopropylbenzene	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
m,p-Xylene	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Methyl acetate	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

Sample Name		A4B68	A4B69	A4B70	A4B71	A4B72	A4B73	A4B74
Sample Location		RMW-405A	MW-305B	MW-203B	RMW-305A	MW-203A	MW-304A	MW-304A
Lab Sample ID		S-5749.08	S-5749.09	S-5749.10	S-5749.11	S-5749.12	S-5749.13	S-5749.14
Station ID		RMW-405A-0520A	MW-305B-052113A	MW-203B-052113A	RMW-305A-052113A	MW-203A-052113A	MW-304A-052113A	F-DUP01-052113A
Dilution Factor		1	1	2/25	4/10	5/100	5/25	1/20
Sample Date		20 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13
Date Analyzed		30 May 13	01 Jun 13	29 May 13	30 May 13/29 May 13	29 May 13	29 May 13	29 May 13/31 May 13
Chemical	CRQL							
Methyl tert-butyl ether	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Methylcyclohexane	5	5 U	5 U	11 J	20 U	25 UJ	25 U	5 U
Methylene chloride	5	5 U	5 U	2.1 J	20 U	6.5 J	9.5 J	2.5 J
o-Xylene	5	5 U	5 U	10 U	20 U	25 U	25 U	1 J
Styrene	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Tetrachloroethene	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Toluene	5	5 U	5 U	10 U	20 U	30 J	6.8 J	4.1 J
trans-1,2-Dichloroethene	5	5 U	5 U	5 J	20 U	11 J	25 U	5.9
trans-1,3-Dichloropropene	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Trichloroethene	5	5 U	5 U	730	1100	1800	2200	1800
Trichlorofluoromethane	5	5 U	5 U	10 U	20 U	25 U	25 U	5 U
Vinyl chloride	5	5 U	5 U	10 U	20 U	600	25 U	27
				1,2-DCB, CB, trans-1,2-DCE, and TCE from dilution.	1,2-DCB and TCE from dilution.	1,2-DCB, CB, and TCE from dilution.	1,2-DCB, CB, and TCE from dilution.	1,2-DCB, CB, trans-1,2-DCE, and TCE from dilution.

Data Qualifier Definitions:
U=analyte not detected; reported to CRQL.
J=associated result is an estimated quantity.
UJ=analyte not detected; quantitation limit is an
R=data are rejected; unusable.

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

Sample Name		A4B75	A4B78	A4B79	A4B80	A4B81	A4B82
Sample Location		MW-304B	MW-06A	MW-110	MW-302	MW-113B	
Lab Sample ID		S-5749.15	S-5749.18	S-5749.19	S-5749.20	S-5749.21	S-5749.22
Station ID		MW-304B-052113A	MW-06A-052213A	MW-110-052213A	MW-302-052213A	MW-113B-052213A	TB-01-052213A
Dilution Factor		1/4	1	1	1/10	1/10	1
Sample Date		21 May 13	22 May 13	22 May 13	22 May 13	22 May 13	20 May 13
Date Analyzed		30 May 13	30 May 13	30 May 13	30 May 13	31 May 13	01 Jun 13
Chemical	CRQL						
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	1.2 J	5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	5	5 U	11	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	5	25	44	11	17	25	5 U
1,2-Dibromo-3-chloropropane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	5	280	29	5 U	670	350	5 U
1,2-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5	5 U	5 U	5 U	5 UJ	5 U	5 U
1,3-Dichlorobenzene	5	5.8	3 J	5 U	6.6	13	5 U
1,4-Dichlorobenzene	5	46	2.7 J	5 U	87	70	5 U
1,4-Dioxane	100	100 UJ	100 U	100 U	100 U	100 U	100 U
2-Butanone	10	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	10	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	10	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	10	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	5	5 U	5 U	5 U	54	5 U	5 U
Bromochloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	5	5 U	5 U	5 U	5 UJ	5 U	5 U
Bromoform	5	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	5	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5	110	38	4.9 J	400	120	5 U
Chloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	5	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	5	190	47	3.7 J	180	100	5 U
cis-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U	5 U	5 U
Cyclohexane	5	5 U	5 U	5 U	5 UJ	5 U	5 U
Dibromochloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5	5 U	5 U	5 U	6.6	5 U	5 U
Isopropylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U
m,p-Xylene	5	5 U	5 U	5 U	5 U	5 U	5 U
Methyl acetate	5	5 U	5 U	5 U	5 U	5 U	5 U

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

	Sample Name	A4B75	A4B78	A4B79	A4B80	A4B81	A4B82
	Sample Location	MW-304B	MW-06A	MW-110	MW-302	MW-113B	
	Lab Sample ID	S-5749.15	S-5749.18	S-5749.19	S-5749.20	S-5749.21	S-5749.22
	Station ID	MW-304B-052113A	MW-06A-052213A	MW-110-052213A	MW-302-052213A	MW-113B-052213A	TB-01-052213A
	Dilution Factor	1/4	1	1	1/10	1/10	1
	Sample Date	21 May 13	22 May 13	22 May 13	22 May 13	22 May 13	20 May 13
	Date Analyzed	30 May 13	30 May 13	30 May 13	30 May 13	31 May 13	01 Jun 13
Chemical	CRQL						
Methyl tert-butyl ether	5	5 U	5 U	5 U	13	5 U	5 U
Methylcyclohexane	5	5 U	5 U	5 U	5 UJ	5 U	5 U
Methylene chloride	5	5 U	5 U	5 U	5 U	5 U	5 U
o-Xylene	5	5 U	5 U	5 U	6.8	5 U	5 U
Styrene	5	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5	5 U	5 U	5 U	1.6 J	5 U	5 U
trans-1,2-Dichloroethene	5	1.3 J	5 U	5 U	5 U	1.1 J	5 U
trans-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5	120	11	1.6 J	320	440	5 U
Trichlorofluoromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	5	5 U	5 U	5 U	5 U	5 U	5 U

Data Qualifier Definitions:
U=analyte not detected; reported to CRQL.
J=associated result is an estimated quantity.
UJ=analyte not detected; quantitation limit is an
R=data are rejected; unusable.

1,2-DCB from dilution.

1,2-DCB, CB, trans-1,2-DCE, and TCE from dilution.

1,2-DCB and TCE from dilution.

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Semi-volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

Sample Name		A4B61	A4B62	A4B63	A4B64	A4B65	A4B66	A4B67
Sample Location		MW-403A	MW-406B	MW-406A	RMW-405B	MW-115B	MW-115A	RMW-403B
Lab Sample ID		S-5749.01	S-5749.02	S-5749.03	S-5749.04	S-5749.05	S-5749.06	S-5749.07
Station ID		MW-403A-052013A	MW-406B-052013A	MW-406A-052013A	RMW-405B-052013A	MW-115B-052013A	MW-115A-052013A	RMW-403B-052013A
Dilution Factor		1	1	1	1	1/5	1	1
Sample Date		20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13
Date Analyzed		05 Jun 13	05 Jun 13	05 Jun 13	05 Jun 13	05 Jun 13/06 Jun 13	05 Jun 13	05 Jun 13
Chemical	CRQL							
1,1'-Biphenyl	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4,5-Tetrachlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,2'-Oxybis(1-chloropropane)	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,3,4,6-Tetrachlorophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,5-Trichlorophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylphenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitroaniline	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloro-3-methylphenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloroaniline	5	5 U	5 U	5 U	5.8	4.2 J	5 U	5 U
4-Chlorophenyl-phenylether	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitroaniline	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetophenone	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Atrazine	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde	5	5 U	5 U	5 U	5 UJ	5 UJ	5 U	5 U
Benzo(a)anthracene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(a)pyrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bis(2-chloroethoxy)methane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bis(2-chloroethyl)ether	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Semi-volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

	Sample Name	A4B61	A4B62	A4B63	A4B64	A4B65	A4B66	A4B67
	Sample Location	MW-403A	MW-406B	MW-406A	RMW-405B	MW-115B	MW-115A	RMW-403B
	Lab Sample ID	S-5749.01	S-5749.02	S-5749.03	S-5749.04	S-5749.05	S-5749.06	S-5749.07
	Station ID	MW-403A-052013A	MW-406B-052013A	MW-406A-052013A	RMW-405B-052013A	MW-115B-052013A	MW-115A-052013A	RMW-403B-052013A
	Dilution Factor	1	1	1	1	1/5	1	1
	Sample Date	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13	20 May 13
	Date Analyzed	05 Jun 13	05 Jun 13	05 Jun 13	05 Jun 13	05 Jun 13/06 Jun 13	05 Jun 13	05 Jun 13
Chemical	CRQL							
Bis(2-ethylhexyl)phthalate	5	5 U	5 U	5 U	5 U	4 J	3.2 J	5 U
Butylbenzylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	5	5 U	5 U	5.2	2.3 J	5 U	5 U	5 U
Carbazole	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzofuran	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dimethylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Di-n-butylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Di-n-octylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluorene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isophorone	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	5	5 U	5 U	5 U	18	110	5 U	5 U
Nitrobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitroso-di-n-propylamine	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pentachlorophenol	10	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Phenanthrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Phenol	5	5 U	5 U	5 U	5 UJ	5 UJ	5 U	5 U
Pyrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Data Qualifier Definitions:
U=analyte not detected; reported to CRQL.
J=associated result is an estimated quantity.
estimated quantitty.
R=data are rejected; unusable.

Naphthalene from dilution.

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Semi-volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

Sample Name		A4B68	A4B69	A4B70	A4B71	A4B72	A4B73	A4B74
Sample Location		RMW-405A	MW-305B	MW-203B	RMW-305A	MW-203A	MW-304A	MW-304A
Lab Sample ID		S-5749.08	S-5749.09	S-5749.10	S-5749.11	S-5749.12	S-5749.13	S-5749.14
Station ID		RMW-405A-0520A	MW-305B-052113A	MW-203B-052113A	RMW-305A-052113A	MW-203A-052113A	MW-304A-052113A	F-DUP01-052113A
Dilution Factor		1	1	1	1/5	1	1/10	10-Jan
Sample Date		20 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13
Date Analyzed		05 Jun 13	05 Jun 13	05 Jun 13	07 Jun 13	06 Jun 13	06 Jun 13	06 Jun 13/07 Jun 13
Chemical	CRQL							
1,1'-Biphenyl	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4,5-Tetrachlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,2'-Oxybis(1-chloropropane)	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,3,4,6-Tetrachlorophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,5-Trichlorophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	5	5 U	5 U	3.7 J	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorophenol	5	5 U	5 U	8.6	5 U	7.5	5 U	5 U
2-Methylnaphthalene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylphenol	5	5 U	5 U	5 U	5 U	3.9 J	5 U	5 U
2-Nitroaniline	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloro-3-methylphenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloroaniline	5	5 U	5 U	3.9 J	5 U	10	5 U	5 U
4-Chlorophenyl-phenylether	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitroaniline	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetophenone	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Atrazine	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde	5	5 U	5 U	5 U	5 U	5 UJ	5 U	5 U
Benzo(a)anthracene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(a)pyrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bis(2-chloroethoxy)methane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bis(2-chloroethyl)ether	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Semi-volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

Sample Name		A4B68	A4B69	A4B70	A4B71	A4B72	A4B73	A4B74
Sample Location		RMW-405A	MW-305B	MW-203B	RMW-305A	MW-203A	MW-304A	MW-304A
Lab Sample ID		S-5749.08	S-5749.09	S-5749.10	S-5749.11	S-5749.12	S-5749.13	S-5749.14
Station ID		RMW-405A-0520A	MW-305B-052113A	MW-203B-052113A	RMW-305A-052113A	MW-203A-052113A	MW-304A-052113A	F-DUP01-052113A
Dilution Factor		1	1	1	1/5	1	1/10	10-Jan
Sample Date		20 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13	21 May 13
Date Analyzed		05 Jun 13	05 Jun 13	05 Jun 13	07 Jun 13	06 Jun 13	06 Jun 13	06 Jun 13/07 Jun 13
Chemical	CRQL							
Bis(2-ethylhexyl)phthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Butylbenzylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	5	5 U	5 U	5 U	5 U	3.5 J	5 U	5 U
Carbazole	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzofuran	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dimethylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Di-n-butylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Di-n-octylphthalate	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluorene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isophorone	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	5	5 U	5 U	5 U	5 U	14	3.3 J	3.4 J
Nitrobenzene	5	5 U	5 U	5 U	110	5 U	300	280
N-Nitroso-di-n-propylamine	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pentachlorophenol	10	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U	10 U
Phenanthrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Phenol	5	5 U	5 U	5 U	5 U	5 UJ	5 U	5 U
Pyrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Data Qualifier Definitions:
U=analyte not detected; reported to CRQL.
J=associated result is an estimated quantity.
estimated quantitty.
R=data are rejected; unusable.

Nitrobenzene from dilution.

Nitrobenzene from dilution.

Nitrobenzene from dilution.

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Semi-volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

	Sample Name	A4B75	A4B79	A4B80	A4B81
	Sample Location	MW-304B	MW-110	MW-302	MW-113B
	Lab Sample ID	S-5749.15	S-5749.19	S-5749.20	S-5749.21
	Station ID	MW-304B-052113A	MW-110-052213A	MW-302-052213A	MW-113B-052213A
	Dilution Factor	1	1	1	1/5
	Sample Date	21 May 13	22 May 13	22 May 13	22 May 13
	Date Analyzed	06 Jun 13	06 Jun 13	06 Jun 13	06 Jun 13/07 Jun 13
Chemical	CRQL				
1,1'-Biphenyl	5	5 U	5 U	5 U	5 U
1,2,4,5-Tetrachlorobenzene	5	5 U	5 U	5 U	5 U
2,2'-Oxybis(1-chloropropane)	5	5 U	5 U	5 U	-- R
2,3,4,6-Tetrachlorophenol	5	5 U	5 U	5 U	5 U
2,4,5-Trichlorophenol	5	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	5	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	5	5 U	5 U	5 U	-- R
2,4-Dimethylphenol	5	5 U	5 U	5 U	-- R
2,4-Dinitrophenol	10	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	5	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	5	5 U	5 U	5 U	5 U
2-Chloronaphthalene	5	5 U	5 U	5 U	5 U
2-Chlorophenol	5	5 U	5 U	5 U	-- R
2-Methylnaphthalene	5	5 U	5 U	5 U	-- R
2-Methylphenol	5	5 U	5 U	5 U	-- R
2-Nitroaniline	10	10 U	10 U	10 U	10 U
2-Nitrophenol	5	5 U	5 U	5 U	-- R
3,3'-Dichlorobenzidine	5	5 U	5 U	5 U	5 U
3-Nitroaniline	10	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	10	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	5	5 U	5 U	5 U	5 U
4-Chloro-3-methylphenol	5	5 U	5 U	5 U	-- R
4-Chloroaniline	5	5 U	5 U	5 U	-- R
4-Chlorophenyl-phenylether	5	5 U	5 U	5 U	5 U
4-Methylphenol	5	5 U	5 U	5 U	-- R
4-Nitroaniline	10	10 U	10 U	10 U	10 U
4-Nitrophenol	10	10 U	10 U	10 U	10 U
Acenaphthene	5	5 U	5 U	5 U	5 U
Acenaphthylene	5	5 U	5 U	5 U	5 U
Acetophenone	5	5 U	5 U	5 U	-- R
Anthracene	5	5 U	5 U	5 U	5 U
Atrazine	5	5 U	5 U	5 U	5 U
Benzaldehyde	5	5 U	5 U	5 U	-- R
Benzo(a)anthracene	5	5 U	5 U	5 U	5 U
Benzo(a)pyrene	5	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	5	5 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	5	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	5	5 U	5 U	5 U	5 U
Bis(2-chloroethoxy)methane	5	5 U	5 U	5 U	-- R
Bis(2-chloroethyl)ether	5	5 U	5 U	5 U	-- R

DATA SUMMARY TABLE
Tier I Plus, Stage 2AVEM Validated Data
Semi-volatile Organics Analysis
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 43512 SDG NO.: A4B61

	Sample Name	A4B75	A4B79	A4B80	A4B81
	Sample Location	MW-304B	MW-110	MW-302	MW-113B
	Lab Sample ID	S-5749.15	S-5749.19	S-5749.20	S-5749.21
	Station ID	MW-304B-052113A	MW-110-052213A	MW-302-052213A	MW-113B-052213A
	Dilution Factor	1	1	1	1/5
	Sample Date	21 May 13	22 May 13	22 May 13	22 May 13
	Date Analyzed	06 Jun 13	06 Jun 13	06 Jun 13	06 Jun 13/07 Jun 13
Chemical	CRQL				
Bis(2-ethylhexyl)phthalate	5	5 U	5 U	5 U	5 U
Butylbenzylphthalate	5	5 U	5 U	5 U	5 U
Caprolactam	5	5 U	5 U	5 U	-- R
Carbazole	5	5 U	5 U	5 U	5 U
Chrysene	5	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	5	5 U	5 U	5 U	5 U
Dibenzofuran	5	5 U	5 U	5 U	5 U
Diethylphthalate	5	5 U	5 U	5 U	5 U
Dimethylphthalate	5	5 U	5 U	5 U	5 U
Di-n-butylphthalate	5	5 U	5 U	5 U	5 U
Di-n-octylphthalate	5	5 U	5 U	5 U	5 U
Fluoranthene	5	5 U	5 U	5 U	5 U
Fluorene	5	5 U	5 U	5 U	5 U
Hexachlorobenzene	5	5 U	5 U	5 U	5 U
Hexachlorobutadiene	5	5 U	5 U	5 U	-- R
Hexachlorocyclopentadiene	5	5 U	5 U	5 U	5 U
Hexachloroethane	5	5 U	5 U	5 U	-- R
Indeno(1,2,3-cd)pyrene	5	5 U	5 U	5 U	5 U
Isophorone	5	5 U	5 U	5 U	-- R
Naphthalene	5	5 U	5 U	18	-- R
Nitrobenzene	5	5 U	5 U	5 U	130
N-Nitroso-di-n-propylamine	5	5 U	5 U	5 U	-- R
N-Nitrosodiphenylamine	5	5 U	2.2 J	5 U	5 U
Pentachlorophenol	10	10 U	10 U	10 U	10 U
Phenanthrene	5	5 U	5 U	5 U	5 U
Phenol	5	5 U	5 U	5 U	-- R
Pyrene	5	5 U	5 U	5 U	5 U

Data Qualifier Definitions:
U=analyte not detected; reported to CRQL.
J=associated result is an estimated quantity.
estimated quantitty.
R=data are rejected; unusable.

Nitrobenzene from dilution.

PES SCORING EVALUATION REPORT

PES VLM0824 Rev: 1 EPA Sample No.: A4B77 Report Date: 06/20/2013

Lab Name: KAP Technologies Inc. Lab Code: KAP
Contract: EPW11031 Case No.: 43512 SAS/Client No.: NA
SDG No.: A4B61 Matrix: Water Lab Sample ID: S-5749.17
Lab File ID: B45671 Date Received: 05/23/2013 Date Analyzed: 06/01/2013
Sample Wt./Vol. (g/mL): 5.0 ML Level: Low % Moisture (not dec.): NA
Purge Volume (mL): 5.0 mL GC Column: RTX-VMS ID (mm): 0.25
Length (m): NA Soil Extract. Vol. (uL): NA Soil Aliquot Vol. (uL): NA
Dilution Factor: 1.0 Units: ug/L

Analysis Method: SOM01.2
Scoring Method: SOM01.2
Comments:

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
75-71-8	Dichlorodifluoromethane	5.9		PASS	Within Limits
74-87-3	Chloromethane	23		PASS	Within Limits
74-83-9	Bromomethane	11		PASS	Within Limits
75-69-4	Trichlorofluoromethane	20		PASS	Within Limits
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	21		PASS	Within Limits
75-15-0	Carbon Disulfide	23		PASS	Within Limits
156-60-5	trans-1,2-Dichloroethene	44		PASS	Within Limits
1634-04-4	Methyl tert-Butyl Ether	100		PASS	Within Limits
67-66-3	Chloroform	39		PASS	Within Limits
71-55-6	1,1,1-Trichloroethane	17		PASS	Within Limits
56-23-5	Carbon Tetrachloride	43		PASS	Within Limits
107-06-2	1,2-Dichloroethane	41		PASS	Within Limits
108-87-2	Methylcyclohexane	23		PASS	Within Limits
10061-01-5	cis-1,3-Dichloropropene	32		PASS	Within Limits
108-10-1	4-Methyl-2-pentanone	120		PASS	Within Limits
108-88-3	Toluene	45		PASS	Within Limits
79-00-5	1,1,2-Trichloroethane	27		PASS	Within Limits
124-48-1	Dibromochloromethane	46		PASS	Within Limits
106-93-4	1,2-Dibromoethane	41		PASS	Within Limits
179601-23-1	m,p-Xylene	32		PASS	Within Limits
100-42-5	Styrene	37		PASS	Within Limits
79-34-5	1,1,2,2-Tetrachloroethane	25		PASS	Within Limits
106-46-7	1,4-Dichlorobenzene	28		PASS	Within Limits
96-12-8	1,2-Dibromo-3-chloropropane	27		PASS	Within Limits
87-61-6	1,2,3-Trichlorobenzene	39		PASS	Within Limits
123-91-1	1,4-Dioxane	99	J	PASS	Within Limits
95-63-6	1,2,4-Trimethylbenzene	0		FAIL	TIC Missed
****	END Main Analytes	**********	****	****	**********
000526-73-8	Benzene,1,2,3-trimethyl-	44	NJ	N.E.	Non-spiked TIC
****	END All Analytes	**********	****	****	**********

PES SCORING EVALUATION REPORT

PES VLM0824 Rev: 1 EPA Sample No.: A4B77 Report Date: 06/20/2013

Lab Name: KAP Technologies Inc.
Lab Code: KAP
Contract: EPW11031
Case No.: 43512
SAS/Client No.: NA
SDG No.: A4B61
Matrix: Water
Lab Sample ID: S-5749.17
Lab File ID: B45671
Date Received: 05/23/2013
Date Analyzed: 06/01/2013
Sample Wt./Vol. (g/mL): 5.0 ML
Level: Low
% Moisture (not dec.): NA
Purge Volume (mL): 5.0 mL
GC Column: RTX-VMS
ID (mm): 0.25
Length (m): NA
Soil Extract. Vol. (uL): NA
Soil Aliquot Vol. (uL): NA
Dilution Factor: 1.0
Units: ug/L
Units: ug/L

Analysis Method: SOM01.2
Scoring Method: SOM01.2
Comments:

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
75-71-8	Dichlorodifluoromethane	5.9		PASS	Within Limits
74-87-3	Chloromethane	23		PASS	Within Limits
74-83-9	Bromomethane	11		PASS	Within Limits
75-69-4	Trichlorofluoromethane	20		PASS	Within Limits
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	21		PASS	Within Limits
75-15-0	Carbon Disulfide	23		PASS	Within Limits
156-60-5	trans-1,2-Dichloroethene	44		PASS	Within Limits
1634-04-4	Methyl tert-Butyl Ether	100		PASS	Within Limits
67-66-3	Chloroform	39		PASS	Within Limits
71-55-6	1,1,1-Trichloroethane	17		PASS	Within Limits
56-23-5	Carbon Tetrachloride	43		PASS	Within Limits
107-06-2	1,2-Dichloroethane	41		PASS	Within Limits
108-87-2	Methylcyclohexane	23		PASS	Within Limits
10061-01-5	cis-1,3-Dichloropropene	32		PASS	Within Limits
108-10-1	4-Methyl-2-pentanone	120		PASS	Within Limits
108-88-3	Toluene	45		PASS	Within Limits
79-00-5	1,1,2-Trichloroethane	27		PASS	Within Limits
124-48-1	Dibromochloromethane	46		PASS	Within Limits
106-93-4	1,2-Dibromoethane	41		PASS	Within Limits
179601-23-1	m,p-Xylene	32		PASS	Within Limits
100-42-5	Styrene	37		PASS	Within Limits
79-34-5	1,1,2,2-Tetrachloroethane	25		PASS	Within Limits
106-46-7	1,4-Dichlorobenzene	28		PASS	Within Limits
96-12-8	1,2-Dibromo-3-chloropropane	27		PASS	Within Limits
87-61-6	1,2,3-Trichlorobenzene	39		PASS	Within Limits
123-91-1	1,4-Dioxane	99	J	PASS	Within Limits
95-63-6	1,2,4-Trimethylbenzene	0		FAIL	TIC Missed
****	END Main Analytes	**********	****	****	**********
000526-73-8	Benzene,1,2,3-trimethyl-	44	NJ	N.E.	Non-spiked TIC
****	END All Analytes	**********	****	****	**********
206-44-0	Fluoranthene	17		PASS	Within Limits
85-68-7	Butylbenzylphthalate	19		PASS	Within Limits
218-01-9	Chrysene	33		PASS	Within Limits
117-81-7	bis(2-Ethylhexyl)phthalate	20		PASS	Within Limits
207-08-9	Benzo(k)fluoranthene	34		PASS	Within Limits
50-32-8	Benzo(a)pyrene	34		N.E.	Not Evaluated
193-39-5	Indeno(1,2,3-cd)pyrene	12		PASS	Within Limits

PES SCORING EVALUATION REPORT

CAS No.	Analyte	Laboratory Results		PES Evaluation	
		Concentration	Q		
90-12-0	1-Methylnaphthalene	53	NJ	PASS	TIC Found
****	END Main Analytes	**********	****	****	**********
****	END All Analytes	**********	****	****	**********

VLM0824
(1 of 3)

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
A4B77

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW11031

Lab Code: KAP Case No.: 43512 Mod. Ref No.: _____ SDG No.: A4B61

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-5749.17

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: B45671

Level: (TRACE/LOW/MED) LOW Date Received: 05/23/2013

% Moisture: not dec. _____ Date Analyzed: 06/01/2013

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ____ (uL)

Purge Volume: 5.0 (mL)

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.9	
74-87-3	Chloromethane	23	
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	11	
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	20	
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	21	
67-64-1	Acetone	10	U
75-15-0	Carbon disulfide	23	
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	44	
1634-04-4	Methyl tert-butyl ether	100	
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	39	
71-55-6	1,1,1-Trichloroethane	17	
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	43	
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	41	
123-91-1	1,4-Dioxane	99	J

Report 1,4-Dioxane for Low-Medium VOA analysis only

VLM0824
(2 of 3)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
A4B77

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW11031

Lab Code: KAP Case No.: 43512 Mod. Ref No.: _____ SDG No.: A4B61

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-5749.17

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: B45671

Level: (TRACE/LOW/MED) LOW Date Received: 05/23/2013

% Moisture: not dec. _____ Date Analyzed: 06/01/2013

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ____ (uL)

Purge Volume: 5.0 (mL)

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	23	
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	32	
108-10-1	4-Methyl-2-pentanone	120	
108-88-3	Toluene	45	
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	27	
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	46	
106-93-4	1,2-Dibromoethane	41	
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	32	
100-42-5	Styrene	37	
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	25	
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	28	
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	27	
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	39	

VLM 0824
(3 of 3)

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
A4B77

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW11031

Lab Code: KAP Case No.: 43512 Mod. Ref No.: _____ SDG No.: A4B61

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-5749.17

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: B45671

Level: (TRACE or LOW/MED) LOW Date Received: 05/23/2013

% Moisture: not dec. _____ Date Analyzed: 06/01/2013

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	000526-73-8	Benzene, 1,2,3-trimethyl-	16.55	44	NJ
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

SOM01.2 (6/2007)

SV0503
(1 of 3)

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
A4B76

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW11031

Lab Code: KAP Case No.: 43512 Mod. Ref No.: _____ SDG No.: A4B61

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-5749.16

Sample wt/vol: 1000 (g/mL) ML Lab File ID: D10461

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 05/23/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 05/24/2013

Injection Volume: 1.0 (uL) GPC Factor: _____ Date Analyzed: 06/06/2013

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	5.0	U
108-95-2	Phenol	18	
111-44-4	Bis(2-chloroethyl)ether	52	
95-57-8	2-Chlorophenol	5.0	U
95-48-7	2-Methylphenol	54	
108-60-1	2,2'-Oxybis(1-chloropropane)	5.0	U
98-86-2	Acetophenone	5.0	U
106-44-5	4-Methylphenol	54	
621-64-7	N-Nitroso-di-n-propylamine	53	
67-72-1	Hexachloroethane	33	
98-95-3	Nitrobenzene	5.0	U
78-59-1	Isophorone	31	
88-75-5	2-Nitrophenol	5.0	U
105-67-9	2,4-Dimethylphenol	40	
111-91-1	Bis(2-chloroethoxy)methane	42	
120-83-2	2,4-Dichlorophenol	14	
91-20-3	Naphthalene	20	
106-47-8	4-Chloroaniline	5.0	U
87-68-3	Hexachlorobutadiene	52	
105-60-2	Caprolactam	39	
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	29	
88-06-2	2,4,6-Trichlorophenol	5.0	U
95-95-4	2,4,5-Trichlorophenol	31	
92-52-4	1,1'-Biphenyl	5.0	U
91-58-7	2-Chloronaphthalene	16	
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	17	
606-20-2	2,6-Dinitrotoluene	5.0	U
208-96-8	Acenaphthylene	17	
99-09-2	3-Nitroaniline	52	
83-32-9	Acenaphthene	29	

SV0503
(2 of 3)

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
A4B76

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW11031

Lab Code: KAP Case No.: 43512 Mod. Ref No.: _____ SDG No.: A4B61

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-5749.16

Sample wt/vol: 1000 (g/mL) ML Lab File ID: D10461

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 05/23/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 05/24/2013

Injection Volume: 1.0 (uL) GPC Factor: _____ Date Analyzed: 06/06/2013

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	40	
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	17	
121-14-2	2,4-Dinitrotoluene	5.0	U
84-66-2	Diethylphthalate	5.0	U
86-73-7	Fluorene	6.8	
7005-72-3	4-Chlorophenyl-phenylether	28	
100-01-6	4-Nitroaniline	61	
534-52-1	4,6-Dinitro-2-methylphenol	64	
86-30-6	N-Nitrosodiphenylamine 1	5.0	U
95-94-3	1,2,4,5-Tetrachlorobenzene	33	
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	75	
85-01-8	Phenanthrene	5.0	U
120-12-7	Anthracene	29	
86-74-8	Carbazole	35	
84-74-2	Di-n-butylphthalate	5.0	U
206-44-0	Fluoranthene	17	
129-00-0	Pyrene	5.0	U
85-68-7	Butylbenzylphthalate	19	
91-94-1	3,3'-Dichlorobenzidine	5.0	U
56-55-3	Benzo(a)anthracene	5.0	U
218-01-9	Chrysene	33	
117-81-7	Bis(2-ethylhexyl)phthalate	20	
117-84-0	Di-n-octylphthalate	5.0	U
205-99-2	Benzo(b)fluoranthene	5.0	U
207-08-9	Benzo(k)fluoranthene	34	
50-32-8	Benzo(a)pyrene	34	
193-39-5	Indeno(1,2,3-cd)pyrene	12	
53-70-3	Dibenzo(a,h)anthracene	5.0	U
191-24-2	Benzo(g,h,i)perylene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

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(3 of 3)

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
A4B76

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW11031

Lab Code: KAP Case No.: 43512 Mod. Ref No.: _____ SDG No.: A4B61

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-5749.16

Sample wt/vol: 1000 (g/mL) ML Lab File ID: D10461

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 05/23/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 05/24/2013

Injection Volume: 1.0 (uL) Date Analyzed: 06/06/2013

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	7.03	2.9	J
02	000090-12-0	Naphthalene, 1-methyl-	7.18	53	NJ
03		Unknown-02	13.05	5.4	J
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

SOM01.2 (6/2007)

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

Blanks

Blanks	**VOA_Low_Med**
VLB11	The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank common contaminant concentration is less than 2x the concentration criteria Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrationshave been elevated to the CRQL.
	A4B64, A4B64DL, A4B68, A4B71, A4B74DL, A4B75, A4B78, A4B79, A4B80, A4B80DL, A4B81, A4B81DL
	Methylene chloride A4B64, A4B64DL, A4B68, A4B71, A4B74DL, A4B75, A4B78, A4B79, A4B80, A4B80DL, A4B81, A4B81DL
Blanks	**VOA_Low_Med**
VLB12	The following volatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.
	A4B64, A4B64DL, A4B65DL, A4B68, A4B71, A4B71DL, A4B72, A4B72DL, A4B73, A4B73DL, A4B74DL, A4B75, A4B75DL, A4B79, A4B80, A4B80DL, A4B81, A4B81DL
	1,2,3-Trichlorobenzene A4B64, A4B64DL, A4B71, A4B71DL, A4B72, A4B73, A4B74DL, A4B75, A4B75DL, A4B79, A4B80, A4B81
	1,2,4-Trichlorobenzene A4B64DL, A4B65DL, A4B68, A4B72DL, A4B73DL, A4B74DL, A4B80DL, A4B81DL
Blanks	**VOA_Low_Med**
VLB13	The following volatile samples have analyte concentrations reported greater than or equal to the CRQL. The associated method blank is less than the concentration criteria. Detected and nondetected compounds are not qualified.
	A4B64, A4B70, A4B70DL, A4B71, A4B71DL, A4B72, A4B73, A4B74, A4B75, A4B75DL, A4B78, A4B79, A4B80, A4B81
	1,2,3-Trichlorobenzene A4B70, A4B70DL, A4B74, A4B78
	1,2,4-Trichlorobenzene A4B64, A4B70, A4B70DL, A4B71, A4B71DL, A4B72, A4B73, A4B74, A4B75, A4B75DL, A4B78, A4B79, A4B80, A4B81

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

Continuing Calibration Verification

Continuing Calibration Verification	**BNA**
BC10	The following semivolatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ.
	A4B61, A4B62, A4B63, A4B64, A4B65, A4B66, A4B67, A4B68, A4B69, A4B70, SBLK08
	Pentachlorophenol SSTD0209Y
	A4B61, A4B62, A4B63, A4B64, A4B65, A4B66, A4B67, A4B68, A4B69, A4B70, SBLK08

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

DMC/Surrogate

DMC/Surrogate	**VOA_Low_Med**
VDSS3	The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B61MS, A4B61MSD
	1,1-Dichloroethene-d2 A4B61MS, A4B61MSD
	1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene
DMC/Surrogate	**VOA_Low_Med**
VDSS32	The following diluted volatile samples with dilution factors greater than 5 have DMC/SMC recoveries above the upper limit of the criteria window. Detected and nondetected compounds are not qualified.
	A4B73DL
	1,2-Dichlorobenzene-d4 A4B73DL
	1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Chlorobenzene
DMC/Surrogate	**VOA_Low_Med**
VDSS4	The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ.
	A4B61, A4B62, A4B63, A4B75, A4B80
	1,2-Dichloropropane-d6 A4B80
	1,2-Dichloropropane, Bromodichloromethane, Cyclohexane, Methylcyclohexane
	1,1,2,2-Tetrachloroethane-d2 A4B61, A4B62
	1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane
	1,4-Dioxane-d8 A4B61, A4B62, A4B63, A4B75
	1,4-Dioxane
DMC/Surrogate	**VOA_Low_Med**
VDSS42	The following diluted volatile samples with dilution factors greater than 5 have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected and nondetected compounds are not qualified.
	A4B71DL
	1,4-Dioxane-d8 A4B71DL
	1,4-Dioxane
DMC/Surrogate	**VOA_Low_Med**
VDSS420	The following diluted volatile samples with dilution factors less than or equal to 5 have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ.
	A4B65, A4B70, A4B72

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

DMC/Surrogate

DMC/Surrogate	VOA_Low_Med
	1,2-Dichloropropane-d6 A4B65, A4B70, A4B72
	1,2-Dichloropropane, Bromodichloromethane, Cyclohexane, Methylcyclohexane

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

DMC/Surrogate

DMC/Surrogate	**BNA**
BDSS14	The following semivolatile samples have deuterated monitoring compound recovery above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B64, A4B65, A4B72
	Bis(2-chloroethyl)ether-d8 A4B64, A4B65, A4B72
	2,2'-Oxybis(1-chloropropane), Bis(2-chloroethoxy)methane, Bis(2-chloroethyl)ether
DMC/Surrogate	**BNA**
BDSS15	The following semivolatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ.
	A4B64, A4B65, A4B72
	Phenol-d5 A4B64, A4B65, A4B72
	Benzaldehyde, Phenol

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

Detection Limit

Detection Limit	VOA_Low_Med
VDL1	The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B64, A4B64DL, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B69, A4B70, A4B70DL, A4B71, A4B71DL, A4B72, A4B72DL, A4B73, A4B73DL, A4B74, A4B74DL, A4B75, A4B75DL, A4B77, A4B78, A4B79, A4B80, A4B80DL, A4B81, A4B81DL, VBLKGQ, VBLKGS, VBLKGU
	1,4-Dioxane A4B77
	Trichloroethene A4B79
	1,1-Dichloroethane A4B74
	Chlorobenzene A4B79
	Toluene A4B65, A4B73, A4B74, A4B80
	1,2,3-Trichlorobenzene A4B64, A4B64DL, A4B65, A4B69, A4B71, A4B71DL, A4B72, A4B73, A4B74DL, A4B75, A4B75DL, A4B79, A4B80, A4B81, VBLKGQ, VBLKGS, VBLKGU
	1,4-Dichlorobenzene A4B78
	Benzene A4B65
	cis-1,2-Dichloroethene A4B72DL, A4B79
	Bromomethane A4B70
	Ethylbenzene A4B70, A4B74
	o-Xylene A4B74
	1,2,4-Trichlorobenzene A4B64DL, A4B65DL, A4B68, A4B72DL, A4B73DL, A4B74DL, A4B80DL, A4B81DL, VBLKGQ, VBLKGS, VBLKGU
	trans-1,2-Dichloroethene A4B70, A4B72, A4B75, A4B81
	1,3-Dichlorobenzene A4B65, A4B70DL, A4B71DL, A4B72DL, A4B73, A4B78
	1,1,1-Trichloroethane A4B81
	Methylene chloride A4B64, A4B64DL, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B70, A4B70DL, A4B71, A4B71DL, A4B72, A4B73, A4B73DL, A4B74, A4B74DL, A4B75, A4B78, A4B79, A4B80, A4B80DL, A4B81, A4B81DL, VBLKGS, VBLKGU

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

Detection Limit

Detection Limit	BNA
BDL1	The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B64, A4B65, A4B66, A4B70, A4B72, A4B73, A4B74, A4B79
	Caprolactam A4B64, A4B72
	4-Chloroaniline A4B65, A4B70
	N-Nitrosodiphenylamine A4B79
	Naphthalene A4B73, A4B74
	2-Methylphenol A4B72
	Bis(2-ethylhexyl)phthalate A4B65, A4B66
	2,4-Dichlorophenol A4B70

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

Initial Calibration

Initial Calibration	VOA_Low_Med
VC6	The following volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds.
	A4B61, A4B61MS, A4B61MSD, A4B62, A4B63, A4B64, A4B64DL, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B69, A4B70, A4B70DL, A4B71, A4B71DL, A4B72, A4B72DL, A4B73, A4B73DL, A4B74, A4B74DL, A4B75, A4B75DL, A4B77, A4B78, A4B79, A4B80, A4B80DL, A4B81, A4B81DL, A4B82, VBLK76, VBLKGN, VBLKGQ, VBLKGS, VBLKGU, VHBLK01
	Toluene VSTD005GN
	Bromomethane VSTD00576
	A4B61, A4B61MS, A4B61MSD, A4B62, A4B63, A4B64, A4B64DL, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B69, A4B70, A4B70DL, A4B71, A4B71DL, A4B72, A4B72DL, A4B73, A4B73DL, A4B74, A4B74DL, A4B75, A4B75DL, A4B77, A4B78, A4B79, A4B80, A4B80DL, A4B81, A4B81DL, A4B82, VBLK76, VBLKGN, VBLKGQ, VBLKGS, VBLKGU, VHBLK01

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

Initial Calibration

Initial Calibration	BNA
BC5	The following semivolatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds.
	A4B61, A4B61MS, A4B61MSD, A4B62, A4B63, A4B64, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B69, A4B70, A4B71, A4B71DL, A4B72, A4B73, A4B73DL, A4B74, A4B74DL, A4B75, A4B76, A4B79, A4B80, A4B81, A4B81DL, A4B81RE, SBLK08
	Pentachlorophenol SSTD0059L
	A4B61, A4B61MS, A4B61MSD, A4B62, A4B63, A4B64, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B69, A4B70, A4B71, A4B71DL, A4B72, A4B73, A4B73DL, A4B74, A4B74DL, A4B75, A4B76, A4B79, A4B80, A4B81, A4B81DL, A4B81RE, SBLK08

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

Internal Standard

Internal Standard	BNA
BIS21	The following semivolatile samples have internal standard area counts that are outside the lower limit of primary criteria. Detected compounds are qualified J. Nondetected compounds are qualified R.
	A4B81, A4B81RE
	Acenaphthene-d10 A4B81RE
	1,1'-Biphenyl, 1,2,4,5-Tetrachlorobenzene, 2,3,4,6-Tetrachlorophenol, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dinitrophenol, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 2-Chloronaphthalene, 2-Nitroaniline, 3-Nitroaniline, 4-Chlorophenyl-phenylether, 4-Nitroaniline, 4-Nitrophenol, Acenaphthene, Acenaphthylene, Dibenzofuran, Diethylphthalate, Dimethylphthalate, Fluorene, Hexachlorocyclopentadiene
	1,4-Dichlorobenzene-d4 A4B81, A4B81RE
	2,2'-Oxybis(1-chloropropane), 2-Chlorophenol, 2-Methylphenol, 4-Methylphenol, Acetophenone, Benzaldehyde, Bis(2-chloroethyl)ether, Hexachloroethane, N-Nitroso-di-n-propylamine, Phenol
	Naphthalene-d8 A4B81, A4B81RE
	2,4-Dichlorophenol, 2,4-Dimethylphenol, 2-Methylnaphthalene, 2-Nitrophenol, 4-Chloro-3-methylphenol, 4-Chloroaniline, Bis(2-chloroethoxy)methane, Caprolactam, Hexachlorobutadiene, Isophorone, Naphthalene, Nitrobenzene
	Phenanthrene-d10 A4B81RE
	4,6-Dinitro-2-methylphenol, 4-Bromophenyl-phenylether, Anthracene, Atrazine, Carbazole, Di-n-butylphthalate, Fluoranthene, Hexachlorobenzene, N-Nitrosodiphenylamine, Pentachlorophenol, Phenanthrene

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

Matrix Spikes

Matrix Spikes	**VOA_Low_Med**
VMS5	The following volatile matrix spike/matrix spike duplicate samples have percent recovery greater than or equal to the expanded lower acceptance limit but less than the primary lower acceptance limit Detected compounds are qualified J. Nondetected compounds are qualified UJ.
	A4B61MS
	Trichloroethene A4B61MS

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

Matrix Spikes

Matrix Spikes	BNA
BMS2	The following semivolatile matrix spike/matrix spike duplicate samples have percent recoveries greater than the upper acceptance criteria. Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B61MS, A4B61MSD
	4-Chloro-3-methylphenol A4B61MS, A4B61MSD
	4-Nitrophenol A4B61MS, A4B61MSD
	Phenol A4B61MS, A4B61MSD
	Pentachlorophenol A4B61MS, A4B61MSD

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

TIC

TIC	VOA_Low_Med
VTIC1	A library search indicates a match at or above 85% for a TIC compound in the volatile sample Detected compounds are qualified NJ. Nondetected compounds are not qualified.
	A4B65, A4B67, A4B77
	Cyclotetrasiloxane, octamethyl- A4B67
	Benzene, 1,2,3-trimethyl- A4B77
	Azulene A4B65
TIC	**VOA_Low_Med**
VTIC2	A library search indicates a match below 85% for a TIC compound in the volatile sample Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B61, A4B62, A4B63, A4B64, A4B64DL, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B69, A4B70, A4B70DL, A4B71, A4B71DL, A4B72, A4B72DL, A4B73, A4B73DL, A4B74, A4B74DL, A4B75, A4B75DL, A4B78, A4B79, A4B80, A4B80DL, A4B81, A4B81DL, A4B82, VBLK76, VBLKGN, VBLKGQ, VBLKGS, VBLKGU
	Unknown-03 A4B65DL, A4B81DL
	Unknown-01 A4B61, A4B62, A4B63, A4B64, A4B64DL, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B69, A4B70, A4B70DL, A4B71, A4B71DL, A4B72, A4B72DL, A4B73, A4B73DL, A4B74, A4B74DL, A4B75, A4B75DL, A4B78, A4B79, A4B80, A4B80DL, A4B81, A4B81DL, A4B82, VBLK76, VBLKGN, VBLKGQ, VBLKGS, VBLKGU
	Unknown-02 A4B64DL, A4B65DL, A4B69, A4B78, A4B80, A4B81DL

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

TIC

TIC	BNA
BTIC1	A library search indicates a match at or above 85% for a TIC compound in the semivolatile sample Detected compounds are qualified NJ. Nondetected compounds are not qualified.
	A4B63, A4B64, A4B65, A4B65DL, A4B66, A4B68, A4B70, A4B72, A4B73, A4B73DL, A4B74, A4B74DL, A4B75, A4B76, A4B80, A4B81RE
	2(1H)-Pyridone, 6-methyl- A4B81RE
	Benzenamine, 2,5-dichloro- A4B74
	Benzene, 1-methyl-4-(methylsulfonyl)- A4B73, A4B74
	Acetamide, N-(4-aminophenyl)-N-methyl- A4B64, A4B65, A4B65DL, A4B70, A4B72, A4B75, A4B80
	1,2-Benzenedicarboxylic acid, butyl cyclohexyl ester A4B68
	Sulfanilamide A4B72, A4B73, A4B74
	Benzenesulfonamide A4B64, A4B66, A4B72, A4B73, A4B73DL, A4B74
	Acetamide, N-methyl-N-phenyl- A4B72
	1,2-Benzenedicarboxylic acid, mono(2-ethylhexyl) ester A4B63
	Benzenesulfonamide, 4-methyl-N-phenyl- A4B73, A4B74
	3-Anilino-1H-inden-1-one A4B65, A4B75
	Aniline, N-methyl- A4B73, A4B80
	Naphthalene, 1-methyl- A4B76
	Benzenamine, 2,3-dichloro- A4B73
	Benzenesulfonamide, 4-methyl- A4B66, A4B73, A4B73DL, A4B74, A4B74DL, A4B75
	Diphenyl ether A4B65
	Toluene-4-sulfonic acid 4-amino-phenyl ester A4B65, A4B75
TIC	**BNA**
BTIC2	A library search indicates a match below 85% for a TIC compound in the semivolatile sample Detected compounds are qualified J. Nondetected compounds are not qualified.
	A4B61, A4B62, A4B63, A4B64, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B69, A4B70, A4B71DL, A4B72, A4B73, A4B74, A4B74DL, A4B75, A4B76, A4B79, A4B80, A4B81, A4B81RE
	Unknown-05 A4B64, A4B72, A4B75
	Unknown-03 A4B62, A4B64, A4B65, A4B72, A4B74, A4B75
	Unknown-04 A4B64, A4B65, A4B72, A4B75
	Unknown-01 A4B61, A4B62, A4B63, A4B64, A4B65, A4B65DL, A4B66, A4B67, A4B68, A4B69, A4B70, A4B71DL, A4B72, A4B73, A4B74, A4B74DL, A4B75, A4B76, A4B79, A4B80, A4B81, A4B81RE
	Unknown-02 A4B62, A4B63, A4B64, A4B65, A4B65DL, A4B66, A4B67, A4B72, A4B73, A4B74, A4B75, A4B76, A4B80, A4B81

National Functional Guidelines Report #03

Lab KAP(KAP Technologies, Inc.) **SDG** A4B61 **Case** 43512 **Contract** EPW11031 **Region** 1 **DDTID** 177136 **SOW** SOM01.2

Data Review Reports

TIC

Regional CCS Defect Report

11:27 Mon, Jun 17, 2013

SDG A4B61 **Lab** KAP **Case** 43512 **Contract** EPW11031 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 177136 **Version** 8.051

DRD 06/12/2013 **LRD** 05/23/2013 **Mailed** 06/17/2013 **Submission Type** First Submission **Screening Type** Semi-Automated

Sample Summary and Lab Receipt Date

Sample/Number	VOA Trace	VOA SIM	VOA	BNA	BNA SIM	PEST	AROCLOR	Automated	Manual
A4B61			05/23/2013	05/23/2013					
A4B61MS			05/23/2013	05/23/2013					
A4B61MSD			05/23/2013	05/23/2013					
A4B62			05/23/2013	05/23/2013					
A4B63			05/23/2013	05/23/2013					
A4B64			05/23/2013	05/23/2013					
A4B64DL			05/23/2013						
A4B65			05/23/2013	05/23/2013					
A4B65DL			05/23/2013	05/23/2013					
A4B66			05/23/2013	05/23/2013					
A4B67			05/23/2013	05/23/2013					
A4B68			05/23/2013	05/23/2013					
A4B69			05/23/2013	05/23/2013					
A4B70			05/23/2013	05/23/2013					
A4B70DL			05/23/2013						
A4B71			05/23/2013	05/23/2013					
A4B71DL			05/23/2013	05/23/2013					
A4B72			05/23/2013	05/23/2013					
A4B72DL			05/23/2013						
A4B73			05/23/2013	05/23/2013					
A4B73DL			05/23/2013	05/23/2013					
A4B74			05/23/2013	05/23/2013					
A4B74DL			05/23/2013	05/23/2013					
A4B75			05/23/2013	05/23/2013					
A4B75DL			05/23/2013						
A4B76				05/23/2013					
A4B77			05/23/2013						
A4B78			05/23/2013						
A4B79			05/23/2013	05/23/2013					
A4B80			05/23/2013	05/23/2013					
A4B80DL			05/23/2013						
A4B81			05/23/2013	05/23/2013					
A4B81DL			05/23/2013	05/23/2013					
A4B81RE				05/23/2013					
A4B82			05/23/2013						
Totals	**0**	**0**	**33**	**27**	**0**	**0**	**0**		

Regional CCS Defect Report

11:27 Mon, Jun 17, 2013

SDG A4B61 **Lab** KAP **Case** 43512 **Contract** EPW11031 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 177136 **Version** 8.051

DRD 06/12/2013 **LRD** 05/23/2013 **Mailed** 06/17/2013 **Submission Type** First Submission **Screening Type** Semi-Automated

Regional CCS Defect Report

11:27 Mon, Jun 17, 2013

SDG A4B61 **Lab** KAP **Case** 43512 **Contract** EPW11031 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 177136 **Version** 8.051

DRD 06/12/2013 **LRD** 05/23/2013 **Mailed** 06/17/2013 **Submission Type** First Submission **Screening Type** Semi-Automated

Regional Defect Detail

NONE FOUND

Regional CCS Defect Report

11:27 Mon, Jun 17, 2013

SDG A4B61 **Lab** KAP **Case** 43512 **Contract** EPW11031 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 177136 **Version** 8.051

DRD 06/12/2013 **LRD** 05/23/2013 **Mailed** 06/17/2013 **Submission Type** First Submission **Screening Type** Semi-Automated

General Comments

NONE FOUND

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2

LABORATORY NAME. KAP TECHNOLOGIES, INC.
CITY/STATE. THE WOODLANDS/TX
CASE NO. 43513 2 SDG NO. A4B61
SDG NOs. TO FOLLOW - - -
MOD. REF. NO. ------
CONTRACT NO. EPW11031
SOW NO. SOM1.2

All documents delivered in the Complete SDG File (CSF) must be original documents where possible.

	PAGE NOs. FROM	PAGE NOs. TO	CHECK LAB	CHECK USEPA
1. **Inventory Sheet** (DC-2) (Do not number)			✓	✓
2. **SDG Case Narrative**	01	04	✓	✓
3. **SDG Cover Sheet/Traffic Report**	05	09	✓	✓
4. **Trace Volatiles Data**				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II VOA-1 and VOA-2)	NA	NA	NA	NA
Matrix Spike/Matrix Spike Duplicate Recover (Form III VOA) (if requested by USEPA Region)				
Method Blank Summary (Form IV VOA)				
GC/MS Instrument Performance Check (Form V VOA)				
Internal Standard Area and RT Summary (Form VIII VOA)				
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I VOA-1 and VOA-2)				
Tentatively Identified Compounds (Form I VOA-TIC)				
Reconstructed total ion chromatograms (RIC) for each sample				
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds identified				
Quantitation reports				
Mass Spectra of all reported TICs with three best library matches				
c. Standards Data (All Instruments)				
Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3)				
RICs and Quantitaation Reports for all Standards				
Continuing Calibration Data (Form VII VOA-1, VOA-2, VOA-3)				
RICs and Quantitation Reports for all Standards				
d. Raw/Quality Control (QC) Data				
BFB				
Blank Data				
Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region)				

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 435132 SDG NO. A4B61 SDG NOs. TO FOLLOW ----
----- ---- MOD. REF. NO. ---------

	PAGE NOs. FROM	PAGE NOs. TO	CHECK LAB	CHECK REGION
e. Trace SIM Data (Place at the end of the Trace Volatiles Section) [Form I VOA-SIM; Form II VOA-SIM1 and VOA-SIM2; Form IV-VOA-SIM; Form VI VOA-SIM; Form VII VOA-SIM; Form VIII VOA-SIM; and all raw data for QC, Samples, and Standards.]	NA	NA	NA	NA
5. Low/Med Volatiles Data				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II VOA-1, VOA-2, VOA-3, VOA-4)	10	13	✓	✓
Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA-1 and VOA-2) (if requested by USEPA Region)	14	14	✓	✓
Method Blank Summary (Form IV VOA)	15	19	✓	✓
GC/MS Instrument Performance Check (Form V VOA)	20	24	✓	✓
Internal Standard Area and RT Summary (Form VIII VOA)	25	29	✓	✓
b. Sample Data	30	574		
TCL Results - Organics Analysis Data Sheet (Form I VOA-1 and VOA-2)			✓	✓
Tentatively Identified Compounds (Form I VOA-TIC)			✓	✓
Reconstructed total ion chromatograms (RIC) for each sample			✓	✓
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds identified			✓	✓
Quantitation reports			✓	✓
Mass Spectra of all reported TICs with three best library matches			✓	✓
c. Standards Data (All Instruments)	575	705	✓	
Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3)				✓
RICs and Quantitation Reports for all Standards			✓	✓
Continuing Calibration Data (Form VII VOA-1, VOA-2, VOA-3)			✓	✓
RICs and Quantitation Reports for all Standards			✓	✓
d. Raw/Quality Control (QC) Data				
BFB	706	735	✓	✓
Blank Data	736	936	✓	✓
Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region)	937	944	✓	✓

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 43513 SDG NO. A4B61 SDG NOs. TO FOLLOW ----
----- ---- MOD. REF. NO. ---------

	PAGE NOs. FROM	PAGE NOs. TO	CHECK LAB	CHECK REGION
6. **Semivolatiles Data**				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II SV-1, SV-2, SV-3, SV-4)	945	946	✓	✓
Matrix Spike/Matrix Spike Duplicate Recovery Summary (Form III SV-1 and SV-2) (if requested by USEPA Region)	947	947		✓
Method Blank Summary (Form IV SV)	948	948	✓	✓
GC/MS Instrument Performance Check (Form V SV)	949	952	✓	✓
Internal Standard Area and RT Summary (Form VIII SV-1 and SV-2)	953	958	✓	✓
b. Sample Data	959	1469		
TCL Results - Organics Analysis Data Sheet (Form I SV-1 and SV-2)			✓	✓
Tentatively Identified Compounds (Form I SV-TIC)			✓	✓
Reconstructed total ion chromatograms (RIC) for each sample				✓
For each sample:	—	—		
Raw Spectra and background-subtracted mass spectra of target compounds			✓	✓
Quantitation reports			✓	✓
Mass Spectra of TICs with three best library matches			✓	✓
GPC chromatograms (if GPC is required)			✓	✓
c. Standards Data (All Instruments)	1470	1542		
Initial Calibration Data (Form VI SV-1, SV-2, SV-3)			✓	✓
RICs and Quantitation Reports for all Standards			✓	✓
Continuing Calibration Data (Form VII SV-1, SV-2, SV-3)			✓	✓
RICs and Quantitation Reports for all Standards			✓	✓
d. Raw (QC) Data				
DFTPP	1543	1582	✓	✓
Blank Data	1583	1595	✓	✓
MS/MSD Data (if requested by USEPA Region)	1596	1603	✓	✓
e. Raw GPC Data	—	—	—	NA

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 43512 SDG NO. A4B61 SDG NOs. TO FOLLOW ----
----- ---- MOD. REF. NO. ---------

	PAGE NOs. FROM	PAGE NOs. TO	CHECK LAB	CHECK REGION
Semivolatile SIM Data	NA	NA	NA	NA
[Form I SV-SIM; Form II SV-SIM1 and SV-SIM2; Form III-SV-SIM1 and SV-SIM2 (if required; Form IV SV-SIM; Form VI SV-SIM; Form VII SV-SIM; Form VIII SV-SIM1 and SV-SIM2; and all raw data for QC, Samples, and Standards.]				
7. Pesticides Data				
a. QC Summary				
Surrogate Recovery Summary (Form II PEST-1 and PEST-2)	NA	NA	NA	NA
Matrix Spike/Matrix Spike Duplicate Recovery Summary (Form III PEST-1 and PEST-2)				
Laboratory Control Sample Recovery (Form III PEST-3 and PEST-4)				
Method Blank Summary (Form IV PEST)				
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I PEST)				
Chromatograms (Primary Column)				
Chromatograms from second GC column confirmation				
GC Integration report or data system printout				
Manual work sheets				
For Pesticides by GC/MS				
Copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)				
c. Standards Data				
Initial Calibration of Single Component Analytes (Form VI PEST-1 and PEST-2)				
Toxaphene Initial Calibration (Form VI PEST-3 and PEST-4)				
Analyte Resolution Summary (Form VI PEST-5, per column)				
Performance Evaluation Mixture (Form VI PEST-6)				
Individual Standard Mixture A (Form VI PEST-7)				
Individual Standard Mixture B (Form VI PEST-8)				
Individual Standard Mixture C (Form VI PEST-9 and PEST-10)				
Calibration Verification Summary (Form VII PEST-1)				
Calibration Verification Summary (Form VII PEST-2)				

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 435132 SDG NO. A4B61 SDG NOs. TO FOLLOW ----
----- ---- MOD. REF. NO. ---------

	PAGE NOs. FROM	PAGE NOs. TO	CHECK LAB	CHECK REGION
Calibration Verification Summary (Form VII PEST-3)			NA	NA
Calibration Verification Summary (Form VII PEST-4)				
Analytical Sequence (Form VIII PEST)				
Florisil Cartridge Check (Form IX PEST-1)				
Pesticide GPC Calibration (Form IX PEST-2)				
Identification Summary for Single Component Analytes (Form X PEST-1)				
Identification Summary for Toxaphene Form X PEST-2)				
Chromatograms and data system printouts A printout of Retention Times and corresponding peak areas or peak heights				
d. Raw QC Data				
Blank Data	NA	NA	NA	
Matrix Spike/Matrix Spike Duplicate Data				
Laboratory Control Sample				
e. Raw GPC Data				
f. Raw Florisil Data				
8. **Aroclor Data**				
a. QC Summary				
Surrogate Recovery Summary (Form II ARO-1 and ARO-2)	NA	NA	NA	
Matrix Spike/Matrix Spike Duplicate Summary (Form III ARO-1 and ARO-2)				
Laboratory Control Sample Recovery (Form III ARO-3 and ARO-4)				
Method Blank Summary (Form IV ARO)				
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I ARO)				
Chromatograms (Primary Column)				
Chromatograms from second GC column confirmation				
GC Integration report of data system printout				
Manual work sheets				
For Aroclors by GC/MS				

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 435132 SDG NO. A4B61 SDG NOs. TO FOLLOW ----
----- ---- MOD. REF. NO. ---------

	PAGE NOs. FROM	PAGE NOs. TO	CHECK LAB	CHECK REGION
Copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)			NA	NA
c. Standards Data	NA	NA		
Aroclors Initial Calibration (Form VI ARO-1, ARO-2, and ARO-3)				
Calibration Verification Summary (Form VII ARO-1)				
Analytical Sequence (Form VIII ARO)				
Identification Summary for Multicomponent Analytes (Form X ARO)				
Chromatograms and data system printouts A printout of Retention Times and corresponding peak areas or peak heights				
d. Raw QC Data				
Blank Data				
Matrix Spike/Matrix Spike Duplicate Data				
Laboratory Control Sample (LCS) Data				
e. Raw GPC Data (if performed)				
9. Miscellaneous Data				
Original preparation and analysis forms or copies of preparation and analysis logbook pages	1604	1620	✓	✓
Internal sample and sample extract transfer chain-of-custody records	1621	1622	✓	✓
Screening records	NA	NA	NA	NA
All instrument output, including strip charts from screening activities (describe or list)				
----------	NA	NA	NA	NA
----------	NA	NA	NA	✓
10. EPA Shipping/Receiving Documents				
Airbills (No. of shipments 5)	1623	1627	✓	✓
Chain of Custody Records	1628	1631	✓	✓
Sample Tags	1632	1660	✓	✓
Sample Log-in Sheet (Lab & DC-1)	1661	1669	✓	✓
Miscellaneous Shipping/Receiving Records (describe or list)				
CUSTODY SEALS	1670	1674	✓	✓
----------	NA	NA	NA	NA

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 435132 SDG NO. A4B61 SDG NOs. TO FOLLOW ----
----- ---- MOD. REF. NO. ---------

	PAGE NOs. FROM	TO	CHECK LAB	REGION
11. **Internal Lab Sample Transfer Records and Tracking Sheets** (describe or list)				
---	---	---	---	
---	---	---	---	
12. **Other Records** (describe or list)				
Telephone Communication Log	---	---	---	
PE SAMPLE INSTRUCTIONS	—	—	—	
EMAIL COMMUNICATION	1675	1676	✓	✓

13. **Comments**

6/11/13

Completed by: (CLP Lab) (Signature) NICOLE HOGUE/CLP COORDINATOR (Printed Name/Title) 6/11/13 (Date)

Verified by: (CLP Lab) (Signature) VISHNUVARDAHN DAVLAPUR/P.M. (Printed Name/Title) 6/11/13 (Date)

Audited by: (USEPA) (Signature) Gail DeRuzzo / Lead Chemist (Printed Name/Title) 6/20/13 (Date)
For NOBIS Engineering

Tier 4 ACTUAL Sampling Event – Part 2

Field Sampling Contractor/Contract: Nobis Engineering, Inc./EP-S1-06-03		Ship to Lab Date: 11/6/13	Data Package Receipt Date: 11/26/13
DAS Case No.: 0126S		SDG: D05761 (Lab No. M2184)	Data Turnaround Time: 20 days
Site Name: Nyanza Chemical Waste Dump, OU2		Site Location: Ashland, MA	CERCLIS #: MAD990685422
Site ID: 0115	Action Code: Remedial Action (RA)	Operable Unit:02	Purpose Code: Remedial Action (RA)
Lab Name: Spectrum Analytical, Inc.		Lab Location: Warwick, RI	Lab Code: Mitkem
No. of Samples: 11 (Total-Including PES & Blanks)		Sample IDs: D05761-D05771	Case Complete: **Yes** or No Total Cost: $550

Parameter	Cost per Parameter, Matrix & Sample	Matrix	No. of Samples	Associated PE Sample Numbers	Associated Field Duplicates	Associated Spike/ Duplicates	Associated MS/MSD Samples	Associated Blanks & Type
DISGAS/MEE	$50	GW	11		D05761/D05762			

Note: The Chain of Custody and Data Validation Memo must be attached.
List the Parameter and Matrix from the NEST Look-Up Table. If the parameter does not exist in the look-up table, send a copy of the Method or a definition along with this form to the RSCC for entry into NESTS.

APPENDIX C

Appendix C
Chlorinated Benzene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Overburden - North Plume											
Distance (ft)	0				1156		1400		1844			
Location	MW-113B				MW-202		MW-201		MW-115B			
Sample Date	08/15/12	11/07/12	05/22/13	11/06/13	11/05/12	11/04/13	11/05/12	11/04/13	08/14/12	11/05/12	05/20/13	11/05/13
Total Molar Mass (umol/L)	1.14	2.69	4.15	2.74	48.1	46.6	7.9	6.36	22.4	29.8	27.8	29.9
1,2,4,5-Tetrachlorobenzene	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,3-Trichlorobenzene	**0.0%**	0.0%	0.0%	0.0%	1.83%	2.13%	1.81%	2.17%	0.0%	0.0%	0.44%	0.52%
1,2,4-Trichlorobenzene	**0.0%**	5.31%	3.32%	4.01%	9.16%	9.81%	8.37%	9.52%	2.95%	4.06%	3.18%	3.51%
1,2-Dichlorobenzene	**59.3%**	60.5%	57.3%	54.7%	36.8%	35.0%	39.6%	38.5%	39.4%	41.0%	41.8%	40.8%
1,3-Dichlorobenzene	**0.0%**	2.45%	2.13%	2.48%	0.64%	0.76%	0.71%	0.92%	0.0%	0.0%	0.54%	0.71%
1,4-Dichlorobenzene	**10.2%**	10.6%	11.5%	10.9%	5.5%	6.57%	5.68%	6.94%	6.38%	7.32%	6.13%	7.05%
Chlorobenzene	**30.5%**	21.1%	25.8%	27.9%	46.1%	45.7%	43.8%	42.0%	51.3%	47.7%	47.9%	47.5%

bold = field duplicate

Appendix C
Chlorinated Benzene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Overburden - South Plume												
Distance (ft)	0	467				1000	1690			3000			
Location	MW-112B	MW-06A				MW-06B	MW-302			MW-406B			
Sample Date	11/05/13	08/14/12	11/07/12	05/22/13	11/06/13	11/07/13	11/07/12	05/22/13	11/05/13	08/14/12	11/07/12	05/20/13	11/05/13
Total Molar Mass (umol/L)	0.335	0.868	0.468	0.876	1.25	4.36	8.03	8.84	8.91	0	0	0	0
1,2,4,5-Tetrachlorobenzene	0.0%	0.0%	0.0%	NA	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,3-Trichlorobenzene	0.0%	4.12%	6.84%	6.91%	5.72%	0.0%	**0.27%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,4-Trichlorobenzene	15.0%	13.9%	16.5%	27.6%	16.3%	2.02%	**1.03%**	1.06%	1.18%	0.0%	0.0%	0.0%	0.0%
1,2-Dichlorobenzene	52.9%	11.7%	17.5%	22.5%	24.5%	59.2%	**51.7%**	51.6%	48.8%	0.0%	0.0%	0.0%	0.0%
1,3-Dichlorobenzene	0.0%	3.05%	0.0%	2.33%	0.0%	0.81%	**0.53%**	0.51%	0.0%	0.0%	0.0%	0.0%	0.0%
1,4-Dichlorobenzene	11.2%	7.83%	7.85%	2.1%	5.98%	7.5%	**5.5%**	6.7%	6.11%	0.0%	0.0%	0.0%	0.0%
Chlorobenzene	21.0%	59.3%	51.3%	38.6%	47.5%	30.5%	**41.0%**	40.2%	43.9%	0.0%	0.0%	0.0%	0.0%

bold = field duplicate

Appendix C
Chlorinated Benzene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Bedrock - North Plume											
Distance (ft)	0		1067					1867				
Location	MW-113A		MW-203A					MW-115A				
Sample Date	11/08/12	11/06/13	04/19/12	08/13/12	11/05/12	05/21/13	11/04/13	04/19/12	08/14/12	11/05/12	05/20/13	11/05/13
Total Molar Mass (umol/L)	407	992	91.5	86	83.2	72.1	63.3	29.2	22.4	36.5	0	26.9
1,2,4,5-Tetrachlorobenzene	NA	0.0%	NA	0.0%	0.0%	0.0%	0.0%	NA	0.0%	**0.0%**	0.0%	**0.0%**
1,2,3-Trichlorobenzene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	**0.0%**
1,2,4-Trichlorobenzene	0.0%	0.28%	0.0%	0.0%	0.93%	0.57%	0.45%	0.0%	0.0%	**1.66%**	0.0%	**1.03%**
1,2-Dichlorobenzene	46.7%	43.9%	22.3%	23.7%	26.2%	25.5%	19.3%	39.7%	24.9%	**29.9%**	0.0%	**25.3%**
1,3-Dichlorobenzene	1.49%	1.71%	0.37%	0.0%	0.4%	0.27%	0.0%	0.0%	0.0%	**0.0%**	0.0%	**0.0%**
1,4-Dichlorobenzene	10.2%	10.3%	3.57%	3.95%	4.09%	3.49%	3.0%	5.58%	3.64%	**5.2%**	0.0%	**4.06%**
Chlorobenzene	41.6%	43.9%	73.8%	72.3%	68.4%	70.2%	77.3%	54.7%	71.4%	**63.3%**	0.0%	**69.6%**

bold = field duplicate

Appendix C
Chlorinated Benzene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Bedrock - South Plume													
Distance (ft)	0				400	844				1444	3044			
Location	MW-B11		SB-600		MW-112A	MW-110				MW-107	MW-406A			
Sample Date	11/09/12	11/06/13	11/09/12	11/06/13	11/05/13	08/15/12	11/07/12	05/22/13	11/06/13	11/07/13	08/14/12	11/07/12	05/20/13	11/05/13
Total Molar Mass (umol/L)	647	1440	0	8.16	1.23	1.08	0.653	0.104	0.936	6.13	0	0.133	0	0
1,2,4,5-Tetrachlorobenzene	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,3-Trichlorobenzene	0.0%	0.0%	0.0%	**0.0%**	0.0%	10.7%	8.43%	0.0%	10.6%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,4-Trichlorobenzene	0.2%	0.65%	0.0%	**0.0%**	0.0%	40.9%	36.3%	58.2%	40.6%	2.51%	0.0%	0.0%	0.0%	0.0%
1,2-Dichlorobenzene	48.4%	51.8%	0.0%	**100.0%**	55.5%	25.2%	30.1%	0.0%	23.9%	63.3%	0.0%	71.4%	0.0%	0.0%
1,3-Dichlorobenzene	1.26%	1.98%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.82%	0.0%	0.0%	0.0%	0.0%
1,4-Dichlorobenzene	8.83%	12.3%	0.0%	**0.0%**	8.32%	4.29%	4.79%	0.0%	4.07%	8.67%	0.0%	0.0%	0.0%	0.0%
Chlorobenzene	41.3%	33.3%	0.0%	**0.0%**	36.2%	18.9%	20.4%	41.8%	20.8%	24.7%	0.0%	28.6%	0.0%	0.0%

bold = field duplicate

Appendix C
Chlorinated Benzene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Other													
Distance (ft)														
Location	MADEP-MW-1		MW-04A		MW-04B		MW-04C		MW-09A		MW-09B		MW-104A	
Sample Date	11/09/12	11/05/13	11/06/12	11/04/13	11/06/12	11/04/13	11/06/12	11/04/13	11/07/12	11/06/13	11/07/12	11/06/13	11/07/12	11/06/13
Total Molar Mass (umol/L)	0.338	0.138	0	0	0	0	0	0	0.361	0.559	0.364	0.564	15.5	20.2
1,2,4,5-Tetrachlorobenzene	NA	NA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,3-Trichlorobenzene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,4-Trichlorobenzene	5.54%	26.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2-Dichlorobenzene	44.4%	73.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.2%	24.3%	89.9%	89.2%	87.7%	91.1%
1,3-Dichlorobenzene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.66%	0.0%
1,4-Dichlorobenzene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.8%	8.99%	10.1%	10.8%	8.77%	7.43%
Chlorobenzene	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	59.0%	66.7%	0.0%	0.0%	2.86%	1.49%

bold = field duplicate

Appendix C
Chlorinated Benzene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Other												
Distance (ft)													
Location	MW-104B		MW-203B				MW-204A		MW-304A				
Sample Date	11/07/12	11/06/13	08/13/12	11/05/12	05/21/13	11/04/13	11/06/12	11/06/13	04/19/12	08/13/12	11/06/12	05/21/13	11/05/13
Total Molar Mass (umol/L)	0.0748	0.0367	39.3	35.9	36.5	35.2	0.469	1.07	34.4	23.5	18.7	22.4	19.1
1,2,4,5-Tetrachlorobenzene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA	0.0%	0.0%	**0.0%**	0.0%
1,2,3-Trichlorobenzene	0.0%	0.0%	1.82%	1.99%	1.96%	2.2%	0.0%	0.0%	0.0%	0.0%	0.22%	**0.0%**	0.0%
1,2,4-Trichlorobenzene	0.0%	0.0%	9.26%	9.52%	11.5%	10.4%	0.0%	3.83%	0.0%	2.34%	1.24%	**1.01%**	0.95%
1,2-Dichlorobenzene	100.0%	100.0%	34.6%	37.8%	39.2%	36.7%	46.5%	53.6%	39.5%	40.4%	43.6%	**48.6%**	39.1%
1,3-Dichlorobenzene	0.0%	0.0%	0.0%	0.64%	0.54%	0.85%	0.0%	0.0%	1.03%	0.0%	0.87%	**0.7%**	1.1%
1,4-Dichlorobenzene	0.0%	0.0%	6.74%	5.48%	5.4%	6.97%	8.12%	10.9%	7.7%	8.37%	6.53%	**6.07%**	7.84%
Chlorobenzene	0.0%	0.0%	47.6%	44.5%	41.4%	42.9%	45.4%	31.7%	51.7%	48.9%	47.5%	**43.6%**	51.0%

bold = field duplicate

Appendix C
Chlorinated Benzene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Other														
Distance (ft)															
Location	MW-304B				MW-305B				MW-401		MW-402		MW-503A	MW-503B	
Sample Date	08/13/12	11/06/12	05/21/13	11/05/13	08/15/12	11/06/12	05/21/13	11/06/13	11/07/12	11/05/13	11/09/12	11/07/13	11/09/12	11/08/12	11/07/13
Total Molar Mass (umol/L)	3.04	1.25	3.37	3.97	0	0	0.016	0	68.6	84.6	4.15	5.17	0	1.54	1.77
1,2,4,5-Tetrachlorobenzene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,3-Trichlorobenzene	1.03%	0.0%	0.0%	0.76%	0.0%	0.0%	100.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,4-Trichlorobenzene	4.91%	4.05%	4.1%	4.16%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	1.93%	0.0%
1,2-Dichlorobenzene	51.4%	50.5%	56.4%	54.9%	0.0%	0.0%	0.0%	0.0%	**38.7%**	35.4%	100.0%	100.0%	0.0%	79.0%	100.0%
1,3-Dichlorobenzene	1.3%	0.0%	1.17%	1.41%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	5.72%	0.0%
1,4-Dichlorobenzene	9.19%	9.26%	9.29%	9.78%	0.0%	0.0%	0.0%	0.0%	**6.94%**	6.83%	0.0%	0.0%	0.0%	11.0%	0.0%
Chlorobenzene	32.2%	36.2%	29.0%	29.0%	0.0%	0.0%	0.0%	0.0%	**54.4%**	57.8%	0.0%	0.0%	0.0%	2.36%	0.0%

bold = field duplicate

Appendix C
Chlorinated Benzene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Other												
Distance (ft)													
Location	MW-B5			RMW-116A		RMW-305A				RMW-403A			
Sample Date	04/19/12	11/08/12	11/05/13	11/06/12	11/06/13	08/15/12	11/06/12	05/21/13	11/06/13	08/13/12	11/06/12	05/20/13	11/04/13
Total Molar Mass (umol/L)	500	312	451	0	0	8.27	7.67	11.6	11.1	0	0	0	0
1,2,4,5-Tetrachlorobenzene	NA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,3-Trichlorobenzene	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.37%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,4-Trichlorobenzene	**0.0%**	0.0%	0.34%	0.0%	0.0%	3.87%	3.52%	3.57%	3.86%	0.0%	0.0%	0.0%	0.0%
1,2-Dichlorobenzene	**40.8%**	43.6%	46.8%	0.0%	0.0%	53.4%	64.8%	58.8%	53.8%	0.0%	0.0%	0.0%	0.0%
1,3-Dichlorobenzene	**1.5%**	1.79%	1.66%	0.0%	0.0%	0.0%	1.59%	1.41%	2.01%	0.0%	0.0%	0.0%	0.0%
1,4-Dichlorobenzene	**9.66%**	12.0%	9.66%	0.0%	0.0%	11.5%	8.87%	10.0%	11.6%	0.0%	0.0%	0.0%	0.0%
Chlorobenzene	**48.0%**	42.6%	41.5%	0.0%	0.0%	31.2%	20.9%	26.1%	28.7%	0.0%	0.0%	0.0%	0.0%

bold = field duplicate

Appendix C
Chlorinated Benzene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Other															
Distance (ft)																
Location	RMW-403B				RMW-405A				RMW-405B				RW-1		WP-105	
Sample Date	08/13/12	11/06/12	05/20/13	11/05/13	08/14/12	11/05/12	05/20/13	11/05/13	08/14/12	11/05/12	05/20/13	11/05/13	11/08/12	11/06/13	11/06/12	11/05/13
Total Molar Mass (umol/L)	0	0	0	0	3.1	0.669	0	1.99	41.7	36.2	39.7	36.6	55.3	127	0	0
1,2,4,5-Tetrachlorobenzene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,3-Trichlorobenzene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,2,4-Trichlorobenzene	0.0%	0.0%	0.0%	0.0%	1.15%	0.0%	0.0%	0.0%	1.72%	1.98%	1.8%	2.11%	0.75%	0.78%	0.0%	0.0%
1,2-Dichlorobenzene	0.0%	0.0%	0.0%	0.0%	30.7%	24.4%	0.0%	25.0%	32.6%	33.7%	34.3%	33.3%	56.6%	53.2%	0.0%	0.0%
1,3-Dichlorobenzene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.49%	0.54%	2.21%	2.15%	0.0%	0.0%
1,4-Dichlorobenzene	0.0%	0.0%	0.0%	0.0%	5.26%	0.0%	0.0%	3.76%	5.88%	5.44%	4.79%	5.95%	14.8%	12.3%	0.0%	0.0%
Chlorobenzene	0.0%	0.0%	0.0%	0.0%	62.9%	75.6%	0.0%	71.3%	59.8%	58.9%	53.7%	58.1%	25.7%	31.6%	0.0%	0.0%

bold = field duplicate

Appendix C
Chlorinated Ethene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Overburden North Plume											
Distance (ft)	0				1156		1400		1844			
Location	MW-113B				MW-202		MW-201		MW-115B			
Sample Date	08/15/12	11/07/12	05/22/13	11/06/13	11/05/12	11/04/13	11/05/12	11/04/13	08/14/12	11/05/12	05/20/13	11/05/13
Total Molar Mass (umol/L)	1.83	2.9	4.39	3.63	15.1	15.3	2.4	2.52	19.3	22	18.4	23.6
Tetrachloroethene	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trichloroethene	**79.1%**	76.2%	76.3%	67.3%	75.4%	70.0%	57.1%	57.5%	82.9%	86.4%	87.1%	84.1%
cis-1,2-Dichloroethene	**20.9%**	23.8%	23.5%	28.4%	24.6%	28.3%	42.9%	40.9%	17.1%	13.6%	12.9%	13.6%
trans-1,2-Dichloroethene	**0.0%**	0.0%	0.26%	0.34%	0.0%	0.29%	0.0%	0.3%	0.0%	0.0%	0.0%	0.11%
1,1-Dichloroethene	**0.0%**	0.0%	0.0%	0.57%	0.0%	0.38%	0.0%	0.41%	0.0%	0.0%	0.0%	0.27%
Vinyl chloride	**0.0%**	0.0%	0.0%	3.45%	0.0%	0.96%	0.0%	0.89%	0.0%	0.0%	0.0%	0.57%
Ethylene	NA	NA	NA	NA	NA	NA	0.0%	0.0%	NA	0.0%	NA	1.12%
Ethane	NA	NA	NA	NA	NA	NA	0.0%	0.0%	NA	0.0%	NA	0.28%

bold = field duplicate

Appendix C
Chlorinated Ethene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Overburden South Plume												
Distance (ft)	0	467				1000	1690			3000			
Location	MW-112B	MW-06A				MW-06B	MW-302			MW-406B			
Sample Date	11/05/13	08/14/12	11/07/12	05/22/13	11/06/13	11/07/13	11/07/12	05/22/13	11/05/13	08/14/12	11/07/12	05/20/13	11/05/13
Total Molar Mass (umol/L)	0.0351	0.951	0.271	0.569	0.667	1.87	4.16	4.3	4.87	0.0239	0	0	0.0115
Tetrachloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.08%	30.2%	0.0%	0.0%	41.5%
Trichloroethene	0.0%	17.6%	27.6%	14.7%	20.5%	4.07%	**60.3%**	56.7%	50.1%	41.3%	0.0%	0.0%	0.0%
cis-1,2-Dichloroethene	100.0%	82.4%	72.4%	85.3%	75.7%	93.7%	**39.7%**	43.3%	48.7%	28.4%	0.0%	0.0%	58.5%
trans-1,2-Dichloroethene	0.0%	0.0%	0.0%	0.0%	2.47%	0.77%	**0.0%**	0.0%	0.15%	0.0%	0.0%	0.0%	0.0%
1,1-Dichloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.53%	**0.0%**	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%
Vinyl chloride	0.0%	0.0%	0.0%	0.0%	1.34%	0.94%	**0.0%**	0.0%	0.56%	0.0%	0.0%	0.0%	0.0%
Ethylene	0.0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane	0.0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

bold = field duplicate

Appendix C
Chlorinated Ethene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Bedrock North Plume											
Distance (ft)	0		1067					1867				
Location	MW-113A		MW-203A					MW-115A				
Sample Date	11/08/12	11/06/13	04/19/12	08/13/12	11/05/12	05/21/13	11/04/13	04/19/12	08/14/12	11/05/12	05/20/13	11/05/13
Total Molar Mass (umol/L)	129	358	26.7	38.2	29.9	27	57.5	26.8	13.6	18.8	0	18
Tetrachloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	**0.0%**
Trichloroethene	100.0%	99.9%	31.3%	81.7%	71.3%	50.7%	21.2%	88.1%	89.4%	**92.9%**	0.0%	**89.1%**
cis-1,2-Dichloroethene	0.0%	0.08%	8.86%	5.69%	7.6%	13.4%	6.99%	11.9%	10.6%	**7.11%**	0.0%	**8.63%**
trans-1,2-Dichloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.42%	0.65%	0.0%	0.0%	**0.0%**	0.0%	**0.07%**
1,1-Dichloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.65%	0.0%	0.0%	**0.0%**	0.0%	**0.29%**
Vinyl chloride	0.0%	0.0%	59.8%	12.6%	18.8%	35.5%	36.2%	0.0%	0.0%	**0.0%**	0.0%	**0.38%**
Ethylene	NA	NA	NA	NA	2.15%	NA	33.4%	NA	NA	**0.0%**	NA	**1.07%**
Ethane	NA	NA	NA	NA	0.16%	NA	0.98%	NA	NA	**0.0%**	NA	**0.46%**

bold = field duplicate

Appendix C
Chlorinated Ethene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	Bedrock South Plume													
Distance (ft)	0				400	844				1444	3044			
Location	MW-B11		SB-600		MW-112A	MW-110				MW-107	MW-406A			
Sample Date	11/09/12	11/06/13	11/09/12	11/06/13	11/05/13	08/15/12	11/07/12	05/22/13	11/06/13	11/07/13	08/14/12	11/07/12	05/20/13	11/05/13
Total Molar Mass (umol/L)	54.5	156	175	139	3.25	0.894	0.338	0.0504	0.591	2.27	0	0.0609	0	0.00418
Tetrachloroethene	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	26.1%
Trichloroethene	96.4%	97.6%	100.0%	**98.6%**	37.5%	12.8%	14.6%	24.2%	18.1%	2.45%	0.0%	100.0%	0.0%	0.0%
cis-1,2-Dichloroethene	3.6%	2.38%	0.0%	**1.04%**	57.2%	84.2%	85.4%	75.8%	78.5%	95.8%	0.0%	0.0%	0.0%	73.9%
trans-1,2-Dichloroethene	0.0%	0.0%	0.0%	**0.0%**	1.08%	1.96%	0.0%	0.0%	2.1%	0.3%	0.0%	0.0%	0.0%	0.0%
1,1-Dichloroethene	0.0%	0.0%	0.0%	**0.4%**	0.48%	0.0%	0.0%	0.0%	0.0%	0.55%	0.0%	0.0%	0.0%	0.0%
Vinyl chloride	0.0%	0.0%	0.0%	**0.0%**	1.28%	1.07%	0.0%	0.0%	1.35%	0.92%	0.0%	0.0%	0.0%	0.0%
Ethylene	NA	NA	NA	NA	2.41%	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane	NA	NA	NA	NA	0.0%	NA	NA	NA	NA	NA	NA	NA	NA	NA

bold = field duplicate

Appendix C
Chlorinated Ethene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	OTHER													
Distance (ft)														
Location	MADEP-MW-1		MW-04A		MW-04B		MW-04C		MW-09A		MW-09B		MW-104A	
Sample Date	11/09/12	11/05/13	11/06/12	11/04/13	11/06/12	11/04/13	11/06/12	11/04/13	11/07/12	11/06/13	11/07/12	11/06/13	11/07/12	11/06/13
Total Molar Mass (umol/L)	0.0419	0.0186	0	0	0.259	0.63	0.0837	0.681	0.064	0.163	0.2	0.272	20.2	12.3
Tetrachloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trichloroethene	100.0%	0.0%	0.0%	0.0%	100.0%	90.7%	100.0%	90.5%	0.0%	0.0%	17.5%	27.1%	63.8%	61.4%
cis-1,2-Dichloroethene	0.0%	100.0%	0.0%	0.0%	0.0%	9.34%	0.0%	9.54%	100.0%	88.4%	82.5%	71.9%	36.2%	36.2%
trans-1,2-Dichloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.66%	0.0%	0.98%	0.0%	0.33%
1,1-Dichloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.47%
Vinyl chloride	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.96%	0.0%	0.0%	0.0%	1.57%
Ethylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

bold = field duplicate

Appendix C
Chlorinated Ethene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	OTHER												
Distance (ft)													
Location	MW-104B		MW-203B				MW-204A		MW-304A				
Sample Date	11/07/12	11/06/13	08/13/12	11/05/12	05/21/13	11/04/13	11/06/12	11/06/13	04/19/12	08/13/12	11/06/12	05/21/13	11/05/13
Total Molar Mass (umol/L)	0.348	0.889	14.6	9.91	9.53	13.4	0.628	3.2	7.84	27.1	18.7	21.6	20.9
Tetrachloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%
Trichloroethene	17.0%	14.5%	62.5%	61.5%	58.3%	51.0%	83.6%	85.7%	77.7%	73.1%	68.9%	**77.5%**	65.4%
cis-1,2-Dichloroethene	83.0%	84.7%	37.5%	38.5%	41.1%	38.4%	16.4%	12.3%	22.3%	25.2%	26.5%	**22.5%**	25.1%
trans-1,2-Dichloroethene	0.0%	0.8%	0.0%	0.0%	0.54%	0.33%	0.0%	0.13%	0.0%	0.0%	0.34%	**0.0%**	0.69%
1,1-Dichloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.45%	0.0%	0.39%	0.0%	0.0%	0.34%	**0.0%**	0.35%
Vinyl chloride	0.0%	0.0%	0.0%	0.0%	0.0%	0.91%	0.0%	1.55%	0.0%	1.71%	3.93%	**0.0%**	8.41%
Ethylene	NA	NA	NA	0.0%	NA	8.48%	NA	NA	NA	NA	NA	NA	NA
Ethane	NA	NA	NA	0.0%	NA	0.45%	NA	NA	NA	NA	NA	NA	NA

bold = field duplicate

Appendix C
Chlorinated Ethene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	OTHER												
Distance (ft)													
Location	MW-304B				MW-305B				MW-401		MW-402		MW-503A
Sample Date	08/13/12	11/06/12	05/21/13	11/05/13	08/15/12	11/06/12	05/21/13	11/06/13	11/07/12	11/05/13	11/09/12	11/07/13	11/09/12
Total Molar Mass (umol/L)	3.14	1.07	2.89	3.51	0.0152	0	0	0	92.8	109	66.3	113	0.0304
Tetrachloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%
Trichloroethene	31.5%	39.2%	31.6%	30.5%	100.0%	0.0%	0.0%	0.0%	**98.3%**	98.4%	91.9%	94.8%	100.0%
cis-1,2-Dichloroethene	65.6%	60.8%	67.9%	64.7%	0.0%	0.0%	0.0%	0.0%	**1.67%**	1.23%	8.09%	4.85%	0.0%
trans-1,2-Dichloroethene	0.53%	0.0%	0.46%	0.47%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%
1,1-Dichloroethene	0.0%	0.0%	0.0%	0.62%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.39%	0.0%	0.33%	0.0%
Vinyl chloride	2.34%	0.0%	0.0%	3.79%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%
Ethylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

bold = field duplicate

Appendix C
Chlorinated Ethene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	OTHER														
Distance (ft)															
Location	MW-503B		MW-B5			RMW-116A		RMW-305A				RMW-403A			
Sample Date	11/08/12	11/07/13	04/19/12	11/08/12	11/05/13	11/06/12	11/06/13	08/15/12	11/06/12	05/21/13	11/06/13	08/13/12	11/06/12	05/20/13	11/04/13
Total Molar Mass (umol/L)	1.89	61.2	129	54	139	0	0	8.16	7.24	9.2	8.73	0	0	0	0
Tetrachloroethene	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trichloroethene	96.7%	98.1%	**100.0%**	100.0%	98.2%	0.0%	0.0%	88.6%	91.4%	91.0%	87.1%	0.0%	0.0%	0.0%	0.0%
cis-1,2-Dichloroethene	3.27%	1.55%	**0.0%**	0.0%	0.53%	0.0%	0.0%	11.4%	8.55%	8.97%	11.8%	0.0%	0.0%	0.0%	0.0%
trans-1,2-Dichloroethene	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.25%	0.0%	0.0%	0.0%	0.0%
1,1-Dichloroethene	0.0%	0.32%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.32%	0.0%	0.0%	0.0%	0.0%
Vinyl chloride	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.51%	0.0%	0.0%	0.0%	0.0%
Ethylene	NA	NA	NA	0.0%	0.46%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane	NA	NA	NA	0.0%	0.79%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

bold = field duplicate

Appendix C
Chlorinated Ethene Molar Fractions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Location Group	OTHER															
Distance (ft)																
Location	RMW-403B				RMW-405A				RMW-405B				RW-1		WP-105	
Sample Date	08/13/12	11/06/12	05/20/13	11/04/13	08/13/12	11/06/12	05/20/13	11/05/13	08/14/12	11/05/12	05/20/13	11/05/13	11/08/12	11/06/13	11/06/12	11/05/13
Total Molar Mass (umol/L)	0	0	0	0	0.00693	0	0	0	1.87	0.584	0	1.68	13.7	48.5	0	0
Tetrachloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trichloroethene	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	77.4%	66.4%	0.0%	54.3%	94.0%	95.7%	0.0%	0.0%
cis-1,2-Dichloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.6%	33.6%	0.0%	30.0%	6.01%	4.25%	0.0%	0.0%
trans-1,2-Dichloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1,1-Dichloroethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.55%	0.0%	0.0%	0.0%	0.0%
Vinyl chloride	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.38%	0.0%	0.0%	0.0%	0.0%
Ethylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0%	NA	7.43%	NA	NA	NA	NA
Ethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0%	NA	7.31%	NA	NA	NA	NA

bold = field duplicate

Appendix C
Chlorinated Benzene Molar Fraction Calculations - Overburden North
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

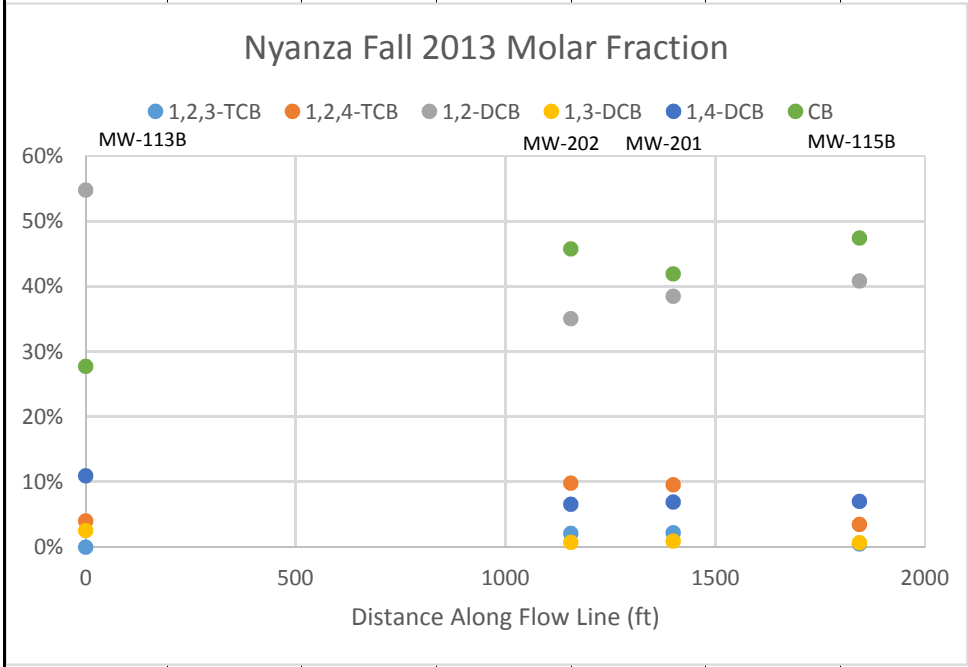
Calculate Molar Fraction of Chlorinated Benzenes					
Steps:					
1. Convert concentrations to micromoles					
2. Sum the micromolar mass					
3. Calculate the molar fraction for each analyte					
4. Look at molar fraction distribution through time (intrawell)					
5. Look at molar fraction distribution through distance (interwell)					
Well 1	MW-113B				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45	0	0.00	0%	
1,2,4-TCB	181.45	20	0.11	4%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	220	1.50	55%	
1,3-DCB	147.01	10	0.07	3%	
1,4-DCB	147.01	44	0.30	11%	
CB	112.56	86	0.76	28%	
				100%	<= check
Sum of Chlorinated Benzenes			2.74	micromoles	
Well 2	MW-202				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45	180	0.99	2%	
1,2,4-TCB	181.45	830	4.57	10%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	2400	16.33	35%	
1,3-DCB	147.01	52	0.35	1%	
1,4-DCB	147.01	450	3.06	7%	
CB	112.56	2400	21.32	46%	
				100%	<= check
Sum of Chlorinated Benzenes			46.62	micromoles	

Appendix C
Chlorinated Benzene Molar Fraction Calculations - Overburden North
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well 3	MW-201				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45	25	0.14	2%	
1,2,4-TCB	181.45	110	0.61	10%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	360	2.45	38%	
1,3-DCB	147.01	8.6	0.06	1%	
1,4-DCB	147.01	65	0.44	7%	
CB	112.56	300	2.67	42%	
				100%	<= check
Sum of Chlorinated Benzenes			6.37	micromoles	
Well 4	MW-115B				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45	28	0.15	1%	
1,2,4-TCB	181.45	190	1.05	4%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	1800	12.24	41%	
1,3-DCB	147.01	31	0.21	1%	
1,4-DCB	147.01	310	2.11	7%	
CB	112.56	1600	14.21	47%	
				100%	<= check
Sum of Chlorinated Benzenes			29.97	micromoles	

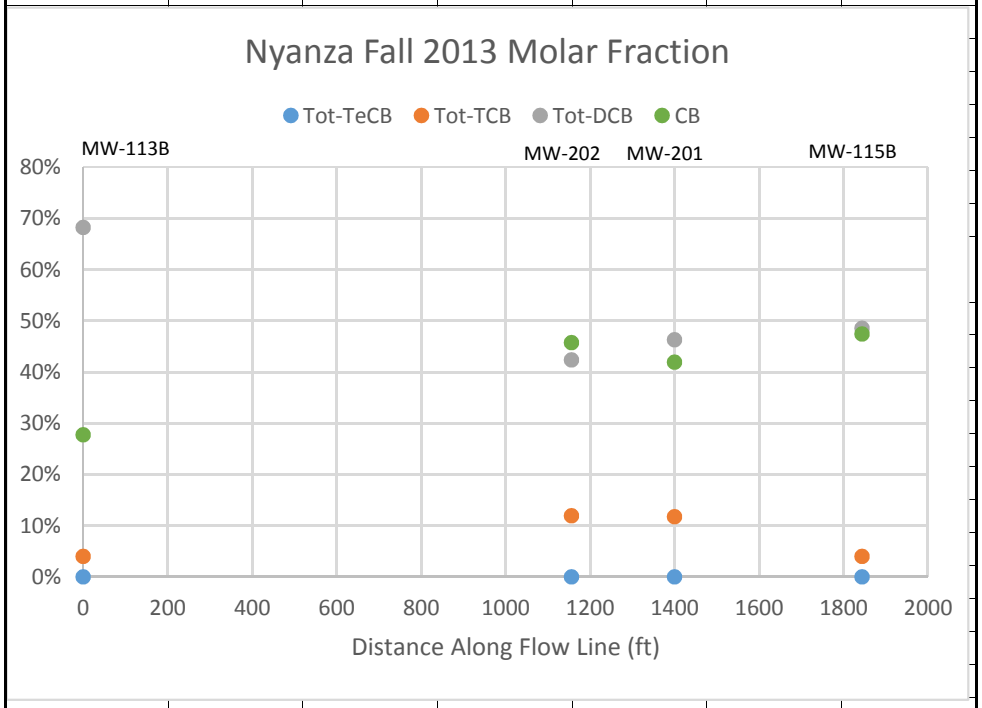
Appendix C
Chlorinated Benzene Molar Fraction Calculations - Overburden North
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Summary						
	Molar Fractions					
Analyte	MW-113B	MW-202	MW-201	MW-115B		
1,2,4,5-TeCB	0%	0%	0%	0%		
1,2,3-TCB	0%	2%	2%	1%		
1,2,4-TCB	4%	10%	10%	4%		
1,3,5-TCB	0%	0%	0%	0%		
1,2-DCB	55%	35%	38%	41%		
1,3-DCB	3%	1%	1%	1%		
1,4-DCB	11%	7%	7%	7%		
CB	28%	46%	42%	47%		
Distance (ft)	0	1156	1400	1844		



Appendix C
Chlorinated Benzene Molar Fraction Calculations - Overburden North
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Summary	Molar Fractions					
Analyte	MW-113B	MW-202	MW-201	MW-115B		
Tot-TeCB	0%	0%	0%	0%		
Tot-TCB	4%	12%	12%	4%		
Tot-DCB	68%	42%	46%	49%		
CB	28%	46%	42%	47%		
Distance (ft)	0	1156	1400	1844		



Appendix C
Chlorinated Benzene Molar Fraction Calculations - Overburden South
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

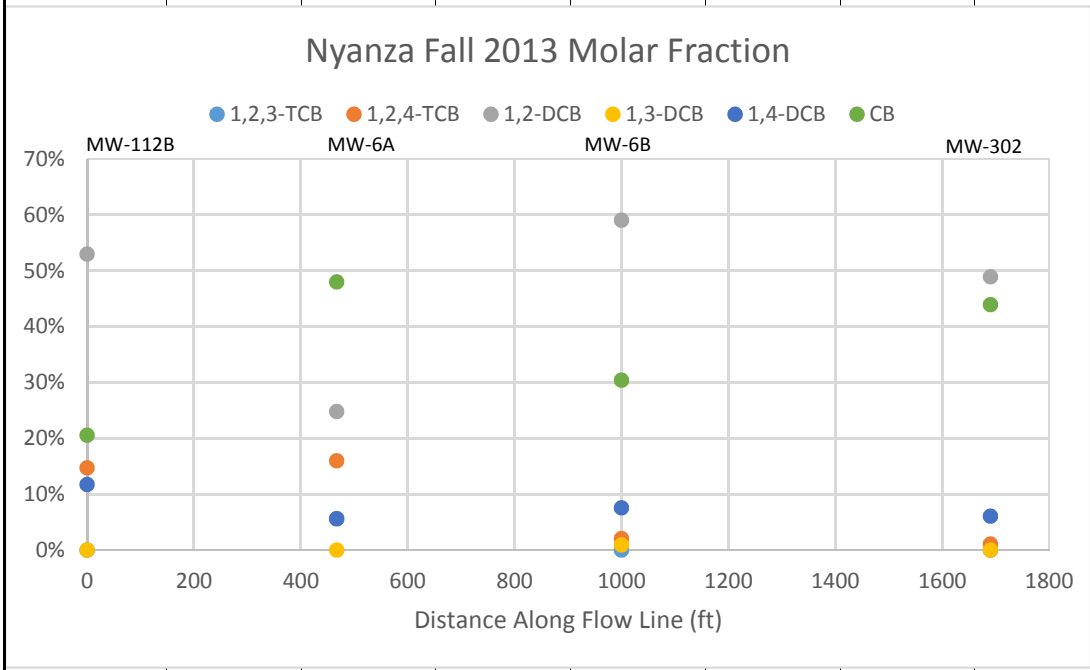
Calculate Molar Fraction of Chlorinated Benzenes					
Steps:					
1. Convert concentrations to micromoles					
2. Sum the micromolar mass					
3. Calculate the molar fraction for each analyte					
4. Look at molar fraction distribution through time (intrawell)					
5. Look at molar fraction distribution through distance (interwell)					
Well 1	MW-112B				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45		0.00	0%	
1,2,4-TCB	181.45	9.1	0.05	15%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	26	0.18	53%	
1,3-DCB	147.01		0.00	0%	
1,4-DCB	147.01	5.5	0.04	12%	
CB	112.56	7.9	0.07	21%	
				100%	<= check
Sum of Chlorinated Benzenes			0.34	micromoles	
Well 2	MW-6A				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45	13	0.07	6%	
1,2,4-TCB	181.45	37	0.20	16%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	45	0.31	25%	
1,3-DCB	147.01		0.00	0%	
1,4-DCB	147.01	11	0.07	6%	
CB	112.56	67	0.60	48%	
				100%	<= check
Sum of Chlorinated Benzenes			1.25	micromoles	

Appendix C
Chlorinated Benzene Molar Fraction Calculations - Overburden South
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well 3	MW-6B				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45		0.00	0%	
1,2,4-TCB	181.45	16	0.09	2%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	380	2.58	59%	
1,3-DCB	147.01	5.2	0.04	1%	
1,4-DCB	147.01	48	0.33	8%	
CB	112.56	150	1.33	30%	
				100%	<= check
Sum of Chlorinated Benzenes			4.37	micromoles	
Well 4	MW-302				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45		0.00	0%	
1,2,4-TCB	181.45	19	0.10	1%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	640	4.35	49%	
1,3-DCB	147.01		0.00	0%	
1,4-DCB	147.01	80	0.54	6%	
CB	112.56	440	3.91	44%	
				100%	<= check
Sum of Chlorinated Benzenes			8.90	micromoles	
Well 5	MW-406B				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	#DIV/0!	
1,2,3-TCB	181.45		0.00	#DIV/0!	
1,2,4-TCB	181.45		0.00	#DIV/0!	
1,3,5-TCB	181.45		0.00	#DIV/0!	
1,2-DCB	147.01		0.00	#DIV/0!	
1,3-DCB	147.01		0.00	#DIV/0!	
1,4-DCB	147.01		0.00	#DIV/0!	
CB	112.56		0.00	#DIV/0!	
				#DIV/0!	
Sum of Chlorinated Benzenes			0.00	micromoles	

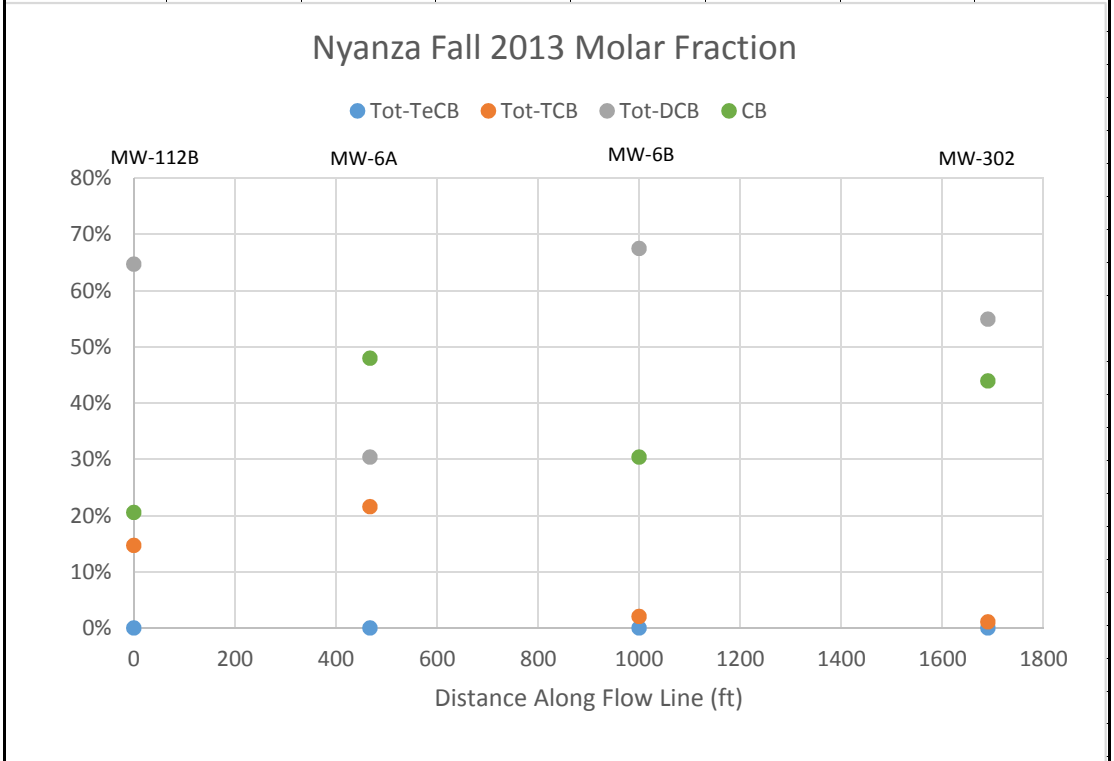
Appendix C
Chlorinated Benzene Molar Fraction Calculations - Overburden South
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Summary							
	Molar Fractions						
Analyte	MW-112B	MW-6A	MW-6B	MW-302	MW-406B		
1,2,4,5-TeCB	0%	0%	0%	0%	0%		
1,2,3-TCB	0%	6%	0%	0%	0%		
1,2,4-TCB	15%	16%	2%	1%	0%		
1,3,5-TCB	0%	0%	0%	0%	0%		
1,2-DCB	53%	25%	59%	49%	0%		
1,3-DCB	0%	0%	1%	0%	0%		
1,4-DCB	12%	6%	8%	6%	0%		
CB	21%	48%	30%	44%	0%		
Distance (ft)	0	467	1000	1690	3000		



Appendix C
Chlorinated Benzene Molar Fraction Calculations - Overburden South
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Summary	Molar Fractions			
Analyte	MW-112B	MW-6A	MW-6B	MW-302
Tot-TeCB	0%	0%	0%	0%
Tot-TCB	15%	22%	2%	1%
Tot-DCB	65%	30%	68%	55%
CB	21%	48%	30%	44%
Distance (ft)	0	467	1000	1690



Appendix C
Chlorinated Benzene Molar Fraction Calculations - Bedrock North
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

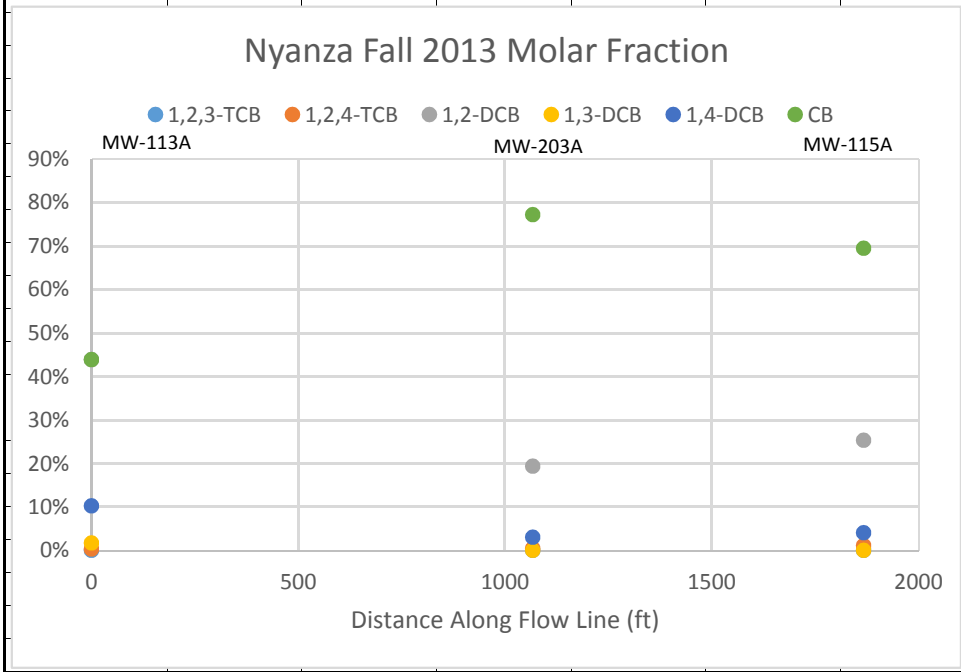
Calculate Molar Fraction of Chlorinated Benzenes					
Steps:					
1. Convert concentrations to micromoles					
2. Sum the micromolar mass					
3. Calculate the molar fraction for each analyte					
4. Look at molar fraction distribution through time (intrawell)					
5. Look at molar fraction distribution through distance (interwell)					
Well 1	MW-113A				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45		0.00	0%	
1,2,4-TCB	181.45	510	2.81	0%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	64000	435.34	44%	
1,3-DCB	147.01	2500	17.01	2%	
1,4-DCB	147.01	15000	102.03	10%	
CB	112.56	49000	435.32	44%	
				100%	<= check
Sum of Chlorinated Benzenes			992.51	micromoles	
Well 2	MW-203A				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45		0.00	0%	
1,2,4-TCB	181.45	52	0.29	0%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	1800	12.24	19%	
1,3-DCB	147.01		0.00	0%	
1,4-DCB	147.01	280	1.90	3%	
CB	112.56	5500	48.86	77%	
				100%	<= check
Sum of Chlorinated Benzenes			63.29	micromoles	

Appendix C
Chlorinated Benzene Molar Fraction Calculations - Bedrock North
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well 3	MW-115A				
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.	
Analyte	(g/mol)	(µg/L)	(µmol)	(%)	
1,2,4,5-TeCB	215.89		0.00	0%	
1,2,3-TCB	181.45		0.00	0%	
1,2,4-TCB	181.45	54	0.30	1%	
1,3,5-TCB	181.45		0.00	0%	
1,2-DCB	147.01	1000	6.80	25%	
1,3-DCB	147.01		0.00	0%	
1,4-DCB	147.01	160	1.09	4%	
CB	112.56	2100	18.66	69%	
				100%	<= check
Sum of Chlorinated Benzenes			26.85	micromoles	

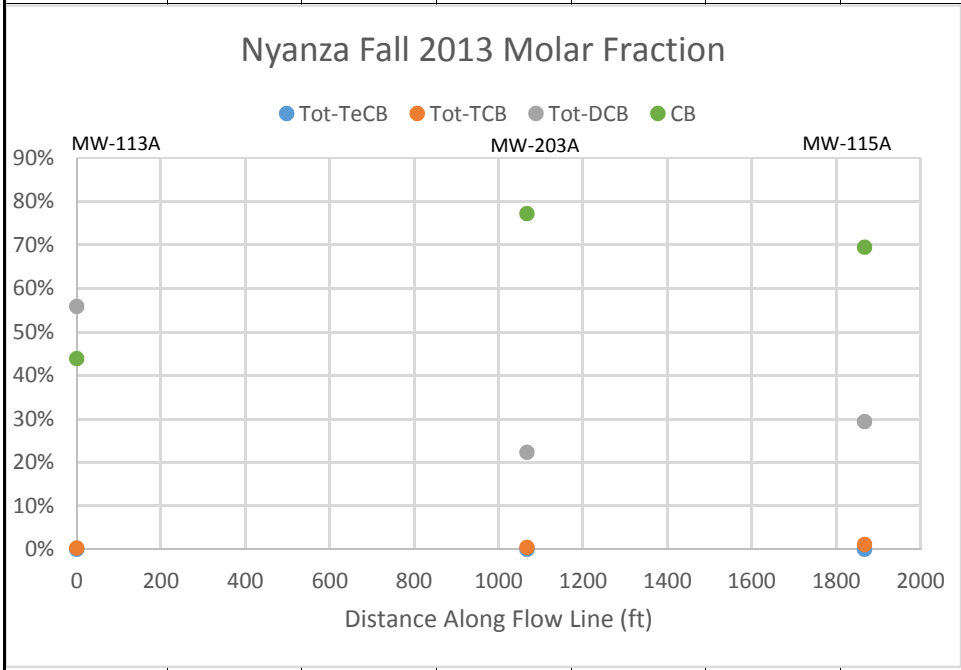
Appendix C
Chlorinated Benzene Molar Fraction Calculations - Bedrock North
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Summary						
	Molar Fractions					
Analyte	MW-113A	MW-203A	MW-115A			
1,2,4,5-TeCB	0%	0%	0%			
1,2,3-TCB	0%	0%	0%			
1,2,4-TCB	0%	0%	1%			
1,3,5-TCB	0%	0%	0%			
1,2-DCB	44%	19%	25%			
1,3-DCB	2%	0%	0%			
1,4-DCB	10%	3%	4%			
CB	44%	77%	69%			
Distance (ft)	0	1067	1867			



Appendix C
Chlorinated Benzene Molar Fraction Calculations - Bedrock North
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

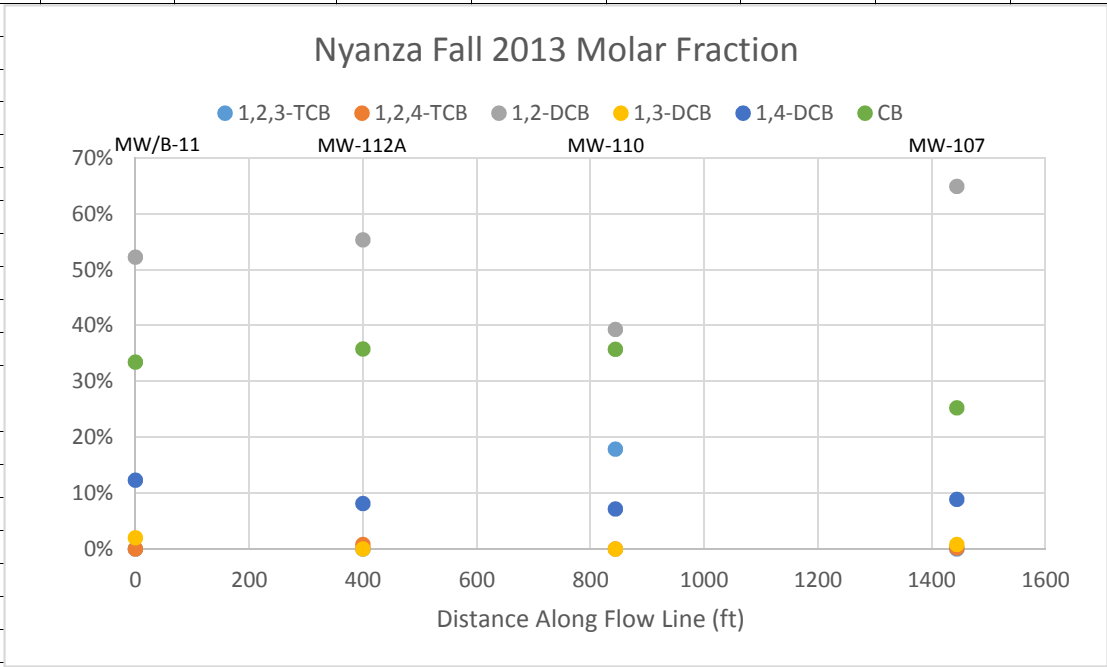
Summary	Molar Fractions					
Analyte	MW-113A	MW-203A	MW-115A	0		
Tot-TeCB	0%	0%	0%	0%		
Tot-TCB	0%	0%	1%	0%		
Tot-DCB	56%	22%	29%	0%		
CB	44%	77%	69%	0%		
Distance (ft)	0	1067	1867	0		



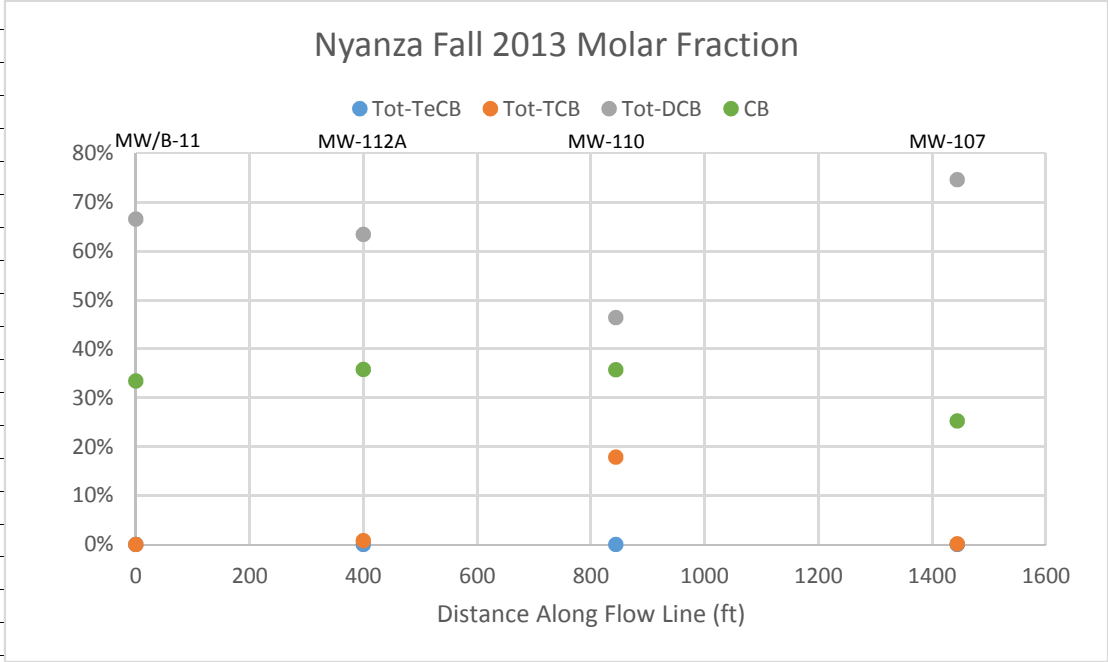
Calculate Molar Fraction of Chlorinated Benzenes						
Steps:						
1	Convert concentrations to micromoles					
2	Sum the micromolar mass					
3	Calculate the molar fraction for each analyte					
4	Look at molar fraction distribution through time (intrawell)					
5	Look at molar fraction distribution through distance (interwell)					
Well 1	MW/B-11					
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.		
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)		
1,2,4,5-TeCB	215.89		0.00	0%		
1,2,3-TCB	181.45		0.00	0%		
1,2,4-TCB	181.45		0.00	0%		
1,3,5-TCB	181.45		0.00	0%		
1,2-DCB	147.01	110000	748.25	52%		
1,3-DCB	147.01	4200	28.57	2%		
1,4-DCB	147.01	26000	176.86	12%		
CB	112.56	54000	479.74	33%		
				100%	<= check	
Sum of Chlorinated Benzenes			1433.42	micromoles		
Well 2	MW-112A					
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.		
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)		
1,2,4,5-TeCB	215.89		0.00	0%		
1,2,3-TCB	181.45		0.00	0%		
1,2,4-TCB	181.45	1.5	0.01	1%		
1,3,5-TCB	181.45		0.00	0%		
1,2-DCB	147.01	100	0.68	55%		
1,3-DCB	147.01		0.00	0%		
1,4-DCB	147.01	15	0.10	8%		
CB	112.56	50	0.44	36%		
				100%	<= check	
Sum of Chlorinated Benzenes			1.23	micromoles		

Well 3	MW-110					
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.		
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)		
1,2,4,5-TeCB	215.89		0.00	0%		
1,2,3-TCB	181.45	18	0.10	18%		
1,2,4-TCB	181.45		0.00	0%		
1,3,5-TCB	181.45		0.00	0%		
1,2-DCB	147.01	33	0.22	39%		
1,3-DCB	147.01		0.00	0%		
1,4-DCB	147.01	5.6	0.04	7%		
CB	112.56	22	0.20	36%		
				100%	<= check	
Sum of Chlorinated Benzenes			0.56	micromoles		
Well 4	MW-107					
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.		
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)		
1,2,4,5-TeCB	215.89		0.00	0%		
1,2,3-TCB	181.45		0.00	0%		
1,2,4-TCB	181.45	1.2	0.01	0%		
1,3,5-TCB	181.45		0.00	0%		
1,2-DCB	147.01	570	3.88	65%		
1,3-DCB	147.01	7.4	0.05	1%		
1,4-DCB	147.01	78	0.53	9%		
CB	112.56	170	1.51	25%		
				100%	<= check	
Sum of Chlorinated Benzenes			5.98	micromoles		

		Summary						
			Molar Fractions					
		Analyte	MW/B-11	MW-112A	MW-110	MW-107		
		1,2,4,5-TeCB	0%	0%	0%	0%		
		1,2,3-TCB	0%	0%	18%	0%		
		1,2,4-TCB	0%	1%	0%	0%		
		1,3,5-TCB	0%	0%	0%	0%		
		1,2-DCB	52%	55%	39%	65%		
		1,3-DCB	2%	0%	0%	1%		
		1,4-DCB	12%	8%	7%	9%		
		CB	33%	36%	36%	25%		
		Distance (ft)	0	400	844	1444		



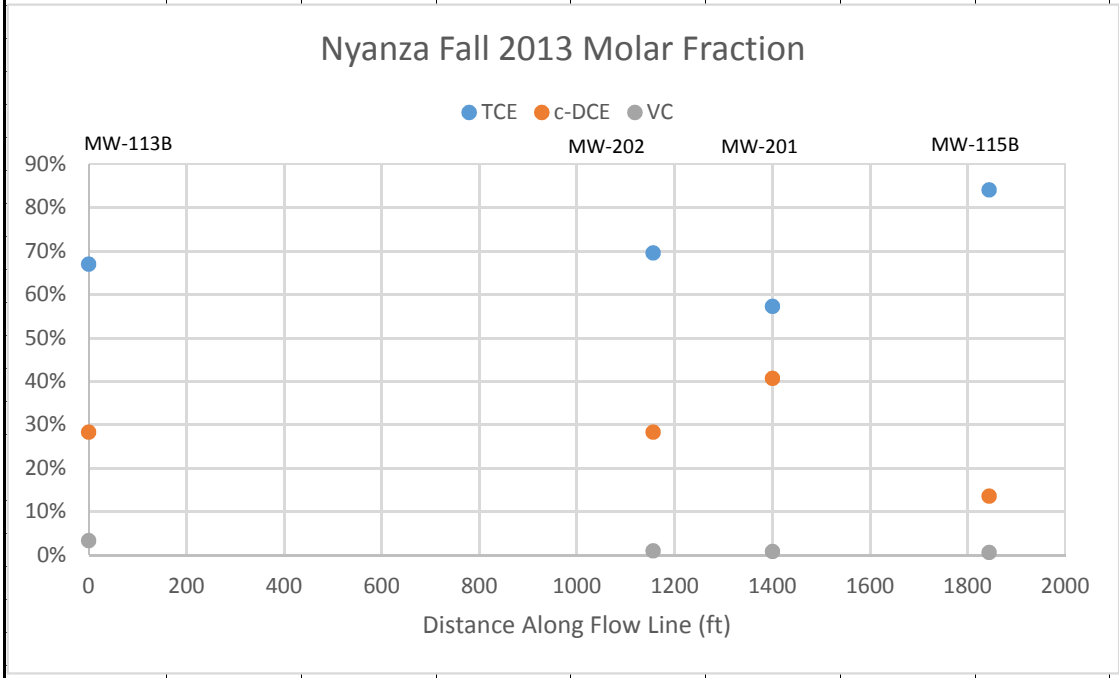
Summary	Molar Fractions			
Analyte	MW/B-11	MW-112A	MW-110	MW-107
Tot-TeCB	0%	0%	0%	0%
Tot-TCB	0%	1%	18%	0%
Tot-DCB	67%	63%	46%	75%
CB	33%	36%	36%	25%
Distance (ft)	0	400	844	1444



Calculate Molar Fraction of Chlorinated Aliphatics								
Steps:								
1	Convert concentrations to micromoles							
2	Sum the micromolar mass							
3	Calculate the molar fraction for each analyte							
4	Look at molar fraction distribution through time (intrawell)							
5	Look at molar fraction distribution through distance (interwell)							
Well 1	MW-113B							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	320	2.44	67%				
c-DCE	96.9	100	1.03	28%				
t-DCE	62.5	1.2	0.02	1%				
1,1-DCE	62.5	2	0.03	1%				
VC	62.5	7.8	0.12	3%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		3.64	micromoles				
Well 2	MW-202							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	1400	10.65	70%				
c-DCE	96.9	420	4.33	28%				
t-DCE	62.5	4.3	0.07	0%				
1,1-DCE	62.5	5.6	0.09	1%				
VC	62.5	9.1	0.15	1%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		15.29	micromoles				
Well 3	MW-201							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	190	1.45	57%				
c-DCE	96.9	100	1.03	41%				
t-DCE	62.5	0.72	0.01	0%				
1,1-DCE	62.5	1	0.02	1%				
VC	62.5	1.4	0.02	1%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		2.53	micromoles				

Well 4	MW-115B							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	2600	19.79	84%				
c-DCE	96.9	310	3.20	14%				
t-DCE	62.5	2.4	0.04	0%				
1,1-DCE	62.5	6.1	0.10	0%				
VC	62.5	8.4	0.13	1%				
Ethylene	28.1	7.4	0.26	1%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		23.52	micromoles				

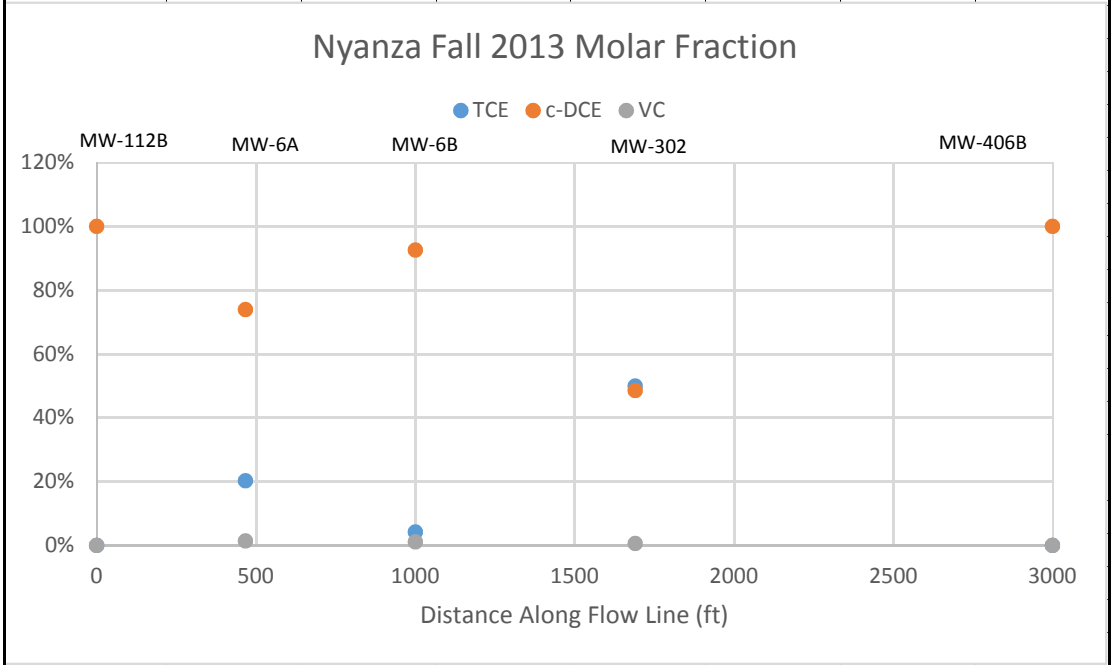
Summary				
	Molar Fractions			
Analyte	MW-113B	MW-202	MW-201	MW-115B
PCE	0%	0%	0%	0%
TCE	67%	70%	57%	84%
c-DCE	28%	28%	41%	14%
t-DCE	1%	0%	0%	0%
1,1-DCE	1%	1%	1%	0%
VC	3%	1%	1%	1%
Ethylene	0%	0%	0%	1%
Distance (ft)	0	1156	1400	1844



Calculate Molar Fraction of Chlorinated Aliphatics								
Steps:								
1	Convert concentrations to micromoles							
2	Sum the micromolar mass							
3	Calculate the molar fraction for each analyte							
4	Look at molar fraction distribution through time (intrawell)							
5	Look at molar fraction distribution through distance (interwell)							
Well 1	MW-112B							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4		0.00	0%				
c-DCE	96.9	3.4	0.04	100%				
t-DCE	62.5		0.00	0%				
1,1-DCE	62.5		0.00	0%				
VC	62.5		0.00	0%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		0.04	micromoles				
Well 2	MW-6A							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	18	0.14	20%				
c-DCE	96.9	49	0.51	74%				
t-DCE	62.5	1.6	0.03	4%				
1,1-DCE	62.5		0.00	0%				
VC	62.5	0.56	0.01	1%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		0.69	micromoles				
Well 3	MW-6B							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	10	0.08	4%				
c-DCE	96.9	170	1.75	93%				
t-DCE	62.5	1.4	0.02	1%				
1,1-DCE	62.5	0.96	0.02	1%				
VC	62.5	1.1	0.02	1%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		1.89	micromoles				

Well 4	MW-302							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8	0.68	0.00	0%				
TCE	131.4	320	2.44	50%				
c-DCE	96.9	230	2.37	49%				
t-DCE	62.5	0.7	0.01	0%				
1,1-DCE	62.5	1.9	0.03	1%				
VC	62.5	1.7	0.03	1%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		4.88	micromoles				
Well 5	MW-406B							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8	0.79	0.00	0%				
TCE	131.4		0.00	0%				
c-DCE	96.9	0.65	0.01	100%				
t-DCE	62.5		0.00	0%				
1,1-DCE	62.5		0.00	0%				
VC	62.5		0.00	0%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		0.01	micromoles				

Summary							
	Molar Fractions						
Analyte	MW-112B	MW-6A	MW-6B	MW-302	MW-406B		
PCE	0%	0%	0%	0%	0%		
TCE	0%	20%	4%	50%	0%		
c-DCE	100%	74%	93%	49%	100%		
t-DCE	0%	4%	1%	0%	0%		
1,1-DCE	0%	0%	1%	1%	0%		
VC	0%	1%	1%	1%	0%		
Ethylene	0%	0%	0%	0%	0%		
Distance (ft)	0	467	1000	1690	3000		



Calculate Molar Fraction of Chlorinated Aliphatics

Steps:

1 Convert concentrations to micromoles
2 Sum the micromolar mass
3 Calculate the molar fraction for each analyte
4 Look at molar fraction distribution through time (intrawell)
5 Look at molar fraction distribution through distance (interwell)

Well 1 MW-113A

Analyte	Molec. Wt. (g/mole)	Fall 2013 Conc. (ug/L)	Fall 2013 Conc. (micromoles)	Fall 2013 Molar Frac. (%)	
PCE	165.8		0.00	0%	
TCE	131.4	47000	357.69	100%	
c-DCE	96.9	27	0.28	0%	
t-DCE	62.5		0.00	0%	
1,1-DCE	62.5		0.00	0%	
VC	62.5		0.00	0%	
Ethylene	28.1		0.00	0%	
Ethane	30.1		0.00	0%	
				100%	<= check
	Sum of Chlorinateds		357.97	micromoles	

Well 2 MW-203A

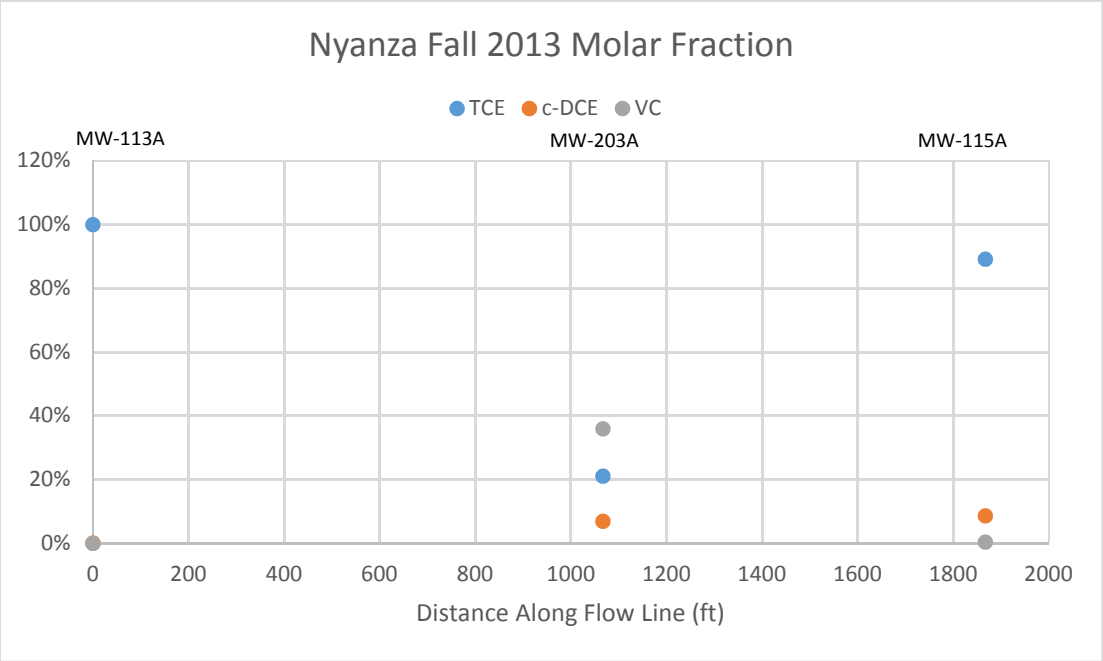
Analyte	Molec. Wt. (g/mole)	Fall 2013 Conc. (ug/L)	Fall 2013 Conc. (micromoles)	Fall 2013 Molar Frac. (%)	
PCE	165.8		0.00	0%	
TCE	131.4	1600	12.18	21%	
c-DCE	96.9	390	4.02	7%	
t-DCE	62.5	36	0.58	1%	
1,1-DCE	62.5	36	0.58	1%	
VC	62.5	1300	20.80	36%	
Ethylene	28.1	540	19.22	33%	
Ethane	30.1	17	0.56	1%	
				100%	<= check
	Sum of Chlorinateds		57.94	micromoles	

Well 3 MW-115A

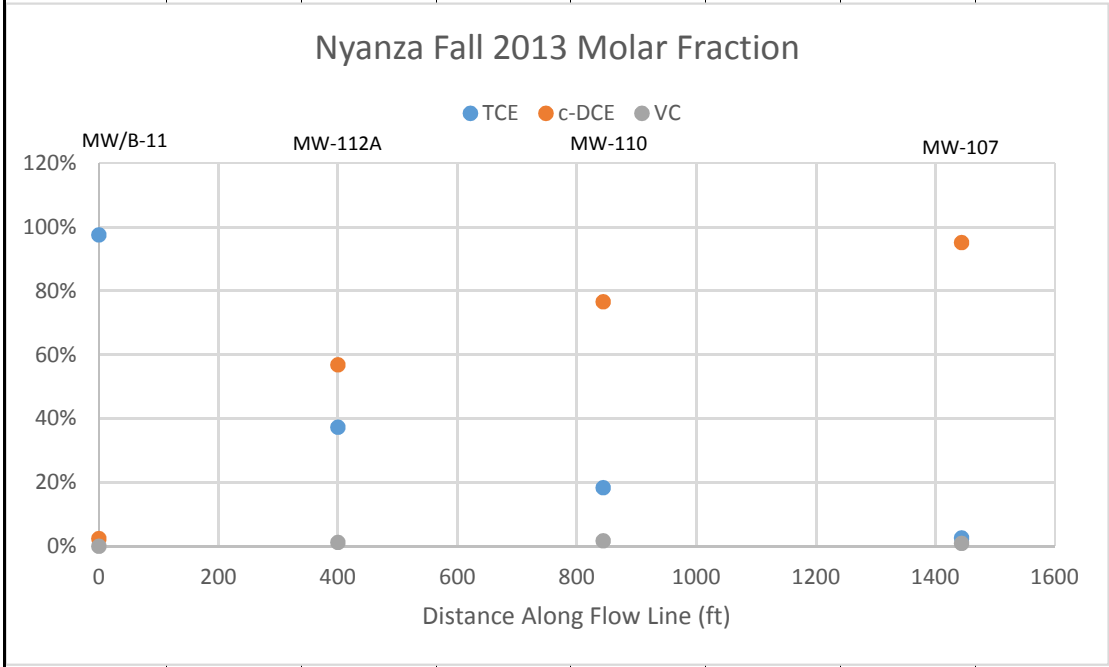
Analyte	Molec. Wt. (g/mole)	Fall 2013 Conc. (ug/L)	Fall 2013 Conc. (micromoles)	Fall 2013 Molar Frac. (%)	
PCE	165.8		0.00	0%	
TCE	131.4	2100	15.98	89%	
c-DCE	96.9	150	1.55	9%	
t-DCE	62.5	1.2	0.02	0%	
1,1-DCE	62.5	5	0.08	0%	
VC	62.5	4.7	0.08	0%	
Ethylene	28.1	3.9	0.14	1%	
Ethane	30.1	2.5	0.08	0%	
				100%	<= check
	Sum of Chlorinateds		17.93	micromoles	

Summary

	Molar Fractions		
Analyte	MW-113A	MW-203A	MW-115A
PCE	0%	0%	0%
TCE	100%	21%	89%
c-DCE	0%	7%	9%
t-DCE	0%	1%	0%
1,1-DCE	0%	1%	0%
VC	0%	36%	0%
Ethylene	0%	33%	1%
Distance (ft)	0	1067	1867



Calculate Molar Fraction of Chlorinated Aliphatics								
Steps:								
1	Convert concentrations to micromoles							
2	Sum the micromolar mass							
3	Calculate the molar fraction for each analyte							
4	Look at molar fraction distribution through time (intrawell)							
5	Look at molar fraction distribution through distance (interwell)							
Well 1	SB-600							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	19000	144.60	98%				
c-DCE	96.9	140	1.44	1%				
t-DCE	62.5		0.00	0%				
1,1-DCE	62.5	53	0.85	1%				
VC	62.5		0.00	0%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		146.89	micromoles				
Well 2	MW/B-11							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	20000	152.21	98%				
c-DCE	96.9	360	3.72	2%				
t-DCE	62.5		0.00	0%				
1,1-DCE	62.5		0.00	0%				
VC	62.5		0.00	0%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		155.93	micromoles				
Well 3	MW-112A							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	160	1.22	37%				
c-DCE	96.9	180	1.86	57%				
t-DCE	62.5	3.4	0.05	2%				
1,1-DCE	62.5	1.5	0.02	1%				
VC	62.5	2.6	0.04	1%				
Ethylene	28.1	2.2	0.08	2%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		3.27	micromoles				

Well 4	MW-110							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	14	0.11	18%				
c-DCE	96.9	45	0.46	77%				
t-DCE	62.5	1.2	0.02	3%				
1,1-DCE	62.5		0.00	0%				
VC	62.5	0.5	0.01	2%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		0.60	micromoles				
Well 5	MW-107							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8		0.00	0%				
TCE	131.4	7.3	0.06	3%				
c-DCE	96.9	210	2.17	95%				
t-DCE	62.5	0.65	0.01	0%				
1,1-DCE	62.5	1.2	0.02	1%				
VC	62.5	1.3	0.02	1%				
Ethylene	28.1		0.00	0%				
Ethane	30.1		0.00	0%				
				100%	<= check			
	Sum of Chlorinateds		2.28	micromoles				
Well 6	MW-406A							
	Molec. Wt.	Fall 2013 Conc.	Fall 2013 Conc.	Fall 2013 Molar Frac.				
Analyte	(g/mole)	(ug/L)	(micromoles)	(%)				
PCE	165.8	0.18	1.09E-03	26%				
TCE	131.4		0.00E+00	0%				
c-DCE	96.9	0.3	3.10E-03	74%				
t-DCE	62.5		0.00E+00	0%				
1,1-DCE	62.5		0.00E+00	0%				
VC	62.5		0.00E+00	0%				
Ethylene	28.1		0.00E+00	0%				
Ethane	30.1		0.00E+00	0%				
				100%	<= check			
	Sum of Chlorinateds		4.18E-03	micromoles				

Summary					
	Molar Fractions				
Analyte	MW/B-11	MW-112A	MW-110	MW-107	MW-406A
PCE	0%	0%	0%	0%	26%
TCE	98%	37%	18%	3%	0%
c-DCE	2%	57%	77%	95%	74%
t-DCE	0%	2%	3%	0%	0%
1,1-DCE	0%	1%	0%	1%	0%
VC	0%	1%	2%	1%	0%
Ethylene	0%	2%	0%	0%	0%
Distance (ft)	0	400	844	1444	3044