Nobis
Engineering a Sustainable Future

EPA Region 1 RAC2 Contract No. EP-S1-06-03

August 10, 2012
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 the Final Groundwater Monitoring Data Summary, Revision 1
Nyanza Chemical Waste Dump Superfund Site – OU2, Ashland, Massachusetts
Remedial Action
Task Order Number 0022-RA-RA-0115

Dear Mr. Keefe:

Attached with this correspondence is the Final Groundwater Monitoring Data Summary, Revision 1 for the Remedial Action efforts at 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 (603) 724-6238, or by email at jmccullough@nobiseng.com.

Sincerely,

NOBIS ENGINEERING, INC.

Jeff McCullough, P.E.
Senior Project Manager

Enclosure

c: File 80022/NH

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Groundwater Monitoring Data Summary, Revision 1

Nyanza Chemical Waste Dump Superfund Site – OU2
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

August 2012

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Groundwater Monitoring Data Summary, Revision 1

Nyanza Chemical Waste Dump Superfund Site – OU2
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1.0 INTRODUCTION

Nobis Engineering, Inc. (Nobis) prepared this Groundwater Monitoring Data Summary Report (Report) for the Nyanza Chemical Waste Dump Superfund Site, Operable Unit II (Nyanza OU2) located in Ashland, Massachusetts (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, 2010, Work Plan Amendment (WPA) No. 2 (Nobis, 2010a).

1.1 Objective

The Task Order objective is to implement a final Remedial Action (RA) for the Nyanza OU2 (the Site) that eliminates, reduces, or controls risks to human health and the environment. More specifically, the Task Order contemplates the recovery of dense non-aqueous phase liquid (DNAPL), and the purpose of Amendment No. 2 is to expand the scope of groundwater monitoring.

The objectives of the ASOW are:

1. Confirm the locations and evaluate the condition of approximately 31 existing groundwater monitoring wells located throughout the Site;
2. Install five staff gauges along the east bank of Mill Pond;
3. Conduct a synoptic groundwater sampling round with potentiometric measurements and analytical testing in the 31 wells; and
4. Develop and submit a report with findings.

Because it had been several years since synoptic water levels were measured (ICF Consulting [ICF 2004], Fall, 2003), Nobis and EPA developed a list of monitoring wells to locate in the field and assess their suitability for gauging and sampling activities. Nobis personnel located the wells proposed for sampling on December 20, 2010 and December 21, 2010. Previously-existing staff gages SG-1 through SG-5 were located on April 18, 2011; therefore, no additional gages were installed along the east bank of Mill Pond.

This Groundwater Monitoring Data Summary Report summarizes the above activities, evaluates the analytical data collected during January 2011, compares the analytical results to the

Massachusetts Department of Environmental Protection (MassDEP) Massachusetts Contingency Plan (MCP) GW-1 and GW-2 standards for organic and inorganic contaminants, and assesses the nature and extent of groundwater contamination at the Site. A comparison is also made to the last synoptic round of groundwater monitoring data collected by ICF in 2003 (ICF, 2004).

The original Groundwater Monitoring Report was submitted to EPA on October 11, 2011. During subsequent review in early 2012 of well field data from the January 2011 groundwater monitoring event, it was discovered that monitoring well sampling errors occurred during that event. The sampling errors, impacts on data evaluation and corrective actions are summarized below:

Sampling Errors

- MW-115B was mislabeled as MW-115A (sampled the Overburden well instead of the Bedrock well);
- MW-406A was mislabeled as MW-406B (sampled the Overburden well instead of the Bedrock well but no loss of data for MW-406A);
- MW-406B was mislabeled as MW-406A (sampled the Bedrock well instead of the Overburden well but no loss of data for MW-406B);
- B/MW-5 was mislabeled as MW-113B (sampled the incorrect well location but no loss of data for B/MW-5);
- P-1S was mislabeled as P-1 (sampled the incorrect well location but have comparable data from an adjacent well); and
- P-4 was mislabeled as B/MW-5 (sampled the incorrect well location but no loss of data for P-4).

Impacts on Data Evaluation

- At MW-115A/B location, the bedrock groundwater elevation contours will be estimated and there are no January 2011 TCE bedrock data in the eastern portion of the plume until the ND at the Raceway;

- At MW-406A/B location, no change in data evaluation since groundwater elevations are within 0.01 foot and TCE results are ND for both locations;

- At B/MW-5 location, TCE result increased from 1,000 ppb to 8,700 ppb; however, overall TCE plume shape will change very little since nearby MW-113A had a TCE concentration of 13,000 ppb;

- At P-1S location, a slight shift in the TCE plume contour, minimal impact; and

- At P-4, the TCE concentration is now 1,000 ppb and the result for MW-113B is removed, so the TCE plume shape shrinks a bit in the vicinity of these locations.

Corrective Actions

- On April 19, 2012, Nobis re-sampled 4 bedrock wells along the core of the TCE plume at the site (B/MW-5, MW-203A, MW-304A, and MW-115A) and analyzed these samples for VOCs only. This adds to the time series of the TCE plume across the site and data that are usable for future evaluation of MNA. The water levels at these wells were also gauged. These data were also used for the TCE bedrock plume contour map; and

- Nobis has revised and re-submitted the 2011 Groundwater Monitoring Summary report to EPA herein.

1.2 Report Organization

This report contains four sections:

- **Section 1** describes the Site and summarizes previous investigations, including the 2010 Step Drilling Program;
- **Section 2** presents a description of groundwater sampling activities;
- **Section 3** presents the analytical results for groundwater and an evaluation of the results; and
- **Section 4** presents an overall summary and recommendations for further activities.

1.3 Site Location and Background

The former Nyanza facility is located on the north side of Megunko Road in the Town of Ashland, Middlesex County, Massachusetts (Figure 1-1). The current Site study area includes areas where chemical wastes released from the former Nyanza facility have come to rest and have not yet been remediated including shallow and deep plumes of groundwater contamination located south and west of the former Nyanza facility and areas of contaminated sediment located in the Sudbury River. The Town of Ashland is located 25 miles west-southwest of Boston, and 20 miles east-southeast of Worcester, Massachusetts.

From 1917 to 1978, manufacturing operations at the Nyanza facility produced textile dyes, dye intermediates, and other products. The last business on the Site, Nyanza, Inc. operated from 1965 to 1978 before declaring bankruptcy in 1978. The Site was subsequently listed on the EPA National Priorities List (NPL) in 1983 and the first Record of Decision (ROD) was signed in 1985 describing the remedy of contaminant sources in the Megunko Hill area (e.g., the former Nyanza facility and landfill); this became known as Operable Unit (OU) 1. Other OUs include contaminated groundwater and vapor intrusion (OU2), drainage ways between the former Nyanza facility and the Sudbury River (OU3), and a 26-mile stretch of the Sudbury River from the Nyanza Site to its confluence with the Assabet River in Concord (OU4).

The Megunko Hill Area was used for surface and sub-surface disposal of chemical sludges, process wastes, and debris. Sludges containing high concentrations of heavy metals, aromatic amines, and volatile organic compounds (VOCs) were dried in beds and the drained chemicals eventually migrated to wetlands. The low-lying industrial area was also used for the disposal of heavy metal sludges and organic solvents in lagoons and/or an underground vault. The vault was also used as a rudimentary settling system for the discharge of waste process liquids. The western wetland, also known as the Area C Wetland, was found to contain wastewater treatment sludge and contaminated sediment from runoff originating at Megunko Hill. The Trolley Brook Wetland, also known as Area G Wetland, received septic waste effluent from settling lagoons as well as runoff from Megunko Hill. These operations allowed contaminant migration from the former Nyanza facility to a collection of wetland areas and drainage culverts and outfalls, and into the Sudbury River.

A number of VOCs, semi-volatile organic compounds (SVOCs), and metals have been detected in soils and groundwater at the Site. The most common VOCs have historically included chlorobenzene, 1,1-dichloroethene (DCE), and trichloroethene (TCE). The principal SVOCs include 1,2,4-trichlorobenzene (TCB), dichlorobenzenes (DCB), aniline, naphthalene, and nitrobenzene. The principal metals have included antimony, beryllium, cadmium, iron, lead, manganese, mercury, nickel, sodium, and thallium. A limited area of dense non-aqueous phase liquid (DNAPL) was occasionally observed in certain wells that were screened across the top of bedrock and located just down gradient of the former underground vault.

Past remediation and restoration activities have included the excavation of the underground vault; capping lagoons and sludge pits; creating cells within the cap for disposal of contaminated soils and solidified sludges; and the formation of a groundwater and surface water diversion trench upgradient of the landfill. Other remediation and restoration activities included the excavation and disposal on site of approximately 45,500 cubic yards of mercury-contaminated sediments from the Eastern Wetland, Trolley Brook, and Outfall Creek/Lower Raceway; the restoration of all excavated and impacted areas; and the replacement of 1,300 feet of waterline along Megunko Road. Additionally, in the mid-1990s, a pumping test by Ebasco Services, Inc. to support a pump and treat system design was halted when DNAPL and a DNAPL emulsion were pumped from a bedrock well located behind the Worcester Air Conditioning (WAC) building, located downgradient and immediately north of the former underground vault. Also, in 2007, a total of 43 vapor mitigation systems (VMS) were installed in certain Ashland residences which are located over the most concentrated portions of the shallow groundwater VOC plume. The VMS are currently inspected and maintained by MassDEP.

Between 2008 and 2010, Nobis conducted periodic monitoring and measured depth to groundwater, total well depth, depth to DNAPL, and DNAPL thickness as applicable. If DNAPL was encountered, a bailer was lowered into the well in an attempt to recover a sample and to visually determine DNAPL thickness.

1.4 2010 Step Drilling Program

Nobis performed an exploratory drilling program to locate additional sources and/or locations where DNAPL might be present for the purpose of installing DNAPL recovery well(s) as detailed in the 2006 Explanation of Significant Differences ([ESD], USEPA, 2006). The DNAPL recovery

system was designed by the US Army Corps of Engineers (ICF, 2006) and EPA technical staff recommended an exploratory drilling program to locate DNAPL sources at or near the bedrock/overburden interface.

As detailed in the Draft Technical Memorandum for Step Drilling Program (Nobis, 2010b), seven soil borings (designated B1 through B7) were advanced on the Worcester Air Conditioning (WAC) and Nyacol properties between September 28 and October 15, 2009. Soil samples were collected for visual characterization and PID screening for the presence of DNAPL only (Figure 1-2). The investigation focused on the previously-identified bedrock depression located southwest of the WAC building between monitoring well MW-113A and the Boston and Albany Railroad right of way (ROW). Of the seven borings, two (B-6 and B-7) were advanced on the other side of the ROW at the Nyacol property located on Megunko Road, in the grassy area between the historical chemical vault and the ROW. One of the soil borings, boring B-5, was completed as a monitoring well (designated as B-5/MW) based on elevated PID screening results which indicated the possible presence of DNAPL.

The findings of the step drilling program were as follows:

- Soil at the WAC property consisted of a layer of fill at the surface, followed by outwash sand and gravel, lacustrine silty sand, glacial till, and bedrock. Bedrock was encountered between 38.5 feet and 43 feet below ground surface (bgs) and borings were advanced up to 7.5 feet into bedrock at these locations.

- Soil conditions encountered in the two Nyacol property borings were similar to the WAC borings, other than a lack of noticeable outwash soil components.

- Solvent odors were noted by Nobis personnel during the advancement of borings B-1 and B-5; however, no DNAPL was observed in the soils or rock cores at either location.

- Elevated PID readings detected in the borings ranged from 5.9 parts per million (ppm) in boring B-6 to 518 ppm in boring B-5.

- Slug testing (performed at wells MW-113A and B-5) yielded hydraulic conductivities between 2.05 to 9.39 feet per day (ft/d) which are comparable to literature values for similar aquifers.

In October 2009, Nobis re-developed existing Site monitoring wells MW-113A, RW-1, RWS-1, P-1S, P-1B, P-2, P-4, and newly installed monitoring well B-5. During redevelopment of monitoring wells MW-113A, RW-1, RWS-1, P-1S, P-1B, P-2, P-4, and B-5, pressure transducers were installed in surrounding wells to identify any hydraulic connections between bedrock wells. No immediately observable connection between bedrock wells was identified during well development.

Based on the results of the step drilling program, Nobis made the following recommendations in the Draft Technical Memorandum (Nobis, 2010b):

- DNAPL can likely be removed from wells MW-113A, RW-1 and potentially well B-5 using product pumps with DNAPL level sensors. When sufficient DNAPL accumulates in the sump, the pump activates and continues until the low level shut off trips.

- Given an assumed DNAPL source to explain the existing dissolved phase groundwater plume, Nobis recommended a Site-wide synoptic groundwater sampling event to see if there are changes from the last round in 2003. These data would also support EPA's evaluation of the ongoing vapor mitigation systems currently operating within the existing groundwater plume.

2.0 GROUNDWATER MONITORING INVESTIGATION

Groundwater gauging and sampling were conducted to characterize groundwater flow and the current nature and extent of groundwater contamination in the center of the Site. This is the first comprehensive groundwater monitoring investigation completed since 2003. The Nobis field activities for this task included mobilization, low-flow groundwater sampling, decontamination of equipment and personnel, and demobilization.

Groundwater samples were collected from 31 groundwater monitoring wells (Figure 2-1) between January 10 and 21, 2011. No field work was conducted on January 12, 2011 due to

inclement weather. The groundwater samples and associated field quality control (QC) samples were collected, preserved, and submitted to the EPA's Region 1 Office of Environmental Measurement and Evaluation (OEME) in North Chelmsford, MA in accordance with the approved Quality Assurance Project Plan (QAPP) (Nobis, 2010c). Per the ASOW, the groundwater samples were analyzed for VOCs, SVOCs, total Target Analyte List (TAL) metals (including mercury), and anions (chloride, nitrate, nitrite, sulfate, nitrate as nitrogen, and nitrite as nitrogen). Total metals were analyzed using inductively coupled plasma optical emission spectroscopy (ICP-OES). Per the direction of EPA, newly installed micro wells MADEP-MW-01 and MADEP-MW-02 were also sampled but analyzed for VOCs only. Previous analytical results, performed by MassDEP, for these micro wells are included in Appendix C.

As stated previously, groundwater samples were collected from B/MW-5, MW-115A, MW-203A, and MW-304A on April 19, 2012 and submitted to a CLP laboratory for analysis of VOCs.

Table 2-1 presents a list of groundwater samples collected during the January 2011 sampling round, sample identification, dates of sample collection, and quality control (QC) designation (as appropriate). Table 2-2 presents monitoring well construction details for the wells sampled. Monitoring wells are classified as being overburden (OB) or bedrock (BR) wells based on where the screen area is located. Three monitoring wells (MW-4B, RW-1, and B-5) were constructed with screens straddling the overburden-bedrock interface and are designated as OB/BR. For groundwater elevation and chemical mapping purposes these three monitoring wells are reported as overburden wells.

2.1 Groundwater Elevations

During the January 2011 sampling activities, depth to groundwater measured in overburden monitoring wells ranged from 1.45 ft bgs (MW-6A) to 13.41 ft bgs ((MW-201). The depth to groundwater measured in bedrock monitoring wells ranged from 3.26 ft bgs (MW-113A) to 8.46 ft bgs (MW-201). The measured depths to water and calculated groundwater elevations for all monitoring locations are in Table 2-1. As requested by EPA, a synoptic round of groundwater gauging was not conducted prior to the commencement of groundwater sampling activities. Individual groundwater wells were gauged just prior to sampling; therefore, the overburden and bedrock potentiometric surface contours are based on data collected between January 10 and 21, 2011.

Groundwater contours based on the overburden well gauging data (Figure 2-2) indicate flow in a north-northeasterly direction on the western portion of the Site, toward Mill Pond, and turning in a north and easterly direction on the eastern portion of the Site, toward the Sudbury River. Groundwater contours based on the bedrock well gauging data (Figure 2-3) indicate a similar flow direction, toward Mill Pond and the Sudbury River. These data are consistent with previous report interpretations (ICF, 2004), which indicated groundwater flow near the Site is towards the Sudbury River in the areas downstream of Mill Pond.

During the January 2011 monitoring round, DNAPL was measured in groundwater monitoring well MW-113A at a thickness of 1.5 feet. DNAPL was not found in any of the other wells gauged during the January 2011/April 2012 monitoring event, including recently completed B-5 installed on the WAC due to the suspected presence of DNAPL.

2.2 Well Purging

Prior to sampling, monitoring wells were purged and monitored until water quality parameters stabilized. Consistent with the EPA Region 1 low-stress purging and sampling procedures, samples were collected after stabilization to ensure that they were representative of aquifer conditions.

The groundwater monitoring wells were outfitted for sampling with dedicated Teflon or Teflon-lined polyethylene tubing left in the wells for future sampling events. Bladder pumps were utilized for purging and collecting a majority of the groundwater samples collected during the January 2011 round. After a sample was collected, the bladder kit was removed, the pump decontaminated, and a new bladder kit installed before collecting the next sample. A pressurized nitrogen tank and control box allowed the sampler to adjust the flow rate.

Wells MW-107, MW-115A, MW-204, and MW-304A required the use of peristaltic pumps because bladder pumps could not be lowered through damaged stand pipes. Groundwater micro wells MA-DEP-01 and MA-DEP-02 also required a peristaltic pump because the diameter of these wells was too small to fit a standard bladder pump. The peristaltic pumps were activated at their lowest settings and the pumping rates were slowly increased, until discharge occurred. Pumping rates were adjusted to a suitable flow rate that minimized drawdown in the

wells. The recorded pumping rates for the January 2011 low-flow sampling event ranged between 98 milliliters per minute (mL/min) and 340 mL/min.

The following water quality parameters were measured prior to sampling: temperature, pH, dissolved oxygen (DO), specific conductance, oxidation-reduction potential (ORP), and turbidity. The field data were recorded on Low-Flow/Low-Stress Groundwater Sampling Log Sheets (Appendix A) and summarized on Table 2-3. The water level, pumping rate, and water quality parameters were recorded every 5 minutes (or as appropriate) using YSI 650 MDS multi-parameter meters along with LaMotte 2020e turbidity meters (or equivalent). Stabilization was considered achieved, when three consecutive readings were within the following limits:

- Turbidity (10 percent or less than 5 Nephelometric Turbidity Units [NTU])
- DO (10 percent or less than 0.5 mg/L)
- Specific conductance (3 percent)
- Temperature (3 percent)
- pH (+/- 0.1 unit)
- ORP (+/- 10 millivolts)

2.3 Well Sampling

During the January 2011 and April 2012 groundwater sampling rounds, samples were collected from the tubing directly into the sample containers. All samples were free of air bubbles or air pockets to minimize changes in the water chemistry upon contact with the atmosphere. All samples were sent to EPA's OEME Laboratory in North Chelmsford, Massachusetts for analysis. Analyses were performed in accordance with the QAPP, and laboratory protocols. An equipment blank was collected from a non-dedicated bladder pump using deionized (DI) and high performance liquid chromatography (HPLC) water after decontaminating the bladder pump between sampling locations.

3.0 LABORATORY ANALYTICAL RESULTS

Groundwater laboratory analytical results for VOCs, SVOCs, total TAL metals, and anions are presented in Tables 3-1 through 3-4, respectively. Section 3.1 summarizes the results and Section 3.2 assesses the data quality and limitations.

3.1 Groundwater Analytical Data

Consistent with data collected during previous sampling events, the January 2011/April 2012 data show a similar distribution of VOCs, SVOCs, and metals in the overburden and bedrock groundwater at the Site.

3.1.1 VOC Analytical Data

Groundwater samples collected from 31 monitoring wells were analyzed for VOCs. The following VOCs were detected at concentrations exceeding the MassDEP GW-1 and/or GW-2 standards:

- **Benzene** was detected at concentrations exceeding the 5 µg/L GW-1 standard in samples collected from monitoring wells MW-115A, MW-201, MW-202, MW-203A, and MW-203B, MW-302 and MW-304A. The highest concentration of benzene, 170J µg/L, was detected in the sample collected from well MW-203A. All wells show a decrease in benzene concentration compared to the 2003 data, with the exception of MW-115A and MW-304A. No samples exceed the 2,000 µg/L GW-2 benzene standard. Samples with benzene exceedances were generally collected from the area south of Mill Pond, along the northeastern portion of the contaminant plume.

- **Chlorobenzene** was detected at concentrations exceeding the 100 µg/L GW-1 standard in the samples collected from overburden (OB) monitoring wells P-4, MW-115B, MW-201, MW-202, MW-203B, MW-302, and MW-304B; bedrock (BR) monitoring wells MW-107, MW-113A, MW-115A, MW-203A, and MW-304A; and overburden/bedrock wells RW-1 and B-5. The concentrations of chlorobenzene detected in the samples collected from wells P-4, MW-113A,, MW-115A, MW-201, MW-202, MW-203A, MW-203B, MW-302, MW-304A, RW-1, and B-5, also exceeded the 200 µg/L GW-2 groundwater standard. The highest concentration of chlorobenzene, 27,000 µg/L, was detected in the sample collected from well B-5, located on the WAC property. Chlorobenzene concentrations that exceed the GW-1/GW-2 standards were detected in samples collected from two areas of the contaminant plume, consistent with other VOC contamination: the WAC property on the western portion of the contaminant plume and wells located on the north-central portion of the contaminant plume, south of Mill Pond.

- **Cis-1,2-DCE** was detected at concentrations exceeding the 70 µg/L GW-1 standard in the samples collected from overburden monitoring wells MW-06A, MW-201, MW-202, MW-203B, MW-302, and MW-304B; bedrock monitoring wells MW-107, MW-115A, MW-203A, MW-204A, MW-304A; and overburden/bedrock well RW-1. The concentrations of cis-1,2-DCE detected in the samples collected from wells MW-107, MW-115A, MW-202, MW-201, MW-203A, MW-203B, MW-204A, MW-304A, MW-304B, and RW-1 also exceeded the 100 µg/L GW-2 standard The highest concentration of cis-1,2-DCE, 310 µg/L, was detected in the sample collected from well MW-115A. This is an increased concentration at this location compared to 2003 but is still lower than the 2003 maximum (from a well not sampled in 2011). Samples with cis-1,2-DCE exceedances were collected from overburden/bedrock couplets located within the western and central portions of the contaminant plume and in both overburden and bedrock wells within the eastern portion of the plume.

- **TCE** was detected at concentrations exceeding the 5 µg/L GW-1 standard in the samples collected from: overburden monitoring wells MADEP-MW-1, MADEP-MW-02, P-4, MW-04B, MW-06A, MW-08, MW-113B, MW-115B, MW-201, MW-202, MW-203B, MW-302, and MW-304B,; bedrock monitoring wells MW-107, MW-112A, MW-113A, MW-115A, MW-203A, MW-204A, and MW-304A; and overburden/bedrock wells RW-1 and B-5. The concentrations of TCE detected in the samples collected from wells RW-1, MW-302, MW-304A, MW-304B, B-5, P-4, MADEP-MW-1, MADEP-MW-02, MW-107, MW-113A, MW-115A, MW-115B, MW-201, MW-202, MW-203A, MW-203B, and MW-204A also exceeded the 30 µg/L GW-2 standard. The highest concentration of TCE, 17,000 µg/L, was detected in the sample collected from well B-5, located on the WAC property.

  TCE concentrations detected in overburden and bedrock aquifer samples are shown in plan view on Figures 3-1 and 3-2, respectively. These plumes were constructed by contouring data points with the GIS Spatial Analyst program using a nearest natural neighbor algorithm and applying small corrections based on groundwater flow directions as well as referencing the ICF 2003 TCE contour maps which had greater spatial coverage.

- **Vinyl chloride** was detected at concentrations exceeding the 2 µg/L GW-1 and GW-2 standards in the samples collected from monitoring wells MW-201, MW-202, and MW-304B; and bedrock wells MW-203A, MW-204A, and MW-304A. The highest concentration of vinyl chloride, 1,000 µg/L, was detected in the sample collected from bedrock monitoring well MW-203A. This represents an order of magnitude increase in concentration from 2003 at this location. Vinyl chloride concentrations that exceed the GW-1/GW-2 standards were generally detected in samples collected from north-central portion of the contaminant plume and in the sample collected from bedrock well MW-203A, which is located on the eastern portion of the contaminant plume, south of Pleasant Street.

3.1.2 SVOC Analytical Data

Groundwater samples collected from 29 monitoring wells in January 2011 were analyzed for SVOCs as shown in Table 3-2. The following SVOCs were detected at concentrations exceeding the MassDEP GW-1 and/or GW-2 standards:

- **4-chloroanaline** was detected at concentrations of 99.1 µg/L in the sample collected from monitoring well MW-203A, exceeding the 20 µg/L GW-1 standard. There are no 4-chloroanaline data reported in the 2003 sampling round. No detected concentration of 4-chloroanaline exceeds the 50,000 µg/L GW-2 standard.

- **1,2,4-Trichlorobenzene (TCB)** was detected at concentrations exceeding the 70 µg/L GW-1 standard in samples collected from overburden monitoring wells P-4, MW-115B, MW-201, MW-202, and MW-203B, bedrock monitoring wells MW-113A, and MW-203A, and overburden/bedrock wells RW-1 and B-5. No samples exceed the 2,000 µg/L GW-2 standard. The highest concentration of 1,2,4-TCB, 416 µg/L, was detected in the sample collected from well MW-202, located within the north-central portion of the contaminant plume. This represents a decrease in concentration compared to 2003 data at this location which was also the 2003 maximum. With the exception of the sample collected from bedrock well MW-113A, which is located in an isolated area of elevated VOC concentrations on the western portion of the contaminant plume, samples with 1,2,4-TCB exceedances were collected from wells located on the north-central portion of the contaminant plume, south of Mill Pond.

- **1,2-Dichlorobenzene (DCB)** was detected at concentrations exceeding the 600 µg/L GW-1 standard in the samples collected from overburden monitoring wells P-4, MW-115B, MW-202, and MW-203B, bedrock wells MW-113A, MW-203A, and MW-304A, and overburden/bedrock wells RW-1 and B-5. The 1,2-DCB concentrations detected in the samples collected from bedrock wells MW-113A and MW-203A, and overburden/bedrock wells RW-1 and B-5 also exceeded the 2,000 µg/L GW-2 standard. The highest concentration of 1,2-DCB, 15,954 µg/L, was detected in the sample collected from overburden/bedrock well B-5, located on the WAC property. This well did not exist in 2003 but the concentration represents an order of magnitude increase from the 2003 maximum in proximity to B-5. 1,2-DCB concentrations that exceed the GW-1/GW-2 standards were detected in samples collected from two areas of the contaminant plume, consistent with other VOC contamination: the WAC property on the western portion of the contaminant plume and wells located on the north-central portion of the contaminant plume, south of Mill Pond.

- **1,3-DCB** was detected at concentrations exceeding the GW-1 standard of 40 µg/L in the samples collected from overburden monitoring well P-4, bedrock well MW-113A and MW-203A, and overburden/bedrock wells B-5, and RW-1. The highest concentration of 1,3-DCB, 592 µg/L, was detected in the sample collected from overburden/bedrock well B-5, located on the WAC property. This well did not exist in 2003 but the concentration represents an order of magnitude increase from the 2003 maximum in proximity to B-5. There were no exceedances of GW-2 for this compound. Samples with 1,3-DCB exceedances were generally collected from the area of contamination associated with the WAC property on the western portion of the contaminant plume.

- **1,4-DCB** was detected at concentrations exceeding the 5 µg/L GW-1 standard in the samples collected from overburden monitoring wells MassDEP-MW-1, MassDEP-MW-2, P-4, MW-06A, MW-08, RMW-102, MW-115B, MW-201, MW-202, MW-203B, MW-302, and MW-304B; bedrock wells MW-107, MW-112A, MW-113A,, MW-203A, MW-204A, and MW-304A; and overburden/bedrock wells RW-1 and B-5. The concentrations of 1,4-DCB detected in the samples collected from wells P-4, MW-202, MW-107, MW-113A, MW-203A, MW-304A, RW-1, and B-5 also exceeded the GW-2 standard of 200 µg/L. The highest concentration of 1,4-DCB, 3,535 µg/L, was detected in the

sample collected from well B-5, located on the WAC property. This well did not exist in 2003 but the concentration represents an order of magnitude increase from the 2003 maximum in proximity to B-5. Samples with 1,4-DCB exceedances were generally collected from the area of contamination on the western portion of the contaminant plume (WAC property) and are more widely spread out on the central and eastern portions of the contaminant plume.

3.1.3 Metals Analytical Data

Groundwater samples collected from 29 monitoring wells were analyzed for total TAL metals and total mercury per the EPA approved QAPP and results are tabulated in Table 3-3. Because the samples were analyzed for total metals analyses, comparison to MassDEP GW-1 standards, which are based on dissolved metals analyses, will be biased high. The following metals were detected at concentrations exceeding the MassDEP GW-1 standards:

- **Arsenic** was detected at concentrations exceeding the 10 µg/L GW-1 standard in the samples collected from monitoring wells MW-06A and MW-203B. Arsenic was detected at both locations in 2003 at concentrations exceeding GW-1.

- **Chromium** was detected at a concentration exceeding the 100 µg/L GW-1 standard in one sample collected from monitoring well MW-204A. Chromium exceeded its GW-1 standard in 2003;

- **Lead** was detected at a concentration exceeding the 15 µg/L GW-1 standard in one sample collected from monitoring well MW-403A. This well was not sampled in 2003;

- **Nickel** was detected at a concentration exceeding the 100 µg/L GW-1 standard in one sample collected from monitoring well MW-204A. Nickel exceeded its GW-1 standard in 2003; and

- **Thallium** was detected at concentrations exceeding the 2 µg/L GW-1 standard in the samples collected from monitoring wells MW-304A and MW-304B. Thallium was not detected in both wells in 2003.

- **Mercury** was detected in 11 of the 29 monitoring wells (Figure 3-3) and concentrations ranged from 0.24 µg/L (MW-204A) to 8 µg/L (P-1S). The 2011 maximum concentration is less than the 2003 maximum at MW-204A. Locations with detected mercury were generally limited to the vicinity of the Nyacol and WAC properties, the MW-4 cluster and two downgradient locations (MW-202 and MW-304A). Only two metals (antimony and mercury) exceeded MCLs at two locations (P-1S and MW-08).

3.1.4 Anion Analytical Data and Field Parameter Measurements

Groundwater samples collected from 29 monitoring wells in January 2011 were analyzed for anions as shown in Table 3-4. These anions are often used as indicators of biodegradation. Microbes will preferentially use nitrate, ferric iron and sulfate containing compounds as electron acceptors for anaerobic degradation of hydrocarbons. Depletion of these terminal electron acceptors may be indicative of ongoing biodegradation. Anaerobic degradation generally begins when dissolved oxygen (DO) levels are less than 1 mg/L. In the overburden aquifer very low DO levels (less than 1 mg/L) were generally found east of WAC with the exception of MW-202 (7.82 mg/L) located in the core of the TCE plume and RMW-403B (3.85 mg/L) located across the Sudbury River. DO values in wells on the WAC property and farther west are between 1 mg/L and 5 mg/L with the exception of the very low DO at RMW-102 (0.68 mg/L). The bedrock aquifer is generally anoxic with DO concentrations less than 1 mg/L except near the outer edges of the sampling area at MW-204A (3.29 mg/L), RMW-403A (3.76 mg/L), and an anomalously high value of 5.55 mg/L at MW-115B.

Chloride accumulation is often used as an indicator of reductive dechlorination. The highest chloride and sulfate values tend to be located in the bedrock wells (MW-203A and MW-304A) or in companion overburden cluster wells (MW-203B and MW-304B), and correlate well with the highest measured specific conductance values. These wells are generally in the core of the organics plume and the chloride may be derived from reductive dechlorination. There are also elevated chloride levels in bedrock and overburden wells near the core (MW-107, MW-112A) where TCE concentrations were higher in past sampling rounds. Electron acceptors such as nitrate and sulfate show a range of concentrations across the Site and do not necessarily correspond with DO data that would indicate favorable anaerobic degradation conditions. High chloride and sulfate concentrations (greater than 1,400 µg/L) were observed in two bedrock wells MW-203A, and MW-304A. These wells, MW-203A and MW-304A are anoxic (DO values

less than 1 mg/L) while MW-115B has ample DO at 5.55 mg/L. MW-115B and MW-203A exhibited correspondingly large declines in TCE concentrations (4,300 µg/L and 2,800 µg/L to 640 µg/L and 1,100µg/L, respectively) while MW-304A showed a slight decrease from 1,400 to 800 µg/L.

3.2 Data Quality Assessment and Limitations

In accordance with the WPA and QAPP, a data quality assessment was performed to evaluate whether the groundwater data acquired during the January 2011/April 2012 sampling event were suitable for use in assessing the current nature and extent of groundwater contamination. Detailed results of the Tier 1 modified data validation are provided in the memoranda presented in Appendix B.

All of the samples were analyzed and the data considered valid as reported from the laboratory. The data, with the qualifications noted during data validation, are considered usable for decision-making purposes.

3.3 Data Evaluation

Organic and inorganic contaminants including VOCs (benzene, bromomethane, chlorobenzene, cis-1,2-DCE, TCE, and vinyl chloride); SVOCs (1,2,4-TCB, 1,2-DCB, 1,4-DCB, and naphthalene); and metals (arsenic, beryllium, cadmium, chromium, mercury, and nickel) have been detected historically in groundwater samples collected from the Site at concentrations exceeding GW-1 standards. Bromomethane, chlorobenzene, TCE, and vinyl chloride have also been present historically at concentrations exceeding the GW-2 standards.

The Fall 2003 groundwater monitoring round (ICF, 2004) included a similar number of wells as sampled in January 2011, but only 17 of the 29 wells sampled by ICF were included in the January 2011 sampling. The ICF monitoring event included monitoring wells adjacent to and south of the railroad tracks, in the former vault area and around the Capped Area (see Figure 3-1). Some wells in the central portion of the Site were destroyed (along Pleasant Street) or became inaccessible in the intervening years. Therefore, the January 2011 sampling focused on the area north of the railroad tracks and south of the Sudbury River and Mill Pond, and included additional wells installed after 2003.

While the January 2011/April 2012 data show a distribution of VOCs, SVOCs, and metals in the overburden and bedrock groundwater similar to that reported by ICF, TCE concentrations remained below the laboratory detection limits in samples from 3 of the 17 wells sampled in 2003 (WP-105, MW-306, and RMW-403B), increased in 2 wells (MW-204A, and MW-304A), and decreased in samples collected from the remaining 12 wells.

A comparison is made in Table 3-5 between the 17 wells sampled in both 2003 and 2011/2012 of relative changes in concentrations for those organic compounds exceeding GW-2 criteria. There are wells that exceeded GW-2 concentrations for some parameters in 2003 that did not 2011/2012 as well as the converse with GW-2 exceedances in 2011/2012 and not in 2003. The relative difference between the rounds is denoted with a plus sign for an increase over time and a minus sign for a decrease over time. Of the 13 locations where TCE exceeded the GW-2 criterion in 2003, 12 show a decrease in TCE concentration over time. Two of the 13locations dropped below the GW-2 criterion in 2011 (MW-4B and MW-6A). One well (MW-204A) showed an increase in TCE concentration.

In general, the 2011/2012 TCE plume centerline concentrations are reduced and the outer edges contracted when compared to the 2003 plume. Overburden concentrations at the plume edge are less than their 2003 counterparts. Order of magnitude decreases are observed along the centerline of the plume in monitoring wells MW-115B, MW-202, MW-203B, and MW-201. Concentrations in the western edge well, MW-4A decreased from 100 µg/L to non-detect. There are no data available to describe any changes in the southern portions of the Site where flow comes off the Capped Area.

A similar reduction in plume size is noted for the bedrock TCE concentrations. Again decreases in TCE concentrations are observed along the centerline (MW-203A and MW-115A) and there is reduction at the western edge well MW-4B. The one increase observed in bedrock was in MW-204A where TCE concentration increased from 110 µg/L to 175 µg/L. This well is downgradient of the high concentration area of the MW-113 cluster. Like the overburden, there are no data available to describe changes in the southern portions of the Site descending off of the Capped Area.

Since 1994, DNAPL has been observed in bedrock well MW-113A, and has been observed on occasion in RW-1. During well sounding activities conducted between August and October

2008, measured DNAPL thicknesses in MW-113A ranged from 6 inches to 1.5 feet. Accumulation rates varied but a product thickness of 0.5 feet over a two week period was observed on several occasions. Thus, a measured DNAPL thickness of 1.5 feet in January 2011 is not unusual given the greater than one year time period when MW-113A was measured last. DNAPL was not observed in any other wells during the January 2011/April 2012 monitoring event.

As a rule of thumb, DNAPL may be suspected in areas where dissolved groundwater concentrations exceed one percent (1%) of the theoretical solubility of a particular compound. The solubility of TCE at 10°C is 1,566,000 µg/L in water (Pankow and Cherry, 1996). Therefore, concentrations of TCE exceeding a 1% value of 15,660 µg/L might be indicative of DNAPL nearby. Nobis personnel measured 1.5 feet of DNAPL in well MW-113A during the January 2011 monitoring event, and TCE was detected at concentration of 13,000 µg/L slightly below the 15,660 µg/L threshold. Also, TCE was detected in B-5 at a concentration of 17,000 µg/L, indicative of the DNAPL presence.

With regard to the solubility of other contaminants (besides TCE) and the potential presence of a DNAPL source, the following were also detected above their 1% solubility (given in the parentheses): 1,2-DCB (763 µg/L at 10°C); 1,4-DCB (790 µg/L at 10°C); chlorobenzene (2,939 µg/L at 10°C), [Pankow and Cherry, 1996]; and nitrobenzenene (20,900 µg/L at 25°C), [USEPA, 2010]. The observed concentrations above these levels from RW-1, B-5/MW, and MW-113A suggest the presence of DNAPL in the vicinity of the WAC property. Additionally, 1,2-DCB concentrations detected in wells overburden wells MW-202 and MW-203B, and bedrock wells MW-115A, MW-203A and MW-304A which exceed or approach the 1,2-DCB 1% solubility value of 763 µg/L. This indicates that DNAPL may also be present in the north-central portion of the Site where contaminant concentrations exceed the MassDEP GW-2 standards (Figure 3-5) and are within the western portion of the GW-2 plume that is part of the eastern portion of the contaminant plume depicted on Figure 3-5.

The contaminant plumes of compounds detected above the GW-1 and GW-2 standards cover similar areas for both sampling events (see Figures 3-4 and 3-5). The extent of the GW-1 and GW-2 are depicted as extent of exceedances only at the specified well locations and does not represent contaminant concentration contours. Figures 3-4 and 3-5 show that the approximate GW-1 exceedance plumes extends further west than in the ICF 2004 report due to the presence

of VOCs and SVOCs at concentrations above GW-1 standards in the sample collected from RMW-102, which was not sampled as part of the ICF investigation. The GW-1 and GW-2 contaminant plumes depicted in the ICFs 2004 report extended further north and east than the plume in Figures 3-4 and 3-5 based on the presence of metals, SVOCs, and VOCs above the GW-1 standards in samples collected from wells MW-405A and MW-405B in Fall 2003. Wells MW-405A and MW-405B were not sampled as part of the January 2011 monitoring program; however, no analytes were detected above the GW-1 standards in the samples collected from wells RMW-403A and RMW-403B, located northeast of wells MW-405A and MW-405B, across the Sudbury River. Based on this information, it is not likely that the GW-1 contaminant plume extends farther northeast than depicted in the ICF 2003 report.

As shown on Figures 3-4 and 3-5, there is still a large area of the Site where organic compounds exceed the GW-1 standards with smaller subareas exceeding the GW-2 standards. Based on historical analytical data, it is likely that GW-1 and GW-2 exceedances would be detected in samples collected from wells located south of the railroad tracks, in the vicinity of the former vault area and sludge drying beds.

Using the groundwater analytical data, a 30 µg/L TCE isopleth was developed to infer the GW-2 concentration limit in the overburden aquifer and is depicted on Figure 3-6. The TCE isopleth was compared to the locations of the existing vapor mitigation systems (VMS) to determine if any VMS are located outside of this TCE GW-2 boundary. Based on the comparison, there are several VMS located in areas where inferred TCE groundwater concentration is below 30 µg/L. These VMS are #10, #12, and #34 through #42.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Based on the results of the January 2011/April 2012 sampling round and evaluation of limited historical data, Nobis concludes the following:

- Groundwater was encountered at depths ranging from 1.45 ft bgs (MW-06A) to 13.41 ft bgs (MW-201). These water level depths are within the 15-ft depth criteria for GW-2 screening. Also, GW-2 standards apply for groundwater that is considered a potential source for indoor air contamination. The criteria for GW-2 applicability are to be within

30 feet of an occupied building or structure and the average annual depth to the water table is 15 feet or less.

- Overburden groundwater flows in a general north-northeasterly direction on the western portion of the Site, toward Mill Pond, and in an east-northeasterly direction on the eastern portion of the Site, toward the Sudbury River. This is consistent with historical trends.

- Bedrock groundwater also flows toward Mill Pond and the Sudbury River. This data is consistent with previous interpretations, which have indicated that groundwater in the vicinity of the Site is discharging to the Sudbury River in the areas downstream of Mill Pond, while surface water is infiltrating groundwater both upstream of and in the area of Mill Pond.

- Contaminants in overburden and bedrock groundwater samples detected at concentrations exceeding the GW-1 standards include: benzene, 1,2,4-TCB, 1,2-DCB, 1,3-DCB, 1,4-DCB, chlorobenzene, cis-1,2-DCE, TCE, and vinyl chloride, and 4-chloroanaline.

- Several metals, including arsenic, chromium, lead, nickel, and thallium, exceeded the GW-1 standard. All other detected metals, including mercury, were at concentrations below GW-1. Organic chemicals in overburden and bedrock groundwater samples detected at concentrations exceeding the GW-2 standards include: 1,2-DCB, cis-1,2-DCE, TCE, vinyl chloride, 1,2,4-TCB, and 1,4-DCB.

- The overall pattern of groundwater contamination in the overburden and bedrock groundwater aquifers in January 2011/April 2012 is consistent with historical data and calculated groundwater flow directions. There appears to be TCE plume contraction when compared to the 2003 data, however, there were additional data in 2003 along the southern boundary of the Site. A major difference is the TCE concentrations in bedrock monitoring wells MW-113A and B-5, at or above the TCE solubility. This may be attributable to the influence of the measured 1.5 feet of DNAPL in the bedrock monitoring well MW-113A.

- DNAPL was measured in groundwater monitoring well MW-113A at a thickness of 1.5 feet. There was no measurable accumulation in other wells that previously exhibited DNAPL (RW-1 and B-5). A comparison of measured organic concentrations to 1% of the chemical's solubility suggests the presence of DNAPL in the vicinity of the WAC property. Additionally, 1,2-DCB concentrations detected in wells overburden wells MW-202 and MW-203B, and bedrock wells MW-203A and MW-304A exceed or approach the 1,2-DCB 1% solubility value.

4.2 Recommendations

- Pump recoverable DNAPL in MW-113A with an extraction system that would be capable of periodic extraction as necessary. This system would most likely be smaller than the originally proposed belt skimmer or pneumatic system.

- Continue to monitor for potential accumulation of DNAPL in wells RW-1 and B-5 at a set schedule (e.g., quarterly).

- Perform additional groundwater monitoring to determine if the apparent plume contraction is part of a broader trend.

- Continue operation of the VMS at locations that are within the TCE GW-2 extent. For existing VMS locations outside the TCE GW-2 extent, recommend collection of site-specific groundwater samples for TCE analysis to confirm if TCE concentrations are below GW-2, which may warrant disinvestment from maintenance and monitoring of certain VMS. The groundwater sample collection could be achieved through the installation of temporary piezometers.

5.0 REFERENCES

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TABLES

Table 2-1
January 2011 Groundwater Gauging and Sampling Information
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well Number	Well Type	Depth to Groundwater (ft bgs)	Total Depth (ft bgs)	Surface Elevation (ft MSL)	PVC Elevation (ft MSL)	Groundwater Elevation (ft MSL)	DNAPL thickness (ft)	Sample ID	Date Sampled	Sample Time	QC
P-1S	OB	3.98	20.16	196.84	196.46	192.48		EP0126	1/11/2011	14:55	
RW-1	OB/BR	4.86	53.99	196.69	196.38	191.52		EP0117	1/11/2011	10:50	
P-4	OB	3.28	32.29	NS	NS	NS		EP0115	1/11/2011	11:40	
MW-04A	OB	6.61	20.68	199.60	199.65	193.04		EP0144	1/18/2011	12:00	MS/MSD (2)
MW-04B	OB/BR	6.65	65.87	199.50	199.54	192.89		EP0145	1/18/2011	12:20	
MW-06A	OB	1.45	69.23	193.99	194.33	192.88		EP0150	1/19/2011	10:50	
MW-08	OB	5.11	46.45	197.90	198.54	193.43		EP0149	1/19/2011	11:20	
RMW-102	OB	4.46	12.12	192.90	194.42	189.96		EP0138	1/17/2011	11:50	
MW-103	OB	8.54	19.00	198.30	201.14	192.60		EP0132	1/14/2011	10:50	
WP-105	OB	6.90	12.69	192.00	NA	NA		EP0161	1/21/2011	11:10	
MW-107	BR	5.97	38.34	192.00	194.42	188.45		EP0146/EP0147	1/18/2011	12:25	DUP02
MW-112A	BR	6.68	47.41	195.80	198.28	191.60		EP0156	1/20/2011	11:10	
MW-113A	BR	3.26	53.81	195.99	195.69	192.43	1.5	EP0124	1/11/2011	14:40	
B-5	OB/BR	3.49	46.24	195.54	195.33	191.84		EP0125	1/11/2011	15:20	
MW-115B	OR	7.96	45.88	192.76	192.62	184.66		EP0128	1/13/2011	13:30	
MW-201	OB	13.41	22.67	197.70	200.21	186.80		EP0201	1/10/2011	13:35	MS/MSD (1)
MW-202	OB	10.57	28.08	196.00	198.60	188.03		EP0112/EP0113	1/10/2011	12:55	
MW-203A	BR	5.54	78.49	194.40	194.72	189.18		EP0111	1/10/2011	13:50	DUP01
MW-203B	OB	5.57	31.91	194.40	194.37	188.80		EP0116	1/11/2011	10:45	
MW-204A	BR	8.41	48.03	199.08	198.60	190.19		EP0133	1/14/2011	10:30	
MW-302	OB	10.55	24.26	193.16	192.96	182.41		EP0134	1/14/2011	10:50	
MW-304A	BR	3.87	53.04	193.17	192.97	189.10		EP0136	1/17/2011	11:55	
MW-304B	OB	4.69	29.89	193.34	193.10	188.41		EP0137	1/17/2011	11:40	
MW-305B	OB	7.21	19.10	197.08	196.87	189.66		EP0160	1/21/2011	10:50	
MW-306	OB	8.17	28.84	201.66	201.32	193.15		EP0159	1/21/2011	11:00	
RMW-403A	OR	7.51	47.28	185.10	187.47	179.96		EP0157	1/20/2011	12:00	
RMW-403B	BR	8.01	21.83	185.40	187.64	179.63		EP0153	1/19/2011	11:05	
MW-406B	BR	8.46	42.41	187.10	186.72	178.26		EP0129	1/13/2011	12:00	
MW-406A	OB	8.61	62.94	187.18	186.86	178.25		EP0130	1/13/2011	12:10	
MADEP-MW-1	OB	NM	15.00	NS	NS	NS		EP0154	1/20/2011	10:30	
MADEP-MW-2	OB	NM	20.00	NS	NS	NS		EP0155	1/20/2011	11:25	

Notes:

1. MS/MSD = Matrix spike/matrix spike duplicate
2. DUP = Duplicate sample
3. NM = Not measured
4. NS = Not surveyed
5. ft = feet
6. bgs = below ground surface
7. MSL = Mean Sea Level
8. NA = Not applicable

Table 2-2
January 2011 Groundwater Monitoring Well Construction Details
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well Number	Well Type	Northing	Easting	Depth to Water** (ft bgs)	Construction Depth (ft bgs)	Measured Depth (ft bgs)	Depth to Bedrock (ft bgs)	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
P-1S*	OB	459457.9875	606892.4921	3.98	18.0	19.79	Unk	8.0	18.0	10.0	13.0	2	PVC	FM
P-4	OB	NS	NS	3.28	32.5	32.09	33.0	29.5	32.5	3.0	31.0	2	PVC	Unk
RW-1	OB/BR	459475.3429	606877.7775	4.86	55.0	53.99	40.0	36.0	51.0	15.0	43.5	6	PVC	FM
B-5	OB/BR	459465.7020	606850.5770	3.49	47.0	46.24	42.0	39.0	46.0	7.0	Unk	2	PVC	FM
MW-4A	OB	459530.9893	606323.2521	6.61	24.0	20.68	--	4.0	24.0	20.0	14.0	2	PVC	SP
MW-4B	OB/BR	459532.4289	606300.3524	6.65	68.0	65.87	67.0	48.0	68.0	20.0	58.0	2	PVC	SP
MW6A	OB	459382.3149	607659.1866	1.45	12.0	69.23	--	7.0	12.0	5.0	9.5	2	PVC	FM
MW-08	OB	NS	NS	5.11	Unk	46.45	--	Unk	Unk	Unk	Unk	2	PVC	SP
RMW-102	OB	NS	NS	4.46	10.0	12.12	--	5.0	10.0	5.0	7.5	2	PVC	SP
MW-103	OB	458750.0178	607920.8791	8.54	15.0	19.00	--	10.0	15.0	5.0	12.5	2	PVC	SP
WP-105	OB	460066.8209	608213.6620	6.90	11.0	12.69	--	9.0	11.0	2.0	10.0	2	PVC	Unk
MW-107	BR	459300.9921	608243.5811	5.97	35.9	38.34	26.6	30.9	35.9	5.0	33.4	2	PVC	SP
MW-112A	BR	459411.5484	607190.5248	6.68	43.0	47.41	35.0	38.0	43.0	5.0	40.5	2	SS	SP
MW-113A	BR	459479.5293	606836.6590	3.26	73.0	53.81	43.0	46.0	51.0	5.0	48.5	2	SS	FM
MW-113B	OB	459490.5851	606839.7613	3.28	29.5	32.09	--	24.5	29.5	5.0	27.0	2	SS	FM
MW-115B	OB	459693.8941	608689.0612	7.96	48.6	45.88	--	43.5	48.5	5.0	46.0	2	PVC	FM
MW-201	OB	459755.6006	608242.9346	13.41	20.0	22.67	--	15.0	20.0	5.0	17.5	2	PVC	SP
MW-202	OB	459774.9684	607995.7403	10.57	25.0	28.08	--	20.0	25.0	5.0	22.5	2	PVC	SP
MW-203A	BR	459636.1056	607895.9888	5.54	78.7	78.49	68.0	73.7	78.7	5.0	76.2	2	SS	SP
MW-203B	OB	459640.9212	607896.8360	5.57	32.0	31.91	--	27.0	32.0	5.0	29.5	2	PVC	SP
MW-204A	BR	459732.5759	606792.0587	8.41	52.6	48.03	36.5	47.6	52.6	5.0	50.1	2	SS	FM
MW-302	OB	459450.8997	608880.7531	10.55	25.0	24.26	--	20.0	25.0	5.0	22.5	2	PVC	FM
MW-304A	BR	459983.2487	607520.8614	3.87	55.0	53.04	45.0	50.0	55.0	5.0	52.5	2	PVC	FM
MW-304B	OB	459983.9671	607526.8326	4.69	30.7	29.89	--	25.7	30.7	5.0	28.2	2	PVC	FM
MW-305B	OB	459964.7348	607138.0529	7.21	19.5	19.10	--	14.5	19.5	5.0	17.0	2	PVC	FM
MW-306	OB	459643.5923	605257.2506	8.17	30.0	28.84	--	25.0	30.0	5.0	27.5	2	PVC	SP
RMW-403A	BR	460151.4101	609362.0027	7.51	44.9	47.28	37.0	41.0	44.9	3.9	43.0	2	PVC	SP
RMW-403B	OB	460128.0769	609401.7741	8.01	19.5	21.83	--	14.5	19.5	5.0	17.0	2	PVC	SP
MW-406A	BR	459153.2682	609843.8629	8.61	68.9	42.41	45.9	61.0	66.0	5.0	63.5	2	PVC	SP
MW-406B	OB	459153.7853	609832.2301	8.46	43.0	62.78	--	38.0	43.0	5.0	40.5	2	PVC	FM
MADEP-MW-1	OB	NS	NS	NM	15.0	15.00	Unk	10.0	15.0	5.0	12.5	1	PVC	FM
MADEP-MW-2	OB	NS	NS	NM	20.0	20.00	Unk	15.0	20.0	5.0	17.5	1	PVC	FM

Notes:

***** Measured monitoring well P-1S total depth measurements; April 2001 (19.30ft bgs), November 2011 (19.75ft bgs), and March 2012 (19.75ft bgs).

****** Depth to water measured January 10 - 20, 2011

1. OB - Overburden
2. BR - Bedrock
3. SS - Stainless Steel
4. FM = flush-mount
5. SP = stand pipe
6. ft bgs = feet below ground surface
7. -- = bedrock was not encountered
8. PVC = polyvinyl chloride
9. Unk = unknown
10. NM = Not measured

NS - Not Surveyed

Table 2-3
January 2011 Groundwater Field Parameter Measurements
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Well Number	Temperature (^{o}C)	Spec. Cond. (uS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)
P-1S	10.71	330	5.84	207.8	1.64	12.0
RW-1	10.25	871	5.31	149.5	0.44	202.0
P-4	9.81	784	5.73	117.2	4.90	11.8
MW-04A	9.34	65	6.00	151.1	2.31	24.8
MW-04B	9.38	673	5.99	216.9	4.62	28.5
MW-06A	9.87	401	6.15	-77.0	0.92	50.9
MW-08	6.69	1,412	6.14	16.8	1.89	4.3
RMW-102	5.43	379	6.00	200.4	0.68	8.8
MW-103	8.48	90	5.54	150.8	0.89	21.1
WP-105	6.07	570	6.29	114.8	0.39	1.7
MW-107	8.37	1,627	5.82	92.6	0.83	4.3
MW-112A	8.47	1,343	6.98	-42.6	0.45	24.1
MW-113A	8.86	371	5.97	190.9	0.86	12.0
B-5 - January 2011	9.71	671	6.19	63.7	6.73	18.0
B-5 - April 2012	11.82	943	5.96	134.9	0.26	1.51
MW-115A - April 2012	13.60	8,056	5.66	38.7	0.16	0.94
MW-115B	10.30	3,808	3.02	515.1	5.55	3.0
MW-201	13.56	2,377	5.73	66.7	0.33	27.9
MW-202	10.88	2,458	5.47	162.8	7.82	53.0
MW-203A - January 2011	10.38	13,779	7.41	-297.0	0.23	7.6
MW-203A - April 2012	13.32	17,504	8.00	-270.5	0.12	11.9
MW-203B	6.37	1,546	6.28	-15.5	0.80	81.7
MW-204A	7.86	268	5.20	215.2	3.29	42.9
MW-302	10.59	392	4.39	287.2	0.61	23.1
MW-304A - January 2011	8.57	7,659	6.37	-55.8	0.41	1.3
MW-304A - April 2012	12.13	4,679	6.80	-301.0	0.18	2.5
MW-304B	9.66	3,109	6.30	140.9	0.42	2.8
MW-305B	10.28	254	4.67	257.6	1.17	27.5
MW-306	8.88	288	6.72	-1.8	3.40	11.0
RMW-403B	9.58	628	5.42	198.2	3.76	162.0
RMW-403A	9.69	760	6.07	55.1	3.85	136.0
MW-406A	11.69	854	7.31	-56.2	0.54	7.5
MW-406B	11.31	722	6.18	184.2	0.97	8.3
MADEP-MW-1	NM	NM	NM	NM	NM	NM
MADEP-MW-2	NM	NM	NM	NM	NM	NM

Notes:
1. ORP = oxidation reduction potential
2. mV = millivolt
3. µS/cm = microSiemens per centimeter
4. mg/L = milligrams per liter
5. NTU = Nephelometric Turbidity Units
6. NM = Not measured

Table 3-1
January 2011/April 2012 Groundwater Analytical Results - VOCs
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location			P-1S	RW-1	P-4	B/MW-05	B/MW-05	B-5	MW-04A	MW-04B	MW-06A	MW-08	RMW-102	MW-103	WP-105	MW-107	MW-107	MW-112A	MW-113A	MW-115A	MW-115B
Sample ID			P-01-011111A	RW-01-011110A	B-05-011110A	B/MW05-041912	DUP-041912	MW-113B-011111A	MW-403A-011811A	MW-403B-011811A	MW-06A-011911A	MW-08-011911A	RMW-102-011711A	MW-103-011411A	WP-105-012111A	DUP-02-011811A	MW-107-011811A	MW-112A-012011A	MW-113A-011111A	MW115A-041912	MW-115B-011310A
Sample Date & Time			1/11/2011 2:55 PM	1/11/2011 10:50 AM	1/11/2011 11:40 AM	4/19/2012 2:30:00 PM	4/19/2012 3:00 PM	1/11/2011 3:20 PM	1/18/2011 12:00 PM	1/18/2011 12:20 PM	1/19/2011 10:50 AM	1/19/2011	1/17/2011 11:50 AM	1/14/2011 10:50 AM	1/21/2011 11:10 AM	1/18/2011 1:20 PM	1/18/2011 12:25 PM	1/20/2011 11:10 AM	1/11/2011 2:40 PM	4/19/2012 12:25:00 PM	1/13/2011 1:30 PM
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																			
1,1,1,2-Tetrachloroethane	5	10	1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
1,1,1-Trichloroethane	200	4000	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,1,2,2-Tetrachloroethane	2	9	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,1,2-Trichloro-1,2,2-trifluoroethane			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,1,2-Trichloroethane	5	900	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,1-Dichloroethane	70	1000	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,1-Dichloroethene	7	80	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,1-Dichloropropene			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
1,2,3-Trichlorobenzene			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	8.2	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,2,3-Trichloropropane			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
1,2,4-Trichlorobenzene	70	2000	1 U	**75.2**	65.3	1700 UJ	1700 UJ	500 U	1 U	1 U	41	1 U	1 U	1 U	1 U	25	25	1.1	**280**	250 U	35
1,2,4-Trimethylbenzene			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
1,2-Dibromo-3-Chloropropane			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,2-Dibromoethane	0.02	2	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,2-Dichlorobenzene	600	2000	1 U	**1300**	**1100**	***30000***	***31000***	***22000***	1 U	1 U	20	4.7	1 U	1 U	1 U	530	530	17	***26000***	**1700**	160
1,2-Dichloroethane	5	5	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,2-Dichloropropane	3	3	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
1,3,5-Trimethylbenzene			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
1,3-Dichlorobenzene	40	2000	1 U	**60.7**	**48.4**	**1100 J**	**1100 J**	**720**	1 U	1 U	1 U	1.5	1 U	1 U	1 U	10 U	10 U	1 U	**870**	250 U	10 U
1,3-Dichloropropane			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
1,4-Dichlorobenzene	5	200	1 U	***318.9***	***252.5***	***7100***	***7400***	***4800***	1 U	1 U	3.5	1.9	1 U	1 U	1 U	**74**	**75**	3	***5800***	***240 J***	**27**
1,4-Dioxane	3	6000	2 U	2 U	20 U	-- R	-- R	400 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	10 U	10 U	2 U	400 U	--	10 U
2,2-Dichloropropane			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
2-Butanone	4000	50000	1 U	10 U	10 U	3300 U	3300 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	2500 U	10 U
2-Chlorotoluene			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
2-Hexanone			1 U	10 U	10 U	3300 U	3300 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	2500 U	10 U
2-Methyl-2-phenylpropane			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
2-Phenylbutane			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
4-Chlorotoluene			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
4-Methyl-2-Pentanone	350	50000	1 U	10 U	10 U	3300 U	3300 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	2500 U	10 U
Acetone	6300	50000	1 U	10 U	10 U	3300 U	1200 J	500 U	1.2	1 U	1 U	1 U	1 U	1 U	1	11	10 U	1 U	200 U	2500 U	10
Acrylonitrile			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
Benzene	5	2000	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	**75 J**	10 U
Bromobenzene			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
Bromochloromethane			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Bromodichloromethane	3	6	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Bromoform	4	700	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Bromomethane	7	7	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 UJ	10 U
Carbon Disulfide			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Carbon Tetrachloride	2	2	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Chlorobenzene	100	200	1 U	***502.3***	***374.4***	***27000***	***28000***	***17000***	1 U	1 U	22	1.1	1 U	1 U	1 U	**170**	**170**	7.5	***16000***	***1800***	**190**
Chloroethane			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Chloroform	50	50	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Chloromethane			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
cis-1,2-Dichloroethene	70	100	4.8	**91.2**	**99.3**	1700 U	1700 U	500 U	1 U	1.3	**96**	8.7	1 U	1 U	1 U	***170***	***180***	19	200 U	***310***	67
cis-1,3-Dichloropropene			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Cyclohexane			--	--	--	1700 U	1700 U	--	--	--	--	--	--	--	--	--	--	--	--	250 U	--
Cymene			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
Dibromochloromethane	2	20	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Dibromomethane			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U

Table 3-1
January 2011/April 2012 Groundwater Analytical Results - VOCs
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location			P-1S	RW-1	P-4	B/MW-05	B/MW-05	B-5	MW-04A	MW-04B	MW-06A	MW-08	RMW-102	MW-103	WP-105	MW-107	MW-107	MW-112A	MW-113A	MW-115A	MW-115B
Sample ID			P-01-011111A	RW-01-011110A	B-05-011110A	B/MW05-041912	DUP-041912	MW-113B-011111A	MW-403A-011811A	MW-403B-011811A	MW-06A-011911A	MW-08-011911A	RMW-102-011711A	MW-103-011411A	WP-105-012111A	DUP-02-011811A	MW-107-011811A	MW-112A-012011A	MW-113A-011111A	MW115A-041912	MW-115B-011310A
Sample Date & Time			1/11/2011 2:55 PM	1/11/2011 10:50 AM	1/11/2011 11:40 AM	4/19/2012 2:30:00 PM	4/19/2012 3:00 PM	1/11/2011 3:20 PM	1/18/2011 12:00 PM	1/18/2011 12:20 PM	1/19/2011 10:50 AM	1/19/2011	1/17/2011 11:50 AM	1/14/2011 10:50 AM	1/21/2011 11:10 AM	1/18/2011 1:20 PM	1/18/2011 12:25 PM	1/20/2011 11:10 AM	1/11/2011 2:40 PM	4/19/2012 12:25:00 PM	1/13/2011 1:30 PM
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																			
Dichlorodifluoromethane			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Diethyl ether			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
Ethylbenzene	700	20000	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Hexachlorobutadiene	0.6	1	1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
Isopropylbenzene			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
m,p-Xylene	10000	9000	2 U	20 U	20 U	1700 U	1700 U	1000 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	20 U	20 U	2 U	400 U	250 U	20 U
Methyl Acetate			--	--	--	1700 U	1700 U	--	--	--	--	--	--	--	--	--	--	--	--	250 U	--
Methyl Tert-Butyl Ether	70	50000	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Methylcyclohexane			--	--	--	1700 U	1700 U	--	--	--	--	--	--	--	--	--	--	--	--	490	--
Methylene Chloride	5	10000	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Naphthalene	140	1000	1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	13
n-Butylbenzene			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
n-Propylbenzene			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
o-Xylene	10000	9000	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Styrene	100	100	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Tetrachloroethene	5	50	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Tetrahydrofuran			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
Toluene	1000	50000	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	33 J	10 U
trans-1,2-Dichloroethene	90	90	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	2.2	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
trans-1,3-Dichloropropene			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Trichloroethene	5	30	2.4	***1500***	***1000***	***17000***	***17000***	***8700***	1 U	**16**	**10**	**5.1**	1 U	1 U	1 U	***34***	***37***	**19**	***13000***	***3100***	***640***
Trichlorofluoromethane			1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U
Vinyl Acetate			1 U	10 U	10 U	--	--	500 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	--	10 U
Vinyl Chloride	2	2	1 U	10 U	10 U	1700 U	1700 U	500 U	1 U	1 U	1.3	1 U	1 U	1 U	1 U	10 U	10 U	1 U	200 U	250 U	10 U

Notes:

1. VOC = volatile organic compound
2. All concentrations listed in micrograms per liter (µg/L).
3. MCP = Massachusetts Contingency Plan (February 2008)
4. **Bold** text indicates concentrations that exceed the MCP Method 1 GW-1 standard
5. ***Italic*** text indicates concentrations that exceed the MCP Method 1 GW-2 standard
6. "U"= below detection limit
7. "--" indicates that the analyte was not sampled or results were rejected (with "R" qualifier)

Table 3-1
January 2011/April 2012 Groundwater Analytical Results - VOCs
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location			MW-201	MW-202	MW-202	MW-203A	MW-203A	MW-203B	MW-204A	MW-302	MW-304A	MW-304A	MW-304B	MW-305B	MW-306	MW-406A	MW-406B	RMW-403A	RMW-403B	MADEP-MW-1	MADEP-MW-2
Sample ID			MW-201-011011A	DUP-01-011011A	MW-202-011011A	MW-203A-011011A	MW203A-041912	MW-203B-011110A	MW-204A-011411A	MW-302-011411A	MW-304A-011711A	MW304A-041912	MW-304B-011711A	MW-305B-012111A	MW-306-012111A	MW-406A-011311A	MW-406B-011311A	RMW-403A-012011A	RMW-403B-011911A	MADEP-MW-1-012011A	MADEP-MW-2-012011A
Sample Date & Time			1/10/2011 1:35 PM	1/10/2011 1:30 PM	1/10/2011 12:55 PM	1/10/2011 1:50 PM	4/19/2012 2:30:00 PM	1/11/2011 10:45 AM	1/14/2011 10:30 AM	1/14/2011 10:50 AM	1/17/2011 11:55 AM	4/19/2012 2:30:00 PM	1/17/2011 11:40 AM	1/21/2011 10:50 AM	1/21/2011 11:00 AM	1/13/2011 12:10 PM	1/13/2011 12:00 PM	1/20/2011 10:45 AM	1/19/2011 11:05 AM	1/20/2011 11:25 AM	1/20/2011 10:30 AM
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																			
1,1,1,2-Tetrachloroethane	5	10	1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	200	4000	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	2	9	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	900	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	70	1000	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	80	1 U	1 U	1 U	3.5	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene			42	76.1	67.3	9.2	250 U	49	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	5.8	4
1,2,3-Trichloropropane			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	70	2000	**120**	**230**	**220**	69.2	250 U	**210**	11.8	20 U	50 U	160 U	20	1 U	1 U	1 U	1 U	1 U	1 U	24	14
1,2,4-Trimethylbenzene			1 U	1.8	1.8	8.6	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-Chloropropane			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	0.02	2	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	600	2000	400	**710**	**720**	**1500**	***3000***	**700**	128	577.2	**1100**	**2000**	230	1 U	1 U	1 U	1 U	1 U	1 U	71	33
1,2-Dichloroethane	5	5	1 U	1 U	1 U	1.7	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	3	3	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene			1 U	1 U	1 U	2.5	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	40	2000	11	15.5	15.6	31.4	**50 J**	15	10 U	**84**	50 U	**52 J**	5	1 U	1 U	1 U	1 U	1 U	1 U	2.2	1
1,3-Dichloropropane			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	5	200	**93**	**120**	**120**	***280***	***480***	**130**	**28.8**	**80.2**	***220***	***390***	**40**	1 U	1 U	1 U	1 U	1 U	1 U	**16**	**7.5**
1,4-Dioxane	3	6000	2 U	2 U	2 U	2 U	--	20 U	4 U	10 U	40 U	--	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2,2-Dichloropropane			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	4000	50000	1 U	1 U	1 U	1.4	2500 U	10 U	10 U	20 U	50 U	1600 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone			1 U	1 U	1 U	1 U	2500 U	10 U	10 U	20 U	50 U	1600 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methyl-2-phenylpropane			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Phenylbutane			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Chlorotoluene			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-Pentanone	350	50000	1 U	1 U	1 U	1 U	2500 U	10 U	10 U	20 U	50 U	1600 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	6300	50000	1 U	1.1	1.4	3.9	2500 U	10 U	10 U	20 U	50 U	1600 U	5 U	1 U	1 U	1 U	1 U	1.2	1 U	1 U	1
Acrylonitrile			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzene	5	2000	**10**	**15.8**	**15.7**	**67.6**	**170 J**	**16**	10 U	**50.1**	50 U	**44 J**	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1	1 U
Bromobenzene			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	3	6	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	4	700	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	7	7	1 U	1 U	1 U	1 U	250 UJ	10 U	10 U	20 U	50 U	160 UJ	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2	2	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	200	***400***	***710***	***710***	***3600***	***7600***	***750***	55.3	***435.1***	***1200***	***2000***	**120**	1 U	1 U	1 U	1 U	1 U	1 U	57	21
Chloroethane			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	50	50	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	100	***130***	**99**	**100**	***110***	***230 J***	***170***	***145.2***	***214.2***	***450***	***170***	***170***	1 U	1 U	1 U	1 U	1 U	1 U	37	15
cis-1,3-Dichloropropene			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane			--	--	--	--	250 U	--	--	--	--	160 U	--	--	--	--	--	--	--	--	--
Cymene			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	2	20	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Table 3-1
January 2011/April 2012 Groundwater Analytical Results - VOCs
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location			MW-201	MW-202	MW-202	MW-203A	MW-203A	MW-203B	MW-204A	MW-302	MW-304A	MW-304A	MW-304B	MW-305B	MW-306	MW-406A	MW-406B	RMW-403A	RMW-403B	MADEP-MW-1	MADEP-MW-2
Sample ID			MW-201-011011A	DUP-01-011011A	MW-202-011011A	MW-203A-011011A	MW203A-041912	MW-203B-011110A	MW-204A-011411A	MW-302-011411A	MW-304A-011711A	MW304A-041912	MW-304B-011711A	MW-305B-012111A	MW-306-012111A	MW-406A-011311A	MW-406B-011311A	RMW-403A-012011A	RMW-403B-011911A	MADEP-MW-1-012011A	MADEP-MW-2-012011A
Sample Date & Time			1/10/2011 1:35 PM	1/10/2011 1:30 PM	1/10/2011 12:55 PM	1/10/2011 1:50 PM	4/19/2012 2:30:00 PM	1/11/2011 10:45 AM	1/14/2011 10:30 AM	1/14/2011 10:50 AM	1/17/2011 11:55 AM	4/19/2012 2:30:00 PM	1/17/2011 11:40 AM	1/21/2011 10:50 AM	1/21/2011 11:00 AM	1/13/2011 12:10 PM	1/13/2011 12:00 PM	1/20/2011 10:45 AM	1/19/2011 11:05 AM	1/20/2011 11:25 AM	1/20/2011 10:30 AM
Chemical Name	**GW-1 Standard**	**GW-2 Standard**																			
Dichlorodifluoromethane			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Diethyl ether			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	20000	1.1	2	2	1	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	0.6	1	1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	10000	9000	2 U	2 U	2 U	3.2	250 U	20 U	20 U	40 U	100 U	160 U	10 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl Acetate			--	--	--	--	250 U	--	--	--	--	160 U	--	--	--	--	--	--	--	--	--
Methyl Tert-Butyl Ether	70	50000	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylcyclohexane			--	--	--	--	250 U	--	--	--	--	160 U	--	--	--	--	--	--	--	--	--
Methylene Chloride	5	10000	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	140	1000	1 U	1 U	1.3	17.1	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Butylbenzene			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene			1 U	1 U	1 U	1.6	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	10000	9000	1 U	1 U	1 U	3.9	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	100	100	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	50	1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrahydrofuran			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	1000	50000	1 U	1 U	1 U	18.1	67 J	10 U	10 U	20 U	50 U	20 J	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	90	90	1 U	1	1.1	37.2	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	30	***240***	***380***	***390***	***500***	***1100***	***560***	***174.8***	***335.4***	***2000***	***800***	***120***	1	1 U	1 U	1 U	1 U	1 U	***88***	***35***
Trichlorofluoromethane			1 U	1 U	1 U	1 U	250 U	10 U	10 U	20 U	50 U	160 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Acetate			1 U	1 U	1 U	1 U	--	10 U	10 U	20 U	50 U	--	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	2	2	***2.3***	***2.4***	***3.5***	***460***	***1000***	10 U	***15.2***	20 U	***65***	160 U	***5.8***	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Notes:

1. VOC = volatile organic compound
2. All concentrations listed in micrograms per liter (µg/L).
3. MCP = Massachusetts Contingency Plan (February 2008)
4. **Bold** text indicates concentrations that exceed the MCP Method 1 GW-1 standard
5. ***Italic*** text indicates concentrations that exceed the MCP Method 1 GW-2 standard
6. "U"= below detection limit
7. "--" indicates that the analyte was not sampled or results were rejected (with "R" qualifier)

Table 3-2
January 2011 Groundwater Analytical Results - SVOCs
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location:			P-1S	RW-1	P-4	MW-4A	MW-4B	MW-06A	MW-08	RMW-102	MW-103	WP-105	MW-107	MW-107	MW-112A	MW-113A	B-5	MW-115B	MW-201
Sample ID:			P-01-011111A	RW-01-011110A	B-05-011110A	MW-403A-011811A	MW-403B-011811A	MW-06A-011911A	MW-08-011911A	RMW-102-011711A	MW-103-011411A	WP-105-012111A	DUP-02-011811A	MW-107-011811A	MW-112A-012011A	MW-113A-011111A	MW-113B-011111A	MW-115A-011310A	MW-201-011011A
Sample Date & Time:			1/11/2011 2:55:00 PM	1/11/2011 10:50:00 AM	1/11/2011 11:40:00 AM	1/18/2011 12:00:00 PM	1/18/2011 12:20:00 PM	1/19/2011 10:50:00 AM	1/19/2011	1/17/2011 11:50:00 AM	1/14/2011 10:50:00 AM	1/21/2011 11:10:00 AM	1/18/2011 1:20:00 PM	1/18/2011 12:25:00 PM	1/20/2011 11:10:00 AM	1/11/2011 2:40:00 PM	1/11/2011 3:20:00 PM	1/13/2011 1:30:00 PM	1/10/2011 1:35:00 PM
Chemical Name	**GW-1**	**GW-2**																	
1,2,4,5-Tetrachlorobenzene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,4-Trichlorobenzene	70	2000	2.5 U	**114**	**110**	2.5 U	2.5 U	64	6.3	15	2.5 U	2.5 U	23	28	2.5 U	**160**	**252**	**120**	**178**
1,2-Dichlorobenzene	600	2000	11	***2050***	**1766**	2.5 U	2.5 U	31	23	180	2.5 U	2.5 U	380	370	33	***15000***	***15954***	**950**	570
1,3-Dichlorobenzene	40	2000	2.5 U	**89**	**79**	2.5 U	2.5 U	2.5 U	8.4	4	2.5 U	2.5 U	4.8	5.8	2.5 U	**500**	**592**	16	14
1,4-Dichlorobenzene	5	200	3	***470***	***406***	2.5 U	2.5 U	**5.3**	**8.7**	**29**	2.5 U	2.5 U	**50**	**60**	**6**	***3300***	***3535***	**170**	**113**
1,4-Naphthoquinone			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,2'-Oxybis(1-Chloropropane)			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,3,4,6-Tetrachlorophenol			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,4,5-Trichlorophenol	200	50000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,4,6-Trichlorophenol	10	5000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,4-Dichlorophenol	10	30000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,4-Dimethylphenol	60	40000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 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
2,4-Dinitrotoluene	30	20000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,6-Dichlorophenol			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,6-Dinitrotoluene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-Chloronaphthalene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-Chlorophenol	10	20000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-Methylnaphthalene	10	2000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-Methylphenol			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-Nitroaniline			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-Nitrophenol			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
3 & 4 Methylphenol			5 U	5 U	5 U	5 U	5 U	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		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
3-Methylchloranthrene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
3-Nitroaniline			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	2.5 U	2.5 U	2.5 U	3	2.5 U	2.5 U
4,6-Dinitro-2-Methylphenol			5 U	5 U	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	5 U	5 U	5 U	5 U
4-Bromophenyl-Phenylether			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Chloro-3-Methylphenol			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Chloroaniline	20	50000	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	3.5	4.5	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Chlorophenyl-Phenylether			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Nitroaniline			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	2.5 U	2.5 U	2.5 U	8	2.5 U	2.5 U
4-Nitrophenol			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Nitroquinoline-N-Oxide			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		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acenaphthylene	30	10000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acetophenone			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Aniline			2.5 U	19	48	2.5 U	2.5 U	14	5.8	2.5 U	2.5 U	2.5 U	3.7	4.1	4.6	40	974	860	4
Anthracene	30		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Aramite			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Azobenzene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzidine			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzo(A)Anthracene	1		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzo(A)Pyrene	0.2		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzo(B)Fluoranthene	1		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzo(G,H,I)Perylene	20		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzo(K)Fluoranthene	1		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzoic Acid			5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzyl Alcohol			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U

Table 3-2
January 2011 Groundwater Analytical Results - SVOCs
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location:			P-1S	RW-1	P-4	MW-4A	MW-4B	MW-06A	MW-08	RMW-102	MW-103	WP-105	MW-107	MW-107	MW-112A	MW-113A	B-5	MW-115B	MW-201
Sample ID:			P-01-011111A	RW-01-011110A	B-05-011110A	MW-403A-011811A	MW-403B-011811A	MW-06A-011911A	MW-08-011911A	RMW-102-011711A	MW-103-011411A	WP-105-012111A	DUP-02-011811A	MW-107-011811A	MW-112A-012011A	MW-113A-011111A	MW-113B-011111A	MW-115A-011310A	MW-201-011011A
Sample Date & Time:			1/11/2011 2:55:00 PM	1/11/2011 10:50:00 AM	1/11/2011 11:40:00 AM	1/18/2011 12:00:00 PM	1/18/2011 12:20:00 PM	1/19/2011 10:50:00 AM	1/19/2011	1/17/2011 11:50:00 AM	1/14/2011 10:50:00 AM	1/21/2011 11:10:00 AM	1/18/2011 1:20:00 PM	1/18/2011 12:25:00 PM	1/20/2011 11:10:00 AM	1/11/2011 2:40:00 PM	1/11/2011 3:20:00 PM	1/13/2011 1:30:00 PM	1/10/2011 1:35:00 PM
Chemical Name	**GW-1**	**GW-2**																	
Bis(2-Chloroethoxy)Methane			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Bis(2-Chloroethyl)Ether	30	30	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Bis(2-Ethylhexyl)Phthalate	6		2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.7	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
Butylbenzylphthalate			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Carbazole			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chlorobenzilate			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chrysene	2		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Dibenz(A,H)Anthracene	0.5		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Dibenzofuran			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Diethylphthalate	2000	50000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Dimethylphthalate	30000	50000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Di-N-Butyl Phthalate			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Dinitrobutyl Phenol			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Di-N-Octyl Phthalate			5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethyl Methanesulfonate			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Fluoranthene	90		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Fluorene	30		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Hexachlorobenzene	1	1.0	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Hexachlorobutadiene	0.6	1.0	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Hexachlorocyclopentadiene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Hexachloroethane	8	100	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Hexachloropropene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Indeno(1,2,3-CD)Pyrene	0.5		3	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Isodrin			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Isophorone			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Isosafrole			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Kepone			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
M-Dinitrobenzene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Methyl Methanesulfonate			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Naphthalene	140	1000	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	2.5 U	2.5 U	2.5 U	9	120	2.5 U
Naphthalene, 1-Methyl-			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Nitrobenzene			20	2297	1647	2.5 U	2.5 U	2.5 U	74	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	42000	41000	4	2.5 U
N-Nitrosodimethylamine			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
N-Nitroso-Di-N-Propylamine			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
N-Nitrosodiphenylamine			2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.6	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
Pentachlorobenzene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Pentachloronitrobenzene			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Pentachlorophenol	1		5 U	5 U	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	5 U	5 U	5 U	2.5 U
Phenacetin			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Phenanthrene	40		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Phenol	1000	50000	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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Pyrene	20		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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Pyridine			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Safrole			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	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U

Notes:

1. VOC = v olatile organic compound
2. All concentrations listed in micrograms per liter (µg/L).
3. MCP = Massachusetts Contingency Plan (February 2008)
4. Bold text indicates concentrations that exceed the MCP Method 1 GW-1 standard
5. *Italic* text indicates concentrations that exceed the MCP Method 1 GW-2 standard
6. U= below detection limit

Table 3-2
January 2011 Groundwater Analytical Results - SVOCs
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location:			MW-202	MW-202	MW-203A	MW-203B	MW-204A	MW-302	MW-304A	MW-304B	MW-305B	MW-306	RMW-403A	RMW-403B	MW-406B	MW-406A
Sample ID:			DUP-01-011011A	MW-202-011011A	MW-203A-011011A	MW-203B-011110A	MW-204A-011411A	MW-302-011411A	MW-304A-011711A	MW-304B-011711A	MW-305B-012111A	MW-306-012111A	RMW-403A-012011A	RMW-403B-011911A	MW-406A-011311A	MW-406B-011311A
Sample Date & Time:			1/10/2011 1:30:00 PM	1/10/2011 12:55:00 PM	1/10/2011 1:50:00 PM	1/11/2011 10:45:00 AM	1/14/2011 10:30:00 AM	1/14/2011 10:50:00 AM	1/17/2011 11:55:00 AM	1/17/2011 11:40:00 AM	1/21/2011 10:50:00 AM	1/21/2011 11:00:00 AM	1/20/2011 10:45:00 AM	1/19/2011 11:05:00 AM	1/13/2011 12:00:00 PM	1/13/2011 12:10:00 PM
Chemical Name	**GW-1**	**GW-2**														
1,2,4,5-Tetrachlorobenzene			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	2.5 U	2.5 U	2.5 U
1,2,4-Trichlorobenzene	70	2000	**390**	**416**	**109**	**334**	7.6	14.6	34	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2-Dichlorobenzene	600	2000	**1079**	**1138**	***2265***	**990**	61.5	452.2	**780**	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	3.6
1,3-Dichlorobenzene	40	2000	23	25	**55**	25	2.6	5.4	20	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,4-Dichlorobenzene	5	200	**190**	***201***	***428***	**180**	**13.3**	**50.6**	**160**	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,4-Naphthoquinone			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	2.5 U	2.5 U	2.5 U
2,2'-Oxybis(1-Chloropropane)			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	2.5 U	2.5 U	2.5 U
2,3,4,6-Tetrachlorophenol			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	2.5 U	2.5 U	2.5 U
2,4,5-Trichlorophenol	200	50000	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	2.5 U	2.5 U	2.5 U
2,4,6-Trichlorophenol	10	5000	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	2.5 U	2.5 U	2.5 U
2,4-Dichlorophenol	10	30000	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	2.5 U	2.5 U	2.5 U
2,4-Dimethylphenol	60	40000	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	2.5 U	2.5 U	2.5 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
2,4-Dinitrotoluene	30	20000	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	2.5 U	2.5 U	2.5 U
2,6-Dichlorophenol			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	2.5 U	2.5 U	2.5 U
2,6-Dinitrotoluene			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	2.5 U	2.5 U	2.5 U
2-Chloronaphthalene			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	2.5 U	2.5 U	2.5 U
2-Chlorophenol	10	20000	4.3	4	7	7	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-Methylnaphthalene	10	2000	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	2.5 U	2.5 U	2.5 U
2-Methylphenol			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	2.5 U	2.5 U	2.5 U
2-Nitroaniline			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	2.5 U	2.5 U	2.5 U
2-Nitrophenol			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	2.5 U	2.5 U	2.5 U
3 & 4 Methylphenol			5 U	5 U	125 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		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	2.5 U	2.5 U	2.5 U
3-Methylchloranthrene			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	2.5 U	2.5 U	2.5 U
3-Nitroaniline			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	2.5 U	2.5 U	2.5 U
4,6-Dinitro-2-Methylphenol			5 U	5 U	2.5 U	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	5 U	5 U
4-Bromophenyl-Phenylether			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	2.5 U	2.5 U	2.5 U
4-Chloro-3-Methylphenol			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	2.5 U	2.5 U	2.5 U
4-Chloroaniline	20	50000	3.5	3.4	99.1	3	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
4-Chlorophenyl-Phenylether			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	2.5 U	2.5 U	2.5 U
4-Nitroaniline			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	2.5 U	2.5 U	2.5 U
4-Nitrophenol			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	2.5 U	2.5 U	2.5 U
4-Nitroquinoline-N-Oxide			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		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	2.5 U	2.5 U	2.5 U
Acenaphthylene	30	10000	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	2.5 U	2.5 U	2.5 U
Acetophenone			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	2.5 U	2.5 U	2.5 U
Aniline			17	24	8232	18	2.5 U	160.2	3.2	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Anthracene	30		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	2.5 U	2.5 U	2.5 U
Aramite			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	2.5 U	2.5 U	2.5 U
Azobenzene			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	2.5 U	2.5 U	2.5 U
Benzidine			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	2.5 U	2.5 U	2.5 U
Benzo(A)Anthracene	1		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	2.5 U	2.5 U	2.5 U
Benzo(A)Pyrene	0.2		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	2.5 U	2.5 U	2.5 U
Benzo(B)Fluoranthene	1		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	2.5 U	2.5 U	2.5 U
Benzo(G,H,I)Perylene	20		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	2.5 U	2.5 U	2.5 U
Benzo(K)Fluoranthene	1		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	2.5 U	2.5 U	2.5 U
Benzoic Acid			5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzyl Alcohol			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	2.5 U	2.5 U	2.5 U

Table 3-2
January 2011 Groundwater Analytical Results - SVOCs
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Sample Location:	MW-202	MW-202	MW-203A	MW-203B	MW-204A	MW-302	MW-304A	MW-304B	MW-305B	MW-306	RMW-403A	RMW-403B	MW-406B	MW-406A
			Sample ID:	DUP-01-011011A	MW-202-011011A	MW-203A-011011A	MW-203B-011110A	MW-204A-011411A	MW-302-011411A	MW-304A-011711A	MW-304B-011711A	MW-305B-012111A	MW-306-012111A	RMW-403A-012011A	RMW-403B-011911A	MW-406A-011311A	MW-406B-011311A
			Sample Date & Time:	1/10/2011 1:30:00 PM	1/10/2011 12:55:00 PM	1/10/2011 1:50:00 PM	1/11/2011 10:45:00 AM	1/14/2011 10:30:00 AM	1/14/2011 10:50:00 AM	1/17/2011 11:55:00 AM	1/17/2011 11:40:00 AM	1/21/2011 10:50:00 AM	1/21/2011 11:00:00 AM	1/20/2011 10:45:00 AM	1/19/2011 11:05:00 AM	1/13/2011 12:00:00 PM	1/13/2011 12:10:00 PM
Chemical Name	**GW-1**	**GW-2**															
Bis(2-Chloroethoxy)Methane				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	2.5 U	2.5 U	2.5 U
Bis(2-Chloroethyl)Ether	30	30		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	2.5 U	2.5 U	2.5 U
Bis(2-Ethylhexyl)Phthalate	6			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	2.5 U	2.5 U	2.5 U
Butylbenzylphthalate				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	2.5 U	2.5 U	2.5 U
Carbazole				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	2.5 U	2.5 U	2.5 U
Chlorobenzilate				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	2.5 U	2.5 U	2.5 U
Chrysene	2			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	2.5 U	2.5 U	2.5 U
Dibenz(A,H)Anthracene	0.5			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	2.5 U	2.5 U	2.5 U
Dibenzofuran				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	2.5 U	2.5 U	2.5 U
Diethylphthalate	2000	50000		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	2.5 U	2.5 U	2.5 U
Dimethylphthalate	30000	50000		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	2.5 U	2.5 U	2.5 U
Di-N-Butyl Phthalate				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	2.5 U	2.5 U	2.5 U
Dinitrobutyl Phenol				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	2.5 U	2.5 U	2.5 U
Di-N-Octyl Phthalate				5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethyl Methanesulfonate				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	2.5 U	2.5 U	2.5 U
Fluoranthene	90			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	2.5 U	2.5 U	2.5 U
Fluorene	30			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	2.5 U	2.5 U	2.5 U
Hexachlorobenzene	1	1.0		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	2.5 U	2.5 U	2.5 U
Hexachlorobutadiene	0.6	1.0		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	2.5 U	2.5 U	2.5 U
Hexachlorocyclopentadiene				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	2.5 U	2.5 U	2.5 U
Hexachloroethane	8	100		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	2.5 U	2.5 U	2.5 U
Hexachloropropene				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	2.5 U	2.5 U	2.5 U
Indeno(1,2,3-CD)Pyrene	0.5			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	2.5 U	2.5 U	2.5 U
Isodrin				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	2.5 U	2.5 U	2.5 U
Isophorone				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	2.5 U	2.5 U	2.5 U
Isosafrole				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	2.5 U	2.5 U	2.5 U
Kepone				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	2.5 U	2.5 U	2.5 U
M-Dinitrobenzene				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	2.5 U	2.5 U	2.5 U
Methyl Methanesulfonate				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	2.5 U	2.5 U	2.5 U
Naphthalene	140	1000		2.5 U	2.5 U	28.7	2.5 U	2.5 U	29.4	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Naphthalene, 1-Methyl-				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	2.5 U	2.5 U	2.5 U
Nitrobenzene				2.5 U	2.5 U	8	2.5 U	2.5 U	2.5 U	140	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	3.4	5.6
N-Nitrosodimethylamine				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	2.5 U	2.5 U	2.5 U
N-Nitroso-Di-N-Propylamine				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	2.5 U	2.5 U	2.5 U
N-Nitrosodiphenylamine				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	2.5 U	2.5 U	2.5 U
Pentachlorobenzene				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	2.5 U	2.5 U	2.5 U
Pentachloronitrobenzene				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	2.5 U	2.5 U	2.5 U
Pentachlorophenol	1			2.5 U	2.5 U	2.5 U	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	5 U	5 U
Phenacetin				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	2.5 U	2.5 U	2.5 U
Phenanthrene	40			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	2.5 U	2.5 U	2.5 U
Phenol	1000	50000		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	2.5 U	2.5 U	2.5 U
Pyrene	20			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	2.5 U	2.5 U	2.5 U
Pyridine				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	2.5 U	2.5 U	2.5 U
Safrole				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	2.5 U	2.5 U	2.5 U

Notes:

1. VOC = v olatile organic compound
2. All concentrations listed in micrograms per liter (µg/L).
3. MCP = Massachusetts Contingency Plan (February 2008)
4. Bold text indicates concentrations that exceed the MCP Method 1 GW-1 standard
5. *Italic* text indicates concentrations that exceed the MCP Method 1 GW-2 standard
6. U= below detection limit

Table 3-3
January 2011 Groundwater Analytical Results - Total Metals Analysis
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Sample Location:	RW-1	P-4	MW-4A	MW-4B	MW-06A	MW-08	RMW-102
			Sample ID:	RW-01-011110A	B-05-011110A	MW-403A-011811A	MW-403B-011811A	MW-06A-011911A	MW-08-011911A	RMW-102-011711A
			Sample Date & Time:	1/11/2011 10:50:00 AM	1/11/2011 11:40:00 AM	1/18/2011 12:00:00 PM	1/18/2011 12:20:00 PM	1/19/2011 10:50:00 AM	1/19/2011	1/17/2011 11:50:00 AM
Chemical Name	**GW-1**	**MCL**								
Aluminum			990	11000	440 U	2400	1700	5700	520	670
ANTIMONY	6	6	**35**	20 U	20 U	20 U	20 U	20 U	**42**	20 U
ARSENIC	10	10	20 U	20 U	20 U	20 U	20 U	**170**	20 U	20 U
Barium	2000	2000	94	82	29	25	49	110	110	20 U
Beryllium	4	4	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
Cadmium	5	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Calcium			24000	50000	53000	5400	52000	26000	100000	7400
CHROMIUM	100	100	20 U	20 U	20 U	20 U	20 U	68	20 U	20 U
Cobalt			20 U	35	33	20 U	20 U	20 U	20 U	20 U
Copper		1300	97	42	20 U	20 U	20 U	21	39	20 U
Iron			790	24000	10000	3400	4100	91000	1800	1000
LEAD	15	15	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Magnesium			2100	8200	4500	1500	12000	4000	4100	1300
Manganese			80 U	2200	1600	50	450	360	240	490
MERCURY	2	2	**8**	1.1	0.64	0.91	0.86	0.5 U	**6.5**	0.2 U
NICKEL	100		20 U	22	20 U	20 U	20 U	20 U	20 U	20 U
Potassium			3500	8200	5600	1500	3000	6400	10000	2000
Selenium	50	50	40 U	40 U	40 U	20 U	20 U	20 U	20 U	20 U
Silver	100		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium			59000	94000	110000	4600	52000	51000	190000	57000
THALLIUM	2	2	40 U	40 U	40 U	40 U	40 U	40 U	40 U	20 U
Vandium	30		20 U	22	20 U	20 U	20 U	24	20 U	20 U
Zinc	5000		39	59	63	20 U	26	36	100	20 U

Notes:

1. All concentrations listed in micrograms per liter (µg/L).
2. U = below detection limit
3. GW-1 = MCP Category GW-1 Standards (310 CMR 40.0974(2)
4. MCL = Maximum Containment Level: EPA's National Primary Drinking Water Regulations, updated May 2009.

Table 3-3
January 2011 Groundwater Analytical Results - Total Metals Analysis
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location:	MW-103	WP-105	MW-107	MW-107	MW-112A	MW-113A	B-5	MW-115B
		Sample ID:	MW-103-011411A	WP-105-012111A	DUP-02-011811A	MW-107-011811A	MW-112A-012011A	MW-113A-011111A	MW-113B-011111A	MW-115A-011310A
		Sample Date & Time:	1/14/2011 10:50:00 AM	1/21/2011 11:10:00 AM	1/18/2011 1:20:00 PM	1/18/2011 12:25:00 PM	1/20/2011 11:10:00 AM	1/11/2011 2:40:00 PM	1/11/2011 3:20:00 PM	1/13/2011 1:30:00 PM
Chemical Name	**GW-1**	**MCL**								
Aluminum			310	220 U	350	280	150	860	1900	1200
ANTIMONY	6	6	20 U	40 U	20 U	20 U	20 U	20 U	20 U	80 U
ARSENIC	10	10	20 U	80 U	20 U	20 U	20 U	20 U	20 U	80 U
Barium	2000	2000	20 U	58	20 U	20 U	20 U	30	41	80 U
Beryllium	4	4	8 U	16 U	8 U	8 U	8 U	8 U	8 U	32 U
Cadmium	5	5	10 U	20 U	10 U	10 U	10 U	10 U	10 U	40 U
Calcium			7800	15000	50000	48000	24000	28000	61000	95000
CHROMIUM	100	100	20 U	40 U	20 U	20 U	75	20 U	25	80 U
Cobalt			20 U	40 U	20 U	20 U	20 U	20 U	20 U	80 U
Copper		1300	20 U	40 U	20 U	20 U	20 U	78	20 U	80 U
Iron			4100	4000	22000	21000	10000	1500	4100	85000
LEAD	15	15	20 U	40 U	20 U	20 U	20 U	20 U	20 U	80 U
Magnesium			1100	3700	4300	4100	3900	2400	3100	30000
Manganese			390	950	1200	1200	1500	93	700	9100
MERCURY	2	2	0.2 U	0.5 U	0.2 U	0.2 U	0.5 U	1.2	1.6	0.2 U
NICKEL	100		20 U	40 U	20 U	20 U	47	20 U	22	80 U
Potassium			1900	2400	4700	4600	4500	3900	4000	13000
Selenium	50	50	40 U	40 U	20 U	20 U	20 U	40 U	40 U	160 U
Silver	100		10 U	20 U	10 U	10 U	10 U	10 U	10 U	40 U
Sodium			14000	64000	340000	330000	260000	31000	91000	1000000
THALLIUM	2	2	40 U	40 U	40 U	40 U	40 U	40 U	40 U	80 U
Vandium	30		20 U	40 U	20 U	20 U	20 U	20 U	20 U	80 U
Zinc	5000		22	40 U	20 U	20 U	20 U	330	63	630

Notes:

1. All concentrations listed in micrograms per liter (µg/L).
2. U = below detection limit
3. GW-1 = MCP Category GW-1 Standards (310 CMR 40.0974(2)
4. MCL = Maximum Containment Level: EPA's National Primary Drinking Water Regulations, updated May 2009.

Table 3-3
January 2011 Groundwater Analytical Results - Total Metals Analysis
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location:	MW-201	MW-202	MW-202	MW-203A	MW-203B	MW-204A	MW-302	MW-304A
		Sample ID:	MW-201-011011A	DUP-01-011011A	MW-202-011011A	MW-203A-011011A	MW-203B-011110A	MW-204A-011411A	MW-302-011411A	MW-304A-011711A
		Sample Date & Time:	1/10/2011 1:35:00 PM	1/10/2011 1:30:00 PM	1/10/2011 12:55:00 PM	1/10/2011 1:50:00 PM	1/11/2011 10:45:00 AM	1/14/2011 10:30:00 AM	1/14/2011 10:50:00 AM	1/17/2011 11:55:00 AM
Chemical Name	**GW-1**	**MCL**								
Aluminum			220 U	4700	5700	1100 U	440 U	1500	2800	450
ANTIMONY	6	6	40 U	60 U	60 U	200 U	40 U	20 U	60 U	80 U
ARSENIC	10	10	40 U	60 U	60 U	200 U	**72**	20 U	60 U	80 U
Barium	2000	2000	40 U	60 U	60 U	200 U	23	32	60 U	80 U
Beryllium	4	4	16 U	24 U	24 U	80 U	16 U	8 U	24 U	32 U
Cadmium	5	5	20 U	30 U	30 U	100 U	20 U	10 U	30 U	40 U
Calcium			33000	22000	22000	330000	32000	39000	83000	620000
CHROMIUM	100	100	40 U	60 U	60 U	200 U	31	**130**	60 U	80 U
Cobalt			56	60 U	60 U	200 U	40 U	20 U	100	80 U
Copper		1300	40 U	250	310	200 U	40 U	20 U	60 U	80 U
Iron			25000	29000	34000	180000	82000	49000	46000	3800
LEAD	15	15	40 U	60 U	60 U	200 U	40 U	20 U	60 U	80 U
Magnesium			9100	8600	8800	120000	9400	6300	15000	150000
Manganese			4400	3200	3200	21000	4100	2900	4400	43000
MERCURY	2	2	0.2 U	0.96	1.2	0.2 U	0.2 U	0.24	0.2 U	0.27
NICKEL	100		40 U	60 U	60 U	200 U	40 U	**160**	79	80 U
Potassium			5600	6200	6200	39000	6000	5600	10000	16000
Selenium	50	50	80 U	120 U	120 U	400 U	80 U	40 U	120 U	80 U
Silver	100		20 U	30 U	30 U	100 U	20 U	10 U	30 U	40 U
Sodium			360000	620000	620000	3500000	430000	130000	660000	1400000
THALLIUM	2	2	40 U	60 U	60 U	200 U	80 U	40 U	60 U	**160**
Vandium	30		40 U	60 U	60 U	200 U	40 U	20 U	60 U	80 U
Zinc	5000		40 U	60 U	60 U	200 U	40 U	25	180	80 U

Notes:

1. All concentrations listed in micrograms per liter (µg/L).
2. U = below detection limit
3. GW-1 = MCP Category GW-1 Standards (310 CMR 40.0974(2)
4. MCL = Maximum Containment Level: EPA's National Primary Drinking Water Regulations, updated May 2009.

Table 3-3
January 2011 Groundwater Analytical Results - Total Metals Analysis
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

		Sample Location:	MW-304B	MW-305B	MW-306	RMW-403A	RMW-403B	MW-406B	MW-406A
		Sample ID:	MW-304B-011711A	MW-305B-012111A	MW-306-012111A	RMW-403A-012011A	RMW-403B-011911A	MW-406A-011311A	MW-406B-011311A
		Sample Date & Time:	1/17/2011 11:40:00 AM	1/21/2011 10:50:00 AM	1/21/2011 11:00:00 AM	1/20/2011 10:45:00 AM	1/19/2011 11:05:00 AM	1/13/2011 12:00:00 PM	1/13/2011 12:10:00 PM
Chemical Name	**GW-1**	**MCL**							
Aluminum			110 U	2000	1800	19000	220	1000	450
ANTIMONY	6	6	20 U	20 U	20 U	20 U	20 U	20 U	20 U
ARSENIC	10	10	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Barium	2000	2000	35	50	130	220	42	320	120
Beryllium	4	4	8 U	8 U	8 U	8 U	8 U	8 U	8 U
Cadmium	5	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Calcium			270000	11000	21000	28000	34000	95000	42000
CHROMIUM	100	100	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Cobalt			20 U	20 U	20 U	20 U	22	27	20 U
Copper		1300	20 U	20 U	20 U	75	20 U	20 U	20 U
Iron			6100	1600	11000	9900	26000	2000	1200
LEAD	15	15	20 U	20 U	20 U	**26**	20 U	20 U	20 U
Magnesium			110000	1400	6300	4800	6600	16000	9300
Manganese			31000	230	2700	1800	4500	860	1400
MERCURY	2	2	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.2 U
NICKEL	100		20 U	20 U	20 U	20 U	20 U	20 U	20 U
Potassium			18000	2100	4000	4500	5600	2700	5100
Selenium	50	50	20 U	20 U	20 U	20 U	20 U	40 U	40 U
Silver	100		10 U	10 U	10 U	11 U	10 U	10 U	10 U
Sodium			240000	27000	20000	87000	90000	47000	120000
THALLIUM	2	2	**110**	40 U	40 U	40 U	40 U	40 U	40 U
Vandium	30		20 U	20 U	20 U	20 U	20 U	20 U	20 U
Zinc	5000		37	53	59	77	20 U	22	20 U

Notes:

1. All concentrations listed in micrograms per liter (µg/L).
2. U = below detection limit
3. GW-1 = MCP Category GW-1 Standards (310 CMR 40.0974(2)
4. MCL = Maximum Containment Level: EPA's National Primary Drinking Water Regulations, updated May 2009.

Table 3-4
January 2011 Groundwater Analytical Results - Anions
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Sample Location	P-1S	RW-1	P-4	MW-4A	MW-4B	MW-06A	MW-08	RMW-102	MW-103	WP-105	MW-107
Sample ID	P-01-011111A	RW-01-011110A	B-05-011110A	MW-403A-011811A	MW-403B-011811A	MW-06A-011911A	MW-08-011911A	RMW-102-011711A	MW-103-011411A	WP-105-012111A	DUP-02-011811A
Sample Date & Time	1/11/2011 2:55:00 PM	1/11/2011 10:50:00 AM	1/11/2011 11:40:00 AM	1/18/2011 12:00:00 PM	1/18/2011 12:20:00 PM	1/19/2011 10:50:00 AM	1/19/2011	1/17/2011 11:50:00 AM	1/14/2011 10:50:00 AM	1/21/2011 11:10:00 AM	1/18/2011 1:20:00 PM
Chemical Name											
Bromide	0.1 U	0.1 U	0.1 U	0.1 U	0.22	0.1 U	0.1 U	0.2	0.1 U	0.11	0.1 U
Chloride	21	110	140	4.9	110	91	110	73	15	120	330
Fluoride	0.19	0.24	0.24	0.1 U	0.32	0.3	0.22	0.32	0.2	0.21	1.2
Nitrate				0.1 U	1.4 B	0.1 U	6 JB			14 J	0.1 U
Nitrate & Nitrite	3.9	0.1 U	0.32					0.1 UJ	0.1 U		
Nitrate (as Nitrogen)	0.02 U	0.02 U	0.02 U	0.02 U	0.32	0.02 U	1.4	0.02 U	0.02 U	3.2	0.02 U
Nitrite				0.1 U	0.1 U	0.1 U	0.1 UJ			0.1 UJ	0.1 U
Nitrite (as Nitrogen)	0.03 U	0.02 U	0.02 U	0.03 U	0.03 U	0.03 U	0.02 U	0.03 U	0.03 U	0.03 U	0.03 U
Nitrite + Nitrate (as Nitrogen)	0.88		0.07	0.02 U	0.02 U	0.02 U	0.03 U	0.03 U	0.03 U	0.03 U	0.02 U
o-Phosphate as Phosphorus	0.03 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.03 U	0.03 U	0.03 U	0.02 U
Sulfate	150	210	190	14	110	43	450	17	22	12	400

Sample Location	MW-107	MW-112A	MW-113A	B-5	MW-115 B	MW-201	MW-202	MW-202	MW-203A	MW-203B	MW-204A
Sample ID	MW-107-011811A	MW-112A-012011A	MW-113A-011111A	MW-113B-011111A	MW-115A-011310A	MW-201-011011A	DUP-01-011011A	MW-202-011011A	MW-203A-011011A	MW-203B-011110A	MW-204A-011411A
Sample Date & Time	1/18/2011 12:25:00 PM	1/20/2011 11:10:00 AM	1/11/2011 2:40:00 PM	1/11/2011 3:20:00 PM	1/13/2011 1:30:00 PM	1/10/2011 1:35:00 PM	1/10/2011 1:30:00 PM	1/10/2011 12:55:00 PM	1/10/2011 1:50:00 PM	1/11/2011 10:45:00 AM	1/14/2011 10:30:00 AM
Chemical Name											
Bromide	0.1 U	0.1 U	0.1 U	0.1 U	5.7	0.53	1.1	1.2	8.2	0.1 U	0.1
Chloride	330	210	44	120	1700	400	470	470	5200	320	86
Fluoride	1.3	0.78	0.22	0.3	8.4	0.3	0.22	0.23	0.1 U	0.41	1.8
Nitrate	0.1 U	0.1 U									
Nitrate & Nitrite			12	0.1 U	5 U	1 U	1 U	1 U	2.4	0.1 U	0.1 U
Nitrate (as Nitrogen)	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Nitrite	0.1 U	0.1 U									
Nitrite (as Nitrogen)	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.02 U	0.03 U
Nitrite + Nitrate (as Nitrogen)	0.02 U	0.03 U	0.03 U	0.03 U	1.5 U	0.3 U	0.3 U	0.3 U	0.54		0.03 U
o-Phosphate as Phosphorus	0.02 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.02 U	0.03 U
Sulfate	400	140	34	130	1700	340	740	730	2700	550	310

Sample Location	MW-302	MW-304A	MW-304B	MW-305B	MW-306	RMW-403A	RMW-403B	MW-406B	MW-406A
Sample ID	MW-302-011411A	MW-304A-011711A	MW-304B-011711A	MW-305B-012111A	MW-306-012111A	RMW-403A-012011A	RMW-403B-011911A	MW-406A-011311A	MW-406B-011311A
Sample Date & Time	1/14/2011 10:50:00 AM	1/17/2011 11:55:00 AM	1/17/2011 11:40:00 AM	1/21/2011 10:50:00 AM	1/21/2011 11:00:00 AM	1/20/2011 10:45:00 AM	1/19/2011 11:05:00 AM	1/13/2011 12:00:00 PM	1/13/2011 12:10:00 PM
Chemical Name									
Bromide	0.78	0.1 U	0.1 U	0.15 J	0.1 U	0.13	0.1 U	0.1 U	0.3
Chloride	900	2800	830	39	26	140	170	190	230
Fluoride	0.77	0.1 U	0.23	0.18	1.1	0.67	0.28	1.7	0.37
Nitrate				5.4 J	0.1 UJ	14	0.1 U		
Nitrate & Nitrite	0.1 U	3.5	0.1 U					0.1 U	0.1 U
Nitrate (as Nitrogen)	0.02 U	0.02 U	0.02 U	1.2	0.02 U	3.2	0.02 U	0.02 U	0.02 U
Nitrite				0.1 UJ	0.1 UJ	0.1 UJ	0.1 U		
Nitrite (as Nitrogen)	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Nitrite + Nitrate (as Nitrogen)	0.03 U	0.79	0.03 U	0.03 U	0.03 U	0.03 U	0.02 U	0.03 U	0.03 U
o-Phosphate as Phosphorus	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.02 U	0.03 U	0.03 U
Sulfate	560	1400	550	41	6.4	34	42	32	33

Notes:
1. Results repoted in miligrams per liter (mg/L)
2. U = below detection limit, J = quantitation approximate, B = detected in laboratory blank

Table 3-5a
Comparison of Detected Metals Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011		2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag					
MW-04B	ALUMINUM	--	--	450		1700		1250	--	--	--	--
MW-04B	BARIUM	2000	--	30		49		19	N	--	N	--
MW-04B	CADMIUM	4	--	0.86	J	10	U	-0.86	N	--	N	--
MW-04B	CALCIUM	--	--	82000		52000		-30000	--	--	--	--
MW-04B	COBALT	--	--	1.2	J	20	U	-1.2	--	--	--	--
MW-04B	COPPER	--	--	4.5	J	20	U	-4.5	--	--	--	--
MW-04B	IRON	--	--	1200	J	4100		2900	--	--	--	--
MW-04B	LEAD	10	--	0.28	J	20	U	-0.28	N	--	N	--
MW-04B	MAGNESIUM	--	--	15000	J	12000		-3000	--	--	--	--
MW-04B	MANGANESE	--	--	1400		450		-950	--	--	--	--
MW-04B	MERCURY	2	--	1.33		0.86		-0.47	N	--	N	--
MW-04B	NICKEL	100	--	9.1	J	20	U	-9.1	N	--	N	--
MW-04B	POTASSIUM	--	--	3900		3000		-900	--	--	--	--
MW-04B	SELENIUM	50	--	0.82		20	U	-0.82	N	--	N	--
MW-04B	SODIUM	--	--	140000		52000		-88000	--	--	--	--
MW-04B	VANADIUM	30	--	2		20	U	-2	N	--	N	--
MW-04B	ZINC	900	--	15		26		11	N	--	N	--
MW-06A	ALUMINUM	--	--	58		5700		5642	--	--	--	--
MW-06A	ANTIMONY	6	--	1.6	J	20	U	-1.6	N	--	N	--
MW-06A	ARSENIC	**10**	--	**19**	**J**	**170**		151	Y	--	Y	--
MW-06A	BARIUM	2000	--	78		110		32	N	--	N	--
MW-06A	CADMIUM	4	--	0.083	J	10	U	-0.083	N	--	N	--
MW-06A	CALCIUM	--	--	28000	J	26000		-2000	--	--	--	--
MW-06A	CHROMIUM	100	--	30	J	68		38	N	--	N	--
MW-06A	COBALT	--	--	1.7	J	20	U	-1.7	--	--	--	--
MW-06A	COPPER	--	--	2.4	U	21		21	--	--	--	--
MW-06A	IRON	--	--	14000		91000		77000	--	--	--	--
MW-06A	LEAD	10	--	0.77	J	20	U	-0.77	N	--	N	--
MW-06A	MAGNESIUM	--	--	2400		4000		1600	--	--	--	--
MW-06A	MANGANESE	--	--	350		360		10	--	--	--	--
MW-06A	MERCURY	2	--	0.13		0.5	U	-0.13	N	--	N	--
MW-06A	NICKEL	100	--	3.7	J	20	U	-3.7	N	--	N	--
MW-06A	POTASSIUM	--	--	5000		6400		1400	--	--	--	--
MW-06A	SELENIUM	50	--	0.55	J	20	U	-0.55	N	--	N	--
MW-06A	SILVER	7	--	0.17	J	10	U	-0.17	N	--	N	--
MW-06A	SODIUM	--	--	100000		51000		-49000	--	--	--	--

Table 3-5a
Comparison of Detected Metals Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003	2011	2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	**Chemical:**	**GW-1 Standard**	**GW-2 Standard**	**Conc. Flag**	**Conc. Flag**					
MW-06A	THALLIUM	2	--	0.083 J	40 U	-0.083	N	--	N	--
MW-06A	VANADIUM	30	--	6.9 U	24	24	N	--	N	--
MW-06A	ZINC	900	--	6.9 U	36	36	N	--	N	--
MW-107	ALUMINUM	--	--	310	*315*	5	--	--	--	--
MW-107	ANTIMONY	6	--	0.19 J	*20 U*	-0.19	N	--	N	--
MW-107	ARSENIC	10	--	4	*20 U*	-4	N	--	N	--
MW-107	BARIUM	2000	--	21	*20 U*	-21	N	--	N	--
MW-107	BERYLLIUM	4	--	2	*8 U*	-2	N	--	N	--
MW-107	CALCIUM	--	--	77000 J	*49000*	-28000	--	--	--	--
MW-107	CHROMIUM	100	--	7.3 J	*20 U*	-7.3	N	--	N	--
MW-107	COBALT	--	--	27 J	*20 U*	-27	--	--	--	--
MW-107	COPPER	--	--	8.5 J	*20 U*	-8.5	--	--	--	--
MW-107	IRON	--	--	38000	*21500*	-16500	--	--	--	--
MW-107	LEAD	10	--	0.14 J	*20 U*	-0.14	N	--	N	--
MW-107	MAGNESIUM	--	--	7000	*4200*	-2800	--	--	--	--
MW-107	MANGANESE	--	--	2300	*1200*	-1100	--	--	--	--
MW-107	MERCURY	2	--	0.16	*0.2 U*	-0.16	N	--	N	--
MW-107	NICKEL	100	--	35 J	*20 U*	-35	N	--	N	--
MW-107	POTASSIUM	--	--	6500	*4650*	-1850	--	--	--	--
MW-107	SELENIUM	50	--	1.4	*20 U*	-1.4	N	--	N	--
MW-107	SODIUM	--	--	680000	*335000*	-345000	--	--	--	--
MW-107	ZINC	900	--	8.7 J	*20 U*	-8.7	N	--	N	--
MW-115B	ALUMINUM	--	--	2400	1200	-1200	--	--	--	--
MW-115B	ANTIMONY	6	--	1.0 J	80 U	-1	N	--	N	--
MW-115B	ARSENIC	**10**	--	**20 J**	80 U	-20	Y	--	N	--
MW-115B	BARIUM	2000	--	16	80 U	-16	N	--	N	--
MW-115B	BERYLLIUM	**4**	--	**15**	32 U	-15	Y	--	N	--
MW-115B	CALCIUM	--	--	190000 J	95000	-95000	--	--	--	--
MW-115B	CHROMIUM	100	--	15 J	80 U	-15	N	--	N	--
MW-115B	COBALT	--	--	72 J	80 U	-72	--	--	--	--
MW-115B	COPPER	--	--	26 J	80 U	-26	--	--	--	--
MW-115B	IRON	--	--	380000	85000	-295000	--	--	--	--
MW-115B	LEAD	10	--	0.1 J	80 U	-0.1	N	--	N	--
MW-115B	MAGNESIUM	--	--	60000	30000	-30000	--	--	--	--
MW-115B	MANGANESE	--	--	22000	9100	-12900	--	--	--	--
MW-115B	MERCURY	2	--	0.24	0.2 U	-0.24	N	--	N	--

Table 3-5a
Comparison of Detected Metals Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011		2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag					
MW-115B	NICKEL	**100**	--	**130**	J	80	U	-130	Y	--	N	--
MW-115B	POTASSIUM	--	--	21000		13000		-8000	--	--	--	--
MW-115B	SELENIUM	50	--	5		160	U	-5	N	--	N	--
MW-115B	SILVER	7	--	0.055	J	40	U	-0.055	N	--	N	--
MW-115B	SODIUM	--	--	2400000		1000000		-1400000	--	--	--	--
MW-115B	VANADIUM	30	--	19	J	80	U	-19	N	--	N	--
MW-115B	ZINC	900	--	12		630		618	N	--	N	--
MW-201	ALUMINUM	--	--	120		220	U	-120	--	--	--	--
MW-201	ARSENIC	**10**	--	**36**	**J**	40	U	-36	Y	--	N	--
MW-201	BARIUM	2000	--	21		40	U	-21	N	--	N	--
MW-201	BERYLLIUM	4	--	0.48		16	U	-0.48	N	--	N	--
MW-201	CADMIUM	4	--	0.062	J	20	U	-0.062	N	--	N	--
MW-201	CALCIUM	--	--	58000		33000		-25000	--	--	--	--
MW-201	CHROMIUM	100	--	17	J	40	U	-17	N	--	N	--
MW-201	COBALT	--	--	110		56		-54	--	--	--	--
MW-201	COPPER	--	--	6.8	J	40	U	-6.8	--	--	--	--
MW-201	IRON	--	--	52000	J	25000		-27000	--	--	--	--
MW-201	LEAD	10	--	0.63	J	40	U	-0.63	N	--	N	--
MW-201	MAGNESIUM	--	--	15000		9100		-5900	--	--	--	--
MW-201	MANGANESE	--	--	9600		4400		-5200	--	--	--	--
MW-201	MERCURY	2	--	0.063		0.2	U	-0.063	N	--	N	--
MW-201	NICKEL	100	--	54	J	40	U	-54	N	--	N	--
MW-201	POTASSIUM	--	--	7500		5600		-1900	--	--	--	--
MW-201	SELENIUM	50	--	1.9		80	U	-1.9	N	--	N	--
MW-201	SODIUM	--	--	650000		360000		-290000	--	--	--	--
MW-201	VANADIUM	30	--	19	J	40	U	-19	N	--	N	--
MW-201	ZINC	900	--	12		40	U	-12	N	--	N	--
MW-202	ALUMINUM	--	--	990		*5200*		4210	--	--	--	--
MW-202	ANTIMONY	6	--	0.17	J	*60*	*U*	-0.17	N	--	N	--
MW-202	ARSENIC	10	--	7.6	J	*60*	*U*	-7.6	N	--	N	--
MW-202	BARIUM	2000	--	14		*60*	*U*	-14	N	--	N	--
MW-202	BERYLLIUM	4	--	1.1		*24*	*U*	-1.1	N	--	N	--
MW-202	CADMIUM	4	--	0.4	J	*30*	*U*	-0.4	N	--	N	--
MW-202	CALCIUM	--	--	35000		*22000*		-13000	--	--	--	--
MW-202	CHROMIUM	100	--	37	J	*60*	*U*	-37	N	--	N	--
MW-202	COBALT	--	--	38	J	*60*	*U*	-38	--	--	--	--

Table 3-5a
Comparison of Detected Metals Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

				Year Sampled:	2003	2011	2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard		Conc. Flag	Conc. Flag					
MW-202	COPPER	--	--		75 J	*280*	205	--	--	--	--
MW-202	IRON	--	--		42000 J	*31500*	-10500	--	--	--	--
MW-202	LEAD	10	--		4.7 J	*60 U*	-4.7	N	--	N	--
MW-202	MAGNESIUM	--	--		10000	*8700*	-1300	--	--	--	--
MW-202	MANGANESE	--	--		5000	*3200*	-1800	--	--	--	--
MW-202	MERCURY	2	--		0.28	*1.1*	0.82	N	--	N	--
MW-202	NICKEL	100	--		46	*60 U*	-46	N	--	N	--
MW-202	POTASSIUM	--	--		6800	*6200*	-600	--	--	--	--
MW-202	SELENIUM	50	--		3.8	*120 U*	-3.8	N	--	N	--
MW-202	SODIUM	--	--		870000	*620000*	-250000	--	--	--	--
MW-202	THALLIUM	2	--		0.075 U	*60 U*	0	N	--	N	--
MW-202	VANADIUM	30	--		5.4 J	*60 U*	-5.4	N	--	N	--
MW-202	ZINC	900	--		76	*60 U*	-76	N	--	N	--
MW-203A	ALUMINUM	--	--		300	1100 U	-300	--	--	--	--
MW-203A	ANTIMONY	6	--		4.1 J	200 U	-4.1	N	--	N	--
MW-203A	ARSENIC	**10**	--		**39 J**	200 U	-39	Y	--	N	--
MW-203A	BARIUM	2000	--		27	200 U	-27	N	--	N	--
MW-203A	BERYLLIUM	4	--		1.2	80 U	-1.2	N	--	N	--
MW-203A	CADMIUM	4	--		0.11	100 U	-0.11	N	--	N	--
MW-203A	CALCIUM	--	--		580000 J	330000	-250000	--	--	--	--
MW-203A	CHROMIUM	100	--		28 J	200 U	-28	N	--	N	--
MW-203A	COBALT	--	--		11 J	200 U	-11	--	--	--	--
MW-203A	COPPER	--	--		79 J	200 U	-79	--	--	--	--
MW-203A	IRON	--	--		360000	180000	-180000	--	--	--	--
MW-203A	LEAD	10	--		0.76 J	200 U	-0.76	N	--	N	--
MW-203A	MAGNESIUM	--	--		190000	120000	-70000	--	--	--	--
MW-203A	MANGANESE	--	--		31000	21000	-10000	--	--	--	--
MW-203A	MERCURY	2	--		0.32	0.2 U	-0.32	N	--	N	--
MW-203A	NICKEL	100	--		32 J	200 U	-32	N	--	N	--
MW-203A	POTASSIUM	--	--		56000	39000	-17000	--	--	--	--
MW-203A	SILVER	7	--		0.16 J	100 U	-0.16	N	--	N	--
MW-203A	SODIUM	--	--		5600000	3500000	-2100000	--	--	--	--
MW-203A	VANADIUM	30	--		29 J	200 U	-29	N	--	N	--
MW-203A	ZINC	900	--		32	200 U	-32	N	--	N	--
MW-203B	ALUMINUM	--	--		16	440 U	-16	--	--	--	--
MW-203B	ANTIMONY	6	--		0.19 J	40 U	-0.19	N	--	N	--

Table 3-5a
Comparison of Detected Metals Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

				Year Sampled:	2003	2011					
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag	2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
MW-203B	ARSENIC	**10**	--	**17**	**J**	**72**		55	Y	--	Y	--
MW-203B	BARIUM	2000	--	24		23		-1	N	--	N	--
MW-203B	CADMIUM	4	--	0.078	J	20	U	-0.078	N	--	N	--
MW-203B	CALCIUM	--	--	42000	J	32000		-10000	--	--	--	--
MW-203B	CHROMIUM	100	--	31	J	31		0	N	--	N	--
MW-203B	COBALT	--	--	7.6	J	40	U	-7.6	--	--	--	--
MW-203B	COPPER	--	--	12	J	40	U	-12	--	--	--	--
MW-203B	IRON	--	--	70000		82000		12000	--	--	--	--
MW-203B	LEAD	10	--	0.3	J	40	U	-0.3	N	--	N	--
MW-203B	MAGNESIUM	--	--	11000		9400		-1600	--	--	--	--
MW-203B	MANGANESE	--	--	6800		4100		-2700	--	--	--	--
MW-203B	MERCURY	2	--	0.11		0.2	U	-0.11	N	--	N	--
MW-203B	NICKEL	100	--	25	J	40	U	-25	N	--	N	--
MW-203B	POTASSIUM	--	--	7400		6000		-1400	--	--	--	--
MW-203B	SELENIUM	50	--	1.7		80	U	-1.7	N	--	N	--
MW-203B	SODIUM	--	--	700000		430000		-270000	--	--	--	--
MW-203B	ZINC	900	--	14		40	U	-14	N	--	N	--
MW-204A	ALUMINUM	--	--	24000		1500		-22500	--	--	--	--
MW-204A	ANTIMONY	6	--	3.6	J	20	U	-3.6	N	--	N	--
MW-204A	ARSENIC	**10**	--	**22**	**J**	20	U	-22	Y	--	N	--
MW-204A	BARIUM	2000	--	55		32		-23	N	--	N	--
MW-204A	BERYLLIUM	**4**	--	**18**		8	U	-18	Y	--	N	--
MW-204A	CADMIUM	**4**	--	**20**	**J**	10	U	-20	Y	--	N	--
MW-204A	CALCIUM	--	--	450000	J	39000		-411000	--	--	--	--
MW-204A	CHROMIUM	**100**	--	**2900**		**130**		-2770	Y	--	Y	--
MW-204A	COBALT	--	--	320		20	U	-320	--	--	--	--
MW-204A	COPPER	--	--	140	J	20	U	-140	--	--	--	--
MW-204A	IRON	--	--	58000		49000		-9000	--	--	--	--
MW-204A	LEAD	**10**	--	**10**	**J**	20	U	-10	Y	--	N	--
MW-204A	MAGNESIUM	--	--	200000		6300		-193700	--	--	--	--
MW-204A	MANGANESE	--	--	110000		2900		-107100	--	--	--	--
MW-204A	MERCURY	**2**	--	**14.3**		0.24		-14.06	Y	--	N	--
MW-204A	NICKEL	**100**	--	**490**	**J**	**160**		-330	Y	--	Y	--
MW-204A	POTASSIUM	--	--	23000		5600		-17400	--	--	--	--
MW-204A	SELENIUM	50	--	4.9		40	U	-4.9	N	--	N	--
MW-204A	SILVER	7	--	1.4	J	10	U	-1.4	N	--	N	--

Table 3-5a
Comparison of Detected Metals Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011		2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag					
MW-204A	SODIUM	--	--	2000000		130000		-1870000	--	--	--	--
MW-204A	VANADIUM	**30**	--	**32**	**J**	20	U	-32	Y	--	N	--
MW-204A	ZINC	900	--	720		25		-695	N	--	N	--
MW-302	ALUMINUM	--	--	2600		2800		200	--	--	--	--
MW-302	ANTIMONY	6	--	0.85	J	60	U	-0.85	N	--	N	--
MW-302	ARSENIC	10	--	6.1	J	60	U	-6.1	N	--	N	--
MW-302	BARIUM	2000	--	17		60	U	-17	N	--	N	--
MW-302	BERYLLIUM	4	--	3.1		24	U	-3.1	N	--	N	--
MW-302	CADMIUM	4	--	2.5	J	30	U	-2.5	N	--	N	--
MW-302	CALCIUM	--	--	120000	J	83000		-37000	--	--	--	--
MW-302	CHROMIUM	100	--	6	J	60	U	-6	N	--	N	--
MW-302	COBALT	--	--	140		100		-40	--	--	--	--
MW-302	COPPER	--	--	35	J	60	U	-35	--	--	--	--
MW-302	IRON	--	--	67000		46000		-21000	--	--	--	--
MW-302	LEAD	10	--	1.8	J	60	U	-1.8	N	--	N	--
MW-302	MAGNESIUM	--	--	21000		15000		-6000	--	--	--	--
MW-302	MANGANESE	--	--	5700		4400		-1300	--	--	--	--
MW-302	MERCURY	2	--	0.1		0.2	U	-0.1	N	--	N	--
MW-302	NICKEL	**100**	--	**110**	**J**	79		-31	Y	--	N	--
MW-302	POTASSIUM	--	--	11000		10000		-1000	--	--	--	--
MW-302	SELENIUM	50	--	3.5		120	U	-3.5	N	--	N	--
MW-302	SILVER	7	--	0.2	J	30	U	-0.2	N	--	N	--
MW-302	SODIUM	--	--	900000		660000		-240000	--	--	--	--
MW-302	THALLIUM	2	--	0.15		60	U	-0.15	N	--	N	--
MW-302	ZINC	900	--	300		180		-120	N	--	N	--
MW-304A	ALUMINUM	--	--	31		450		419	--	--	--	--
MW-304A	ANTIMONY	6	--	2.9	J	80	U	-2.9	N	--	N	--
MW-304A	ARSENIC	**10**	--	**20**	**J**	80	U	-20	Y	--	N	--
MW-304A	BARIUM	2000	--	56		80	U	-56	N	--	N	--
MW-304A	CADMIUM	4	--	3.3	J	40	U	-3.3	N	--	N	--
MW-304A	CALCIUM	--	--	860000	J	620000		-240000	--	--	--	--
MW-304A	CHROMIUM	100	--	6.3	J	80	U	-6.3	N	--	N	--
MW-304A	COBALT	--	--	48	J	80	U	-48	--	--	--	--
MW-304A	COPPER	--	--	21	J	80	U	-21	--	--	--	--
MW-304A	IRON	--	--	6600		3800		-2800	--	--	--	--
MW-304A	LEAD	10	--	0.46	J	80	U	-0.46	N	--	N	--

Table 3-5a
Comparison of Detected Metals Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011		2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag					
MW-304A	MAGNESIUM	--	--	220000		150000		-70000	--	--	--	--
MW-304A	MANGANESE	--	--	64000		43000		-21000	--	--	--	--
MW-304A	MERCURY	2	--	0.18		0.27		0.09	N	--	N	--
MW-304A	NICKEL	100	--	50	J	80	U	-50	N	--	N	--
MW-304A	POTASSIUM	--	--	18000		16000		-2000	--	--	--	--
MW-304A	SELENIUM	50	--	10		80	U	-10	N	--	N	--
MW-304A	SILVER	7	--	0.1	J	40	U	-0.1	N	--	N	--
MW-304A	SODIUM	--	--	1700000		1400000		-300000	--	--	--	--
MW-304A	THALLIUM	**2**	--	0.075	U	**160**		160	N	--	Y	--
MW-304A	VANADIUM	30	--	12	J	80	U	-12	N	--	N	--
MW-304A	ZINC	900	--	35		80	U	-35	N	--	N	--
MW-304B	ALUMINUM	--	--	67		110	U	-67	--	--	--	--
MW-304B	ANTIMONY	6	--	0.18	J	20	U	-0.18	N	--	N	--
MW-304B	ARSENIC	**10**	--	**17**	**J**	20	U	-17	Y	--	N	--
MW-304B	BARIUM	2000	--	76		35		-41	N	--	N	--
MW-304B	CADMIUM	4	--	0.071	J	10	U	-0.071	N	--	N	--
MW-304B	CALCIUM	--	--	280000	J	270000		-10000	--	--	--	--
MW-304B	CHROMIUM	100	--	5.5	J	20	U	-5.5	N	--	N	--
MW-304B	COBALT	--	--	9	J	20	U	-9	--	--	--	--
MW-304B	IRON	--	--	9700		6100		-3600	--	--	--	--
MW-304B	LEAD	10	--	0.78	J	20	U	-0.78	N	--	N	--
MW-304B	MAGNESIUM	--	--	110000		110000		0	--	--	--	--
MW-304B	MANGANESE	--	--	34000		31000		-3000	--	--	--	--
MW-304B	MERCURY	2	--	0.052		0.2	U	-0.052	N	--	N	--
MW-304B	NICKEL	100	--	16	J	20	U	-16	N	--	N	--
MW-304B	POTASSIUM	--	--	17000		18000		1000	--	--	--	--
MW-304B	SELENIUM	50	--	0.96		20	U	-0.96	N	--	N	--
MW-304B	SODIUM	--	--	270000		240000		-30000	--	--	--	--
MW-304B	THALLIUM	**2**	--	0.075	U	**110**		110	N	--	Y	--
MW-304B	ZINC	900	--	15		37		22	N	--	N	--
MW-306	ALUMINUM	--	--	2200		1800		-400	--	--	--	--
MW-306	ARSENIC	10	--	2.2		20	U	-2.2	N	--	N	--
MW-306	BARIUM	2000	--	240		130		-110	N	--	N	--
MW-306	BERYLLIUM	4	--	0.11	J	8	U	-0.11	N	--	N	--
MW-306	CADMIUM	4	--	0.58		10	U	-0.58	N	--	N	--
MW-306	CALCIUM	--	--	17000		21000		4000	--	--	--	--

Table 3-5a
Comparison of Detected Metals Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011		2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag					
MW-306	CHROMIUM	100	--	6.2		20	U	-6.2	N	--	N	--
MW-306	COBALT	--	--	3.3		20	U	-3.3	--	--	--	--
MW-306	COPPER	--	--	5.2		20	U	-5.2	--	--	--	--
MW-306	IRON	--	--	13000	J	11000		-2000	--	--	--	--
MW-306	LEAD	10	--	5.5		20	U	-5.5	N	--	N	--
MW-306	MAGNESIUM	--	--	5900	J	6300		400	--	--	--	--
MW-306	MANGANESE	--	--	2200		2700		500	--	--	--	--
MW-306	MERCURY	2	--	0.0087		0.5	U	-0.0087	N	--	N	--
MW-306	NICKEL	100	--	4.9		20	U	-4.9	N	--	N	--
MW-306	POTASSIUM	--	--	3700		4000		300	--	--	--	--
MW-306	SODIUM	--	--	10000		20000		10000	--	--	--	--
MW-306	VANADIUM	30	--	5.9		20	U	-5.9	N	--	N	--
MW-306	ZINC	900	--	66		59		-7	N	--	N	--
RMW-102	ALUMINUM	--	--	90		670		580	--	--	--	--
RMW-102	BARIUM	2000	--	14		20	U	-14	N	--	N	--
RMW-102	CADMIUM	4	--	0.1	J	10	U	-0.1	N	--	N	--
RMW-102	CALCIUM	--	--	4900		7400		2500	--	--	--	--
RMW-102	COBALT	--	--	1.8	J	20	U	-1.8	--	--	--	--
RMW-102	IRON	--	--	180	J	1000		820	--	--	--	--
RMW-102	LEAD	10	--	0.22	J	20	U	-0.22	N	--	N	--
RMW-102	MAGNESIUM	--	--	720	J	1300		580	--	--	--	--
RMW-102	MANGANESE	--	--	340		490		150	--	--	--	--
RMW-102	MERCURY	2	--	0.0013		0.2	U	-0.0013	N	--	N	--
RMW-102	POTASSIUM	--	--	1700	J	2000		300	--	--	--	--
RMW-102	SELENIUM	50	--	0.43	J	20	U	-0.43	N	--	N	--
RMW-102	SODIUM	--	--	59000		57000		-2000	--	--	--	--
RMW-102	VANADIUM	30	--	1.6	J	20	U	-1.6	N	--	N	--
RMW-403B	ALUMINUM	--	--	45		220		175	--	--	--	--
RMW-403B	ARSENIC	10	--	3.5	J	20	U	-3.5	N	--	N	--
RMW-403B	BARIUM	2000	--	30		42		12	N	--	N	--
RMW-403B	CADMIUM	4	--	0.41	J	10	U	-0.41	N	--	N	--
RMW-403B	CALCIUM	--	--	32000		34000		2000	--	--	--	--
RMW-403B	COBALT	--	--	11		22		11	--	--	--	--
RMW-403B	IRON	--	--	14000	J	26000		12000	--	--	--	--
RMW-403B	LEAD	10	--	0.61	J	20	U	-0.61	N	--	N	--
RMW-403B	MAGNESIUM	--	--	5700	J	6600		900	--	--	--	--

Table 3-5a
Comparison of Detected Metals Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011		2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag					
RMW-403B	MANGANESE	--	--	5400		4500		-900	--	--	--	--
RMW-403B	NICKEL	100	--	8.1	J	20	U	-8.1	N	--	N	--
RMW-403B	POTASSIUM	--	--	5300	J	5600		300	--	--	--	--
RMW-403B	SELENIUM	50	--	0.41	J	20	U	-0.41	N	--	N	--
RMW-403B	SODIUM	--	--	70000		90000		20000	--	--	--	--
RMW-403B	VANADIUM	30	--	1.3	J	20	U	-1.3	N	--	N	--
RMW-403B	ZINC	900	--	7.4	J	20	U	-7.4	N	--	N	--
WP-105	ALUMINUM	--	--	*55*		220	U	-55	--	--	--	--
WP-105	ARSENIC	10	--	*1.1*	*J*	80	U	-1.1	N	--	N	--
WP-105	BARIUM	2000	--	*82*		58		-24	N	--	N	--
WP-105	CALCIUM	--	--	*18000*		15000		-3000	--	--	--	--
WP-105	CHROMIUM	100	--	*1.17*	*J*	40	U	-1.17	N	--	N	--
WP-105	COBALT	--	--	*0.19*	*J*	40	U	-0.19	--	--	--	--
WP-105	IRON	--	--	*3050*	*J*	4000		950	--	--	--	--
WP-105	LEAD	10	--	*0.43*	*J*	40	U	-0.43	N	--	N	--
WP-105	MAGNESIUM	--	--	*4300*	*J*	3700		-600	--	--	--	--
WP-105	MANGANESE	--	--	*980*		950		-30	--	--	--	--
WP-105	MERCURY	2	--	*0.001*		0.5	U	-0.001	N	--	N	--
WP-105	NICKEL	100	--	*1.3*	*J*	40	U	-1.3	N	--	N	--
WP-105	POTASSIUM	--	--	*3050*		2400		-650	--	--	--	--
WP-105	SELENIUM	50	--	*0.19*	*J*	40	U	-0.19	N	--	N	--
WP-105	SODIUM	--	--	*67000*		64000		-3000	--	--	--	--
WP-105	VANADIUM	30	--	*1.3*	*J*	40	U	-1.3	N	--	N	--
WP-105	ZINC	900	--	*3.5*	*J*	40	U	-3.5	N	--	N	--

Notes: Results and qualifers in *italics* indicate an average result from a duplicate pair.
Results and qualifiers in **bold** indicate an exceedance of one or more action levels.

Table 3-5b
Comparison of VOC Detected Compounds - 2003-2011/2012 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

				Year Sampled:	2003	2011/2012					
Well #:	**Chemical:**	**GW-1 Standard**	**GW-2 Standard**	**Conc.**	**Flag**	**Conc.**	**Flag**	**2011-2003 Difference**	**2003 Exceed GW-1?**	**2003 Exceed GW-2?**	**2011 Exceed GW-1?**	**2011 Exceed GW-2?**
MW-04B	1,2-Dichloroethene (total)	--	--	11		--		--	--	--	--	--
MW-04B	CHLOROBENZENE	100	200	1.7	J	1	U	-1.7	N	N	N	N
MW-04B	CIS-1,2-DICHLOROETHENE	70	100	11		1.3		-9.7	N	N	N	N
MW-04B	TRICHLOROETHENE	**5**	**30**	**100**		**16**		-84	Y	Y	Y	N
MW-06A	1,2-Dichloroethene (total)	--	--	240		--		--	--	--	--	--
MW-06A	CHLOROBENZENE	**100**	200	**110**		22		-88	Y	N	N	N
MW-06A	CIS-1,2-DICHLOROETHENE	**70**	**100**	**230**		**96**		-134	Y	Y	Y	N
MW-06A	TRANS-1,2-DICHLOROETHENE	90	90	8.6		2.2		-6.4	N	N	N	N
MW-06A	TRICHLOROETHENE	**5**	**30**	**37**		**10**		-27	Y	Y	Y	N
MW-06A	VINYL CHLORIDE	2	2.0	4	U	1.3		1.3	N	N	N	N
MW-107	1,2-Dichloroethene (total)	--	--	250		--		--	--	--	--	--
MW-107	ACETONE	6300	50000	10	U	*11*		11	N	N	N	N
MW-107	BENZENE	**5**	2000	**11**		*10*	*U*	-11	N	N	N	N
MW-107	CHLOROBENZENE	**100**	**200**	**400**		***170***		-230	Y	Y	Y	N
MW-107	CIS-1,2-DICHLOROETHENE	**70**	**100**	**250**		***175***		-75	Y	Y	Y	Y
MW-107	TRICHLOROETHENE	**5**	**30**	**360**		***36***		-324	Y	Y	Y	Y
MW-107	VINYL CHLORIDE	2	2.0	10	U	*10*	*U*	0	N	N	N	N
MW-107	Xylene (total)	5000	9000	10	U	--		--	N	N	N	N
MW-115A	1,2-Dichloroethene (total)	--	--	200	J	--		--	--	--	--	--
MW-115A	BENZENE	**5**	2000	100	U	**75**	J	75	N	N	Y	N
MW-115A	CHLOROBENZENE	**100**	**200**	**2900**	J	**1800**		-1100	Y	Y	Y	Y
MW-115A	CIS-1,2-DICHLOROETHENE	**70**	**100**	**200**	J	**310**		110	Y	Y	Y	Y
MW-115A	TOLUENE	1000	50000	100	U	33	J	33	N	N	N	N
MW-115A	TRICHLOROETHENE	**5**	**30**	**4300**		**3100**		-1200	Y	Y	Y	Y
MW-115A	Xylene (total)	5000	9000	100	U	--		--	--	--	--	--
MW-115B	1,2-Dichloroethene (total)	--	--	360	J	--		--	--	--	--	--
MW-115B	CHLOROBENZENE	**100**	**200**	**2700**	**J**	**190**		-2710	Y	Y	Y	N
MW-115B	CIS-1,2-DICHLOROETHENE	**70**	**100**	**360**	**J**	67		-133	Y	Y	N	N
MW-115B	TRICHLOROETHENE	**5**	**30**	**5700**		**640**		-3660	Y	Y	Y	Y
MW-115**B**	Xylene (total)	5000	9000	100	U	--		--	N	N	N	N
MW-201	1,1,1-TRICHLOROETHANE	200	4000	20	U	1	U	0	N	N	N	N
MW-201	1,1,2,2-TETRACHLOROETHANE	2	9.0	20	U	1	U	0	N	N	N	N
MW-201	1,1,2-TRICHLOROETHANE	5	900	20	U	1	U	0	N	N	N	N
MW-201	1,1-DICHLOROETHANE	70	1000	20	U	1	U	0	N	N	N	N
MW-201	1,1-DICHLOROETHENE	7	80	20	U	1	U	0	N	N	N	N
MW-201	1,2-DICHLOROETHANE	5	5.0	20	U	1	U	0	N	N	N	N

Table 3-5b
Comparison of VOC Detected Compounds - 2003-2011/2012 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011/2012		2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	**Chemical:**	**GW-1 Standard**	**GW-2 Standard**	**Conc.**	**Flag**	**Conc.**	**Flag**					
MW-201	1,2-Dichloroethene (total)	--	--	180		--		--	--	--	--	--
MW-201	BENZENE	**5**	2000	**28**		**10**		-18	Y	N	Y	N
MW-201	CHLOROBENZENE	**100**	**200**	**1100**		**400**		-700	Y	Y	Y	Y
MW-201	CIS-1,2-DICHLOROETHENE	**70**	**100**	**180**		**130**		-50	Y	Y	Y	Y
MW-201	ETHYLBENZENE	700	20000	20	U	1.1		1.1	N	N	N	N
MW-201	TRICHLOROETHENE	**5**	**30**	**1100**		**240**		-860	Y	Y	Y	Y
MW-201	VINYL CHLORIDE	**2**	**2.0**	20	U	**2.3**		2.3	N	N	Y	Y
MW-202	1,2-Dichloroethene (total)	--	--	410		--		--	--	--	--	--
MW-202	ACETONE	6300	50000	100	U	*1.3*		1.3	N	N	N	N
MW-202	BENZENE	**5**	2000	**63**		***15.8***		-47.2	Y	N	Y	N
MW-202	CHLOROBENZENE	**100**	**200**	**2400**		***710***		-1690	Y	Y	Y	Y
MW-202	CIS-1,2-DICHLOROETHENE	**70**	**100**	**410**		***100***		-310	Y	Y	Y	Y
MW-202	ETHYLBENZENE	700	20000	40	U	*2*		2	N	N	N	N
MW-202	TRANS-1,2-DICHLOROETHENE	90	90	40	U	*1.1*		1.1	N	N	N	N
MW-202	TRICHLOROETHENE	**5**	**30**	**1900**		***385***		-1515	Y	Y	Y	Y
MW-202	VINYL CHLORIDE	**2**	**2.0**	40	U	***3***		3	N	N	Y	Y
MW-203A	1,2-Dichloroethene (total)	--	--	630	J	--		--	--	--	--	--
MW-203A	BENZENE	**5**	2000	**200**		**170**	**J**	-30	Y	N	Y	N
MW-203A	CHLOROBENZENE	**100**	**200**	**9000**	**J**	**7600**		-1400	Y	Y	Y	Y
MW-203A	CIS-1,2-DICHLOROETHENE	**70**	**100**	**630**	**J**	**230**	**J**	-400	Y	Y	Y	Y
MW-203A	TOLUENE	1000	50000	200	U	67	J	-67	N	N	N	N
MW-203A	TRICHLOROETHENE	**5**	**30**	**3800**		**1100**		-2700	Y	Y	Y	Y
MW-203A	VINYL CHLORIDE	**2**	**2.0**	**100**	**J**	**1000**		900	Y	Y	Y	Y
MW-203B	1,2-Dichloroethene (total)	--	--	350	J	--		--	--	--	--	--
MW-203B	BENZENE	**5**	2000	**40**		**16**		-24	Y	N	Y	N
MW-203B	CHLOROBENZENE	**100**	**200**	**1000**	**J**	**750**		-250	Y	Y	Y	Y
MW-203B	CIS-1,2-DICHLOROETHENE	**70**	**100**	**350**	**J**	**170**		-180	Y	Y	Y	Y
MW-203B	TRANS-1,2-DICHLOROETHENE	90	90	5.8	J	10	U	-5.8	N	N	N	N
MW-203B	TRICHLOROETHENE	**5**	**30**	**1200**		**560**		-640	Y	Y	Y	Y
MW-203B	VINYL CHLORIDE	**2**	**2.0**	**9.5**	**J**	10	U	-9.5	Y	Y	N	N
MW-204A	1,2-Dichloroethene (total)	--	--	140		--		--	--	--	--	--
MW-204A	BENZENE	5	2000	4.5		10	U	-4.5	N	N	N	N
MW-204A	CHLOROBENZENE	**100**	200	**140**		55.3		-84.7	Y	N	N	N
MW-204A	CIS-1,2-DICHLOROETHENE	**70**	**100**	46		**145.2**		99.2	N	N	Y	Y
MW-204A	TRICHLOROETHENE	**5**	**30**	**110**		**174.8**		64.8	Y	Y	Y	Y
MW-204A	VINYL CHLORIDE	**2**	**2.0**	**2.9**	**J**	**15.2**		12.3	Y	Y	Y	Y

Table 3-5b
Comparison of VOC Detected Compounds - 2003-2011/2012 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011/2012						
Well #:	**Chemical:**	**GW-1 Standard**	**GW-2 Standard**	**Conc.**	**Flag**	**Conc.**	**Flag**	**2011-2003 Difference**	**2003 Exceed GW-1?**	**2003 Exceed GW-2?**	**2011 Exceed GW-1?**	**2011 Exceed GW-2?**
MW-302	1,2-Dichloroethene (total)	--	--	110		--		--	--	--	--	--
MW-302	BENZENE	**5**	2000	**74**		**50.1**		-23.9	Y	N	Y	N
MW-302	CHLOROBENZENE	**100**	**200**	**580**		**435.1**		-144.9	Y	Y	Y	Y
MW-302	CIS-1,2-DICHLOROETHENE	**70**	**100**	**110**		**214.2**		104.2	Y	Y	Y	Y
MW-302	TRICHLOROETHENE	**5**	**30**	**870**		**335.4**		-534.6	Y	Y	Y	Y
MW-304A	1,2-Dichloroethene (total)	--	--	130		--		--	--	--	--	--
MW-304A	BENZENE	**5**	2000	**43**		**44**	J	1	Y	N	Y	N
MW-304A	CHLOROBENZENE	**100**	**200**	**1000**		**2000**		1000	Y	Y	Y	Y
MW-304A	CIS-1,2-DICHLOROETHENE	**70**	**100**	**130**		**170**		40	Y	Y	Y	Y
MW-304A	TOLUENE	1000	50000	20	U	20	J	20	N	N	N	N
MW-304A	TRICHLOROETHENE	**5**	**30**	**1400**		**800**		-600	Y	Y	Y	Y
MW-304A	VINYL CHLORIDE	**2**	**2.0**	**26**		160	U	-26	Y	Y	N	N
MW-304B	1,2-Dichloroethene (total)	--	--	140		--		--	--	--	--	--
MW-304B	BENZENE	5	2000	4.5		5	U	-4.5	N	N	N	N
MW-304B	CHLOROBENZENE	**100**	200	**140**		**120**		-20	Y	N	Y	N
MW-304B	CIS-1,2-DICHLOROETHENE	**70**	**100**	**140**		**170**		30	Y	Y	Y	Y
MW-304B	TRANS-1,2-DICHLOROETHENE	90	90	2.3	J	5	U	-2.3	N	N	N	N
MW-304B	TRICHLOROETHENE	**5**	**30**	**200**		**120**		-80	Y	Y	Y	Y
MW-304B	VINYL CHLORIDE	**2**	**2.0**	**6**		**5.8**		-0.2	Y	Y	Y	Y
RMW-102	TETRACHLOROETHENE	5	50	1.3	J	1	U	-1.3	N	N	N	N
RMW-102	TRICHLOROETHENE	5	30	1.6	J	1	U	-1.6	N	N	N	N
WP-105	ACETONE	6300	50000	*5*	*U*	1		1	N	N	N	N

Notes: Results and qualifers in *italics* indicate an average result from a duplicate pair.
Results and qualifiers in **bold** indicate an exceedance of one or more action levels.

Table 3-5c
Comparison of SVOC Detected Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003	2011	2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc. Flag	Conc. Flag					
MW-04B	1,2,4-TRICHLOROBENZENE	70	2000	0.26 J	2.5 U	-0.26	N	N	N	N
MW-04B	1,2-DICHLOROBENZENE	600	2000	0.87	2.5 U	-0.87	N	N	N	N
MW-04B	1,4-DICHLOROBENZENE	5	200	0.34	2.5 U	-0.34	N	N	N	N
MW-04B	4-NITROANILINE	--	--	0.19 J	2.5 U	-0.19	--	--	--	--
MW-04B	Aniline	--	--	0.14 J	2.5 U	-0.14	--	--	--	--
MW-04B	NITROBENZENE	--	--	0.97	2.5 U	-0.97	--	--	--	--
MW-06A	1,2,4-TRICHLOROBENZENE	70	2000	65	64	-1	N	N	N	N
MW-06A	1,2-DICHLOROBENZENE	600	2000	69	31	-38	N	N	N	N
MW-06A	1,3-DICHLOROBENZENE	40	2000	3.2	2.5 U	-3.2	N	N	N	N
MW-06A	1,4-DICHLOROBENZENE	**5**	200	**16**	**5.3**	-10.7	Y	N	Y	N
MW-06A	Aniline	--	--	81	14	-67	--	--	--	--
MW-06A	NAPHTHALENE	140	1000	0.84 J	2.5 U	-0.84	N	N	N	N
MW-107	1,2,4-TRICHLOROBENZENE	70	2000	28	*26*	-2	N	N	N	N
MW-107	1,2-DICHLOROBENZENE	**600**	2000	**740**	*375*	-365	Y	N	N	N
MW-107	1,3-DICHLOROBENZENE	40	2000	8.1 J	*5.3*	-2.8	N	N	N	N
MW-107	1,4-DICHLOROBENZENE	**5**	200	**100**	***55***	-45	Y	N	Y	N
MW-107	Aniline	--	--	13 U	*3.9*	3.9	--	--	--	--
MW-107	NAPHTHALENE	140	1000	14 U	*2.5 U*	0	N	N	N	N
MW-107	NITROBENZENE	--	--	14 U	*2.5 U*	0	--	--	--	--
MW-107	PENTACHLOROPHENOL	1	--	14 UJ	*2.5 U*	0	N	--	N	--
MW-115A	1,2,4-TRICHLOROBENZENE	**70**	2000	**71** J	250 U	-71	Y	N	N	N
MW-115A	1,2-DICHLOROBENZENE	**600**	2000	**1000** J	**1700**	700	Y	N	Y	N
MW-115A	1,3-DICHLOROBENZENE	40	2000	14 UJ	250 U	0	--	--	--	--
MW-115A	1,4-DICHLOROBENZENE	**5**	200	**180** J	**240** J	60	Y	N	Y	Y
MW-115B	1,2,4-TRICHLOROBENZENE	**70**	2000	**160 J**	**120**	-40	Y	N	Y	N
MW-115B	1,2-DICHLOROBENZENE	**600**	2000	**1800 J**	**950**	-850	Y	N	Y	N
MW-115B	1,3-DICHLOROBENZENE	40	2000	110 UJ	16	16	N	N	N	N
MW-115B	1,4-DICHLOROBENZENE	**5**	200	**320 J**	**170**	-150	Y	Y	Y	N
MW-115B	Aniline	--	--	5500	860	-4640	--	--	--	--
MW-115B	NAPHTHALENE	**140**	1000	**260**	120	-140	Y	N	N	N
MW-115B	NITROBENZENE	--	--	110 UJ	4	4	--	--	--	--
MW-201	1,2,4-TRICHLOROBENZENE	**70**	2000	**180**	**178**	-2	Y	N	Y	N
MW-201	1,2-DICHLOROBENZENE	**600**	2000	**680**	570	-110	Y	N	N	N
MW-201	1,3-DICHLOROBENZENE	40	2000	16	14	-2	N	N	N	N
MW-201	1,4-DICHLOROBENZENE	**5**	200	**130**	**113**	-17	Y	N	Y	N
MW-201	Aniline	--	--	6.4	4	-2.4	--	--	--	--

Table 3-5c
Comparison of SVOC Detected Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011					
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag	2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
MW-202	1,2,4-TRICHLOROBENZENE	**70**	2000	**530**		***403***		-127	Y	N	Y	N
MW-202	1,2-DICHLOROBENZENE	**600**	2000	**1500**		***1109***		-391	Y	N	Y	N
MW-202	1,3-DICHLOROBENZENE	40	2000	34		*24*		-10	N	N	N	N
MW-202	1,4-DICHLOROBENZENE	**5**	**200**	**300**		***196***		-104	Y	Y	Y	N
MW-202	Aniline	--	--	41		*21*		-20	--	--	--	--
MW-202	NAPHTHALENE	140	1000	11	J	*2.5*	*U*	-11	N	N	N	N
MW-203A	1,2,4-TRICHLOROBENZENE	**70**	2000	130	UJ	250	U	0	N	N	N	N
MW-203A	1,2-DICHLOROBENZENE	**600**	**2000**	**1700**	**J**	**3000**		1300	Y	N	Y	Y
MW-203A	1,3-DICHLOROBENZENE	**40**	2000	130	UJ	**50**	**J**	55	N	N	Y	N
MW-203A	1,4-DICHLOROBENZENE	**5**	**200**	**270**	**J**	**480**		210	Y	Y	Y	Y
MW-203A	Aniline	--	--	8900		8232		-668	--	--	--	--
MW-203A	NAPHTHALENE	140	1000	130	U	28.7		28.7	N	N	N	N
MW-203A	NITROBENZENE	--	--	130	UJ	8		8	--	--	--	--
MW-203B	1,2,4-TRICHLOROBENZENE	**70**	2000	**140**	**J**	**334**		194	Y	N	Y	N
MW-203B	1,2-DICHLOROBENZENE	**600**	2000	530	J	**990**		460	N	N	Y	N
MW-203B	1,3-DICHLOROBENZENE	40	2000	11	J	25		14	N	N	N	N
MW-203B	1,4-DICHLOROBENZENE	**5**	200	**93**	**J**	**180**		87	Y	N	Y	N
MW-203B	Aniline	--	--	34	U	18		18	--	--	--	--
MW-204A	1,2,4-TRICHLOROBENZENE	70	2000	16		7.6		-8.4	N	N	N	N
MW-204A	1,2-DICHLOROBENZENE	600	2000	180		61.5		-118.5	N	N	N	N
MW-204A	1,3-DICHLOROBENZENE	40	2000	5.2		2.6		-2.6	N	N	N	N
MW-204A	1,4-DICHLOROBENZENE	**5**	200	**36**		**13.3**		-22.7	Y	N	Y	N
MW-204A	NITROBENZENE	--	--	30		2.5	U	-30	--	--	--	--
MW-302	1,2,4-TRICHLOROBENZENE	70	2000	15		14.6		-0.4	N	N	N	N
MW-302	1,2-DICHLOROBENZENE	600	2000	490		452.2		-37.8	N	N	N	N
MW-302	1,3-DICHLOROBENZENE	40	2000	6.7		5.4		-1.3	N	N	N	N
MW-302	1,4-DICHLOROBENZENE	**5**	200	**73**		**50.6**		-22.4	Y	N	Y	N
MW-302	Aniline	--	--	360		160.2		-199.8	--	--	--	--
MW-302	NAPHTHALENE	140	1000	66		29.4		-36.6	N	N	N	N
MW-304A	1,2,4-TRICHLOROBENZENE	70	2000	17		160	U	17	N	N	N	N
MW-304A	1,2-DICHLOROBENZENE	**600**	2000	370		**2000**		1630	N	N	Y	N
MW-304A	1,3-DICHLOROBENZENE	40	2000	8.5		52	J	43.5	N	N	N	N
MW-304A	1,4-DICHLOROBENZENE	**5**	200	**76**		**390**		314	Y	N	Y	Y
MW-304A	Aniline	--	--	9.9	U	3.2		3.2	--	--	--	--
MW-304A	NITROBENZENE	--	--	82		140		58	--	--	--	--
MW-304B	1,2,4-TRICHLOROBENZENE	70	2000	16		2.5	U	-16	N	N	N	N

Table 3-5c
Comparison of SVOC Detected Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

			Year Sampled:	2003		2011						
Well #:	**Chemical:**	**GW-1 Standard**	**GW-2 Standard**	**Conc.**	**Flag**	**Conc.**	**Flag**	**2011-2003 Difference**	**2003 Exceed GW-1?**	**2003 Exceed GW-2?**	**2011 Exceed GW-1?**	**2011 Exceed GW-2?**
MW-304B	1,2-DICHLOROBENZENE	600	2000	180		2.5	U	-180	N	N	N	N
MW-304B	1,3-DICHLOROBENZENE	40	2000	5.2		2.5	U	-5.2	N	N	N	N
MW-304B	1,4-DICHLOROBENZENE	**5**	200	**36**		2.5	U	-36	Y	N	N	N
MW-304B	NITROBENZENE	--	--	30		2.5	U	-30	--	--	--	--
MW-306	1,3-DICHLOROBENZENE	40	2000	0.63		2.5	U	-0.63	N	N	N	N
RMW-102	1,2,4-TRICHLOROBENZENE	70	2000	0.29	U	15		15	N	N	N	N
RMW-102	1,2-DICHLOROBENZENE	600	2000	0.13	U	180		180	N	N	N	N
RMW-102	1,3-DICHLOROBENZENE	40	2000	0.18	J	4		3.82	N	N	N	N
RMW-102	1,4-DICHLOROBENZENE	**5**	200	0.29	U	**29**		29	N	N	Y	N
RMW-403B	1,3-DICHLOROBENZENE	40	2000	0.41		2.5	U	-0.41	N	N	N	N

Notes: Results and qualifers in *italics* indicate an average result from a duplicate pair.
Results and qualifiers in **bold** indicate an exceedance of one or more action levels.

Table 3-5d
Comparison of Inorganic Detected Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Year Sampled:				2003		2011		2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag					
MW-04B	Alkalinity	--	--	42		--		--	--	--	--	--
MW-04B	Chloride	--	--	220	J	110		-110	--	--	--	--
MW-04B	Nitrate (as Nitrogen)	--	--	0.27	UJ	0.32		0.32	--	--	--	--
MW-04B	Sulfate	--	--	29	J	110		81	--	--	--	--
MW-06A	Alkalinity	--	--	38		--		--	--	--	--	--
MW-06A	Chloride	--	--	120	J	91		-29	--	--	--	--
MW-06A	Sulfate	--	--	110	J	43		-67	--	--	--	--
MW-107	Alkalinity	--	--	49		--		--	--	--	--	--
MW-107	Chloride	--	--	700	J	*330*		-370	--	--	--	--
MW-107	Sulfate	--	--	700	J	*400*		-300	--	--	--	--
MW-115B	Alkalinity	--	--	12		--		-12	--	--	--	--
MW-115B	Chloride	--	--	2800	J	1700		-1100	--	--	--	--
MW-115B	Sulfate	--	--	2400	J	1700		-700	--	--	--	--
MW-201	Alkalinity	--	--	27		--		--	--	--	--	--
MW-201	Chloride	--	--	870	J	400		-470	--	--	--	--
MW-201	Sulfate	--	--	630	J	340		-290	--	--	--	--
MW-202	Alkalinity	--	--	8.5		--		--	--	--	--	--
MW-202	Chloride	--	--	790	J	*470*		-320	--	--	--	--
MW-202	Sulfate	--	--	1100	J	*735*		-365	--	--	--	--
MW-203A	Chloride	--	--	7600	J	5200		-2400	--	--	--	--
MW-203A	Sulfate	--	--	3400	J	2700		-700	--	--	--	--
MW-203B	Alkalinity	--	--	76		--		--	--	--	--	--
MW-203B	Chloride	--	--	520	J	320		-200	--	--	--	--
MW-203B	Sulfate	--	--	810	J	550		-260	--	--	--	--
MW-204A	Alkalinity	--	--	75		--		--	--	--	--	--
MW-204A	Chloride	--	--	3000	J	86		-2914	--	--	--	--
MW-204A	Sulfate	--	--	2600	J	310		-2290	--	--	--	--
MW-302	Chloride	--	--	1300	J	900		-400	--	--	--	--
MW-302	Nitrate (as Nitrogen)	--	--	25	J	0.02	U	-25	--	--	--	--
MW-302	Sulfate	--	--	720	J	560		-160	--	--	--	--
MW-304A	Alkalinity	--	--	90		--		--	--	--	--	--
MW-304A	Chloride	--	--	3700	J	2800		-900	--	--	--	--
MW-304A	Sulfate	--	--	1400	J	1400		0	--	--	--	--
MW-304B	Alkalinity	--	--	92		--		--	--	--	--	--
MW-304B	Chloride	--	--	980	J	830		-150	--	--	--	--
MW-304B	Sulfate	--	--	620	J	550		-70	--	--	--	--

Table 3-5d
Comparison of Inorganic Detected Compounds - 2003-2011 Sampling Rounds
Nyanza Chemical Waste Dump Superfund Site
Ashland, Massachusetts

Year Sampled:				2003		2011		2011-2003 Difference	2003 Exceed GW-1?	2003 Exceed GW-2?	2011 Exceed GW-1?	2011 Exceed GW-2?
Well #:	Chemical:	GW-1 Standard	GW-2 Standard	Conc.	Flag	Conc.	Flag					
MW-306	Alkalinity	--	--	80		--		--	--	--	--	--
MW-306	Chloride	--	--	7.2	J	26		18.8	--	--	--	--
MW-306	Sulfate	--	--	0.92	J	6.4		5.48	--	--	--	--
RMW-102	Alkalinity	--	--	33		--		--	--	--	--	--
RMW-102	Chloride	--	--	59	J	73		14	--	--	--	--
RMW-102	Sulfate	--	--	16	J	17		1	--	--	--	--
RMW-403B	Alkalinity	--	--	69		--		--	--	--	--	--
RMW-403B	Chloride	--	--	130	J	170		40	--	--	--	--
RMW-403B	Sulfate	--	--	17	J	42		25	--	--	--	--
WP-105	Alkalinity	--	--	*31*		--		--	--	--	--	--
WP-105	Chloride	--	--	*125*	*J*	120		-5	--	--	--	--
WP-105	Nitrate (as Nitrogen)	--	--	*0.24*	*UJ*	3.2		3.2	--	--	--	--
WP-105	Sulfate	--	--	*0.25*	*U*	12		12	--	--	--	--

Notes: Results and qualifers in *italics* indicate an average result from a duplicate pair.
Results and qualifiers in **bold** indicate an exceedance of one or more action levels.

FIGURES

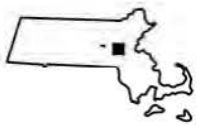
USGS TOPOGRAPHIC MAP

AHLAND, MASSACHUSETTS

1982

APPROXIMATE SCALE
1" = 2,000 FEET

N



Quadrangle Location

FIGURE 1-1	NYANZA CHEMICAL WASTE DUMP SUPERFUND SITE OPERABLE UNIT II ASHLAND, MASSACHUSETTS SITE LOCUS PLAN	Nobis Engineering & Sustainable Future Nobis Engineering, Inc. 18 Chenell Drive Concord, NH 03301 (603) 224-4182 www.nobiseng.com	DATE: MAY 2011 REV 00 PROJECT NO. 80022 FILE NAME: Locus Plan.MXD PREPARED BY: JDF CHECKED BY: JM

#190
EXT. BLDG.

CONC. WALK

PARKING

ERT-1
156.37

160

#146
WORCESTER A/C COMPANY
EXT. BUILDING

CONCRETE
LOADING DOCK

SB-601
161.30

BUILDING
ADDITION

MW-113A
152.66

RW-1
156.78

B-5/MW

B-3

P-4

P-1B
153.88

P-1

P-2

B-2

B-1

B-4

MW-401
156.06

MW-5C
156.09

MW-112A
161.03

150

155

160

170

180

TB-108
173.03

B-6

B-7

SB-600
179.90

BOSTON AND ALBANY RAILROAD

LEGEND

- SITE BOUNDARY
- OTHER PROPERTY LINE
- EDGE OF PAVEMENT
- 160 — BEDROCK ELEVATION CONTOUR ADAPTED FROM ICF, 2006
- MW-113A 152.66 — OVERBURDEN MONITORING WELL & BEDROCK ELEVATION
- MW-112A 161.03 — BEDROCK MONITORING WELL & BEDROCK ELEVATION
- ERT-1 156.37 — OVERBURDEN MONITORING WELL NOT LOCATED & BEDROCK ELEVATION
- SB-601 161.30 — BEDROCK MONITORING WELL NOT LOCATED & BEDROCK ELEVATION
- B-1 — STEPOUT BORING LOCATION (INITIAL LOCATION IS AT B-1)
- FRACTURE TRACE (ICF JUNE 2006)

GRAPHIC SCALE

0 20' 40' 80'

Nobis
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Concord, New Hampshire 03301
Tel (603) 224-4182
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www.nobiseng.com

FIGURE 1-2

BORING LOCATION PLAN (2009)
STEP DRILLING PROGRAM
NYANZA CHEMICAL WASTE DUMP SUPERFUND SITE
ASHLAND, MASSACHUSETTS

DRAWN BY:	CEL	APPROVED BY:	JM
PROJECT:	80022.00		MAY 2011

R:\80000 Task Orders\80022 Nyanza OU2\CAD\dwg\80022-Site.dwg

R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2011 GWM Report\Figure 2-1 Well Locations.mxd

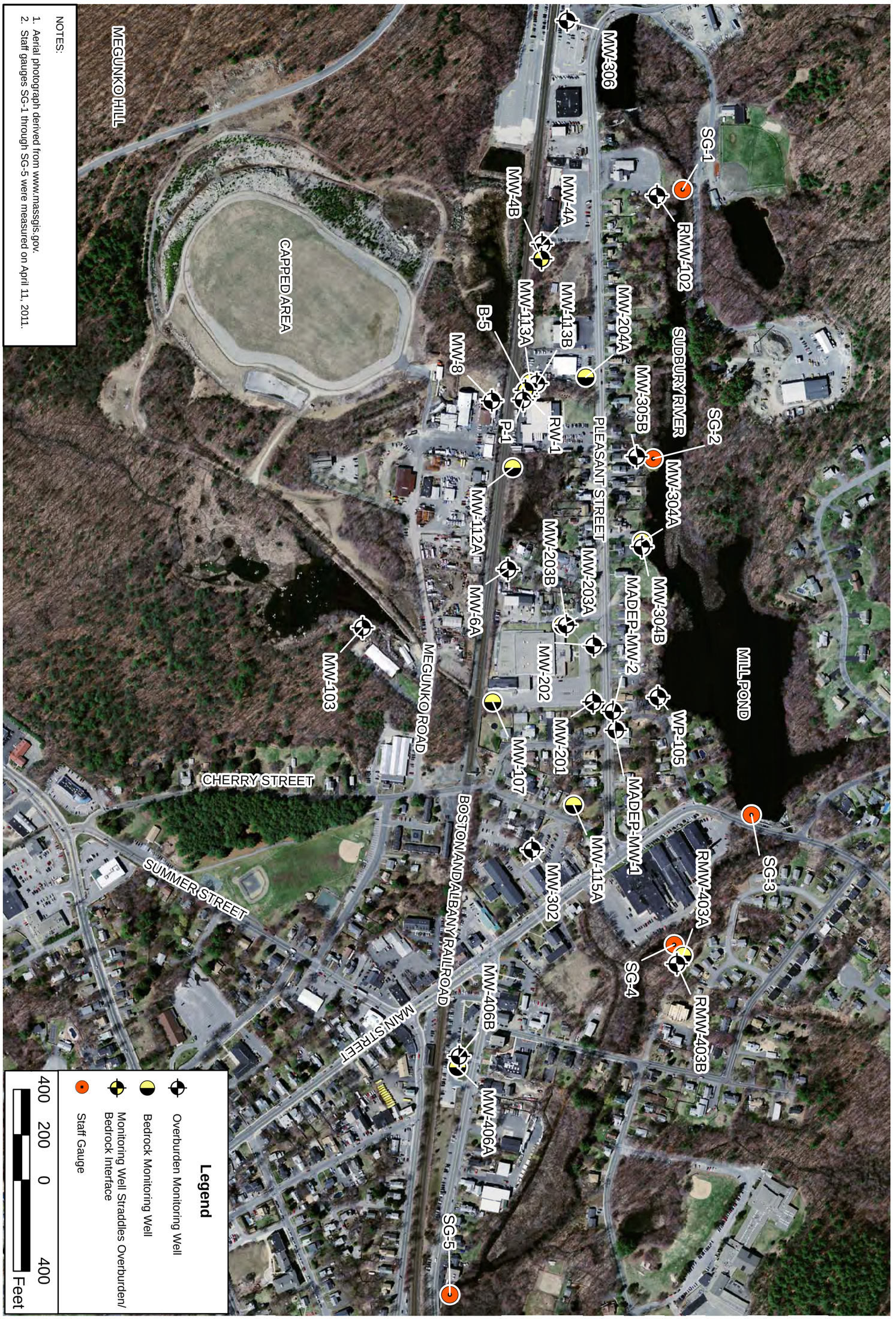

FIGURE 2-1

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

SITE LAYOUT AND JANUARY 2011 GROUNDWATER SAMPLING LOCATIONS

Nobis
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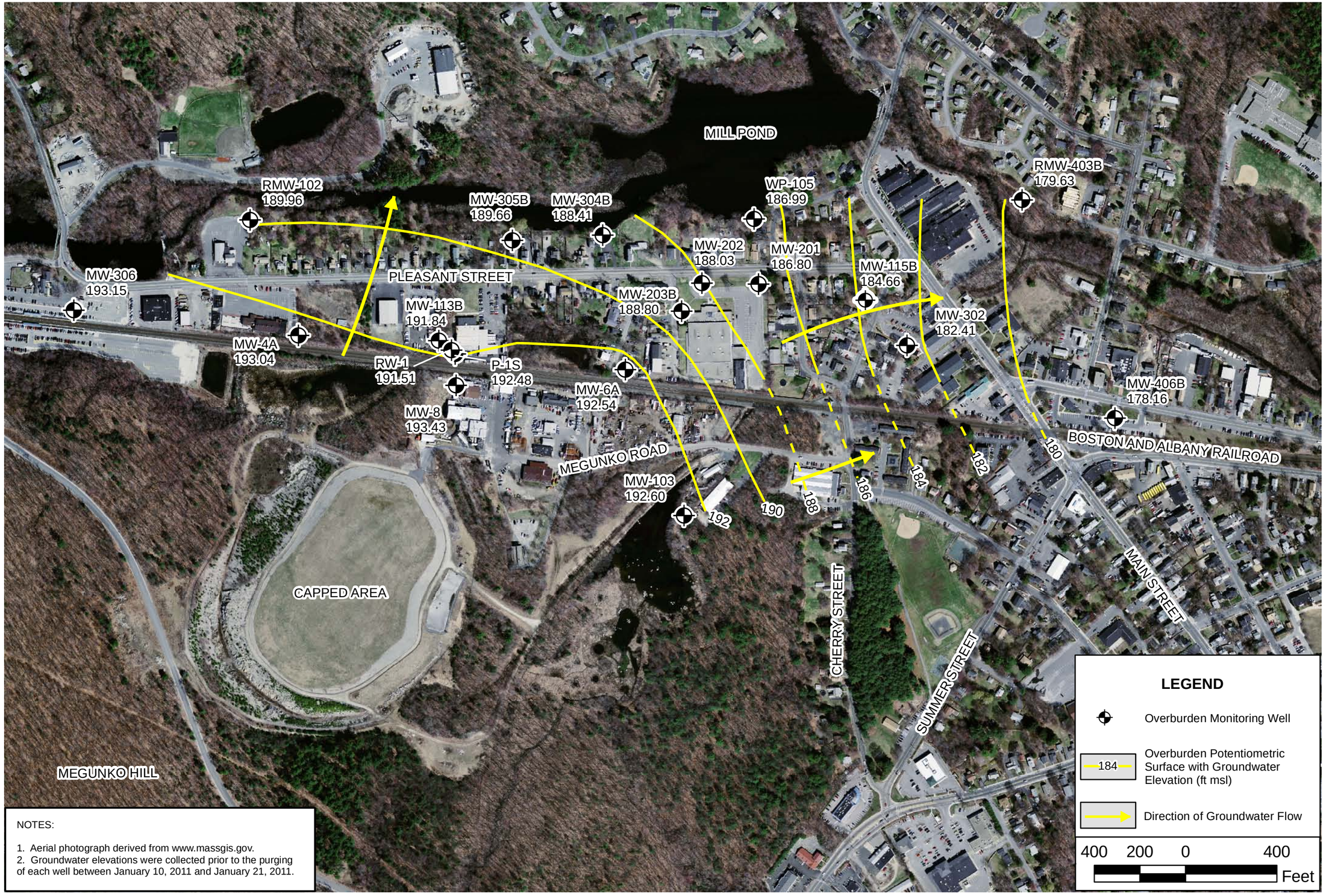
Nobis Engineering, Inc.
18 Chenell Drive
Concord, NH 03301
(603) 224-4182
www.nobiseng.com

DATE:	MAY 2011 Rev 00
PROJECT NO.	80022
	Site Layout.MXD
PREPARED BY:	JDF
CHECKED BY:	JM



NOTES:

1. Aerial photograph derived from www.massgis.gov.
2. Groundwater elevations were collected prior to the purging of each well between January 10, 2011 and January 21, 2011.

DATE: 8/2/2012 Rev 01
PROJECT NO. 80022
OB_contours.MXD
PREPARED BY: JDF
CHECKED BY: JM

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

OVERBURDEN GROUNDWATER ELEVATIONS AND POTENTIOMETRIC SURFACES
JANUARY 2011

FIGURE
2-2

R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2011 GWM Report\Figure 2-2 OB GW contours_Jan2011.mxd

MILL POND

SUDBURY RIVER

MW-304A
189.10

PLEASANT STREET

MW-204A
190.19

MW-4B
192.89

MW-113A
192.43

MW-112A
191.60

MW-203A
188.92

MW-107
188.45

RMW-403A
179.96

MW-406A
178.25

192

190

188

186

184

182

180

BOSTON AND ALBANY RAILROAD

MEGUNKO ROAD

MAIN STREET

CHERRY STREET

SUMMER STREET

CAPPED AREA

MEGUNKO HILL

N

LEGEND

Bedrock Monitoring Well

Bedrock Potentiometric Surface with Groundwater Elevation (ft msl) Dashed where inferred

184

Direction of Groundwater Flow

400 200 0 400

Feet

NOTES:

1. Aerial photograph derived from www.massgis.gov.
2. Groundwater elevations were collected prior to the purging of each well between January 10, 2011 and January 21, 2011.

DATE: AUG 2012 Rev 01
PROJECT NO. 80022
BR_contours.MXD
PREPARED BY: JDF
CHECKED BY: JM

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NYANZA CHEMICAL WASTE DUMP
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OPERABLE UNIT II
ASHLAND, MASSACHUSETTS

BEDROCK GROUNDWATER ELEVATIONS AND POTENTIOMETRIC SURFACE CONTOURS
JANUARY 2011

FIGURE
2-3

R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2011 GWM Report\Figure 2-3 BR GW contours_Jan2011_rev073012.mxd

MILL POND

SUDBURY RIVER

PLEASANT STREET

RMW-102
ND

MW-305B
1

MW-304B
120

WP-105
ND

RMW-403B
ND

MADEP-MW-2
35

MADEP-MW-1
88

MW-202
390

MW-306
ND

MW-4A
ND

MW-203B
560

MW-201
240

MW-115B
190

MW-302
335

P-4
1000

P-1S
2.4

MW-6A
10

MW-8
5.1

MW-406B
ND

BOSTON AND ALBANY RAILROAD

MEGUNKO ROAD

MAIN STREET

MW-103
ND

CHERRY STREET

SUMMER STREET

CAPPED AREA

MEGUNKO HILL

N

LEGEND

Overburden Monitoring Well

ND = Not Detected

TCE Concentrations (ug/L)

- 5 - < 100
- 100 - < 1,000
- > 1,000 - < 10,000

400 200 0 400
Feet

NOTES:

1. Aerial photograph derived from www.massgis.gov.
2. Overburden groundwater samples were collected between January 10, 2011 and January 21, 2011.
3. All concentrations are in micrograms per liter (ug/L).

DATE: AUG 2012 Rev 00
PROJECT NO. 80022
OB_TCE.MXD
PREPARED BY: JDF
CHECKED BY: JM

Nobis Engineering, Inc.
18 Chenell Drive
Concord, NH 03301
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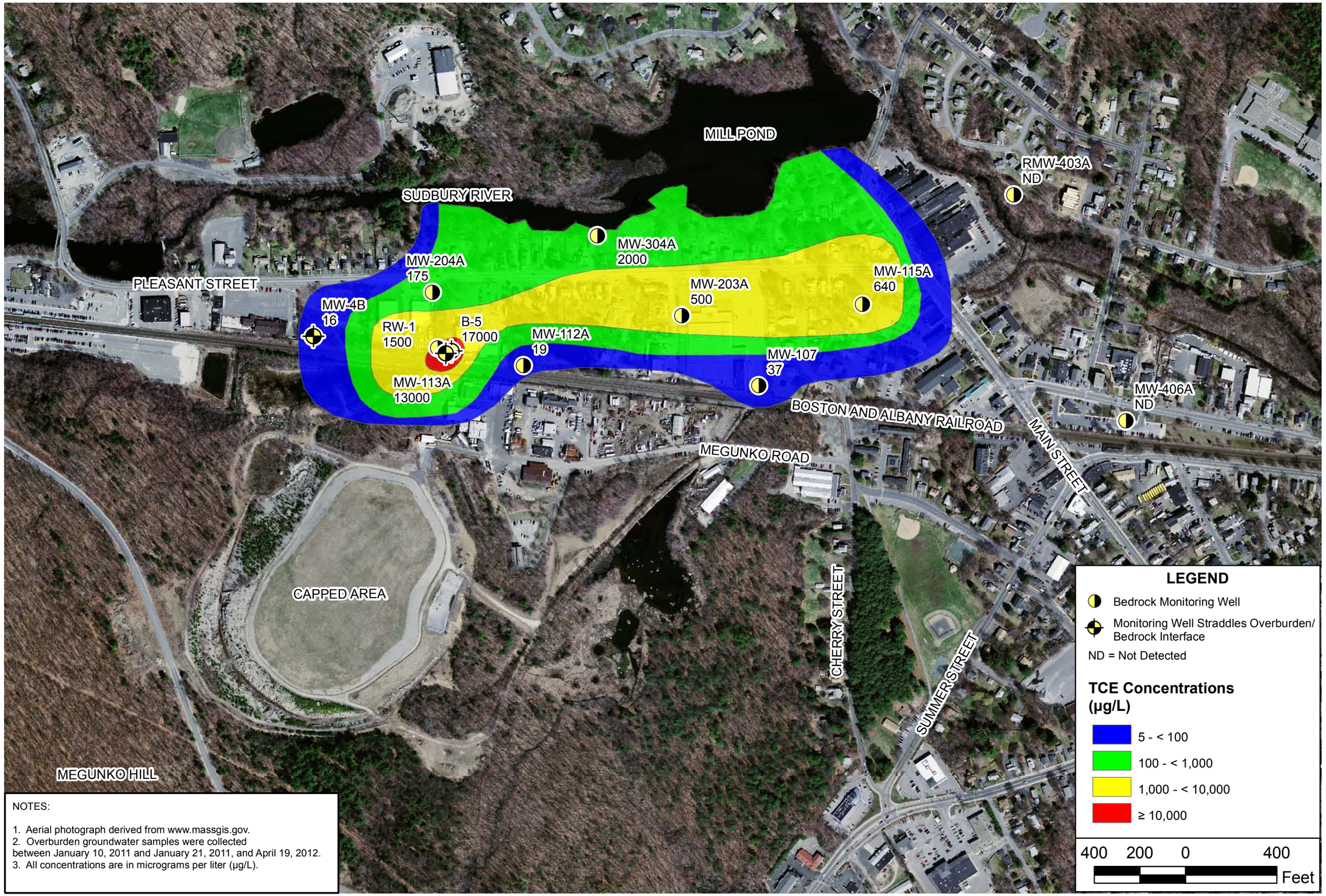
www.nobiseng.com

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

TCE CONCENTRATIONS
IN OVERBURDEN GROUNDWATER
JANUARY 2011/APRIL 2012

FIGURE
3-1

R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2011 GWM Report\Figure 3-1 OB GW TCE_Jan2011_rev071612.mxd



NOTES:

1. Aerial photograph derived from www.massgis.gov.
2. Overburden groundwater samples were collected between January 10, 2011 and January 21, 2011, and April 19, 2012.
3. All concentrations are in micrograms per liter (µg/L).

DATE: AUG 2012 Rev 01
PROJECT NO. 80022
BR_TCE.MXD
PREPARED BY: JH
CHECKED BY: JM

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TCE CONCENTRATIONS
IN BEDROCK GROUNDWATER
JANUARY 2011/APRIL 2012

FIGURE
3-2

R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2011 GWM Report\Figure 3-2 BR GW TCE_Jan2011_rev073012.mxd

NOTES:

1. Aerial photograph derived from www.massgis.gov.
2. Overburden groundwater samples were collected between January 10, 2011 and January 21, 2011.
3. All concentrations are in micrograms per liter (ug/L).
4. ND = Not Detected.
5. GW-1 standard for mercury = 2 ug/L.

DATE: MAY 2011 Rev 00
PROJECT NO. 80022
OB_BR_Hg.MXD
PREPARED BY: JDF
CHECKED BY: JM

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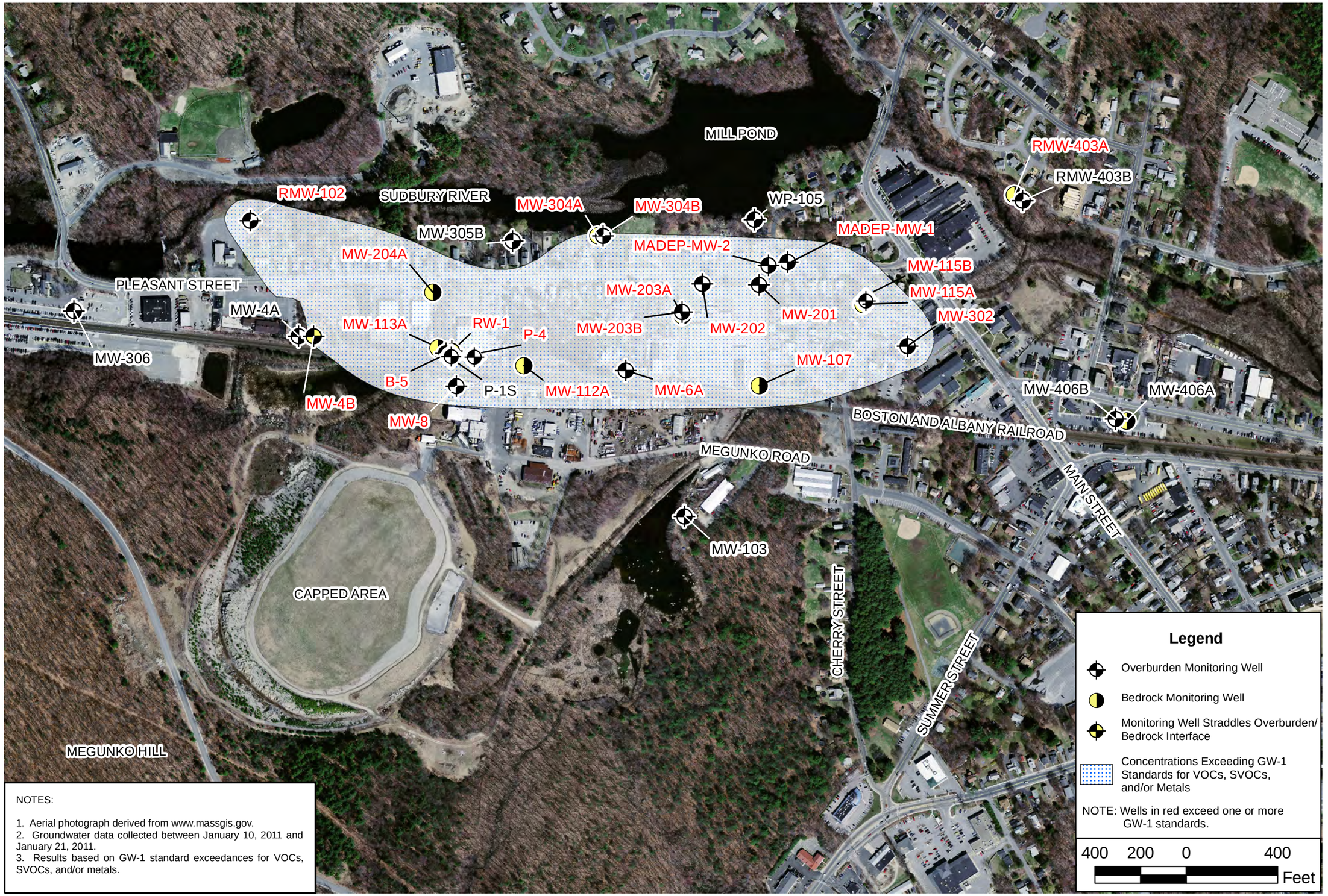
MERCURY CONCENTRATIONS IN OVERBURDEN AND BEDROCK GROUNDWATER
JANUARY 2011

FIGURE
3-3

R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2011 GWM Report\Figure 3-5 GW Hg_Jan2011.mxd



NOTES:

1. Aerial photograph derived from www.massgis.gov.
2. Groundwater data collected between January 10, 2011 and January 21, 2011.
3. Results based on GW-1 standard exceedances for VOCs, SVOCs, and/or metals.

DATE: MAY 2011 Rev 00
PROJECT NO. 80022
GW1_exceedances.MXD
PREPARED BY: JDF
CHECKED BY: JM

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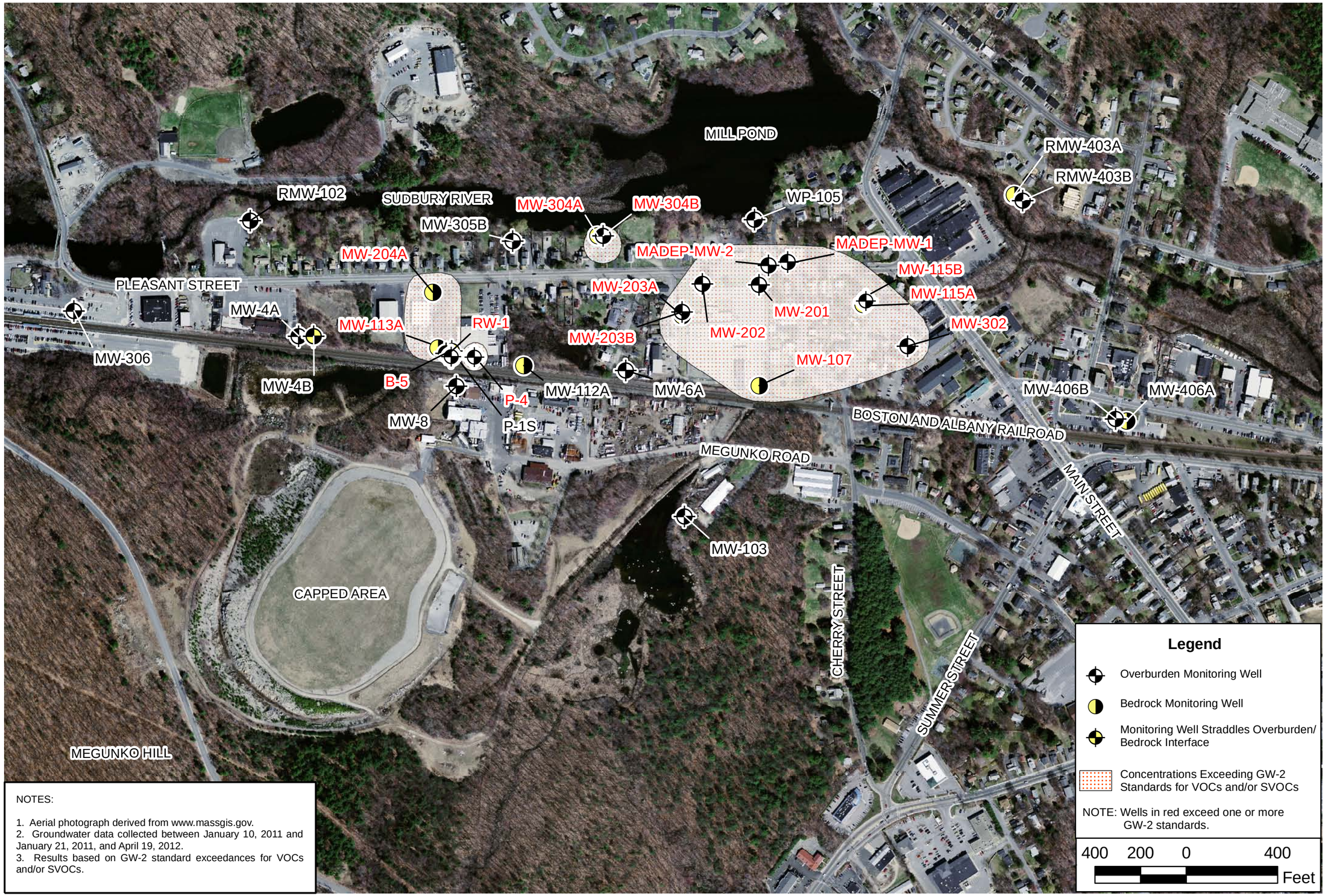
NYANZA CHEMICAL WASTE DUMP
SUPERFUND SITE
OPERABLE UNIT II
ASHLAND, MASSACHUSETTS

OVERBURDEN AND BEDROCK GROUNDWATER CONCENTRATIONS EXCEEDING GW-1 STANDARDS
JANUARY 2011/APRIL 2012

FIGURE 3-4

R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2011 GWM Report\Figure 3-4 GW-1 Exceedances.mxd



NOTES:

1. Aerial photograph derived from www.massgis.gov.
2. Groundwater data collected between January 10, 2011 and January 21, 2011, and April 19, 2012.
3. Results based on GW-2 standard exceedances for VOCs and/or SVOCs.

DATE: AUG 2012 Rev 01
PROJECT NO. 80022
GW2_exceedances.MXD
PREPARED BY: JH
CHECKED BY: JM

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NYANZA CHEMICAL WASTE DUMP
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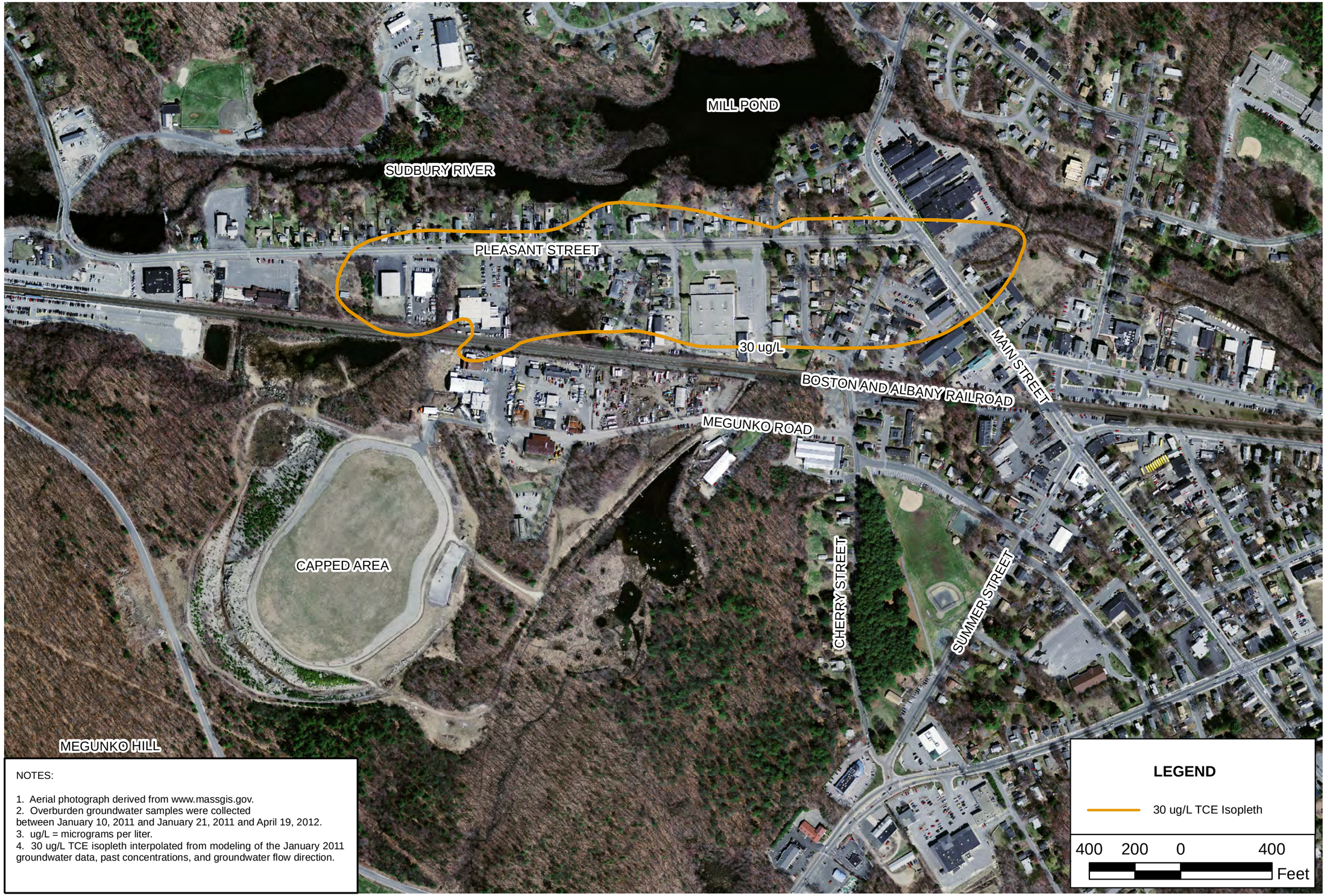
ASHLAND, MASSACHUSETTS
MONITORING WELLS WITH OVERBURDEN AND BEDROCK GROUNDWATER CONCENTRATIONS EXCEEDING GW-2 STANDARDS
JANUARY 2011/APRIL 2012

FIGURE 3-5

R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2011 GWM Report\Figure 3-5 GW-2 Exceedances.mxd



NOTES:

1. Aerial photograph derived from www.massgis.gov.
2. Overburden groundwater samples were collected between January 10, 2011 and January 21, 2011 and April 19, 2012.
3. ug/L = micrograms per liter.
4. 30 ug/L TCE isopleth interpolated from modeling of the January 2011 groundwater data, past concentrations, and groundwater flow direction.

DATE: 7/30/2012 Rev 01
PROJECT NO. 80022
OB_30 ug/L_TCE.MXD
PREPARED BY: JDF
CHECKED BY: JM

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NYANZA CHEMICAL WASTE DUMP
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ASHLAND, MASSACHUSETTS

30 ug/L TCE ISOPLETH
IN OVERBURDEN GROUNDWATER
JANUARY 2011/APRIL 2012

FIGURE
3-6

R:\80000 Task Orders\80022 Nyanza OU2\Technical Data (TD)\GIS\Maps\2011 GWM Report\Figure 3-6 OB TCE 30 ppb line.mxd

APPENDIX A

Nobis Engineering, Inc. nobisengineering.com

Low-Flow Field Log

SOP No: SA-003
Date: Mar. 2010

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

Date: 4·19·12 Page 1 of 1 Well ID: MW-115A

Field Personnel JNB Purging Start Time: 11:13 / 11:35

Well Depth as installed (ft.): 91.0 Measured Well Depth (ft.): 91.0

Screen Length in ft. 5 Screen Depth in ft. ____ Parameter Stabilization: (Circle) (Yes) / No EXCEPT DRAWDOWN

Depth to GW (ft.): 9.51 From: 86 Two Hour Time Limit Reached ? (Circle) Yes / (No)

Pump/Tubing Intake set (ft.): EXISTING TUBING From: 91 Total Volume Purged, Including Drawdown (gallons): 2

Sample Designation MW-115A Time at Purge Completion: 12:30

Sample Time 12:25 Signature: [signature]

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

Multimeter model and serial number YSI 650MPS Turbidity meter model and serial number ____

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

PINKISH WATER
CHEMICAL ODOR - LIKE SITE NAPL

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	
11:28		200	10.24									TUBING WON'T GO DOWN WELL- OLD TUBING RECOVERED FROM WELL WHILE PULLING UP NEW TUBING
11:39		150	10.35			13.15	7953	5.71	34.2	1.32		OLD TUBING RECOVERED W/ NEW TUBING
11:44		100	10.46			13.17	7894	5.67	33.6	0.96		PUMP RUNNING AS SLOW AS POSSIBLE TO MAINTAIN FLOW / KEEP SPINNING
11:50		100	10.68			13.36	7998	5.67	33.0	0.33		
11:55		100	10.69			13.43	8047	5.69	31.3	0.24		
12:00		100	10.79			13.47	8056	5.68	38.0	0.21		
12:05		100	10.89			13.52	8052	5.68	37.8	0.19	1.16	
12:10		100	11.00			13.61	8050	5.67	38.0	0.18	0.92	
12:15		100	11.19			13.53	8054	5.66	37.7	0.19	1.52	
12:20		100	11.29			13.60	8056	5.66	38.7	0.16	0.94	
12:25		SAMPLE COLLECTED										

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.

Engineering a Sustainable Future

Low-Flow Field Log

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

Date: 4/19/12 Page 1 of
Field Personnel AR
Well Depth as installed (ft.):
Screen Length in ft. 5 Screen Depth in ft. 73.7 - 75.7
Depth to GW (ft.): 5.88 From: TOR
Pump/Tubing Intake set (ft.): ~~75~~ 75.7 From: TOR
Sample Designation
Sample Time 1430

Well ID: ~~MW~~ 203A
Purging Start Time: 1225
Measured Well Depth (ft.): 78.1
Parameter Stabilization: (Circle) Yes / No
Two Hour Time Limit Reached ? (Circle) Yes / No
Total Volume Purged, Including Drawdown (gallons): 5
Time at Purge Completion: 1435
Signature:

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Red pump
Multimeter model and serial number YSI 600XL/2F1062 Turbidity meter model and serial number Lamotte 2020 EV/1846-0412
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) A slight odor noted on purge water

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		150	5.66	NR							5	Start Purge Fill
1230		100	7.45	1.57	1.57	13.05	20348	7.60	-243.8	6.20	39.1	flow through cell
1235		100	7.95	0.5	2.07	13.22	20209	7.47	-308.9	0.19	NR	
1240		100	8.73	0.78	2.85	13.17	19563	7.40	-288.1	0.18	36.7	
1245			9.16	0.43	NR							Phase Cell
1250			9.83	0.67	3.95	13.26	17785	7.60	-343.1	0.16	31.0	
1255		↓	10.24	0.41	4.36	13.19	17207	7.81	-301.6	0.16	19.6	
1300		75	10.55	0.31	4.67	13.20	16346	7.65	-309.8	0.15	23.3	Slow flowrate to slow
1305			10.92	0.37	5.04	13.35	16131	7.65	-262.9	0.15	24.7	draw down
1310			11.21	0.29	6.36	13.51	16081	7.80	-301.4	0.15	26.0	
1315			11.45	0.24	6.60	13.68	15972	7.95	-363.4	0.14	19.1	
1320		↓	11.75	0.30	6.90	13.75	15813	7.93	-347.5	0.14	18.2	

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.

R:\Standard Operating Procedures\Field Forms\Sampling

Engineering a Sustainable Future

Low-Flow Field Log

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

Date : 4/19/12 Page 2 of 2 **Well ID :** 203A
Field Personnel
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 ~~1337~~ 1430 DE Post
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	
1325		75	11.95	0.20	7.10	13.53	15802	7.94	-351.4	0.14	21.5	
1330		75	12.25	0.30	7.40	13.44	15826	8.22	-357.8	0.13	20.7	
1335			12.41	0.16	7.56	13.40	15846	8.23	-359.6	0.13	21.9	
1340			12.63	0.22	7.78	13.30	15968	8.26	-351.6	0.12	24.7	
1345			12.80	0.23	8.01	13.29	16274	8.26	-307.9	0.12	21.3	
1350			13.0~~0~~	0.21	8.22	13.22	16592	8.29	-353.1	0.12	19.8	
1355			13.2~~0~~	0.19	8.~~41~~	13.28	16748	8.29	-291.4	0.12	18.7	
1400			13.35	0.15	8.56	13.54	16978	8.23	-290.8	0.12	17.1	
1405			13.43	0.12	8.68	13.41	17082	8.20	-332.9	0.12	18.9	
1410			13.~~60~~	0.25	8.93	13.52	17472	8.11	-282.5	0.12	16.2	
1415			13.85	0.17	9.10	13.42	17491	8.09	-294.6	0.12	15.4	
1420			13.98	0.13	9.23	13.23	17524	8.03	-293.0	0.12	15.1	

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.

1425 14.15 0.17 9.30 13.32 17504 8.00 -270.5 0.12 11.9

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Engineering a Sustainable Future

Low-Flow Field Log

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

Date : 4/12/12 Page 1 of 1 **Well ID :** 30417
Field Personnel DRay Purging Start Time : 1045
Well Depth as installed (ft.): 47.5 Measured Well Depth (ft.): 53.5
Screen Length in ft. 5 Screen Depth in ft. 42.5 - 47.5 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 41.19 From: TOR Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 44.5 From: TOR Total Volume Purged, Including Drawdown (gallons): 2.5±
Sample Designation Time at Purge Completion: 1135
Sample Time 1125 Signature: [signature]
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic pump
Multimeter model and serial number YSI 600XL/102E1062 Turbidity meter model and serial number Lamotte 2020WE/1646-0412
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.) Slight odor noted on purge water. MS/MSD collected.

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	
1045		150	4.19	NR								Start purge, All flow-through cell
1050		150	4.75	0.56	0.56	12.53	4906	6.65	-312.2	0.63	2.57	
1055		150	4.81	~~0.62~~ 0.06	0.62	12.39	4840	6.67	-308.1	0.44	2.51	
1100		150	4.86	0.05	0.67	12.14	4750	6.69	-307.9	0.36	2.49	
1105		100	4.99	0.13	0.80	12.15	4719	6.72	-318.8	0.23	2.47	Slow purge rate to try and stop draw down
1110		100	4.92	+ 0.07	0.73	12.10	4703	6.75	-307.9	0.19	3.19	
1115		100	4.89	+0.03	0.70	12.17	4691	6.78	302.5	0.20	2.77	
1120		100	4.92	0.03	0.73	12.13	4679	6.80	-301.0	0.18	2.52	
1125				SAMPLE TIME								Sample time

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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

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

Date : 4.19.12 Page 1 of 2 **Well ID :** B/MW-5

Field Personnel JNS Purging Start Time : 13:07

Well Depth as installed (ft.): 47.00 Measured Well Depth (ft.): 46.24

Screen Length in ft. 7 Screen Depth in ft. 46 Parameter Stabilization: (Circle) (Yes) / No

Depth to GW (ft.): 4.24 From: 39 Two Hour Time Limit Reached ? (Circle) Yes / (No)

Pump/Tubing Intake set (ft.): EXISTING TUBING From: 46 Total Volume Purged, Including Drawdown (gallons): 2.5

Sample Designation B/MW-5 Time at Purge Completion: 14:35

Sample Time 1430 Signature:

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

Multimeter model and serial number YSI 650 MPS Turbidity meter model and serial number LAMOTTE 2020

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

CLEAR, NO SILT, NO SHEEN

NAPL ODOR (CHERRY AROMA)

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	
13.07	/	100	4.24	—							→	FLOW FLOW THROUGH CELL
13:12	/	100	4,31	0,07	0.07	12,07	4880	5,92	29,1	1.10	35,3	
13:20	/	100	4.32	0.01	0.08	12.14	4996	5.93	31.5	0.62	35.0	
13:25	/	100	4.32	0,00		12.31	4560	5.91	48.4	0.46	27.0	
13:30	/	100	4.33			12.27	2592	5.93	58.5	0.39	13,9	
13.35	/	100	4.33			12.12	1600	5.95	82.5	0.38	11.7	
13:40	/	100	4.33			11.98	1235	5.95	98.5	0.40	8.34	
13:45	/	100	4.33			12.06	1071	5.96	113.7	0.39	5.71	
13:50	/	100	4.33			11.96	1009	5.96	122.0	0.38	4.21	
13:55	/	100	4.33			11.88	978	5.95	129.0	0.35	3.43	
14:00	/	100	4.33	↓	↓	12.05	946	5.95	132.0	0.31	3.10	
14:10	/	100	4.34	0.01	0.09	12.11	944	5.95	134.3	0.30	2.23	

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.

Nobis Engineering, Inc. nobisengineering.com

Low-Flow Field Log

SOP No: SA-003
Date: Mar. 2010

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

Date : 4.19.12 Page 2 of 2 **Well ID :** B1MW-5

Field Personnel JNB Purging Start Time : 13:07

Well Depth as installed (ft.): 47.00 Measured Well Depth (ft.): 46.24

Screen Length in ft. 7 Screen Depth in ft. 46 Parameter Stabilization: (Circle) (Yes) / No

Depth to GW (ft.): 4.24 From: 39 Two Hour Time Limit Reached ? (Circle) Yes / (No)

Pump/Tubing Intake set (ft.): EXISTING TUBING From: 46 Total Volume Purged, Including Drawdown (gallons): 2.5

Sample Designation B1MW-5 Time at Purge Completion: 1435

Sample Time 1430 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	
14:15		100	4.34	0.00	0.09	12.03	945	5.96	134.7	0.30	2.11	
14:20		100	4.34	0.00	0.09	11.86	945	5.95	135.1	0.27	1.51	
14:25		100	4.34	0.00	0.09	11.82	943	5.96	134.9	0.26		
14:30		SAMPLE	COLLECTED	/ DUP	COLLECTED							

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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MULTIPARAMETER WATER PROBE FIELD CALIBRATION LOG SHEET

Today's Date: 4/19/12

SOP No: FS-005	Page: 1 of 1
Date: March 2011	Rev.: 3

Completed by: (signature) _____

Reviewed by (FOL): (signature) _____

SITE INFORMATION

Site Name: Nyanza

Project Number/Task: 5082

Personnel: RM

INSTRUMENT INFORMATION

Instrument Make/Model: YSI 6000XL passed morning cal check (Y) N (not used)

Instrument Serial No.: 04E1062 passed EoD cal check Y N

Nobis Identification No.: _____ if EoD cal check fails, list sample designators at bottom of form

vendor documentation of cleaning and cal present (Y) N with FOL calibration of temp. probe to NIST thermometer verified (Y) N DO membrane replaced today Y N *list other maintenance at bottom*

Criteria	Units	Morning Calibration: Standard Lot Number	Standard Expiration Date	Reading / Measured Value	"Check" Target Value	"Check" Measured Value	Acceptable Value	End-of-Day Calibration Check: Standard Lot Number	Standard Expiration Date	Reading / Measured Value	"Check" Target Value	"Check" Measured Value	Acceptable Value
Dissolved Oxygen (DO)													
DO Probe Charge				64.5			25-75			66.5			25-75
Barometric Preassure	mm Hg			761.3						758.5			
Temperature	°C			19.85						23.96			
100% Saturation	mg/L				9.24	9.27	± 2% (or ±0.2 mg/L, whichever is greater) of target value				8.39	8.56	± 0.5 mg/L to temp. corrected value
0.0 mg/L Dissolved Oxygen	mg/L	NR	—		<0.5	—	≥0 but <0.5	NR	→		<0.5	—	≥0 but <0.5
pH													
pH 7		2109104	08/2013		7	7.00	6.8-7.2 (±0.2)	See AM	→		7	6.97	6.7-7.3 (±0.3)
pH 4		2109132	Aug 2013										
pH 10		2105569	02/2013										
Specific Conductance													
Specific Conductivity Calibration Standard (lower)	µS/cm	9319	11/30/12		1413	1414	±5 % of Target Value				1413	1554	
Specific Conductivity Check Standard (higher)	µS/cm	N.C	—		—	—	±5 % of Target Value	—	—		—	—	±5 % of Target Value
Oxidation/Reduction Potential													
Temperature	°C			19.79						20.47			
ORP	mV	3834	12/2016		277.5	234.4	±10 mV	See AM			237.5	232.6	±10 mV
Other Criteria (Specify)													

Comments:
If the instrument did not pass the end-of-day cal check, note parameters that failed and list all samples designations from the day's work. List all maintenance (DO probe reconditioned, etc.). Use the back of the form for additional notes.

1. 2nd DO solution not available
2. No high conductivity standard available

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MULTIPARAMETER WATER PROBE FIELD CALIBRATION LOG SHEET

Today's Date: 4.19.12

SOP No: FS-005	Page: 1 of 1
Date: March 2011	Rev.: 3
Completed by: (signature)	
Reviewed by (FOL): (signature)	

SITE INFORMATION

Site Name: NYANZA
Project Number/Task: 80022
Personnel: JAB/A

INSTRUMENT INFORMATION

Instrument Make/Model: YSI 600 MDS
Instrument Serial No.: 07A1480 AD
Nobis Identification No.: N/A

passed morning cal check — N (not used)
passed EoD cal check — Y — N
If EoD cal check fails, list sample designators at bottom of form

vendor documentation of cleaning and cal present — Y — N — with FOL
calibration of temp. probe to NIST thermometer verified — Y — N
DO membrane replaced today — Y — N
list other maintenance at bottom

		Morning Calibration						End-of-Day Calibration Check					
Criteria	Units	Standard Lot Number	Standard Expiration Date	Reading / Measured Value	"Check" Target Value	"Check" Measured Value	Acceptable Value	Standard Lot Number	Standard Expiration Date	Reading / Measured Value	"Check" Target Value	"Check" Measured Value	Acceptable Value
Dissolved Oxygen (DO)													
DO Probe Charge				38			25-75			38			25-75
Barometric Preassure	mm Hg			761.3						758.5			
Temperature	°C			19.28						22.02			
100% Saturation	mg/L				9.24	9.28	± 2% (or ±0.2 mg/L, whichever is greater) of target value				8.71	8.82	± 0.5 mg/L to temp. corrected value
0.0 mg/L Dissolved Oxygen	mg/L				<0.5		≥0 but <0.5				<0.5		≥0 but <0.5
pH													
pH 7		2109104	8/13		7	6.99	6.8-7.2 (±0.2)	CAM	CAM		7	6.91	6.7-7.3 (±0.3)
pH 4		2109132	8/13										
pH 10		2108566	2/13										
Specific Conductance													
Specific Conductivity Calibration Standard (lower)	µS/cm	9319	11/30/12		1.413	1413	±5 % of Target Value	←				1424	
Specific Conductivity Check Standard (higher)	µS/cm	NO HIGH AVAILABLE	→		→	→	±5 % of Target Value	CAM	CAM		1.413	~~1425~~	±5 % of Target Value
Oxidation/Reduction Potential													
Temperature	°C			19.79						20.88			
ORP	mV	3834	12/16		237.5	238.9	±10 mV	CAM	CAM		236.2	239.3	±10 mV
Other Criteria (Specify)													

Comments:
If the instrument did not pass the end-of-day cal check, note parameters that failed and list all samples designations from the day's work. List all maintenance (DO probe reconditioned, etc.). Use the back of the form for additional notes.

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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 : 1/19/11 Page 1 of 1 **Well ID :** MADEP-MW-01

Field Personnel KArmitage Purging Start Time : 1046

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: 55 Two Hour Time Limit Reached ? (Circle) Yes (No)

Pump/Tubing Intake set (ft.): _____ From: 55 Total Volume Purged, Including Drawdown (gallons): _____

Sample Designation _____ Time at Purge Completion: 1123

Sample Time 1125 Signature: KArmitage

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

Multimeter model and serial number YSI 650MDS: 99K0637AA Turbidity meter model and serial number Lamotte 2020e : ME K4429

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

H2O level meter probe will not fit down the well.

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	NA NA	234	—	—	8.00	9.84	1000	5.88	132.4	2.94	3.21	tubing froze.
1055		234	—	—	—	9.37	1013	5.71	131.0	2.64	3.62	batteries are dying on
1100		234	—	—	—	9.33	1017	5.68	131.4	2.59	3.24	turbidity meter.
1105		240	—	—	—	9.34	1018	5.65	131.7	2.54		3 no readings.
1110		250	—	—	—	9.32	1020	5.64	131.9	2.47		5
1115		260	—	—	—	9.31	1017	5.63	131.92	2.48	3.52	
1120		260	—	—	—	9.32	1016	5.63	1320	2.40	3.47	

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 : 1/19/11 Page 1 of 1 **Well ID :** MADEP-MW-2
Field Personnel KArmitage Purging Start Time : 0949
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: 55 Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): From: 55 Total Volume Purged, Including Drawdown (gallons): ~~4.5~~ ~2.5
Sample Designation Time at Purge Completion: 1032
Sample Time 1030 Signature: KArmitage
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number YSI 650 MDS 99K0637AA Turbidity meter model and serial number LaMotte 2020e : ME14429
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

NO DTW. Water Level meter probe did not fit down the well. SS well is less than 1" diam. The well is slightly angled!

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	NA / NA	280	—	—	—	8.42	794	7.02	149.9	15.68	4.91	
0955		280	—	—	—	10.06	796	5.99	144.4	6.00	4.22	
1000		280	—	—	—	9.80	792	5.83	144.1	5.53	4.01	
1005		280	—	—	—	9.93	789	5.75	143.4	5.45	3.31	
1010		280	—	—	—	9.79	786	5.73	143.0	5.73	3.11	
1015		280	—	—	—	9.81	785	5.73	142.7	5.37	3.00	
1020		280	—	—	—	9.77	783	5.72	142.2	5.48	2.91	
1025		300	—	—	—	9.79	785	5.71	141.9	5.41	2.80	
1030		300										

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: ~~C~~ B M. Summerlin

Date : 1-18-11 Page 1 of 1 **Well ID :** ~~MW-403A~~ MW-04A

Field Personnel Ken Marks | Purging Start Time : 1050

Well Depth as installed (ft.): 24 | Measured Well Depth (ft.): 20.68

Screen Length in ft. 20 | Screen Depth in ft. 4-24 | Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): 6.61 | From: PVC | Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): | From: PVC | Total Volume Purged, Including Drawdown (gallons): 7

Sample Designation ~~MW-403A~~ | Time at Purge Completion: 1155

Sample Time 1200 | Signature: Ken Marks

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

Multimeter model and serial number YSI 650 MDS #08B0377 Turbidity meter model and serial number Hach 2020e #12233

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	PSI=30 5 10	300	6.68			9.52	69	6.43	148.1	4.19	2085	
1105			6.68			9.57	67	6.22	149.0	4.00	1246	
1110						9.54	67	6.08	148.2	4.09	1011	
1115						9.55	67	6.05	150.2	3.88	764	
1120						9.62	66	6.04	153.3	3.69	330	
1125						9.61	66	6.02	153.3	3.55	142	
1130						9.45	66	6.01	151.8	3.11	69.7	
1135						9.41	66	6.01	151.7	2.91	63.0	
1140						9.38	65	5.98	150.0	2.37	62.0	
1145						9.39	65	6.00	151.1	2.31	26.3	
1150						9.34	65	6.01	150.9	2.33	24.7	
1155						9.34	65	6.00	151.1	2.31	24.8	

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
Date: Mar. 2010

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

Date : 4/19/10 Page 1 of 1 **Well ID :** ~~MW-403~~ MW-04B

Field Personnel Jay Wu

Purging Start Time : 11:25

Well Depth as installed (ft.): 68

Measured Well Depth (ft.): 65.87

Screen Length in ft. 20 Screen Depth in ft. 48-68

Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): 6.65 From: Top PVC

Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): 3' From bottom From: Top PVC

Total Volume Purged, Including Drawdown (gallons): 4.0

Sample Designation

Time at Purge Completion: 12:45

Sample Time 12:20

Signature: Jay Wu

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	P 5	190	6.65	—	—	9.27	555	6.01	203.5	6.71	65.4	
11:35						9.44	590	5.98	205.7	5.75	56.5	
11:40						9.46	591	5.97	209.8	5.51	43.2	
11:45						9.47	591	5.97	209.7	5.38	36.0	
11:50						9.36	598	5.97	211.9	5.30	31.9	
11:55						9.48	611	5.97	212.6	5.18	29.1	
12:00						9.41	634	5.95	214.7	5.06	25.8	
12:05						9.35	662	5.98	216.2	4.79	23.5	
12:10						9.37	670	5.98	216.8	4.74	21.8	
12:15		↓	↓			9.38	673	5.99	219	4.62	28.3	
												Temp. 17.2

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: 11/9/11 Page 1 of 2 (see bottom)
Field Personnel: KArmitage
Well ID: MW-06A
Purging Start Time: 0927
Well Depth as installed (ft.):
Measured Well Depth (ft.): 69.20
Screen Length in ft.: Screen Depth in ft.:
Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 1.45 From: 55
Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 63.00 From: 55
Total Volume Purged, Including Drawdown (gallons): 1.25
Sample Designation:
Time at Purge Completion: 1047
Sample Time: 1050
Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments): bladder : p ~40psi ; R/D = 10/5
Multimeter model and serial number: YSI 650MDS : 99K0637AA Turbidity meter model and serial number: LaMotte 2020e : Mell429
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

No product observed · grey cloudy purge H_2O

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	
0945	5 / 10	100	3.16	/	/	8.67	393	6.19	-6.1	3.61	809	
0950	5 / 10	120	3.21	0.05	0.05	8.86	399	6.15	-15.4	2.19	784	
0955	5 / 10	120	3.36	0.05	0.10	8.92	399	6.12	-15.7	1.65	781	
1000	5 / 10	120	3.40	0.04	0.14	9.07	400	6.11	-18.9	1.46	683	
1005	5 / 10	120	3.46	0.06	0.20	9.04	399	6.12	-24.1	1.24	168	
1010	5 / 10	115	3.51	0.05	0.25	9.25	400	6.14	-27.5	1.15	143	
1015	5 / 10	120	3.56	0.05	0.30	9.55	401	6.15	-31.3	1.06	120	
1020	5 / 10	120	3.57	0.01	0.31	9.70	401	6.15	-35.0	1.00	93.5	
1025	5 / 10	120	3.60	0.03	0.34	9.78	400	6.15	-39.1	0.99	50.4	
1030	/	120	3.62	0.02	0.36	9.91	402	6.15	-43.8	0.95	50.0	
1035	/	120	3.63	0.01	0.37	9.92	402	6.15	-46.1	0.93	51.8	
1040	↓	120	3.63	Ø	0.37	9.84	401	6.15	-46.7	0.92	50.6	
1045		120	3.63	Ø	0.37	9.87	401	6.15	-77.0	0.92	50.9	

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: S. Bonis
Approved by: M. Summerlin

Date : 1-19-11 Page 1 of 1 **Well ID :** MW-8

Field Personnel Ken Marks Purging Start Time : 1010

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.): 5.11 From: Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): From: Total Volume Purged, Including Drawdown (gallons): 5

Sample Designation MW-8 Time at Purge Completion: 1115

Sample Time 1120 Signature: Ken Marks

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Bladder PSI=10

Multimeter model and serial number YSI 650 MDS #08B10377 Turbidity meter model and serial number Lamotte 2020e #12233

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

Clock Time	Discharge / Refill / Pump Setting PSI= 10	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	
1020	5 / 10	250	5.21	0.10	-	6.63	1299	6.18	-3.5	7.98	101.7	Purge water silty dark brown
1025		250	5.21	0.0	0.10	6.61	1322	6.09	4.9	7.02	121	
1030		250	5.21	0.0	0.10	6.67	1380	6.08	8.7	5.93	55.5	Purge water slightly cloudy light
1035		250	5.21	0.0	0.10	6.68	1412	6.09	9.2	5.41	29.3	brown
1040		250	5.21	0.0	0.10	6.70	1408	6.11	11.0	4.56	24.7	
1045		250	5.21	0.0	0.10	6.74	1412	6.12	12.4	3.80	20.1	
1050		250	5.21	0.0	0.10	6.73	1410	6.12	13.1	3.38	12.2	
1055		250	5.21	0.0	0.10	6.72	1405	6.13	13.6	3.03	10.9	
1100		250	5.21	0.0	0.10	6.70	1410	6.13	16.9	2.55	7.96	Purge water clear No odor
1105		250	5.21	0.0	0.10	6.68	1411	6.13	16.4	2.11	6.39	
1110		250	5.21	0.0	0.10	6.68	1411	6.14	17.0	1.91	5.12	
1115		250	5.21	0.0	0.10	6.69	1412	6.14	16.8	1.89	4.30	

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

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

Date : 1-14-11 Page 1 of 2 **Well ID :** MW-103

Field Personnel Ken Marks Purging Start Time : 0850

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.): 8.54 From: _____ Two Hour Time Limit Reached ? (Circle) Yes / (No)

Pump/Tubing Intake set (ft.): 16.50 From: _____ Total Volume Purged, Including Drawdown (gallons): 6

Sample Designation _____ Time at Purge Completion: 1045

Sample Time 1050 Signature: Ken Marks

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Bladder PSI= 16#

Multimeter model and serial number YSI 650 MDS # 08B10377 Turbidity meter model and serial number LaMotte 2020 e # 12233

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	
0855	PSI=16 3 / 12	125	8.61	0.07	-	6.46	99	6.27	164.2	5.98	411	Purge Water Cloudy Orange
0900		125	8.61	0.0	0.07	6.80	93	5.92	168.7	4.32	312	
0905		125	8.61	0.0	0.07	6.91	89	5.51	177.8	2.72	242	
0910		125	8.61	0.0	0.07	7.21	89	5.46	181.7	2.10	219	
0915		125	8.61	0.0	0.07	7.53	89	5.46	185.0	1.93	191	
0920		125	8.61	0.0	0.07	7.75	89	5.47	183.7	1.72	185	
0925		125	8.61	0.0	0.07	7.83	89	5.47	182.1	1.60	175	
0930		125	8.61	0.0	0.07	7.89	89	5.47	178.6	1.53	167	
0935		125	8.61	0.0	0.07	7.93	90	5.48	173.5	1.44	158	
0940		125	8.61	0.0	0.07	8.11	90	5.48	172.2	1.36	150	
0945		125	8.61	0.0	0.07	8.31	91	5.49	171.7	1.32	149	
0950		125	8.61	0.0	0.07	8.36	91	5.51	165.6	1.29	124	

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: 1-14-11 Page 2 of 2 Well ID: MW-103
Field Personnel Ken Meeks 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: Ken Meeks
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.)
INFO See page#1

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	
0955		125	8.61	0.0	0.07	8.31	91	5.52	160.0	1.39	116	Page#2 of 2
1000		125	8.61	0.0	0.07	8.26	91	5.53	157.9	1.35	100	Purge water slightly cloudy orange
1005		125	8.61	0.0	0.07	8.36	91	5.53	156.2	1.30	81.6	
1010		125	8.61	0.0	0.07	8.44	91	5.53	155.4	1.27	62.2	
1015		125	8.61	0.0	0.07	8.47	91	5.53	155.1	1.22	54.9	very light orange purge water
1020		125	8.61	0.0	0.07	8.51	91	5.53	153.9	1.07	50.6	
1025		125	8.61	0.0	0.07	8.55	90	5.54	152.6	1.01	39.7	
1030		125	8.61	0.0	0.07	8.48	90	5.54	151.9	0.98	30.3	
1035		125	8.61	0.0	0.07	8.49	90	5.54	151.6	0.99	22.6	
1040		125	8.61	0.0	0.07	8.47	90	5.54	151.1	0.93	21.9	
1045		125	8.61	0.0	0.07	8.48	90	5.54	150.8	0.89	21.1	

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
Date: Mar. 2010

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

Date : 1/18/11 Page 1 of 2 **Well ID :** MW-107 / DUP2

Field Personnel K'Armitage Purging Start Time : 1130

Well Depth as installed (ft.): Measured Well Depth (ft.): 38.34

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

Depth to GW (ft.): 5.97 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): 38.00 From: PVC Total Volume Purged, Including Drawdown (gallons): ~5+1½=6.5

Sample Designation Time at Purge Completion: 1252

Sample Time 1255 / 1320 Signature:

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

Multimeter model and serial number YSI 650 MDS : 99K0637AA Turbidity meter model and serial number LaMotte 2020e : ME14429

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	
1140	NA / NA	320	5.99	—	—	7.54	1590	5.85	171.3	17.15	11.9	initial purge H2O dark brown
1145		320	5.99	ø	ø	8.05	1632	5.87	159.5	15.55	9.93	& silty.
1150		320	5.99	ø	ø	7.97	1622	5.85	152.0	14.22	144	A lot of flock present
1155		320	5.99	ø	ø	8.12	1629	5.85	144.4	13.19	56.4	
1200		350	5.99	ø	ø	8.30	1630	5.85	138.5	12.01	54.1	
1205		340	5.99	ø	ø	8.61	1649	5.84	131.3	10.52	24.0	
1210		340	5.99	ø	ø	8.31	1639	5.84	125.1	9.75	41.0	
1215		340	5.99	ø	ø	8.49	1639	5.84	119.9	8.00	8.09	
1220		340	5.99	ø	ø	8.56	1651	5.84	115.5	7.51	8.72	
1225		340	5.99	ø	ø	8.64	1638	5.83	111.6	2.62	7.65	
1230		340	5.99	ø	ø	8.74	1645	5.82	107.8	1.60	7.41	
1235	V	340	5.99	ø	ø	8.58	1629	5.82	104.4	1.19	7.74	

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

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

Date : 11/18/11 Page 2 of 2 **Well ID :** MW-107/DUP02

Field Personnel KArmitage 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 1255 / 1320 Signature: KArmitage

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 Page 1

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	
1240	NA NA	340	5.99	ϕ	ϕ	16.24	1629	5.82	99.4	0.87	3.54	Temp=8.37 °C
1245		340	5.99	ϕ	ϕ	8.43	1634	5.82	95.3	0.81	3.63	
1250		340	5.99	ϕ	ϕ	8.37	1627	5.82	92.6	0.83	4.28	

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: S. Bonis
Approved by: M. Summerlin

Date : 1-20-11 Page 1 of 1 **Well ID :** MW-112A

Field Personnel Ken Marks Purging Start Time : 0935

Well Depth as installed (ft.): 43 Measured Well Depth (ft.): 47.41

Screen Length in ft. 5 Screen Depth in ft. 38-43 Parameter Stabilization: (Circle) (Yes) / No

Depth to GW (ft.): 6.68 From: TPVC Two Hour Time Limit Reached ? (Circle) Yes / (No)

Pump/Tubing Intake set (ft.): 42.4 From: TPVC Total Volume Purged, Including Drawdown (gallons): 4

Sample Designation MW-112A Time at Purge Completion: 1100

Sample Time 1110 Signature: Ken Marks

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

Multimeter model and serial number YSI 650 MDS # 08B10377 Turbidity meter model and serial number LaMotte 2020e # 12233

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	
0945	4 / 11	100	7.12	0.44	—	10.35	1836	6.65	-56.7	4.14	50.9	Purge water slightly cloudy
0950		100	7.27	0.15	0.59	9.98	1715	6.74	-61.0	2.21	40.4	very light brown.
0955		100	7.50	0.23	0.82	9.63	1449	6.86	-66.2	1.71	25.2	
1000		100	7.72	0.22	1.04	9.68	1368	6.90	-66.4	1.02	27.9	
1005		100	7.90	0.18	1.22	9.68	1320	6.90	-65.8	0.81	34.6	
1010		100	8.20	0.30	1.52	9.74	1259	6.92	-62.9	0.73	31.8	
1015		100	8.57	0.37	1.89	8.21	1273	6.92	-58.6	0.69	26.6	
1020		100	8.73	0.16	2.05	7.66	1288	6.93	-54.2	0.63	21.6	
1025		100	8.89	0.16	2.21	8.00	1284	6.96	-50.8	0.68	25.1	
1030		100	9.11	0.22	2.43	7.81	1311	6.90	-48.1	0.66	26.9	
1035		100	9.30	0.19	2.62	8.31	1322	6.97	-43.4	0.51	26.1	
1040		100	9.55	0.25	2.87	8.40	1340	6.97	-42.5	0.44	25.7	

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
Date: Mar. 2010

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

Date : 1-20-11 Page 2 of 2 **Well ID :** MW-112A

Field Personnel Ken Marks Purging Start Time : 0935

Well Depth as installed (ft.): 43 Measured Well Depth (ft.): 47.41

Screen Length in ft: 5 Screen Depth in ft. 38-43 Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): 6.05 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / (No)

Pump/Tubing Intake set (ft.): 42.4 From: PVC Total Volume Purged, Including Drawdown (gallons): 4

Sample Designation _____ Time at Purge Completion: 1100

Sample Time 1110 Signature: Ken Marks

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.)

INFO on page #1

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	
1045		100	9.71	0.16	3.03	8.46	1344	6.97	-42.9	0.46	24.8	Page 2 of 2
1050		100	9.90	0.19	3.22	8.51	1348	6.97	-43.1	0.46	24.0	
1055		106	9.96	0.06	3.28	8.50	1350	6.97	-44.9	0.44	23.9	
1100		100	9.99	0.03	3.31	8.47	1343	6.98	-42.6	0.45	24.1	

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: S. Bonis
Approved by: M. Summerlin

Date : 1/6/11 Page 1 of 1 **Well ID :** 113A

Field Personnel Jay Purging Start Time : 13:40

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.): 3.26 From: PVC Stainless Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): 3' From Bot. From: Total Volume Purged, Including Drawdown (gallons): 2.0

Sample Designation 14:40 Time at Purge Completion: 3:10

Sample Time MW-113A 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.)

1" Stainless

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	
13:50	/	120	3.46	—	—	7.54	1031	6.33	115.1	4.20	66.9	
13:55	/	120	3.46	—	—	7.77	800	6.38	117.5	3.08	46.1	
14:00	/	120	3.46	—	—	8.19	1151	6.38	126.9	2.38	36.0	
14:05	/	120	3.46	—	—	8.42	966	6.31	136.9	1.61	29.5	
14:10	/	120	3.46	—	—	8.67	617	6.13	154.5	1.12	27.8	
14:15	/	120	3.46	—	—	8.85	476	6.04	166.1	0.95	25.1	
14:20	/	120	3.46	—	—	8.94	397	5.99	180.3	0.86	9.94	
14:25	/	120	3.46	—	—	9.82	378	5.97	187.6	0.85	14.6 12.7	
14:30	/	120	3.46	—	—	8.83	372	5.97	190.3	0.85	12.6	
14:35	/	120	3.46	—	—	8.86	371	5.97	190.9	0.86	12.0	
	/			NW								Sample Time 14:40
	/											

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.

- Black Water Probable Product Noted on Pump Duty Retrieval, Gauged 13 Bottom w/ Interface Tape
- Interface Probe Indicate Product @ 53.00' → 53.80"
- Entered Corey Gauged w/ Corey

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Low-Flow Field Log

SOP No: SA-003
Date: Mar. 2010

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

Date: 1/11/11 Page 1 of 2 Well ID: MW-113B

Field Personnel: KArmitage Purging Start Time: 1335

Well Depth as installed (ft.): ~~27.50~~ Measured Well Depth (ft.): 46.24

Screen Length in ft. ~~10~~ Screen Depth in ft. ~~24.5-39.50~~ Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): ~~3.49~~ 3.49 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): 43.20 From: PVC Total Volume Purged, Including Drawdown (gallons): _____

Sample Designation _____ Time at Purge Completion: _____

Sample Time 1520 Signature: KArmitage

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) bladder: p~40psi ; R/D = 10/5

Multimeter model and serial number YSI650MDS ~~99K0637AA~~ Turbidity meter model and serial number LaMotte 2020e : ME14476

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

strong odor to purge H_2O. No product observed.

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	5 / 10	300	3.56	~~0~~	~~0~~	9.72	854	6.25	25.7	6.76	183	purge H_2O is cloudy, grey.
1350	5 / 10	300	3.56	~~0~~	~~0~~	9.79	779	6.21	32.7	6.73	154	
1355	5 / 10	300	3.56	~~0~~	~~0~~	9.79	754	6.20	37.0	6.47	73.1	
1400	5 / 10	300	3.56	~~0~~	~~0~~	9.79	735	6.20	40.9	6.20	68.5	
1405	5 / 10	300	3.56	~~0~~	~~0~~							
1410												
1435	5 / 10	300	3.64			9.74	687	6.19	56.5	6.35	45.8	
1440	5 / 10	300	3.65			9.69	684	6.19	57.4	6.47	40.4	
1445	5 / 10	300	3.65			9.77	680	6.19	58.5	6.81	23.5	
1450	5 / 10	300	3.65			9.80	683	6.19	58.9	6.75	21.7	
1455	5 / 10	300	3.65			9.76	679	6.19	60.0	6.61	27.3	
1500	5 / 10	300	3.65			9.76	673	6.19	61.2	6.65	18.7	

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
Date: Mar. 2010

Rev.: 2

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

Date : 1/4/11 Page 2 of 2 **Well ID :** MW-113B

Field Personnel KArmitage 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 1520 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 Page 1

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	
1505	5 / 10	300	3.65	0	0	9.78	671	6.19	62.3	6.75	18.1	
1510	5 / 10	300	3.65	0	0	9.79	670	6.19	63.9	6.77	~~20.0~~ 17.9	NTU.
1515	5 / 10	300	3.65	0	0	9.71	671	6.19	63.7	6.73	18.0	
1520	5 / 10	Sample collected										

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: S. Bonis
Approved by: M. Summerlin

Date : 1/13/11 Page 1 of 2 **Well ID :** MW-115A

Field Personnel KArmitage Purging Start Time : 1204

Well Depth as installed (ft.): Measured Well Depth (ft.): 45.88

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

Depth to GW (ft.): 7.96 From: PVC Two Hour Time Limit Reached ? (Circle) Yes No

Pump/Tubing Intake set (ft.): ~20 From: PVC Total Volume Purged, Including Drawdown (gallons): 1328 ~1 gall.

Sample Designation Time at Purge Completion: ~1328

Sample Time 1330 Signature: KArmitage

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

Multimeter model and serial number YSI 650MDS: 99K0637AA Turbidity meter model and serial number LaMotte 2020e: ME 14476

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

bladder pump would not go down the well after ~2 ft.
MW-115B: Dry - TD = 5.20 below PVC.

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	
1210	NA / NA	120	9.10	—	—	9.99	3684	3.03	460.7	5.91	26.1	
1215		100	9.37	0.27	0.27	10.07	3724	3.03	492.5	5.89	23.6	
1220		100	9.71	0.34	0.61	10.32	3767	3.02	506.7	5.85	23.1	
1225		95	10.00	0.29	0.90	10.40	3774	3.02	511.0	5.90	22.4	
1230		96	10.18	0.18	01.08	10.42	3782	3.02	512.1	5.89	20.7	
1235		96	10.08	-0.10	0.98	10.25	3778	3.01	516.8	5.82	13.8	
1240		98	10.08	Ø	0.98	10.03	3781	3.00	518.6	5.83	12.0	
1245		98	10.01	-0.07	0.91	9.89	3773	3.00	517.6	5.83	10.1	
1250		98	10.01	Ø	0.91	9.79	3751	3.00	519.0	5.80	9.19	
1255		98	10.00	-0.01	0.90	9.87	3759	3.00	521.5	5.75	9.10	
1300		98	10.04	0.04	0.94	9.90	3763	3.00	520.1	5.60	5.71	
1305	✓	98	10.01	-0.03	0.91	9.92	3773	3.01	519.0	5.65	4.67	

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

See Page 1

Date : 1/13/11 Page 2 of 2 **Well ID :** MW-115A
Field Personnel KArmitage 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 1330 Signature: KArmitage
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	
1310	NA NA	98	10.00	-0.01	0.90	10.14	3780	3.01	5.60	517.8	4.90	
1315		98	10.00	Ø	0.90	10.31	3791	3.01	5.54	519.1	3.46	
1320		98	10.04	0.04	0.94	10.21	3802	3.01	5.53	516.8	3.15	
1325		100	10.03	-0.01	0.93	10.30	3808	3.02	5.55	515.1	2.95	

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 : 1/10/11 Page 1 of 1 **Well ID :** MW-10R-201

Field Personnel Jay D. Purging Start Time : 12:30

Well Depth as installed (ft.): 20.0 Measured Well Depth (ft.): 22.67

Screen Length in ft. 5 Screen Depth in ft. 15-20 Parameter Stabilization: (Circle) (Yes) / No

Depth to GW (ft.): ~~13.55~~ 13.41 From: PVC Two Hour Time Limit Reached ? (Circle) Yes (No)

Pump/Tubing Intake set (ft.): 5 from 13 to From: — Total Volume Purged, Including Drawdown (gallons): 60

Sample Designation MW-10R-201 Time at Purge Completion: 2:25

Sample Time 13:35 Signature: [signature]

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

Multimeter model and serial number YSI 04C3554AB Turbidity meter model and serial number Lamotte 2020e 14432

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

Very Rusty Water

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	
12:35	10 / 5	280	13.65	—	—	13.19	2713	6.01	53.1	1.99	316	24 PSI
12:40	10 / 5	280	13.65	13.24	—	13.24	2699	5.80	61.0	1.60	307	
12:45	10 / 5	280	13.65	—	—	1331	2673	5.76	66.0	0.93	255	
12:50	10 / 5	280	13.65	—	—	13.44	2654	5.76	65.4	0.77	221	
12:55	10 / 5	280	13.65	—	—	1341	2605	5.75	65.0	0.64	157	
13:00	10 / 5	280	13.65	—	—	13.43	2575	5.75	64.0	0.51	157	
13:05	10 / 5	280	13.65	—	—	1352	2545	5.75	64.0	0.50	66.1	
13:10	10 / 5	280	13.65	—	—	13.54	2518	5.74	63.8	0.47	46.3	
13:15	10 / 5	280	13.65	—	—	13.55	2451	5.73	63.8	0.34	34.7	
13:20	10 / 5	280	13.65	—	—	1355	2392	5.73	66.2	0.31	27.5	
13:25	10 / 5	280	13.65	—	—	13.55	2381	5.73	66.5	0.31	28.5	
13:30	10 / 5	280	13.65	—	—	13:56	2377	5.73	66.7	0.33	27.9	Sample Time 13:35

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.

[signature]

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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 : 1/10/11 Page 1 of 2 **Well ID :** MW-202/DUP1
Field Personnel KArmitage Purging Start Time : 1130
Well Depth as installed (ft.): 35 Measured Well Depth (ft.): 28.08
Screen Length in ft. 5 Screen Depth in ft. 20-25 Parameter Stabilization: (Circle) (Yes) / No
Depth to GW (ft.): 10.57 From: PVC std pipe Two Hour Time Limit Reached ? (Circle) Yes (No)
Pump/Tubing Intake set (ft.): 25.00 From: PVC std pipe Total Volume Purged, Including Drawdown (gallons): 2.25
Sample Designation MW-202-011111 Time at Purge Completion: 1400
Sample Time 1255/1330 Signature: KArmitage
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) bladder: p~25psi; R/D = 10/5
Multimeter model and serial number YSI 650 MDS : 99K637AA Turbidity meter model and serial number LaMotte 2020e : ME-14476
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)
No product present.

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	5/10	100	10.81	—	—	10.02	2,464	5.67	117.9	7.11	169	water color is brown,
1140	5/10	100	10.78	-0.02	-0.02	9.85	2,447	5.64	116.4	7.37	165	flock settling out in bucket
1145	5/10	100	10.77	-0.01	-0.03	10.01	2,453	5.61	121.8	7.44	150	
1150	5/10	100	10.78	0.01	-0.02	10.07	2,466	5.55	129.2	7.46	105.8	
1155	5/10	100	10.78	ø	-0.02	9.61	2433	5.55	137.9	7.67	98.6	
1200	5/10	100	10.78	ø	-0.02	9.49	2,418	5.53	142.9	7.73	83.2	
1205	5/10	100	10.78	ø	-0.02	10.29	2,462	5.52	147.9	7.73	71.1	
1210	5/10	100	10.78	ø	-0.02	10.56	2,475	5.51	149.5	7.78	69.0	
1215	5/10	100	10.78	ø	-0.02	10.54	2,470	5.50	151.4	7.74	68.0	
1220	5/10	100	10.78	ø	-0.02	10.84	2,478	5.51	154.4	7.70	65.1	
1225	5/10	100	10.78	ø	-0.02	10.95	2,484	5.48	157.2	7.64	61.6	
1230	5/10	100	10.78	ø	-0.02	10.90	2,478	5.47	158.7	7.71	55.8	
1235	5/10	100	10.78	ø	-0.02	10.81	2,463	5.45	160.0	7.75	56.2 (10)	Turbidity = 55.2 NTU

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

See pg 1

Date: 1/10/11 Page 2 of 2 Well ID: MW-202 / DUP 1
Field Personnel KArmitage 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 1255/1330 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 Page 1

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 / pump setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1240	5 / 10	100	10.78	Ø	-0.02	10.76	2457	5.46	162.6	7.83	55.0	
1245	5 / 10	100	10.78	Ø	-0.02	10.85	2460	5.46	163.3	7.82	53.8	
1250	5 / 10	100	10.78	Ø	-0.02	10.88	2458	5.47	162.8	7.82	53.0	
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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 : 1-10-11 Page 1 of 2 **Well ID :** MW-203A

Field Personnel Ken Marks | Purging Start Time : 1140

Well Depth as installed (ft.): 78.7 | Measured Well Depth (ft.): 78.49

Screen Length in ft. 5 | Screen Depth in ft. 78.7 | Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): 5.54 | From: SS | Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): 73.49 | From: SS | Total Volume Purged, Including Drawdown (gallons): 3.5

Sample Designation MW-203A-01111 | Time at Purge Completion: 1345

Sample Time 1350 | Signature: Ken Marks

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Bladder PSI = 60

Multimeter model and serial number YSI 650 NOS# 08B1013 Turbidity meter model and serial number LaMotte 2020 e #12233

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

Page#1 of 2

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	
1145	5 / 10	150	5.61	0.07	-	10.86	11973	7.45	-139.8	6.44	90.0	Purge slightly cloudy light
1150		150	5.66	0.05	0.12	11.11	11596	7.61	-191.5	2.86	66.5	brown
1155		150	5.67	0.01	0.13	10.77	16076	7.64	-218.7	1.89	52.9	
1200		150	5.67	0.0	0.13	10.26	15944	7.60	-235.3	1.01	46.7	
1205		150	5.69	0.02	0.15	9.96	15652	7.58	-226.3	0.63	41.6	
1210		150	5.70	0.01	0.16	9.85	21895	7.51	-228.3	0.48	36.7	
1215		150	5.71	0.01	0.17	10.09	21812	7.51	-231.8	0.39	32.9	
1220		150	5.71	0.0	0.17	10.01	22027	7.38	-235.5	0.22	29.2	
1225		150	5.72	0.01	0.18	9.87	21906	7.42	-271.1	0.21	26.6	
1230		150	5.72	0.0	0.18	10.15	21356	7.57	-305.2	0.21	30.6	
1235		150	5.72	0.0	0.18	10.50	20111	7.49	-307.1	0.21	16.0	
1240		150	5.73	0.01	0.19	10.61	20016	7.46	-308.3	0.20	10.36	Purge water slighty yellowish

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 : 1-10-11 Page 2 of 2 **Well ID :** MW-203A

Field Personnel Ken Marks Purging Start Time : 1140

Well Depth as installed (ft.): 78.7 Measured Well Depth (ft.): ~~78.98~~ 78.49

Screen Length in ft. 5 Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes (No)

Depth to GW (ft.): 5.54 From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): 73.49 From: _____ Total Volume Purged, Including Drawdown (gallons): 3.5

Sample Designation MW-203A-011111 Time at Purge Completion: 1345

Sample Time 1350 Signature: Ken Marks

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.)

Well info on page#1

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	
1245	/	150	5.73	0.0	0.19	10.56	19497	7.42	-302.6	0.20	9.79	Page #2 of 2
1250	/	150	5.74	0.01	0.20	10.43	19152	7.37	-298.4	0.20	9.02	Purge water slightly yellowish
1255	/	150	5.74	0.0	0.20	10.13	18926	7.30	-286.7	0.20	9.59	
1300	/	150	5.74	0.0	0.20	9.93	18581	7.27	-256.9	0.20	9.63	
1305	/	150	5.74	0.0	0.20	9.98	18558	7.25	-248.6	0.20	9.33	
1310	/	150	5.74	0.0	0.20	9.90	17119	7.33	-255.6	0.21	9.21	
1315	/	150	5.74	0.0	0.20	9.95	15311	7.34	-257.7	0.21	8.16	
1325	/	150	5.74	0.0	0.20	10.02	14910	7.40	-293.4	0.21	7.97	
1330	/	150	5.74	0.0	0.20	10.25	14101	7.41	-292.8	0.22	7.71	
1335	/	150	5.75	0.01	0.21	10.28	13793	7.42	-303.7	0.22	7.67	
1340	/	150	5.75	0.0	0.21	10.31	13787	7.41	-295.9	0.23	7.61	
1345	/	150	5.75	0.0	0.21	10.38	13779	7.41	-297.0	0.23	7.57	

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 : 1-11-11 Page 1 of 1 **Well ID :** MW-203B
Field Personnel Ken MarKS Purging Start Time : 0935
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.): 5.57 From: Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 26.91 From: Total Volume Purged, Including Drawdown (gallons): 1.5
Sample Designation MW-203B Time at Purge Completion: 1040
Sample Time 1045 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Bladder PSI = 19
Multimeter model and serial number YSI 650 MDS # 08B10377 Turbidity meter model and serial number Hach 2020 e # 12233
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	
0945	7.5 / 7.5 PSI=19	100	5.78	0.21	-	8.78	1672	6.23	-13.5	3.04	89.1	Purge water silty dark brownish
0950		100	5.81	0.03	0.24	8.11	1640	6.22	-13.0	3.06	80.1	dark orangeish. Slight odor?
0955		100	5.83	0.02	0.26	7.84	1621	6.21	-12.7	3.03	76.9	
1000		100	5.84	0.01	0.27	8.15	1618	6.22	-13.4	2.56	82.5	
1005		100	5.84	0.0	0.27	7.84	1610	6.23	-14.9	2.13	81.3	
1010		100	5.84	0.0	0.27	8.13	1621	6.24	-15.9	1.92	80.7	
1015		100	5.85	0.01	0.28	7.59	1601	6.25	-15.6	1.07	81.3	
1020		100	5.85	0.0	0.28	7.15	1580	6.26	-15.8	1.01	80.7	
1025		100	5.86	0.01	0.29	6.80	1542	6.26	-15.3	0.98	84.1	
1030		100	5.86	0.00	0.29	6.21	1535	6.27	-15.1	0.99	81.9	
1035		100	5.87	0.01	0.30	6.33	1541	6.28	-15.4	0.81	82.1	
1040		100	5.87	0.0	0.30	6.37	1546	6.28	-15.5	0.80	81.7	

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: 1/14/11 Page 1 of 2 Well ID: MW-209A
Field Personnel KArmitage Purging Start Time: 0901
Well Depth as installed (ft.): Measured Well Depth (ft.): 47.45
Screen Length in ft. Screen Depth in ft. Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 8.41 From: 55/2" Two Hour Time Limit Reached? (Circle) Yes / No
Pump/Tubing Intake set (ft.): ~45 From: 55 Total Volume Purged, Including Drawdown (gallons): ~ 1 gallon
Sample Designation Time at Purge Completion: 1027
Sample Time 1030 Signature:
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number YSI 650 MDS: 99K Turbidity meter model and serial number LaMotte 2020e ME14476
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)
well kinked & photographed: peristaltic pump used.

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	
0905	NA NA	105	9.15	—	—	7.27	298	4.16	256.1	4.91	191	orange-brown purge H2O
0910		100	9.22	0.07	0.07	5.63	245	4.01	300.2	4.81	143	
0915		100	9.38	0.16	0.23	5.83	239	4.04	343.1	4.51	96.5	
0920		100	9.39	0.01	0.24	5.92	236	4.06	351.5	4.50	94.2	
0925		100	9.51	0.12	0.36	6.99	239	4.21	326.9	4.22	90.1	
0930		100	9.58	0.07	0.43	7.33	245	4.36	317.7	4.07	88.3	
0935		100	9.62	0.04	0.47	7.21	244	4.02	316.8	4.02	82.0	pH = 4.44
0940		100	9.64	0.02	0.49	6.72	237	4.41	308.5	4.02	80.5	
0945		100	9.59	-0.05	0.44	6.34	235	4.56	303.6	3.93	52.9	
0950		100	9.61	0.02	0.46	6.68	238	4.59	300.7	3.85	49.6	
0955		100	9.60	-0.01	0.45	7.24	241	4.65	289.8	3.76	51.2	
1000		100	9.63	0.03	0.48	7.59	256	4.89	251.6	3.56	48.5	

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
Date: Mar. 2010

Rev.: 2

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

See Page #1

Date : 1/14/11 Page 2 of 2 **Well ID :** MW-209A

Field Personnel KA Armitage 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 1030 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	
1005	NA / NA	100	9.65	0.02	0.50	7.66	263	5.08	231.2	3.33	52.4	
1010	/	100	9.68	0.03	0.53	7.95	269	5.16	222.0	3.21	48.9	
1015	/	100	9.66	0.02	0.51	7.83	271	5.13	218.3	3.20	45.6	
1020	/	100	9.67	0.01	0.52	7.89	269	5.20	216.0	3.23	44.0	
1025	/	100	9.71	0.04	0.56	7.86	268	5.20	215.2	3.29	42.9	
	/											
	/											
	/											
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	/											
	/											
	/											

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 : 1/14/10 Page 1 of 2 **Well ID :** MW-302
Field Personnel Jay Ward Purging Start Time : 9:35
Well Depth as installed (ft.): 25 Measured Well Depth (ft.): 24.03
Screen Length in ft. 5 Screen Depth in ft. 20-25 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 10.55 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): From: PVC Total Volume Purged, Including Drawdown (gallons): 3.0 gallons
Sample Designation MW-302 Time at Purge Completion: 1050
Sample Time 10:50 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	
9:40	10 / 5	100	11.41	—	—	9.74	3177	3.79	250.0	3.85	140	25,151
9:45		100	11.81			9.73	3238	3.79	294	3.38	135	
9:50			12.15			10.12	3327	3.89	301.1	2.60	100.7	
9:55			12.40			10.25	3383	3.97	297.7	2.24	94.0	
10:00			12.56			10.38	3434	4.04	294.4	1.92	80.6	
10:05			12.74			10.40	3483	4.11	290.2	1.65	71.3	
10:10			12.83			10.43	3512	4.13	288.0	1.55	55.7	
10:15			12.91			10.49	3599	4.22	284.9	1.23	53.2	
10:20			12.95			10.59	3652	4.27	285.7	1.03	39.6	
10:25			12.99			10.53	3719	4.31	286.0	0.86	34.5	
10:30			12.99			10.63	3775	4.34	285.5	0.73	29.9	
10:35			12.99			10.68	3830	4.37	287.2	0.64	24.0	

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 : 11/3/10 **Page** 2 of 2 **Well ID :** MW-302
Field Personnel SWJ Purging Start Time : 11:20
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: SWJ
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	
11:20 ~~11:15~~		100	9.94			11.11	651	7.35	-29.1	0.79	8.05	
11:25			9.94			11.42	720	7.34	-36.0	0.70	8.23	
11:30			9.97			11.64	762	7.33	-42.2	0.64	7.70	
11:35			9.97			11.43	796	7.33	-47.2	0.62	8.27	
11:40			9.97			11.39	820	7.32	-51.3	0.60	7.55	
11:45			9.97			11.51	835	7.31	-52.5	0.57	7.74	
11:50			9.97			11.64	849	7.31	-55.2	0.55	7.52	
11:55			9.97			11.69	854	7.31	-56.2	0.54	7.50	Sample T.— 12:00

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 : 1-17-11 Page 1 of 2 **Well ID :** MW-304A
Field Personnel Ken Marks Purging Start Time : 0935
Well Depth as installed (ft.): 55 Measured Well Depth (ft.): —
Screen Length in ft. 5 Screen Depth in ft. 50-55 Parameter Stabilization: (Circle) Yes / (No)
Depth to GW (ft.): 3.87 From: PVC Two Hour Time Limit Reached ? (Circle) (Yes) / No
Pump/Tubing Intake set (ft.): 48.04 From: PVC Total Volume Purged, Including Drawdown (gallons): 6
Sample Designation MW-304A Time at Purge Completion: 1155
Sample Time 1155 Signature: Ken Marks
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) ~~Hydrasleeve~~ Bladder
Multimeter model and serial number YSI 650 MDS #08810377 Turbidity meter model and serial number LaMotte 2020 e# 12233
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

Clock Time	Discharge / Refill / Pump Setting PSI=30	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	
0955	5 / 10	125	4.11	0.24	—	6.18	312	6.74	178.6	6.08	5.99	Purge water clear No odor
1000		125	4.10	-0.01	0.23	6.83	305	6.31	175.5	5.02	4.87	
1005		125	4.10	0.0		7.12	297	6.21	172.1	3.96	4.21	
1010		125	4.10	0.0		7.39	295	6.10	169.7	3.30	4.16	
1015		125	4.10	0.0		7.63	304	6.07	168.8	3.22	4.14	
1020		125	4.10	0.0		7.87	306	6.06	162.1	3.05	4.11	
1025		125	4.10	0.0		8.13	310	6.05	160.8	2.97	3.15	ORP = 160.8
1030		125	4.10	0.0		8.30	339	6.05	156.9	2.66	1.75	Purge water clear
1035		125	4.10	0.0		8.32	414	6.08	139.7	1.58	1.61	
1040		125	4.11	0.01	0.24	8.16	689	6.11	115.6	1.59	1.41	
1045		125	4.11	0.0		8.30	979	6.14	84.0	1.21	1.36	
1050		125	4.11	0.0		8.24	1173	6.19	70.1	0.98	1.33	

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 : 1-17-11 Page 2 of 2 **Well ID :** MW-304A

Field Personnel Ken Marks Purging Start Time : 9935

Well Depth as installed (ft.): 55 Measured Well Depth (ft.): _____

Screen Length in ft. 5 Screen Depth in ft. 50-55 Parameter Stabilization: (Circle) Yes / (No)

Depth to GW (ft.): 31.87 From: PVC Two Hour Time Limit Reached ? (Circle) (Yes) No

Pump/Tubing Intake set (ft.): 48.04 From: PVC Total Volume Purged, Including Drawdown (gallons): 6

Sample Designation MW-304A Time at Purge Completion: 1155

Sample Time 1155 Signature: Ken Marks

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.)

INFO on page #1

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	PSI=30 sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1055	5 / 10	125	4.10	-0.01	0.23	8.45	1719	6.31	-11.7	0.81	1.21	Page #2 of 2
1100		125	4.10	0.0	↓	8.51	2330	6.37	-26.2	0.70	1.29	
1105		125	4.11	0.01	0.24	8.49	2999	6.36	-37.1	0.43	1.31	
1110		125	4.11	0.0	|	8.70	6329	6.40	-68.9	0.35	1.45	
1115		125	4.11	0.0	|	8.78	6759	6.42	-69.7	0.34	1.55	
1120		125	4.11	0.0	|	8.71	7466	6.39	-65.6	0.36	1.51	
1125		125	4.11	0.0	|	8.65	7559	6.39	-63.7	0.37	1.50	
1130		125	4.11	0.0	|	8.64	7619	6.38	-61.0	0.40	1.42	
1135		125	4.11	0.0	↓	8.63	7647	6.37	-60.1	0.37	1.40	
1140		125	4.12	0.01	0.25	8.61	7686	6.37	-58.9	0.36	1.28	
1145	↓	125	4.12	0.0	|	8.59	7669	6.37	-57.9	0.37	1.22	
1150		125	4.12	0.0	↓	8.57	7659	6.37	-55.8	0.41	1.25	

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: S. Bonis
Approved by: M. Summerlin

Date: 11/7/11 Page 1 of 2 Well ID: MW-304B
Field Personnel KArmitage Purging Start Time: 0941
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.): 4.15 From: PVC Two Hour Time Limit Reached ? (Circle) (Yes) / No
Pump/Tubing Intake set (ft.): ~20 From: PVC Total Volume Purged, Including Drawdown (gallons): ~4.5
Sample Designation Time at Purge Completion: 1138
Sample Time 1140 Signature: KArmitage
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) peristaltic
Multimeter model and serial number YSI 650 MDS ; 99K0637 AA Turbidity meter model and serial number LaMotte 2020e : ME14429
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)

No product observed. Air temp = 13°F

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	NA / NA	142	4.73	—	—	9.03	1231	6.01	210.9	6.40	9.81	
0955		142	4.66	-0.07	-0.07	9.10	1240	5.96	211.3	6.35	9.00	
1000		150	4.71	0.05	-0.02	9.57	1253	5.89	211.3	6.29	7.12	
1005		150	4.68	-0.03	-0.05	9.38	1256	5.88	211.8	5.92	6.98	
1010		152	4.68	Ø		9.19	12.51	5.87	212.2	6.12	6.75	
1015		152	4.68	Ø		9.42	1261	5.85	213.0	5.26	6.75	
1020		150	4.68	Ø		9.43	1274	5.86	213.1	5.52	6.61	
1030		150	4.72	0.04	-0.01	9.68	1537	5.87	213.0	1.28	6.52	
1035		150	4.72	Ø		9.72	1639	5.89	210.0	0.85	5.29	
1040		148	4.70	-0.02	-0.03	9.92	2769	6.05	187.6	0.40	5.08	
1045		145	4.70	Ø		9.50	3112	6.22	172.9	0.46	4.11	
1050		150	4.70	Ø		9.29	3115	6.25	162.4	0.47	3.03	

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: S. Bonis
Approved by: M. Summerlin

Date: 1/17/11 Page 2 of 2 Well ID: MW-304B

Field Personnel KArmitage 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) NA

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

Sample Designation Time at Purge Completion:

Sample Time 1140 Signature: KArmitage

See Page #1

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	
1055	NA NA	150	4.69	-0.01	-0.02	9.41	3122	6.26	161.1	0.43	2.98	
1100		148	4.71	0.02	Ø	9.57	3139	6.29	150.3	0.42	2.96	
1105		150	4.71	Ø	Ø	9.38	3120	6.28	163.4	0.40	2.90	
1110		150	4.70	-0.01	-0.01	9.41	3119	6.29	162.7	0.40	2.92	
1115		150	4.72	+0.02	+~~0.03~~ 0.01	9.56	3127	6.29	158.3	0.40	2.89	0.01 DTW
1120		150	4.72	Ø	0.01	9.53	3124	6.30	149.8	0.38	2.85	↓DO change = 7%.2
1125		150	4.73	0.01	0.02	9.59	3118	6.30	138.9	0.38	2.87	
1130		148	4.73	Ø	0.02	9.61	3112	6.29	136.2	0.41	2.86	
1135		150	4.73	Ø		9.66	3109	6.30	140.9	0.42	2.84	

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: 11/21/11 Page 1 of _____ Well ID: MW-305B

Field Personnel: [illegible] / Paul Ingling Purging Start Time: 10:00

Well Depth as installed (ft.): Unk Measured Well Depth (ft.): 18.89

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

Depth to GW (ft.): 9.17 From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): 5' Fro-Bth From: _____ Total Volume Purged, Including Drawdown (gallons): 4.0

Sample Designation: MW-305B Time at Purge Completion: _____

Sample Time: 10:50 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	
10:05	10 / 5	150	7.21			9.61	333	5.18	235.4	3.25	856	20 PSI
10:10		150	7.21			9.86	288	4.76	239.2	1.73	109.5	
10:15		150	7.21			9.90	278	4.74	239.2	1.56	71.6	
10:20		150	7.21			10.05	271	4.72	246.0	1.45	48.0	
10:25		150	7.21			10.09	265	4.70	249.7	1.30	32.8	
10:30		150	7.21			10.21	262	4.69	252.1	1.28	30.4	
10:35		150	7.21			10.23	258	4.68	254.5	1.18	27.8	
10:40		150	7.21			10.28	254	4.67	257.6	1.17	27.5	
												Sample 10:50

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

SOP No: SA-003
Date: Mar. 2010

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

Date : 1-21-11 Page 1 of 1 **Well ID :** MW-306

Field Personnel Ken Marks Purging Start Time : 1015

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.): 8.17 From: _____ Two Hour Time Limit Reached ? (Circle) Yes / (No)

Pump/Tubing Intake set (ft.): 22.84 From: _____ Total Volume Purged, Including Drawdown (gallons): 1.5

Sample Designation MW-306 Time at Purge Completion: _____

Sample Time 1105 Signature: Ken Marks

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

Multimeter model and serial number YSI 650 MDS #18B10377 Turbidity meter model and serial number LaMotte 2020 e #17233

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

Clock Time	Discharge / Refill / Pump Setting PSI=20	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	
1025	5 / 10	100	8.22	0.05	-	8.74	314	6.83	28.5	5.89	219	
1030		100	8.25	0.03	0.08	8.68	299	6.72	29.7	5.25	114	
1035		100	8.26	0.01	0.09	8.75	293	6.70	23.9	4.70	72.4	
1040		100	8.27	0.01	0.10	8.78	294	6.71	18.6	4.24	43.6	
1045		100	8.30	0.03	0.13	8.81	291	6.71	12.6	3.93	20.1	
1050		100	8.31	0.01	0.14	8.87	289	6.72	-1.5	3.49	11.6	
1055		100	8.31	0.01	0.14	8.86	288	6.72	-1.7	3.41	11.1	
1100	↓	100	8.31	0.01	0.14	8.88	288	6.72	-1.8	3.40	11.0	

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

Rev.: 2

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

Date : 1/19/11 Page 1 of 1 **Well ID :** RMW-403A

Field Personnel JWJ Paul Wrigley Purging Start Time : 9:45

Well Depth as installed (ft.): Measured Well Depth (ft.): 47.11

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

Depth to GW (ft.): 7.51 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 RMW-403A 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	
9:50	1 - 5		8.02			8.83	6.20	6.62	129.2	3.22	226	23,25F
9:55			8.14			9.17	6.35	6.21	152.6	2.88	275	
10:00			8.15			9.41	6.25	5.92	166.6	3.15	278	
10:05			8.16			9.41	6.30	5.64	181.2	3.65	227	
10:10			8.17			9.48	6.32	5.52	187.7	3.53	189	
10:15			8.17			9.39	6.31	5.40	191.5	3.95	160	
10:20			8.17			9.39	6.31	5.43	194.0	3.93	153	
10:25			8.17			9.55	6.30	5.44	195.3	3.86	158	
10:30			8.17			9.50	6.30	5.42	196.7	3.81	162	
10:35			8.17			9.56	6.29	5.41	197.8	3.78	162	
10:40			8.17			9.58	6.29	5.42	198.2	3.76	162	
												Sample Time 10:45

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 : 1/19/12 Page 1 of 1 **Well ID :** RMW-4031S
Field Personnel S. Bonis, Rob Yingling Purging Start Time : 9:55
Well Depth as installed (ft.): Unknown Measured Well Depth (ft.): 21.59
Screen Length in ft. Unknown Screen Depth in ft. _____ Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 8.01 From: PVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): 3' From Bottom From: _____ Total Volume Purged, Including Drawdown (gallons): _____
Sample Designation RMW-4031S Time at Purge Completion: _____
Sample Time 11:05 Signature: _____
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) _____
Multimeter model and serial number QuC3884A13 Turbidity meter model and serial number 14432
Notes: (initial wellhead PID/FID reading, deviations from SOP, etc.)
DTW Top of Casing

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	
10:10	10 / 5	100	9.76	—	—	9.36	774	6.33	95.7	4.25	274	17 PSI
10:15		100	10.87			9.39	765	6.09	108.4	4.06	201	
10:20		100	11.65			9.41	763	6.07	103.1	4.07	174	
10:25		100	12.46			9.46	763	6.06	95.4	4.04	165	
10:30		100	13.25			9.47	761	6.07	87.7	3.99	162	
10:35		100	13.66			9.57	761	6.07	79.6	3.99	166	
10:40		100	14.33			9.63	760	6.06	72.5	3.97	159	
10:45		100	15.09			9.65	760	6.07	62.9	3.89	~~144~~ 148	
10:50		100	15.63			9.65	760	6.08	58.5	3.85	142	
10:55		100	16.17			9.69	760	6.07	55.1	3.85	136	Sample Time 11:05

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

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

Date: 11/3/11 Page 1 of 2 Well ID: ~~MW-30~~ MW-406A

Field Personnel _____ Purging Start Time: 10:15

Well Depth as installed (ft.): _____ Measured Well Depth (ft.): 12.78

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

Depth to GW (ft.): 8.46 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	
10:20	10 / 5	100	8.98	—	—	10.27	612	7.35	65.7	3.87	12.4	
10:25		100	8.15			10.21	608	7.13	108.9	2.31	12.0	
10:30		100	9.30			10.44	607	7.11	83.5	1.97	10.62	
10:35		100	9.57			11.05	605	7.14	60.4	1.77	10.20	
10:40			9.70			11.30	603	7.18	32.6	1.47	9.93	
10:45			9.84			11.36	601	7.24	17.5	1.18	10.29	
10:50			9.90			11.35	601	7.28	7.3	1.05	9.42	
10:55			9.90			11.31	600	7.31	~~7.5~~ 7.1	0.99	9.42	
11:00			9.90			11.30	600	7.34	-6.3	0.90	9.24	
11:05			9.94			11.25	606	7.35	-16.9	0.85	5.21	
11:10			9.94			11.26	627	7.35	-23.4	0.78	7.99	
11:15			9.94			11.24	644	7.36	-24.4	0.99	9.49	

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

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

Date : 1/13/10 Page 2 of 2

Well ID : ~~MW-502~~ MW-406A

Field Personnel S.W.J

Purging Start Time : ~~11:45~~ 11:30

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: 12:00

Sample Time _____

Signature: S.W.J

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	
~~11:45~~ 11:30		100	9.94			11.11	651	7.35	-29.1	0.79	8.05	
11:25			9.94			11.42	720	7.34	-36.0	0.70	8.23	
11:30			9.97			11.64	762	7.33	-42.2	0.64	7.70	
11:35			9.97			11.43	796	7.33	-47.2	0.62	8.27	
11:40			9.97			11.59	820	7.32	-51.3	0.60	7.85	
11:45			9.97			11.59	835	7.31	-52.5	0.57	7.74	
11:50			9.97			11.64	849	7.31	-55.2	0.55	7.52	
11:55			9.97			11.69	854	7.31	-56.2	0.54	7.50	Sample Time 12:00

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 : 1-13-11 Page 1 of 2 **Well ID :** MW-406 B
Field Personnel Ken Marks Purging Start Time : 1010
Well Depth as installed (ft.): ~~43~~ Measured Well Depth (ft.):
Screen Length in ft. ~~8~~ Screen Depth in ft. ~~35-43~~ Parameter Stabilization: (Circle) (Yes) / No
Depth to GW (ft.): 8.61 From: Two Hour Time Limit Reached ? (Circle) Yes / (No)
Pump/Tubing Intake set (ft.): 57.94 From: Total Volume Purged, Including Drawdown (gallons): 5
Sample Designation Time at Purge Completion: 1205
Sample Time 1210 Signature: Ken Marks
Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Bladder - PSI=30
Multimeter model and serial number YSI 650 MDS #08B10377 Turbidity meter model and serial number LaMotte 2020 @ #12233
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
	PSI=30											
HHMM	sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1020	~~7.5~~ 7.5	150	8.66	0.05	—	11.04	806	5.91	190.4	2.30	33.9	Purge water slightly cloudy
1025		150	8.66	0.0	0.05	11.15	814	5.74	192.6	1.50	54.9	light gray
1030		150	8.66	0.0	0.05	11.41	813	5.77	193.7	1.29	60.9	
1035		150	8.66	0.0	0.05	11.44	810	5.80	194.6	1.26	59.1	
1040		150	8.66	0.0	0.05	11.35	803	5.83	194.7	1.16	59.0	
1045		150	8.66	0.0	0.05	11.36	796	5.88	194.2	1.12	50.1	
1050		150	8.66	0.0	0.05	11.34	790	5.92	193.9	1.09	44.6	
1055		150	8.66	0.0	0.05	11.33	781	5.93	193.7	1.06	31.6	
1100		150	8.66	0.0	0.05	11.31	773	5.96	192.8	1.03	45.8	
1105		150	8.66	0.0	0.05	11.27	761	5.99	191.9	1.02	36.2	
1110		150	8.66	0.0	0.05	11.09	752	6.02	190.7	1.03	31.0	
1115		150	8.66	0.0	0.05	11.03	741	6.07	189.6	1.03	20.8	

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
Date: Mar. 2010

Rev.: 2

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

Date: 1-13-11 Page 2 of 2

Field Personnel Ken Marks

Well Depth as installed (ft.): _____

Screen Length in ft. _____ Screen Depth in ft. _____

Depth to GW (ft.): 8.61 From: _____

Pump/Tubing Intake set (ft.): 57.94 From: _____

Sample Designation MW-406B

Sample Time 1210

Well ID: MW-406B

Purging Start Time: 1010

Measured Well Depth (ft.): _____

Parameter Stabilization: (Circle) Yes / No

Two Hour Time Limit Reached ? (Circle) Yes / (No)

Total Volume Purged, Including Drawdown (gallons): 5

Time at Purge Completion: 1205

Signature: Ken Marks

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.)

Well info on page #1 Page # 2 of 2

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	PSI=30 sec. / sec. or setting	ml/min	ft.	ft.	ft.	°C	µS/cm		mV	mg/L	NTU	
1120	7.5 7.5	150	8.66	0.0	0.05	11.14	737	6.10	188.6	1.15	20.1	Page # 2 of 2
1125		150	8.66	0.0	0.05	11.23	737	6.12	87.5	1.04	18.1	ORP=187.5
1130		150	8.66	0.0	0.05	11.44	736	6.13	186.5	1.02	16.0	Purge water slightly cloudy
1135		150	8.66	0.0	0.05	11.37	732	6.14	186.2	0.97	14.2	
1140		150	8.66	0.0	0.05	11.25	728	6.14	186.1	0.93	12.1	
1145		150	8.66	0.0	0.05	11.19	726	6.15	185.8	0.97	11.0	
1150		150	8.66	0.0	0.05	11.26	723	6.17	184.7	0.94	9.37	
1155		150	8.66	0.0	0.05	11.17	722	6.17	184.6	0.92	8.39	
1200		150	8.66	0.0	0.05	11.28	722	6.18	184.4	0.96	8.33	
1205		150	8.66	0.0	0.05	11.31	722	6.18	184.2	0.97	8.31	

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 : 1/11/11 Page 1 of 2 **Well ID :** B-5

Field Personnel KArmitage Purging Start Time : 1002

Well Depth as installed (ft.): unk Measured Well Depth (ft.): 32.09

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

Depth to GW (ft.): 3.28 From: PVC Two Hour Time Limit Reached ? (Circle) Yes No

Pump/Tubing Intake set (ft.): 29.00 From: PVC Total Volume Purged, Including Drawdown (gallons): 5+0.75=5.75

Sample Designation ~~DUP~~ B-05-211111 Time at Purge Completion: 1137

Sample Time 1140 Signature: [signature]

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) bladder: P~35 psi; R/D=10/5

Multimeter model and serial number YSI 650MDS: 99K0637AA Turbidity meter model and serial number LaMotte 2020e: ME 14476

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

No product observed. Overcast

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	5 / 10	244	3.11	—	—	9.24	987	5.84	132.5	9.58	31.7	
1020	5 / 10	244	3.11	∅	∅	9.45	909	5.72	119.9	7.71	30.1	
1025	5 / 10	244	3.11	∅	∅	9.53	886	5.71	115.7	7.02	24.6	
1030	5 / 10	244	3.11	∅	∅	9.63	867	5.70	113.1	6.29	22.5	
1035	5 / 10	244	3.11	∅	∅	9.69	851	5.71	112.3	5.96	20.6	
1040	5 / 10	244	3.11	∅	∅	9.70	840	5.70	112.2	5.72	20.1	
1045	5 / 10	244	3.11	∅	∅	9.80	830	5.71	112.1	5.40	18.1	
1050	5 / 10	244	3.11	∅	∅	9.81	820	5.71	113.1	5.15	16.9	
1055	5 / 10	244	3.11	∅	∅	9.86	813	5.71	113.7	5.02	15.8	
1100	5 / 10	244	3.11	∅	∅	9.87	805	5.71	113.9	4.96	14.1	
1105	5 / 10	244	3.11	∅	∅	9.88	800	5.71	114.1	4.90	13.3	
1110	5 / 10	244	3.11	∅	∅	9.85	797	5.71	115.3	4.98	12.6	
1115	5 / 10	244	3.11	∅	∅	9.86	792	5.72	115.9	4.92	12.4	

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
Date: Mar. 2010

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

See Pg. 1

Date : 1/11/11 Page 2 of 2 **Well ID :** B-5

Field Personnel K Armitage

Well Depth as installed (ft.): _____ Purging Start Time : _____

Screen Length in ft. _____ Screen Depth in ft. _____ Measured Well Depth (ft.): _____

Depth to GW (ft.): _____ From: _____ Parameter Stabilization: (Circle) Yes / No

Pump/Tubing Intake set (ft.): _____ From: _____ Two Hour Time Limit Reached ? (Circle) Yes / No

Sample Designation _____ Total Volume Purged, Including Drawdown (gallons): _____

Sample Time 1140 Time at Purge Completion: _____

Signature: K Armitage

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	5 / 10	244	3.11	Ø	Ø	9.90	787	5.72	116.3	4.87	12.2	
1125	5 / 10	244	3.11	Ø	Ø	9.83	795	5.72	116.4	4.91	11.9	
1130	5 / 10	244	3.11	Ø	Ø	9.85	781	5.72	116.9	4.93	11.9	
1135	5 / 10	244	3.11	Ø	Ø	9.81	784	5.73	117.2	4.90	11.8	← ✓
	/											
	/											
	/											
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	/											
	/											

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: 1-11-11 Page 1 of 2 **Well ID:** P-1

Field Personnel Ken Marks Purging Start Time: 1320

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.): 3.98 From: _____ Two Hour Time Limit Reached ? (Circle) Yes / (No)

Pump/Tubing Intake set (ft.): _____ From: _____ Total Volume Purged, Including Drawdown (gallons): 6

Sample Designation P-1 Time at Purge Completion: _____

Sample Time 1455 Signature: Ken Marks

Pump Type (include pressure, discharge, and recharge for bladder pump under pump setting and comments) Bladder PSI = 15

Multimeter model and serial number YSI 650 MDS #08B10377 Turbidity meter model and serial number LaMotte 2020 e# 12233

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

This well has a good 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	
1330	PSI=15 10 / 5	300	3.80	-	-	9.93	348	6.23	111.6	3.43	192	Purge water slightly cloudy
1335		300	3.80	-	-	10.10	324	5.99	126.7	3.01	175	gray
1340		300	3.80	-	-	10.24	322	5.90	146.1	1.04	115	Page#1 of 2
1345		300	3.80	-	-	10.41	326	5.87	157.9	1.00	86.8	
1350		300	3.80	-	-	10.60	328	5.87	164.4	0.99	69.4	
1355		300	3.80	-	-	10.79	329	5.86	172.7	0.97	39.7	
1400		300	3.80	-	-	10.81	329	5.85	177.4	1.05	41.1	
1405		300	3.80	-	-	10.85	330	5.85	182.7	1.13	38.6	
1410		300	3.80	-	-	10.85	331	5.85	186.9	1.20	28.6	
1415		300	3.80	-	-	10.84	331	5.85	191.1	1.24	26.2	
1420		300	3.80	-	-	10.82	331	5.85	196.4	1.30	17.7	
1425		300	3.80	-	-	10.75	330	5.84	199.2	1.33	14.3	

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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Low-Flow Field Log

SOP No: SA-003
Date: Mar. 2010

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

Date : 1-11-11 Page 2 of 2 **Well ID :** P-1

Field Personnel Ken Marks 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): 6

Sample Designation _____ Time at Purge Completion: 1450

Sample Time 1455 Signature: Ken Marks

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.)

Well info see page# 1

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	
1430		300	3.80	–	–	10.68	330	5.84	201.9	1.56	14.1	Page # 2 of 2
1435		300	3.80	–	–	10.72	330	5.85	203.9	1.62	12.8	
1440		300	3.80	–	–	10.70	330	5.84	206.9	1.65	12.2	
1445		300	3.80	–	–	10.72	330	5.84	207.3	1.66	12.1	S. Cond = 330
1450		300	3.80	–	–	10.71	330	5.84	207.8	1.64	12.0	

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

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

Date : 1/11/11 Page 1 of 1 **Well ID :** RW-1

Field Personnel Jay DW Purging Start Time : 10:10

Well Depth as installed (ft.): 55 Measured Well Depth (ft.): 53.99

Screen Length in ft. 15 Screen Depth in ft. 36-51 Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): 4.86 From: PVC Two Hour Time Limit Reached ? (Circle) Yes (No)

Pump/Tubing Intake set (ft.): 3' From Bottom From: Total Volume Purged, Including Drawdown (gallons): 20

Sample Designation RW-1 Time at Purge Completion:

Sample Time 10:50 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	
10:15	10 / 5	160	5.00	—	—	9.92	834	5.43	121.9	1.56	374	2.5 PSI
10:20	10 / 5	160	5.03	—	.03	10.05	850	5.36	132.0	1.01	420	
10:25	10 / 5	160	5.03	—	.03	10.10	864	5.34	136.6	0.71	331	
10:30	10 / 5	160	5.03	—	.03	10.20	868	5.34	139.7	0.57	268	
10:35	10 / 5	160	5.03	—	.03	10.21	869	5.33	143.0	0.52	232	
10:40	10 / 5	160	5.03	—	.03	10.23	870	5.32	146.5	0.48	212	
10:45	10 / 5	160	5.03	—	.03	10.24	871	5.31	148.4	0.42	204	
10:45	10 / 5	160	5.03	—	.03	10.25	871	5.31	149.5	0.44	202	Sample 10:50
							10:50					

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.

Nobis Engineering, Inc. nobisengineering.com

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 : 11/7/10 Page 1 of 2 **Well ID :** RMW-102
Field Personnel Jay Wood Purging Start Time : 10:05
Well Depth as installed (ft.): 10 Measured Well Depth (ft.): 12.12
Screen Length in ft. 5 Screen Depth in ft. 5-10 Parameter Stabilization: (Circle) Yes / No
Depth to GW (ft.): 4.96 From: TPVC Two Hour Time Limit Reached ? (Circle) Yes / No
Pump/Tubing Intake set (ft.): From: TPVC Total Volume Purged, Including Drawdown (gallons): 5.0
Sample Designation RMW-102 Time at Purge Completion:
Sample Time 11:50 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	
10:10		140	6.65			4.99	414	6.04	204.7	2.10	124	
10:15		140				4.92	416	5.91	207.0	2.01	87.2	
10:20						4.86	416	5.90	207.3	2.04	80.0	
10:25						4.84	416	5.91	207.6	1.64	50.4	
10:30						4.81	419	5.92	207.5	1.51	45.6	
10:35						4.80	409	5.93	207.8	1.62	31.8	
10:40						4.83	410	5.93	207.6	1.58	25.1	
10:45						4.87	406	5.93	207.5	1.49	21.7	
10:50						5.10	402	5.94	207.3	1.46	19.0	
10:55						5.09	400	5.94	207.3	1.26	17.6	
11:00						5.07	397	5.95	207.0	1.12	15.3	
11:05						5.71	395	5.96	205.1	0.99	13.6	

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.

Nobis Engineering, Inc. nobisengineering.com

Low-Flow Field Log

SOP No: SA-003
Date: Mar. 2010

Rev.: 2

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

Date : 11/7/10 Page 2 of 2 **Well ID :** RMW-102

Field Personnel Jay W. Purging Start Time : 1025

Well Depth as installed (ft.): 10 Measured Well Depth (ft.): 12.12

Screen Length in ft. 5 Screen Depth in ft. 5-10 Parameter Stabilization: (Circle) (Yes) No

Depth to GW (ft.): 4.46 From: TPVC Two Hour Time Limit Reached ? (Circle) Yes / (No)

Pump/Tubing Intake set (ft.): From: TPVC Total Volume Purged, Including Drawdown (gallons): 5.0

Sample Designation RMW-102 Time at Purge Completion:

Sample Time 1150 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	
11:10		140	6.65			5.35	351	5.97	204.5	0.95	10.5	
11:15						5.68	359	5.97	204.2	0.86	10.1	
11:20						5.42	357	5.97	203.7	0.91	9.90	
11:25						5.34	355	5.97	202.9	0.77	9.13	
11:30						5.41	354	5.98	202.9	0.74	8.90	
11:35						5.32	383	5.98	201.4	0.69	8.79	
11:40		↓	↓			5.43	379	6.00	200.4	0.68	8.77	Sample Time 11:50

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.

Nobis Engineering, Inc. nobisengineering.com

Low-Flow Field Log

SOP No: SA-003
Date: Mar. 2010

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

Date : 1/21/11 Page 1 of 1

Well ID : WP-10.5

Field Personnel KAmitrano

Purging Start Time : 1050

Well Depth as installed (ft.): 11

Measured Well Depth (ft.): 12.67

Screen Length in ft. 2 Screen Depth in ft. 9-11

Parameter Stabilization: (Circle) Yes / No

Depth to GW (ft.): 6.90 From: Std pipe

Two Hour Time Limit Reached ? (Circle) Yes / No

Pump/Tubing Intake set (ft.): From:

Total Volume Purged, Including Drawdown (gallons):

Sample Designation WP-105

Time at Purge Completion: 1120

Sample Time 1110

Signature:

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

Multimeter model and serial number YSI 650MDS : 99K0637AA Turbidity meter model and serial number LaMotte 2020e : ME14429

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	NA NA	212	6.90	—	—	4.32	359	7.96	172	2.57		
1055		240				4.62	358	7.42	168.9	1.58		
1059						5.24	572	6.69	151.4	1.10	17.4	
1105						5.34	572	6.43	142.2	0.87	6.54	
1110						5.41	570	6.34	135.6	0.68	3.82	
1115						5.44	570	6.30	129.1	0.62	2.94	
1120						5.46	569	6.29	126	0.53	2.25	
1125						5.50	569	6.29	120.6	0.45	1.98	
1130						5.42	570	6.29	117.6	0.41	1.68	
1135						6.07	570	6.29	114.9	0.39	1.64	

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.

APPENDIX B

Nobis
Engineering a Sustainable Future

May 11, 2012
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. 42461, Sample Delivery Group (SDG) No. A45Z1
Liberty Analytical Corporation, Cary, NC
Nyanza Chemical Waste Dump, OU2 Superfund Site
Ashland, Massachusetts
CERCLIS No.: MAD990685422

Tier I Organic Data Validation with Stage 2A Electronic Qualification

Low Volatiles:	2/Aqueous/ A45Z1, A45Z5 1/Field Duplicate: A45Z1/A45Z5
Trace Volatiles:	3/Aqueous/ A45Z2, A45Z3, A45Z4 1/Trip Blank: A45Z6

Dear Mr. Keefe:

Nobis Engineering, Inc. performed a Tier I data validation in accordance with the Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 Criteria, on the organic analytical data for five aqueous groundwater samples and one trip blank collected by Nobis Engineering, Inc. at the Nyanza Chemical Waste Dump, OU2 Superfund Site located in Ashland, Massachusetts. Two samples were analyzed for low level volatile organic compounds (VOCs) and three were analyzed for trace level VOCs. The trip blank was analyzed for low-level and trace level VOCs. All samples were analyzed under the Contract Laboratory Program Routine Analytical Services (CLP RAS) program using the CLP SOM01.2 Statement of Work.

A Tier I data validation is based only on the following parameters:

- Data Completeness (CSF Audit – Tier I)
NA • Performance Evaluation Sample Results

* - All criteria were met for this parameter.

Nobis Engineering, Inc.
585 Middlesex Street
Lowell, MA 01851
T (508) 683-0891

Data Completeness

The data packages are complete. Initially the trip blank was analyzed in error at the low-level method. The laboratory submitted a complete data package with low-level results for the trip blank. It was discovered through the CCS review that the trip blank required trace analysis. The sample was still within technical holding time and was reanalyzed. Another complete data package was submitted with trace and low-level trip blank results.

Data presented in the Summary Tables include qualifiers assigned by Environmental Data Exchange and Evaluation System (EXES) Data Manager (EDM). Qualifications for these parameters were assessed under the Stage 2A Validation Electronic (S2AVE) scenario. Qualification was taken from EXES and data package completeness was done manually.

Performance Evaluation Sample Results

No performance evaluation samples were submitted with these samples.

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 – Tier II Validated Data

Enclosures: CCS Reports
Field Sampling Notes
CSF Audit (DC-2 Forms)

Cc: Cynthia Gurley, US EPA Region II (via email)

DATA SUMMARY TABLE
Volatile Organics Analysis
Tier I, Stage 2A Electronic Data Validation
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 42461 SDG NO.: A45Z1

Sample Name		A45Z2	A45Z3	A45Z4
Sample Location		MW-203A	MW-304A	MW-115A
Lab Sample ID		1204091-02	1204091-03	1204091-04
Station ID		MW203A-041912	MW304A-041912	MW115A-041912
Dilution Factor		500	312.5	500
Sample Date		19 Apr 12	19 Apr 12	19 Apr 12
Date Analyzed		26 Apr 12	26 Apr 12	26 Apr 12
Chemical	CRQ			
1,1,1-Trichloroethane	0.5	250 U	160 U	250 U
1,1,2,2-Tetrachloroethane	0.5	250 U	160 U	250 U
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5	250 U	160 U	250 U
1,1,2-Trichloroethane	0.5	250 U	160 U	250 U
1,1-Dichloroethane	0.5	250 U	160 U	250 U
1,1-Dichloroethene	0.5	250 U	160 U	250 U
1,2,3-Trichlorobenzene	0.5	250 U	160 U	250 U
1,2,4-Trichlorobenzene	0.5	250 U	160 U	250 U
1,2-Dibromo-3-chloropropane	0.5	250 U	160 U	250 U
1,2-Dibromoethane	0.5	250 U	160 U	250 U
1,2-Dichlorobenzene	0.5	3000	2000	1700
1,2-Dichloroethane	0.5	250 U	160 U	250 U
1,2-Dichloropropane	0.5	250 U	160 U	250 U
1,3-Dichlorobenzene	0.5	50 J	52 J	250 U
1,4-Dichlorobenzene	0.5	480	390	240 J
2-Butanone	5	2500 U	1600 U	2500 U
2-Hexanone	5	2500 U	1600 U	2500 U
4-Methyl-2-pentanone	5	2500 U	1600 U	2500 U
Acetone	5	2500 U	1600 U	2500 U
Benzene	0.5	170 J	44 J	75 J
Bromochloromethane	0.5	250 U	160 U	250 U
Bromodichloromethane	0.5	250 U	160 U	250 U
Bromoform	0.5	250 U	160 U	250 U
Bromomethane	0.5	250 UJ	160 UJ	250 UJ
Carbon Disulfide	0.5	250 U	160 U	250 U
Carbon tetrachloride	0.5	250 U	160 U	250 U
Chlorobenzene	0.5	7600	2000	1800
Chloroethane	0.5	250 U	160 U	250 U
Chloroform	0.5	250 U	160 U	250 U
Chloromethane	0.5	250 U	160 U	250 U
cis-1,2-Dichloroethene	0.5	230 J	170	310
cis-1,3-Dichloropropene	0.5	250 U	160 U	250 U
Cyclohexane	0.5	250 U	160 U	250 U
Dibromochloromethane	0.5	250 U	160 U	250 U
Dichlorodifluoromethane	0.5	250 U	160 U	250 U
Ethylbenzene	0.5	250 U	160 U	250 U
Isopropylbenzene	0.5	250 U	160 U	250 U
m,p-Xylene	0.5	250 U	160 U	250 U
Methyl acetate	0.5	250 U	160 U	250 U
Methyl tert-butyl ether	0.5	250 U	160 U	250 U
Methylcyclohexane	0.5	250 U	160 U	490
Methylene chloride	0.5	250 U	160 U	250 U
o-Xylene	0.5	250 U	160 U	250 U
Styrene	0.5	250 U	160 U	250 U
Tetrachloroethene	0.5	250 U	160 U	250 U
Toluene	0.5	67 J	20 J	33 J
trans-1,2-Dichloroethene	0.5	250 U	160 U	250 U
trans-1,3-Dichloropropene	0.5	250 U	160 U	250 U
Trichloroethene	0.5	1100	800	3100
Trichlorofluoromethane	0.5	250 U	160 U	250 U
Vinyl chloride	0.5	1000	160 U	250 U

DATA SUMMARY TABLE
Volatile Organics Analysis
Tier I, Stage 2A Electronic Data Validation
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 42461 SDG NO.: A45Z1

	Sample Name	A45Z6
	Sample Location	
	Lab Sample ID	1204091-06
	Station ID	TB-041912
	Dilution Factor	1
	Sample Date	19 Apr 12
	Date Analyzed	03 May 12
Chemical	CRQ	
1,1,1-Trichloroethane	0.5	0.5 U
1,1,2,2-Tetrachloroethane	0.5	0.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5	0.5 U
1,1,2-Trichloroethane	0.5	0.5 U
1,1-Dichloroethane	0.5	0.5 U
1,1-Dichloroethene	0.5	0.5 U
1,2,3-Trichlorobenzene	0.5	0.5 U
1,2,4-Trichlorobenzene	0.5	0.5 U
1,2-Dibromo-3-chloropropane	0.5	0.5 U
1,2-Dibromoethane	0.5	0.5 U
1,2-Dichlorobenzene	0.5	0.5 U
1,2-Dichloroethane	0.5	0.5 U
1,2-Dichloropropane	0.5	0.5 U
1,3-Dichlorobenzene	0.5	0.5 U
1,4-Dichlorobenzene	0.5	0.5 U
2-Butanone	5	7.5
2-Hexanone	5	5 U
4-Methyl-2-pentanone	5	5 U
Acetone	5	45
Benzene	0.5	0.5 U
Bromochloromethane	0.5	0.5 U
Bromodichloromethane	0.5	0.5 U
Bromoform	0.5	0.5 U
Bromomethane	0.5	0.5 U
Carbon Disulfide	0.5	0.5 U
Carbon tetrachloride	0.5	0.5 U
Chlorobenzene	0.5	0.5 U
Chloroethane	0.5	0.5 U
Chloroform	0.5	0.5 U
Chloromethane	0.5	0.5 U
cis-1,2-Dichloroethene	0.5	0.5 U
cis-1,3-Dichloropropene	0.5	0.5 U
Cyclohexane	0.5	0.5 U
Dibromochloromethane	0.5	0.5 U
Dichlorodifluoromethane	0.5	0.5 U
Ethylbenzene	0.5	0.5 U
Isopropylbenzene	0.5	0.5 U
m,p-Xylene	0.5	0.5 U
Methyl acetate	0.5	0.5 U
Methyl tert-butyl ether	0.5	0.5 U
Methylcyclohexane	0.5	0.5 U
Methylene chloride	0.5	0.55
o-Xylene	0.5	0.5 U
Styrene	0.5	0.5 U
Tetrachloroethene	0.5	0.11 J
Toluene	0.5	0.13 J
trans-1,2-Dichloroethene	0.5	0.5 U
trans-1,3-Dichloropropene	0.5	0.5 U
Trichloroethene	0.5	0.5 U
Trichlorofluoromethane	0.5	0.5 U
Vinyl chloride	0.5	0.5 U

DATA SUMMARY TABLE
Volatile Organics Analysis
Tier I, Stage 2A Electronic Data Validation
Aqueous - ug/L

SITE: Nyanza Chemical Waste Dump - Ashland, MA
CASE NO.: 42461 SDG NO.: A45Z1

Sample Name		A45Z1	A45Z5
Sample Location		B/MW-05	B/MW-05
Lab Sample ID		1204091-01	1204091-05
Station ID		B/MW05-041912	DUP-041912
Dilution Factor		333.3	333.3
Sample Date		19 Apr 12	19 Apr 12
Date Analyzed		25 Apr 12	25 Apr 12
Chemical	CRQ		
1,1,1-Trichloroethane	5	1700 U	1700 U
1,1,2,2-Tetrachloroethane	5	1700 U	1700 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5	1700 U	1700 U
1,1,2-Trichloroethane	5	1700 U	1700 U
1,1-Dichloroethane	5	1700 U	1700 U
1,1-Dichloroethene	5	1700 U	1700 U
1,2,3-Trichlorobenzene	5	1700 U	1700 U
1,2,4-Trichlorobenzene	5	1700 UJ	1700 UJ
1,2-Dibromo-3-chloropropane	5	1700 U	1700 U
1,2-Dibromoethane	5	1700 U	1700 U
1,2-Dichlorobenzene	5	30000	31000
1,2-Dichloroethane	5	1700 U	1700 U
1,2-Dichloropropane	5	1700 U	1700 U
1,3-Dichlorobenzene	5	1100 J	1100 J
1,4-Dichlorobenzene	5	7100	7400
1,4-Dioxane	100	R	R
2-Butanone	10	3300 U	3300 U
2-Hexanone	10	3300 U	3300 U
4-Methyl-2-pentanone	10	3300 U	3300 U
Acetone	10	3300 U	1200 J
Benzene	5	1700 U	1700 U
Bromochloromethane	5	1700 U	1700 U
Bromodichloromethane	5	1700 U	1700 U
Bromoform	5	1700 U	1700 U
Bromomethane	5	1700 U	1700 U
Carbon Disulfide	5	1700 U	1700 U
Carbon tetrachloride	5	1700 U	1700 U
Chlorobenzene	5	27000	28000
Chloroethane	5	1700 U	1700 U
Chloroform	5	1700 U	1700 U
Chloromethane	5	1700 U	1700 U
cis-1,2-Dichloroethene	5	1700 U	1700 U
cis-1,3-Dichloropropene	5	1700 U	1700 U
Cyclohexane	5	1700 U	1700 U
Dibromochloromethane	5	1700 U	1700 U
Dichlorodifluoromethane	5	1700 U	1700 U
Ethylbenzene	5	1700 U	1700 U
Isopropylbenzene	5	1700 U	1700 U
m,p-Xylene	5	1700 U	1700 U
Methyl acetate	5	1700 U	1700 U
Methyl tert-butyl ether	5	1700 U	1700 U
Methylcyclohexane	5	1700 U	1700 U
Methylene chloride	5	1700 U	1700 U
o-Xylene	5	1700 U	1700 U
Styrene	5	1700 U	1700 U
Tetrachloroethene	5	1700 U	1700 U
Toluene	5	1700 U	1700 U
trans-1,2-Dichloroethene	5	1700 U	1700 U
trans-1,3-Dichloropropene	5	1700 U	1700 U
Trichloroethene	5	17000	17000
Trichlorofluoromethane	5	1700 U	1700 U
Vinyl chloride	5	1700 U	1700 U

Regional CCS Defect Report

12:19 Thu, May 10, 2012

SDG A45Z1 **Lab** LIBRTY **Case** 42461 **Contract** EPW11032 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 150044 **Version** 8.035

DRD 05/08/2012 **LRD** 04/21/2012 **Mailed** 05/10/2012 **Submission Type** Replacement Data **Screening Type** Semi-Automated

Sample Summary and Lab Receipt Date

Sample/Number	VOA Trace	VOA SIM	VOA	BNA	BNA SIM	PEST	AROCLOR	Automated	Manual
A45Z1			04/21/2012						
A45Z2	04/21/2012								
A45Z3	04/21/2012								
A45Z3MS	04/21/2012								
A45Z3MSD	04/21/2012								
A45Z4	04/21/2012								
A45Z5			04/21/2012						
A45Z6	04/21/2012		04/21/2012					X	
Totals	**6**	**0**	**3**	**0**	**0**	**0**	**0**		

Regional CCS Defect Report

12:19 Thu, May 10, 2012

SDG A45Z1 **Lab** LIBRTY **Case** 42461 **Contract** EPW11032 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 150044 **Version** 8.035

DRD 05/08/2012 **LRD** 04/21/2012 **Mailed** 05/10/2012 **Submission Type** Replacement Data **Screening Type** Semi-Automated

Regional Defect Summary

Method	Defect Message	Samples with defect
VOA_Trace	Sample was not analyzed within 10 days of validated time of sample receipt (VTSR).	1
		1

Regional CCS Defect Report

12:19 Thu, May 10, 2012

SDG A45Z1 **Lab** LIBRTY **Case** 42461 **Contract** EPW11032 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 150044 **Version** 8.035

DRD 05/08/2012 **LRD** 04/21/2012 **Mailed** 05/10/2012 **Submission Type** Replacement Data **Screening Type** Semi-Automated

Regional Defect Detail

METHOD = VOA_Trace

Defect **Sample was not analyzed within 10 days of validated time of sample receipt (VTSR).**

Associated Samples: **A45Z6**

Comments:

Regional CCS Defect Report

12:19 Thu, May 10, 2012

SDG A45Z1 **Lab** LIBRTY **Case** 42461 **Contract** EPW11032 **Client** EPA Region 1 **SOW** SOM01.2 **Stage** 3 **Tracking ID** 150044 **Version** 8.035

DRD 05/08/2012 **LRD** 04/21/2012 **Mailed** 05/10/2012 **Submission Type** Replacement Data **Screening Type** Semi-Automated

General Comments

Method	Sample	Criterion	Comment
VOA	A45Z6	*	The analysis of sample A45Z6 was not required per ASR.

NYANZA WELLS RESAMPLE — 4/19/12
JWS/ANR — Clear 72°

7:30 Load up equipment / MSDS. Check Wells Gone

8:30 Calibrate YSI's & Turbidities. Cal Data Logged on Designated Cal Sheets.

9:45 Arrive @ MW-115A Location. Check Well Depths. MW-115A DTB: 91.0

9:50 Check in @ 99 Pleasant St, Garage MWs out Back (304 Suite) Behind Garage.

ID	DTB
MW-304A	53.5
MW-304B	29.65

10:10 Locate & Gauge MW-203A/B @ Gatewell Property.

ID	DTB
MW-203A	78.1

MW-203B not Gauge Because well pad locked. JWS cut lock off of 203A.

Well depths compared to install depths - ok!

MWs Re-Sample — 4.19.12

10:20 Drive off ANR @ MW-304 Location to sample well. Head over to MW-115A Location to collect sample.

10:30 Measure out tubing for sampling some sort of obstruction prevents tubing from going to bottom of well. Continue to try & feed tubing to bottom.

10:50 Old in-well tubing that had fallen in well was extracted while pulling out new tubing. Unable to use existing, large diameter tubing.

11:13 Low flow set-up ready, begin pumping.

11:25 Consistent pumping cannot be achieved w/ large diameter tubing. Old tubing pulled & replaced w/ new tubing. New tubing difficult to get down to depth.

12:00 DTW not stable, pumping drawing down well ~.1' per 5 min.

Wells RE-SAMPLE 4.19.12

12:25 PARAMETERS STABLE, EXCEPT DRAWDOWN — SAMPLE COLLECTED, WATER IS PINK W/ SULFAT NAPL / SEWER ODOR.

12:43 PACK UP & BUY ICE. HEAD OVER TO MEET ANR.

12:55 MEET ANR @ MW-203 LOCATION ANR GETTING SET-UP TO LOW FLOW. JNB HEAD TO B/MW-5 LOCATION TO LOW FLOW SAMPLE.

[No key for Lock - Lock cut off w/ bolt cutters.]

13:07 JNB SET-UP ON B/MW-5 - BEGIN LOW FLOW PURGING

13:25 DRAWDOWN STABLE, CONTINUE MONITORING PARAMETERS

14:30 WELL STABLE, COLLECT GW SAMPLE * DUPLICATE.

BEGIN PACK UP, DECON, & HEAD OVER TO PICK UP ANR.

14:40 ARRIVE @ MW-203A LOCATION ANR PACKED UP & @ CH2B-NOBIS DECONS EQUIP & HEADS TO HARDWARE STORE TO BUY LOCK TO SECURE WELL. (MW-203A SAMPLED @ 14:30 - 2hr time limit reached - not stable).

15:00 BUY LOCK

15:10 PROPERLY LOCK, SECURE SITE & EQUIP, NOBIS OFF-SITE @ 15:25.

HEAD BACK TO OFFICE TO COMPLETE POST CAL ON MULTIMETERS.

16:20 POST CAL METERS

17:00 CAL CHECK COMPLETE & SAMPLES IN FRIDGE. ANR TO COMPLETE SCRIBE & SHIP SAMPLES IN AM.

Original

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2

Nyanza chemical
NOBIS

LABORATORY NAME Liberty
CITY/STATE Cary, NC
CASE NO. 42461 SDG NO. A4521
SDG NOs. TO FOLLOW N/A N/A N/A
MOD. REF. NO. N/A
CONTRACT NO. EPW11032
SOW NO. SOM01.2

MAY - 2 2012

All documents delivered in the Complete SDG File (CSF) must be original documents where possible.

	PAGE NOs FROM	PAGE NOs TO	CHECK FOR LAB	CHECK FOR USEPA
1. **Inventory Sheet** (Form DC-2) (Do not number)			✓	✓
2. **SDG Case Narrative**	1	14	✓	✓
3. **SDG Cover Sheet/Traffic Report**	15	17	✓	✓
4. **Trace Volatiles Data**				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II VOA-1 and VOA-2)	18	21	✓	✓
Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA) (if requested by USEPA Region)	22	22	✓	✓
Method Blank Summary (Form IV VOA)	23	23	✓	✓
GC/MS Instrument Performance Check (Form V VOA)	24	25	✓	✓
Internal Standard Area and RT Summary (Form VIII VOA)	26	26	✓	✓
b. Sample Data	27	79	✓	✓
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)	80	127		
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	128	134	✓	✓
Blank Data	135	150	✓	✓

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 42461 SDG NO. A4521 SDG NOS. TO FOLLOW N/A
N/A N/A MOD. REF. NO.

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK USEPA
Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region)	151	162	✓	✓
e. Trace SIM Data (Place at the end of the Trace Volatiles Section)	N/A	N/A	N/A	NA
[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)	163	166	✓	✓
Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA-1 and VOA-2) (if requested by USEPA Region)	N/A	N/A	N/A	NA
Method Blank Summary (Form IV VOA)	167	168	✓	✓
GC/MS Instrument Performance Check (Form V VOA)	169	171	✓	✓
Internal Standard Area and RT Summary (Form VIII VOA)	172	173	✓	✓
b. Sample Data	174	221		
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)	222	280		
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	281	290	✓	✓
Blank Data	291	324	✓	✓

CASE NO. 42461 SDG NO. A4521 SDG NOS. TO FOLLOW N/A
N/A 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)	N/A	N/A	N/A	N/A
6. Semivolatiles Data				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II SV-1, SV-2, SV-3, SV-4)				N/A
Matrix Spike/Matrix Spike Duplicate Recovery Summary (Form III SV-1 and SV-2) (if requested by USEPA Region)				
Method Blank Summary (Form IV SV)				
GC/MS Instrument Performance Check (Form V SV)				
Internal Standard Area and RT Summary (Form VIII SV-1 and SV-2)				
b. Sample Data				
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)				
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				
Blank Data				
MS/MSD Data (if requested by USEPA Region)				
e. Raw GPC Data				

CASE NO. 42461 SDG NO. R4521 SDG NOS. TO FOLLOW NA
NA NA MOD. REF. NO.

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK USEPA
	NA	NA	NA	NA
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 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
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)				

CASE NO. 42461 MAA SDG NO. A4521 MAA SDG NOS. TO FOLLOW MAA
MOD. REF. NO.

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK USEPA
Calibration Verification Summary (Form VII PEST-4)			MAA	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				
Blank Data	MAA	MAA		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
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. 42461 SDG NO. A4521 SDG NOS. TO FOLLOW N/A
N/A N/A MOD. REF. NO. N/A

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK USEPA
c. Standards Data	N/A	N/A	N/A	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	325	345	✓	✓
Internal sample and sample extract transfer chain-of-custody records	346	347	✓	✓
Screening records	N/A	N/A	N/A	NA
All instrument output, including strip charts from screening activities (describe or list)				
Non-Reportables	348	364	✓	✓
	N/A	N/A	N/A	NA
10. **EPA Shipping/Receiving Documents**				
Airbills (No. of shipments 1)	365	366	✓	✓
Chain of Custody Records	367	367	✓	✓
Sample Tags	368	371	✓	✓
Sample Log-in Sheet (Lab & DC-1)				
Miscellaneous Shipping/Receiving Records (describe or list)				
	N/A	N/A	N/A	NA

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 42461 SDG NO. A4521 SDG NOS. TO FOLLOW N/A

N/A N/A MOD. REF. NO. N/A

	PAGE NOs FROM	TO	CHECK LAB	USEPA
11. **Internal Lab Sample Transfer Records and Tracking Sheets** (describe or list)	N/A	N/A	N/A	N/A
12. **Other Records** (describe or list)				
Telephone Communication Log				

13. **Comments** None

Completed by: (CLP Lab)	(Signature)	Joan Purdie (Printed Name/Title)	4-30-12 (Date)
Verified by: (CLP Lab)	(Signature)	CATHY DOVER (Printed Name/Title)	4/30/12 (Date)
Audited by: (USEPA)	(Signature)	Gail DeRuzzo/Lead Chemist, Nibis Engineering (Printed Name/Title)	5/8/12 (Date)

FOR

Resubmission

DG/ESAT

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2

NYANZA CHEMICAL
NOBIS IBAC2

LABORATORY NAME LIBRTY
CITY/STATE CARY NC
CASE NO. 42461 SDG NO. A45Z1
SDG NOs. TO FOLLOW _____ _____ _____
MOD. REF. NO. _____
CONTRACT NO. EPW11032
SOW NO. SOM01.2

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** (Form DC-2) (Do not number)			✓	✓
2. **SDG Case Narrative**	1	14	✓	✓
3. **SDG Cover Sheet/Traffic Report**	15	17	✓	
4. **Trace Volatiles Data**				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II VOA-1 and VOA-2)	18	21	✓	✓
Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA) (if requested by USEPA Region)	22	22	✓	✓
Method Blank Summary (Form IV VOA)	23	25	✓	✓
GC/MS Instrument Performance Check (Form V VOA)	26	30	✓	✓
Internal Standard Area and RT Summary (Form VIII VOA)	31	33	✓	✓
b. Sample Data	34	99	✓	✓
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)	100	221		
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	222	237	✓	✓
Blank Data	238	274	✓	✓

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 42461 SDG NO. A45Z1 SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK FOR USEPA
Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region)	275	286	✓	✓
e. Trace SIM Data (Place at the end of the Trace Volatiles Section)	N/A	N/A	N/A	N/A
[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)	287	290	✓	✓
Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA-1 and VOA-2) (if requested by USEPA Region)	N/A	N/A	N/A	N/A
Method Blank Summary (Form IV VOA)	291	292	✓	✓
GC/MS Instrument Performance Check (Form V VOA)	293	295	✓	✓
Internal Standard Area and RT Summary (Form VIII VOA)	296	297	✓	✓
b. Sample Data	298	345		
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)	346	404		
Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3) *	+444-448		✓	✓
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	405	414	✓	✓
Blank Data	415	443		✓

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 42461 SDG NO. A45Z1 SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs FROM	PAGE NOs TO	CHECK FOR LAB	CHECK FOR USEPA
Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region)	N/A	N/A	N/A	N/A
6. Semivolatiles Data				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II SV-1, SV-2, SV-3, SV-4)	N/A	N/A	N/A	NA
Matrix Spike/Matrix Spike Duplicate Recovery Summary (Form III SV-1 and SV-2) (if requested by USEPA Region)				
Method Blank Summary (Form IV SV)				
GC/MS Instrument Performance Check (Form V SV)				
Internal Standard Area and RT Summary (Form VIII SV-1 and SV-2)				
b. Sample Data				
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)	N/A	N/A		
Initial Calibration Data (Form VI SV-1, SV-2, SV-3)			N/A	NA
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	N/A	N/A	N/A	
Blank Data				
MS/MSD Data (if requested by USEPA Region)				
e. Raw GPC Data				

CASE NO. 42461 SDG NO. A4571 SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs FROM	PAGE NOs TO	CHECK FOR LAB	CHECK FOR 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 SV-SIM; Form VII SV-SIM; Form VIII SV-SIM1 and SV-SIM2; and all raw data for QC, Samples, and Standards.]	N/A	N/A	N/A	N/A
7. Pesticides Data				
a. QC Summary				
Surrogate Recovery Summary (Form II PEST-1 and PEST-2)	N/A	N/A	N/A	N/A
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	N/A	N/A		
Initial Calibration of Single Component Analytes (Form VI PEST-1 and PEST-2)			N/A	N/A
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. 42461 SDG NO. A45Z1 SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK USEPA
Calibration Verification Summary (Form VII PEST-4)			NA	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)			✓ 5/8	1/12
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 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	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. 42461 SDG NO. A4571 SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK For USEPA
c. Standards Data	N/A	N/A		
Aroclors Initial Calibration (Form VI ARO-1, ARO-2, and ARO-3)			N/A	N/A
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	N/A	N/A	N/A	N/A
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	449	471	✓	✓
Internal sample and sample extract transfer chain-of-custody records	474	476	✓	✓
Screening records	477	497	✓	✓
All instrument output, including strip charts from screening activities (describe or list)				
manual integrations	472	473	✓	✓
_____				
10. EPA Shipping/Receiving Documents				
Airbills (No. of shipments 1)	498	498	✓	✓
Chain of Custody Records	499	499	✓	✓
Sample Tags			✓**	N/A
Sample Log-in Sheet (Lab & DC-1)	500	503	✓	✓
Miscellaneous Shipping/Receiving Records (describe or list)				
** in original folder/original data shipment CLP 5/8/12				
_____	N/A ✓	N/A ✓	N/A ✓	N/A N
_____				

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2 (CON'T)

CASE NO. 42461 SDG NO. A45Z1 SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs FROM	TO	CHECK LAB	USEPA
11. **Internal Lab Sample Transfer Records and Tracking Sheets** (describe or list)				
_____	N/A	N/A	N/A	N/A
_____	↓	↓	↓	↓
12. **Other Records** (describe or list)				
Telephone Communication Log	N/A	N/A	N/A	N/A
e-mail copy	504	505	✓	✓
_____	N/A	N/A	N/A	N/A

13. **Comments**
* 5 pages of a Standard inadvertently scanned in Raw QC/blank section (page #'s 444-448)

Completed by: (CLP Lab)	(Signature)	CATHY DOVER (Printed Name/Title)	5/8/12 (Date)
Verified by: (CLP Lab)	(Signature)	Joan Rundle (Printed Name/Title)	5/8/12 (Date)
Audited by: (USEPA)	(Signature)	Gail DeRuzzo / Lead Chemist (Printed Name/Title) Nobis Engineering Inc.	5/11/12 (Date)

For

Engineering a Sustainable Future

April 8, 2011
Nobis File No. 80022

Mr. Jim DiLorenzo
Task Order Project Officer
U.S. Environmental Protection Agency
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. E005S, Summary of 10 SDGs
Region I OEME Laboratory, North Chelmsford, Massachusetts 01863
Nyanza Chemical Waste Dump Superfund Site, OU2
Ashland, Massachusetts
CERCLA#: MAD990685422
Tier I Modified Organic and Inorganic Data Validation

Volatiles:	29/GW/ EP0111-EP0162
Semi-Volatiles:	27/GW/ EP0111-EP0162
1,4-Dioxane:	29/GW/ EP0111-EP0162
Metals:	27/GW/ EP0111-EP0162
Mercury:	27/GW/ EP0111-EP0162
Anions:	27/GW/ EP0111-EP0162

(2/Equipment Blanks/EP0118, EP0151)
(9/Trip Blanks/EP0119, EP0127, EP0131, EP0135, EP0139, EP0148, EP0152, EP0158, EP0162)
(2 sets PEs/EP0140(HG5754), EP0120(HG5877), EP0141(IS0640), EP0121(IS1302), EP0142(SV0328), EP0122(SV0525), EP0123(VLM0213), EP0143(VLM0573))

Dear Mr. DiLorenzo:

Nobis Engineering, Inc. performed a Tier I Modified data validation in accordance with the Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 Criteria, on the organic and inorganic analytical data for 29 groundwater samples, 2 equipment blanks, 9 trip blanks, and two sets of performance evaluation (PE) samples. The samples were collected by Nobis Engineering, Inc. at the Nyanza Chemical Waste Dump Superfund Site, OU2 located in Ashland, Massachusetts in January 2011. The samples were analyzed by EPA Region I Laboratory Methods for Volatile Organic Compounds (VOCs) [EIASOP-VOAGCMS9], for Semi-Volatile Organic Compounds (SVOCs)

[EIASOP-BNAW2], for 1,4-dioxane (EIASOP-VOADIOX4), for Metals (EIASOP-INGDVICP), for Mercury (EIASOP-INGMERC9.SOP), and for anions (EIASOP-INGIC11). 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
• Blanks
• Laboratory Control Samples (LCS/LCSDs)
* • PE Samples
• Field Duplicates
• Laboratory Duplicates
• Matrix Spike/Matrix Spike Duplicate (MS/MSDs)
* • Surrogate Compounds (organics only)
NR • Internal Standards (ISTDs)
* • Reported Quantitation Limits

* All criteria were met for this parameter.
N/A Not analyzed for this Sample Data Group.
NR Not reported.

Overall Evaluation of Data and Potential Usability Issues:

The groundwater data obtained during this project are intended to support the DNAPL extraction remedy and design. Although no risk assessment is intended to be performed, groundwater data may be compared to applicable State and Federal criteria, including Massachusetts Contingency Plan (MCP) GW-1 and GW-2 standards, EPA Maximum Contaminant Levels (MCLs), and MCP S-1/GW-1 standards.

The data are acceptable for the intended use for this project with the exception of the biases and qualifications noted below.

Data Completeness:

Full data packages were not submitted. Only sample results and QC sample results were provided. Ten sample delivery groups (SDGs) were submitted, analyzed, and reported by the laboratory. Separate detailed DV memos were created for each SDG. This memo is a summary of the issues that would result in some estimation or impact on the data only.

Data presented in the Summary Tables include qualifiers assigned by the laboratory. Qualifications for these parameters were not assessed under Tier I validation.

Preservation and Technical Holding Times:

The combined Nitrate/Nitrite values for samples EP0111-EP0114 were reported from a diluted run of a preserved portion of the sample; however those samples missed the analysis holding time by 8 days. The sample results should be considered biased low. Bromide also missed the holding time in sample EP0111 and would be considered biased low. However, Bromide is not a target compound.

All samples missed the analysis holding time for nitrate and nitrite by 1 day due to laboratory error. The sample results should be considered biased low.

Blanks:

Anions were analyzed in the equipment blank, EP0118. Fluoride was detected at 0.16 ppm and Sulfate was detected at 4.7 ppm (RL= 0.1 ppm). Since the detection level of Sulfate in the associated field samples was greater than the blank action level and the sample quantitation limit, Sulfate would be reported as unqualified in samples EP0115-EP0117. The results for Fluoride in each of the associated field samples were above the sample quantitation limit but below the action level (0.80 ppm) and would be qualified as undetected in samples EP0115-EP0117. Fluoride is not a project target analyte.

Acetone was detected in the trip blank (EP0148) with a value above the reporting limit at 3.0 ppb (RL=1ppb). Sample EP0144 had a detection of Acetone at 1.2 ppb (RL=1ppb) and Acetone was also detected in sample EP0147 at 11 ppb (RL=10ppb). Although the results for Acetone in EP0144 and EP0147 are above the reporting limit, they are less than the action level (30 ppb) and would be qualified as undetected in a tier II validation.

Acetone was detected in the trip blank (EP0152) with a value above the reporting limit at 2.9 ppb (RL=1ppb). Sample EP0151 (equipment blank) had a detection of Acetone at 2.3 ppb. Although the result for Acetone in sample EP0151 is above the reporting limit, it is less than the action level (29 ppb) and would be qualified as undetected in a Tier II validation.

Acetone was detected in the trip blank (EP0158) with a value above the reporting limit at 2.6 ppb (RL=1 ppb). Acetone was detected in sample EP0155 at 1.0 ppb and in sample EP0157 at 1.2 ppb. If a Tier II validation were completed, Acetone in sample EP0155 would be reported as non-detected at the reporting limit (1 ppb U). In sample EP0157, Acetone would be qualified as undetected (U) since the result is less than the action limit (26 ppb).

Acetone was detected in the trip blank (EP0162) with a value above the reporting limit at 2.4 ppb (RL=1 ppb). Sample EP0161 had a detection of Acetone at 1 ppb. If a tier II validation were completed, this analyte would be reported as non-detect at the reporting limit (1 ppb U) in sample EP0161. All other samples were non-detected for this compound.

Laboratory Control Samples:

The following list summarizes the measurement error associated with analysis criteria for the LCS.

Semi-volatiles:

- 1,3-Dinitrobenzene and Benzidine recovered below the QC limits and Benzoic acid was not recovered in the LCS. These compounds are not in the QAPP target analyte list. However, reported results should be considered estimated biased low (J/UJ) in samples EP0111-EP0114.

- 1,3-Dinitrobenzene and 3-Methylcholanthrene recovered below the QC limits. These compounds are not in the QAPP SVOC target analyte list. However, these compounds would be estimated (J/UJ) and biased low in samples EP0115-EP0117.

- 1,3-Dinitrobenzene and 3-Methylcholanthrene recovered below the QC limits and Kepone was not recovered in the LCS. These compounds are not in the QAPP SVOC target analyte list. However, these compounds would be estimated (J/UJ) and biased low in samples EP0124-EP0126 and EP0128-EP0130. Kepone would be rejected (R) for non-detections.

- 4-Chlorophenyl-phenylether recovered below QC limits and is a target analyte. Had a Tier II validation been performed, detects and non-detects would be estimated (J/UJ) in samples EP0124-EP0126 and EP0128-EP0130.

- 1,3-Dinitrobenzene recovered below the QC limits and Benzoic Acid and N-Nitrosodimethylamine were not recovered in the LCS. These compounds are not in the QAPP SVOC target analyte list. However, these compounds would be estimated (J/UJ) and biased low in samples EP0132-EP0138.

- 3,3'-Dichlorobenzidine, 4,nitroquinoline-1-oxide and Benzoic Acid were not recovered in the LCS. If a Tier II validation were performed, the following actions would be applied to these analytes: positive results would have been estimated (J) and non-detected results rejected (R) in samples EP0144-EP0147, EP0149-EP0153, and EP0154-EP0157. 4-nitroquiniline-1-oxide and Benzoic acid are not target analytes.
- 3,3'-Dichlorobenzidine and Benzoic Acid were not recovered in the LCS. Benzoic acid is not in the QAPP target analyte list. If a tier II validation were performed, positive results for these analytes would be estimated (J) and non-detects would be rejected (R) in samples EP0159-EP0161.

Field Duplicates:
Samples EP0112 and EP0113 were collected as field duplicates and analyzed for all methods.

For the Volatiles analysis, Vinyl Chloride was detected in both samples at a concentration greater than twice the sample quantitation; however the RPD result was greater than 30%. For the Semi-Volatiles analysis, Aniline also was detected in both samples at a concentration greater than twice the sample quantitation with an RPD result greater than 30%. Vinyl Chloride and Aniline should be considered estimated in samples EP0122 and EP0113 (J) due to result variability.

Laboratory Duplicates:

Anions**:**

The precision RPD for Nitrate exceeded the QC limits in sample EP0149. Nitrate was detected at 6.0ppm in the parent sample and was reported from a 25x dilution. In a Tier II validation, Nitrate results would be estimated (J) in samples EP0149-EP0153.

The RPD was outside control limits for Bromide in sample EP0160, which is not a target analyte. However, a Tier II validation would qualify bromide results as estimated (J) in samples EP0159-EP0161.

Matrix Spike/Matrix Spike Duplicate (MS/MSD):

Volatiles:

The percent recovery in the MSD for 1,2,3-Trichlorobenzene was below QC limits. This analyte would be flagged estimated (J/UJ) in sample EP0114.

The relative percent difference (RPD) for the compound Vinyl Acetate was not within the QC acceptance criteria in the MS/MSD of sample EP0132. The result for this analyte in sample EP0132 would be estimated (J/UJ). Vinyl Acetate is not a target analyte.

Semi-Volatiles:

The following compounds could not be calculated due to a 0% recovery in sample EP0125: Benzoic acid, Benzyl alcohol, Bis(2-chloroethyl)ether, and Phenol. Benzoic acid and Benzyl alcohol are not a target analytes. However, if a Tier II validation were performed, the following actions would be applied to these non-compliant analytes in sample EP0125: positive results would have been estimated (J) and non-detected results rejected (R).

The following compounds were recovered below QC limits: 1,2,4,5-Tetrachlorobenzene, 2,6-Dinitrotoluene, Kepone, and methyl methanesulfonate. If a Tier II validation were performed, the following actions would be applied to these analytes in sample EP0125: results would be estimated (J/UJ). Kepone and Methyl methanesulfonate are not target analytes.

The percent recovery for 4-nitroquinoline-1-oxide was above QC limits. If a Tier II validation were performed, positive results would be estimated (J) and non-detections would be accepted in sample EP0125. 4-nitroquinoline-1-oxide is not a target analyte.

The following compounds could not be calculated due to a 0% recovery in sample EP0134: Benzidine and 2,2-oxybis(1-chloropropane). If a Tier II validation were performed, the following actions would be applied to these analytes in sample EP0134: positive results would have been estimated (J) and non-detected results rejected (R). Benzidine is not a target analyte.

The following compounds were recovered below QC limits: 1,4 Naphthoquinone, Anthracene, 4-nitroquinoline-1-oxide, Pyrene, Chrysene, and Benzo(g,h,i)perylene. If a Tier II validation were performed, the following actions would be applied to these analytes in sample EP0134: results would be estimated (J/UJ). 1,4 Naphthoquinone and 4-nitroquinoline-1-oxide are not target analytes. The percent recovery for Bis(2-chloroethyl)ether was above QC limits. If a Tier II validation were performed, positive results would be estimated (J) and non-detects would be accepted in sample EP0134.

The following compounds were spiked but not recovered in EP0144: Phenol, 3,3'-dichlorobenzidene, 4-nitrophenol, 4-nitroquinoline-1-oxide, benzoic acid, and benzidine. The first three compounds are target analytes for the project and the last two are not. These

compounds would be flagged as estimated (J) for detections and rejected (R) for non-detects in the associated sample (EP0144).

The following compounds could not be calculated due to a 0% recovery in sample EP0157: 3,3-Dichlorobenzidine, 4-nitroquiniline-1-oxide, and Benzidine. If a Tier II validation were performed, the following actions would be applied to the analytes: positive results would have been estimated (J) and non-detected results rejected (R) in sample EP0157. 4-nitroquiniline-1-oxide and Benzidine are not target analytes. The spike recovery result for N-Nitrosodiphenylamine was less than 10% and therefore positive detects for this compound would be estimated (J) and non-detects would be rejected (R) in sample EP0157.

Anions:

The matrix spike percent recovery for Nitrate and Nitrite exceeded the QC limits in sample EP0138. If a Tier II validation were performed, positive results for Nitrate and Nitrite would be estimated (J) and non-detects would be accepted in samples EP0132-EP0138.

The matrix spike percent recovery for Nitrate exceeded the QC limits in sample EP0144. If a Tier II validation were performed, positive results for Nitrate would be estimated (J) and non-detects would be accepted in samples EP0144-EP0147.

The percent recovery for Nitrate exceeded the QC limits in sample EP0149. In a Tier II validation, detects for Nitrate would be estimated (J) and non-detects would be accepted in samples EP0149-EP0153.

The matrix spike percent recovery for Nitrite exceeded the QC limits in sample EP0157. If a Tier II validation were performed, positive results for Nitrite would be estimated (J) and non-detects would be accepted in samples EP0154-EP0157.

Conclusions

All VOC, 1,4-dioxane, metals, mercury, and anion data are usable. Some qualification of results is warranted based on issues addressed above. There were several instances where SVOC data would be rejected based on LCS and matrix spike results. Eleven SVOC compounds had some rejected data. Of those eleven compounds five were not on the project target analyte list. These data are summarized in the attached table. All other SVOC data are usable for this project.

Please contact Gail DeRuzzo at (978) 703-6021 should you have any questions or comments regarding this information.

Very truly yours,

NOBIS ENGINEERING, INC.

Gail DeRuzzo
Lead Chemist

Tables: SVOC Rejection Data
Data Summary Tables

Enclosures: Data Review Checklists
Field Sampling Notes and COC
DQO Summary

APPENDIX C

Report Date:
29-Dec-10 15:30

☐ Final Report
☐ Re-Issued Report
☑ Revised Report

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Laboratory Report

CEA, Inc.
127 Hartwell Street, Suite 2
West Boylston, MA 01583
Attn: Jason Frigon

Project: Nyanza Chemical Waste Dump - Ashland, MA
Project #: 6883-09-0004

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SB22313-01	NCWD-GW-DEP-MW-1-12-9-10	Ground Water	09-Dec-10 09:17	10-Dec-10 17:00
SB22313-02	NCWD-GW-DEP-MW-2-12-9-10	Ground Water	09-Dec-10 10:23	10-Dec-10 17:00
SB22313-03	NCWD-GW-DEP-MW-3-12-9-10	Ground Water	09-Dec-10 11:37	10-Dec-10 17:00
SB22313-04	NCWD-GW-DEP-MW-4-12-9-10	Ground Water	09-Dec-10 13:33	10-Dec-10 17:00
SB22313-05	NCWD-GW-DUP-12-9-10	Ground Water	09-Dec-10 00:00	10-Dec-10 17:00
SB22313-06	NCWD-GW-TB-12-9-10	Water	09-Dec-10 00:00	10-Dec-10 17:00

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435

Authorized by:

Hanibal C. Tayeh, Ph.D.
President/Laboratory Director

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes.
Please note that this report contains 19 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

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CASE NARRATIVE:

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 3.2 degrees Celsius. The condition of these samples was further noted as received on ice. The samples were transported on ice to the laboratory facility and the temperature was recorded at 0.6 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

SW846 8260B/C

Calibration:

1012004

Analyte quantified by quadratic equation type calibration.

1,2-Dibromo-3-chloropropane
cis-1,3-Dichloropropene
Dibromochloromethane
trans-1,3-Dichloropropene

This affected the following samples:

NCWD-GW-DEP-MW-1-12-9-10
NCWD-GW-DEP-MW-2-12-9-10
NCWD-GW-DEP-MW-3-12-9-10
NCWD-GW-DEP-MW-4-12-9-10
NCWD-GW-DUP-12-9-10
NCWD-GW-TB-12-9-10

Spikes:

1026260-MS1 *Source: SB22313-02*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

1,1,1-Trichloroethane

Samples:

S011342-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

1,1,1-Trichloroethane (24.3%)

SW846 8260B/C

Samples:

S011342-CCV1

This affected the following samples:

1026260-BLK1
1026260-BS1
1026260-BSD1
1026260-MS1
1026260-MSD1
NCWD-GW-DEP-MW-1-12-9-10
NCWD-GW-DEP-MW-2-12-9-10
NCWD-GW-DEP-MW-3-12-9-10
NCWD-GW-DEP-MW-4-12-9-10
NCWD-GW-DUP-12-9-10
NCWD-GW-TB-12-9-10

SB22313-01 *NCWD-GW-DEP-MW-1-12-9-10*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DEP-MW-1-12-9-10	6883-09-0004	Ground Water	09-Dec-10 09:17	10-Dec-10
SB22313-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS			GS1									
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	5.0	5	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
67-64-1	Acetone	BRL		µg/l	50.0	5	"	"	"	"	"	
107-13-1	Acrylonitrile	BRL		µg/l	2.5	5	"	"	"	"	"	
71-43-2	Benzene	BRL		µg/l	5.0	5	"	"	"	"	"	
108-86-1	Bromobenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
74-97-5	Bromochloromethane	BRL		µg/l	5.0	5	"	"	"	"	"	
75-27-4	Bromodichloromethane	BRL		µg/l	2.5	5	"	"	"	"	"	
75-25-2	Bromoform	BRL		µg/l	5.0	5	"	"	"	"	"	
74-83-9	Bromomethane	BRL		µg/l	10.0	5	"	"	"	"	"	
78-93-3	2-Butanone (MEK)	BRL		µg/l	50.0	5	"	"	"	"	"	
104-51-8	n-Butylbenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
135-98-8	sec-Butylbenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
98-06-6	tert-Butylbenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
75-15-0	Carbon disulfide	BRL		µg/l	10.0	5	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL		µg/l	5.0	5	"	"	"	"	"	
108-90-7	Chlorobenzene	33.4		µg/l	5.0	5	"	"	"	"	"	
75-00-3	Chloroethane	BRL		µg/l	10.0	5	"	"	"	"	"	
67-66-3	Chloroform	BRL		µg/l	5.0	5	"	"	"	"	"	
74-87-3	Chloromethane	BRL		µg/l	10.0	5	"	"	"	"	"	
95-49-8	2-Chlorotoluene	BRL		µg/l	5.0	5	"	"	"	"	"	
106-43-4	4-Chlorotoluene	BRL		µg/l	5.0	5	"	"	"	"	"	
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/l	10.0	5	"	"	"	"	"	
124-48-1	Dibromochloromethane	BRL		µg/l	2.5	5	"	"	"	"	"	
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/l	2.5	5	"	"	"	"	"	
74-95-3	Dibromomethane	BRL		µg/l	5.0	5	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	47.6		µg/l	5.0	5	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	10.4		µg/l	5.0	5	"	"	"	"	"	
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/l	10.0	5	"	"	"	"	"	
75-34-3	1,1-Dichloroethane	BRL		µg/l	5.0	5	"	"	"	"	"	
107-06-2	1,2-Dichloroethane	BRL		µg/l	5.0	5	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL		µg/l	5.0	5	"	"	"	"	"	
156-59-2	cis-1,2-Dichloroethene	53.1		µg/l	5.0	5	"	"	"	"	"	
156-60-5	trans-1,2-Dichloroethene	BRL		µg/l	5.0	5	"	"	"	"	"	
78-87-5	1,2-Dichloropropane	BRL		µg/l	5.0	5	"	"	"	"	"	
142-28-9	1,3-Dichloropropane	BRL		µg/l	5.0	5	"	"	"	"	"	
594-20-7	2,2-Dichloropropane	BRL		µg/l	5.0	5	"	"	"	"	"	
563-58-6	1,1-Dichloropropene	BRL		µg/l	5.0	5	"	"	"	"	"	
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/l	2.5	5	"	"	"	"	"	
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/l	2.5	5	"	"	"	"	"	
100-41-4	Ethylbenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
87-68-3	Hexachlorobutadiene	BRL		µg/l	2.5	5	"	"	"	"	"	
591-78-6	2-Hexanone (MBK)	BRL		µg/l	50.0	5	"	"	"	"	"	
98-82-8	Isopropylbenzene	BRL		µg/l	5.0	5	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DEP-MW-1-12-9-10	6883-09-0004	Ground Water	09-Dec-10 09:17	10-Dec-10
SB22313-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds			GS1									
Prepared by method SW846 5030 Water MS												
99-87-6	4-Isopropyltoluene	BRL		µg/l	5.0	5	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
1634-04-4	Methyl tert-butyl ether	BRL		µg/l	5.0	5	"	"	"	"	"	
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/l	50.0	5	"	"	"	"	"	
75-09-2	Methylene chloride	BRL		µg/l	10.0	5	"	"	"	"	"	
91-20-3	Naphthalene	BRL		µg/l	5.0	5	"	"	"	"	"	
103-65-1	n-Propylbenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
100-42-5	Styrene	BRL		µg/l	5.0	5	"	"	"	"	"	
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/l	5.0	5	"	"	"	"	"	
79-34-5	1,1,2,2-Tetrachloroethane	BRL		µg/l	2.5	5	"	"	"	"	"	
127-18-4	Tetrachloroethene	BRL		µg/l	5.0	5	"	"	"	"	"	
108-88-3	Toluene	BRL		µg/l	5.0	5	"	"	"	"	"	
87-61-6	1,2,3-Trichlorobenzene	5.9		µg/l	5.0	5	"	"	"	"	"	
120-82-1	1,2,4-Trichlorobenzene	15.3		µg/l	5.0	5	"	"	"	"	"	
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL		µg/l	5.0	5	"	"	"	"	"	
79-00-5	1,1,2-Trichloroethane	BRL		µg/l	5.0	5	"	"	"	"	"	
79-01-6	Trichloroethene	130		µg/l	5.0	5	"	"	"	"	"	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/l	5.0	5	"	"	"	"	"	
96-18-4	1,2,3-Trichloropropane	BRL		µg/l	5.0	5	"	"	"	"	"	
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL		µg/l	5.0	5	"	"	"	"	"	
179601-23-1	m,p-Xylene	BRL		µg/l	10.0	5	"	"	"	"	"	
95-47-6	o-Xylene	BRL		µg/l	5.0	5	"	"	"	"	"	
109-99-9	Tetrahydrofuran	BRL		µg/l	10.0	5	"	"	"	"	"	
60-29-7	Ethyl ether	BRL		µg/l	5.0	5	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	BRL		µg/l	5.0	5	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	BRL		µg/l	5.0	5	"	"	"	"	"	
108-20-3	Di-isopropyl ether	BRL		µg/l	5.0	5	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	BRL		µg/l	50.0	5	"	"	"	"	"	
123-91-1	1,4-Dioxane	BRL		µg/l	100	5	"	"	"	"	"	
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/l	25.0	5	"	"	"	"	"	
64-17-5	Ethanol	BRL		µg/l	2000	5	"	"	"	"	"	
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*96*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*98*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*108*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*95*			*70-130 %*		"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DEP-MW-2-12-9-10	6883-09-0004	Ground Water	09-Dec-10 10:23	10-Dec-10
SB22313-02				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	naa	1026260	
67-64-1	Acetone	BRL		µg/l	10.0	1	"	"	"	"	"	
107-13-1	Acrylonitrile	1.8		µg/l	0.5	1	"	"	"	"	"	
71-43-2	Benzene	1.2		µg/l	1.0	1	"	"	"	"	"	
108-86-1	Bromobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
74-97-5	Bromochloromethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-27-4	Bromodichloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
75-25-2	Bromoform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-83-9	Bromomethane	BRL		µg/l	2.0	1	"	"	"	"	"	
78-93-3	2-Butanone (MEK)	BRL		µg/l	10.0	1	"	"	"	"	"	
104-51-8	n-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
135-98-8	sec-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
98-06-6	tert-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-15-0	Carbon disulfide	BRL		µg/l	2.0	1	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL		µg/l	1.0	1	"	"	"	"	"	
108-90-7	Chlorobenzene	38.3		µg/l	1.0	1	"	"	"	"	"	
75-00-3	Chloroethane	BRL		µg/l	2.0	1	"	"	"	"	"	
67-66-3	Chloroform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-87-3	Chloromethane	BRL		µg/l	2.0	1	"	"	"	"	"	
95-49-8	2-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-43-4	4-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0	1	"	"	"	"	"	
124-48-1	Dibromochloromethane	0.5		µg/l	0.5	1	"	"	"	"	"	
106-93-4	1,2-Dibromoethane (EDB)	0.6		µg/l	0.5	1	"	"	"	"	"	
74-95-3	Dibromomethane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	58.6		µg/l	1.0	1	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	2.2		µg/l	1.0	1	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	13.4		µg/l	1.0	1	"	"	"	"	"	
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0	1	"	"	"	"	"	
75-34-3	1,1-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
107-06-2	1,2-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-59-2	cis-1,2-Dichloroethene	25.4		µg/l	1.0	1	"	"	"	"	"	
156-60-5	trans-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
78-87-5	1,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
142-28-9	1,3-Dichloropropane	0.5		µg/l	1.0	1	"	"	"	"	"	
594-20-7	2,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
563-58-6	1,1-Dichloropropene	BRL		µg/l	1.0	1	"	"	"	"	"	
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
100-41-4	Ethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-68-3	Hexachlorobutadiene	0.6		µg/l	0.5	1	"	"	"	"	"	
591-78-6	2-Hexanone (MBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
98-82-8	Isopropylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DEP-MW-2-12-9-10	6883-09-0004	Ground Water	09-Dec-10 10:23	10-Dec-10
SB22313-02				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
99-87-6	4-Isopropyltoluene	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	naa	1026260	
1634-04-4	Methyl tert-butyl ether	1.1		µg/l	1.0	1	"	"	"	"	"	
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
75-09-2	Methylene chloride	BRL		µg/l	2.0	1	"	"	"	"	"	
91-20-3	Naphthalene	1.4		µg/l	1.0	1	"	"	"	"	"	
103-65-1	n-Propylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
100-42-5	Styrene	BRL		µg/l	1.0	1	"	"	"	"	"	
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-34-5	1,1,2,2-Tetrachloroethane	0.9		µg/l	0.5	1	"	"	"	"	"	
127-18-4	Tetrachloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-88-3	Toluene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-61-6	1,2,3-Trichlorobenzene	8.1		µg/l	1.0	1	"	"	"	"	"	
120-82-1	1,2,4-Trichlorobenzene	24.4		µg/l	1.0	1	"	"	"	"	"	
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-00-5	1,1,2-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-01-6	Trichloroethene	64.8		µg/l	1.0	1	"	"	"	"	"	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0	1	"	"	"	"	"	
96-18-4	1,2,3-Trichloropropane	1.4		µg/l	1.0	1	"	"	"	"	"	
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL		µg/l	1.0	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	BRL		µg/l	2.0	1	"	"	"	"	"	
95-47-6	o-Xylene	BRL		µg/l	1.0	1	"	"	"	"	"	
109-99-9	Tetrahydrofuran	2.1		µg/l	2.0	1	"	"	"	"	"	
60-29-7	Ethyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	1.2		µg/l	1.0	1	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-20-3	Di-isopropyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	24.5		µg/l	10.0	1	"	"	"	"	"	
123-91-1	1,4-Dioxane	27.7		µg/l	20.0	1	"	"	"	"	"	
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0	1	"	"	"	"	"	
64-17-5	Ethanol	BRL		µg/l	400	1	"	"	"	"	"	
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*98*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*98*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*115*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*98*			*70-130 %*		"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DEP-MW-3-12-9-10	6883-09-0004	Ground Water	09-Dec-10 11:37	10-Dec-10
SB22313-03				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
67-64-1	Acetone	BRL		µg/l	10.0	1	"	"	"	"	"	
107-13-1	Acrylonitrile	BRL		µg/l	0.5	1	"	"	"	"	"	
71-43-2	Benzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-86-1	Bromobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
74-97-5	Bromochloromethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-27-4	Bromodichloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
75-25-2	Bromoform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-83-9	Bromomethane	BRL		µg/l	2.0	1	"	"	"	"	"	
78-93-3	2-Butanone (MEK)	BRL		µg/l	10.0	1	"	"	"	"	"	
104-51-8	n-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
135-98-8	sec-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
98-06-6	tert-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-15-0	Carbon disulfide	BRL		µg/l	2.0	1	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL		µg/l	1.0	1	"	"	"	"	"	
108-90-7	Chlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-00-3	Chloroethane	BRL		µg/l	2.0	1	"	"	"	"	"	
67-66-3	Chloroform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-87-3	Chloromethane	BRL		µg/l	2.0	1	"	"	"	"	"	
95-49-8	2-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-43-4	4-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0	1	"	"	"	"	"	
124-48-1	Dibromochloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/l	0.5	1	"	"	"	"	"	
74-95-3	Dibromomethane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	0.8		µg/l	1.0	1	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0	1	"	"	"	"	"	
75-34-3	1,1-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
107-06-2	1,2-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-59-2	cis-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-60-5	trans-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
78-87-5	1,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
142-28-9	1,3-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
594-20-7	2,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
563-58-6	1,1-Dichloropropene	BRL		µg/l	1.0	1	"	"	"	"	"	
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
100-41-4	Ethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-68-3	Hexachlorobutadiene	BRL		µg/l	0.5	1	"	"	"	"	"	
591-78-6	2-Hexanone (MBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
98-82-8	Isopropylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DEP-MW-3-12-9-10	6883-09-0004	Ground Water	09-Dec-10 11:37	10-Dec-10
SB22313-03				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
99-87-6	4-Isopropyltoluene	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
1634-04-4	Methyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
75-09-2	Methylene chloride	BRL		µg/l	2.0	1	"	"	"	"	"	
91-20-3	Naphthalene	BRL		µg/l	1.0	1	"	"	"	"	"	
103-65-1	n-Propylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
100-42-5	Styrene	BRL		µg/l	1.0	1	"	"	"	"	"	
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-34-5	1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5	1	"	"	"	"	"	
127-18-4	Tetrachloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-88-3	Toluene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-61-6	1,2,3-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
120-82-1	1,2,4-Trichlorobenzene	0.5		µg/l	1.0	1	"	"	"	"	"	
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-00-5	1,1,2-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-01-6	Trichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0	1	"	"	"	"	"	
96-18-4	1,2,3-Trichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL		µg/l	1.0	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	BRL		µg/l	2.0	1	"	"	"	"	"	
95-47-6	o-Xylene	BRL		µg/l	1.0	1	"	"	"	"	"	
109-99-9	Tetrahydrofuran	BRL		µg/l	2.0	1	"	"	"	"	"	
60-29-7	Ethyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-20-3	Di-isopropyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	BRL		µg/l	10.0	1	"	"	"	"	"	
123-91-1	1,4-Dioxane	BRL		µg/l	20.0	1	"	"	"	"	"	
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0	1	"	"	"	"	"	
64-17-5	Ethanol	BRL		µg/l	400	1	"	"	"	"	"	
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*97*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*97*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*110*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*91*			*70-130 %*		"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DEP-MW-4-12-9-10	6883-09-0004	Ground Water	09-Dec-10 13:33	10-Dec-10
SB22313-04				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
67-64-1	Acetone	BRL		µg/l	10.0	1	"	"	"	"	"	
107-13-1	Acrylonitrile	BRL		µg/l	0.5	1	"	"	"	"	"	
71-43-2	Benzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-86-1	Bromobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
74-97-5	Bromochloromethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-27-4	Bromodichloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
75-25-2	Bromoform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-83-9	Bromomethane	BRL		µg/l	2.0	1	"	"	"	"	"	
78-93-3	2-Butanone (MEK)	BRL		µg/l	10.0	1	"	"	"	"	"	
104-51-8	n-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
135-98-8	sec-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
98-06-6	tert-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-15-0	Carbon disulfide	BRL		µg/l	2.0	1	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL		µg/l	1.0	1	"	"	"	"	"	
108-90-7	Chlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-00-3	Chloroethane	BRL		µg/l	2.0	1	"	"	"	"	"	
67-66-3	Chloroform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-87-3	Chloromethane	BRL		µg/l	2.0	1	"	"	"	"	"	
95-49-8	2-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-43-4	4-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0	1	"	"	"	"	"	
124-48-1	Dibromochloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/l	0.5	1	"	"	"	"	"	
74-95-3	Dibromomethane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0	1	"	"	"	"	"	
75-34-3	1,1-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
107-06-2	1,2-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-59-2	cis-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-60-5	trans-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
78-87-5	1,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
142-28-9	1,3-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
594-20-7	2,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
563-58-6	1,1-Dichloropropene	BRL		µg/l	1.0	1	"	"	"	"	"	
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
100-41-4	Ethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-68-3	Hexachlorobutadiene	BRL		µg/l	0.5	1	"	"	"	"	"	
591-78-6	2-Hexanone (MBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
98-82-8	Isopropylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DEP-MW-4-12-9-10	6883-09-0004	Ground Water	09-Dec-10 13:33	10-Dec-10
SB22313-04				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
99-87-6	4-Isopropyltoluene	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
1634-04-4	Methyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
75-09-2	Methylene chloride	BRL		µg/l	2.0	1	"	"	"	"	"	
91-20-3	Naphthalene	BRL		µg/l	1.0	1	"	"	"	"	"	
103-65-1	n-Propylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
100-42-5	Styrene	BRL		µg/l	1.0	1	"	"	"	"	"	
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-34-5	1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5	1	"	"	"	"	"	
127-18-4	Tetrachloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-88-3	Toluene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-61-6	1,2,3-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-00-5	1,1,2-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-01-6	Trichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0	1	"	"	"	"	"	
96-18-4	1,2,3-Trichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL		µg/l	1.0	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	BRL		µg/l	2.0	1	"	"	"	"	"	
95-47-6	o-Xylene	BRL		µg/l	1.0	1	"	"	"	"	"	
109-99-9	Tetrahydrofuran	BRL		µg/l	2.0	1	"	"	"	"	"	
60-29-7	Ethyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-20-3	Di-isopropyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	BRL		µg/l	10.0	1	"	"	"	"	"	
123-91-1	1,4-Dioxane	BRL		µg/l	20.0	1	"	"	"	"	"	
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0	1	"	"	"	"	"	
64-17-5	Ethanol	BRL		µg/l	400	1	"	"	"	"	"	
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*97*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*98*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*108*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*94*			*70-130 %*		"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DUP-12-9-10	6883-09-0004	Ground Water	09-Dec-10 00:00	10-Dec-10
SB22313-05				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
67-64-1	Acetone	BRL		µg/l	10.0	1	"	"	"	"	"	
107-13-1	Acrylonitrile	BRL		µg/l	0.5	1	"	"	"	"	"	
71-43-2	Benzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-86-1	Bromobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
74-97-5	Bromochloromethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-27-4	Bromodichloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
75-25-2	Bromoform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-83-9	Bromomethane	BRL		µg/l	2.0	1	"	"	"	"	"	
78-93-3	2-Butanone (MEK)	BRL		µg/l	10.0	1	"	"	"	"	"	
104-51-8	n-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
135-98-8	sec-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
98-06-6	tert-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-15-0	Carbon disulfide	BRL		µg/l	2.0	1	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL		µg/l	1.0	1	"	"	"	"	"	
108-90-7	Chlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-00-3	Chloroethane	BRL		µg/l	2.0	1	"	"	"	"	"	
67-66-3	Chloroform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-87-3	Chloromethane	BRL		µg/l	2.0	1	"	"	"	"	"	
95-49-8	2-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-43-4	4-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0	1	"	"	"	"	"	
124-48-1	Dibromochloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/l	0.5	1	"	"	"	"	"	
74-95-3	Dibromomethane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0	1	"	"	"	"	"	
75-34-3	1,1-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
107-06-2	1,2-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-59-2	cis-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-60-5	trans-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
78-87-5	1,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
142-28-9	1,3-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
594-20-7	2,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
563-58-6	1,1-Dichloropropene	BRL		µg/l	1.0	1	"	"	"	"	"	
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
100-41-4	Ethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-68-3	Hexachlorobutadiene	BRL		µg/l	0.5	1	"	"	"	"	"	
591-78-6	2-Hexanone (MBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
98-82-8	Isopropylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-DUP-12-9-10	6883-09-0004	Ground Water	09-Dec-10 00:00	10-Dec-10
SB22313-05				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
99-87-6	4-Isopropyltoluene	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
1634-04-4	Methyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
75-09-2	Methylene chloride	BRL		µg/l	2.0	1	"	"	"	"	"	
91-20-3	Naphthalene	BRL		µg/l	1.0	1	"	"	"	"	"	
103-65-1	n-Propylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
100-42-5	Styrene	BRL		µg/l	1.0	1	"	"	"	"	"	
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-34-5	1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5	1	"	"	"	"	"	
127-18-4	Tetrachloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-88-3	Toluene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-61-6	1,2,3-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-00-5	1,1,2-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-01-6	Trichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0	1	"	"	"	"	"	
96-18-4	1,2,3-Trichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL		µg/l	1.0	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	BRL		µg/l	2.0	1	"	"	"	"	"	
95-47-6	o-Xylene	BRL		µg/l	1.0	1	"	"	"	"	"	
109-99-9	Tetrahydrofuran	BRL		µg/l	2.0	1	"	"	"	"	"	
60-29-7	Ethyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-20-3	Di-isopropyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	BRL		µg/l	10.0	1	"	"	"	"	"	
123-91-1	1,4-Dioxane	BRL		µg/l	20.0	1	"	"	"	"	"	
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0	1	"	"	"	"	"	
64-17-5	Ethanol	BRL		µg/l	400	1	"	"	"	"	"	
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*98*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*97*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*108*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*97*			*70-130 %*		"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-TB-12-9-10	6883-09-0004	Water	09-Dec-10 00:00	10-Dec-10
SB22313-06				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
67-64-1	Acetone	BRL		µg/l	10.0	1	"	"	"	"	"	
107-13-1	Acrylonitrile	BRL		µg/l	0.5	1	"	"	"	"	"	
71-43-2	Benzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-86-1	Bromobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
74-97-5	Bromochloromethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-27-4	Bromodichloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
75-25-2	Bromoform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-83-9	Bromomethane	BRL		µg/l	2.0	1	"	"	"	"	"	
78-93-3	2-Butanone (MEK)	BRL		µg/l	10.0	1	"	"	"	"	"	
104-51-8	n-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
135-98-8	sec-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
98-06-6	tert-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-15-0	Carbon disulfide	BRL		µg/l	2.0	1	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL		µg/l	1.0	1	"	"	"	"	"	
108-90-7	Chlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-00-3	Chloroethane	BRL		µg/l	2.0	1	"	"	"	"	"	
67-66-3	Chloroform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-87-3	Chloromethane	BRL		µg/l	2.0	1	"	"	"	"	"	
95-49-8	2-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-43-4	4-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0	1	"	"	"	"	"	
124-48-1	Dibromochloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/l	0.5	1	"	"	"	"	"	
74-95-3	Dibromomethane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0	1	"	"	"	"	"	
75-34-3	1,1-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
107-06-2	1,2-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-59-2	cis-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-60-5	trans-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
78-87-5	1,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
142-28-9	1,3-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
594-20-7	2,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
563-58-6	1,1-Dichloropropene	BRL		µg/l	1.0	1	"	"	"	"	"	
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
100-41-4	Ethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-68-3	Hexachlorobutadiene	BRL		µg/l	0.5	1	"	"	"	"	"	
591-78-6	2-Hexanone (MBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
98-82-8	Isopropylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
NCWD-GW-TB-12-9-10	6883-09-0004	Water	09-Dec-10 00:00	10-Dec-10
SB22313-06				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
99-87-6	4-Isopropyltoluene	BRL		µg/l	1.0	1	SW846 8260B/C	17-Dec-10	18-Dec-10	EQ	1026260	
1634-04-4	Methyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
75-09-2	Methylene chloride	BRL		µg/l	2.0	1	"	"	"	"	"	
91-20-3	Naphthalene	BRL		µg/l	1.0	1	"	"	"	"	"	
103-65-1	n-Propylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
100-42-5	Styrene	BRL		µg/l	1.0	1	"	"	"	"	"	
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-34-5	1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5	1	"	"	"	"	"	
127-18-4	Tetrachloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-88-3	Toluene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-61-6	1,2,3-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-00-5	1,1,2-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-01-6	Trichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0	1	"	"	"	"	"	
96-18-4	1,2,3-Trichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL		µg/l	1.0	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	BRL		µg/l	2.0	1	"	"	"	"	"	
95-47-6	o-Xylene	BRL		µg/l	1.0	1	"	"	"	"	"	
109-99-9	Tetrahydrofuran	BRL		µg/l	2.0	1	"	"	"	"	"	
60-29-7	Ethyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-20-3	Di-isopropyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	BRL		µg/l	10.0	1	"	"	"	"	"	
123-91-1	1,4-Dioxane	BRL		µg/l	20.0	1	"	"	"	"	"	
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0	1	"	"	"	"	"	
64-17-5	Ethanol	BRL		µg/l	400	1	"	"	"	"	"	
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*95*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*97*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*115*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*101*			*70-130 %*		"	"	"	"	"	

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1026260 - SW846 5030 Water MS										
Blank (1026260-BLK1)					Prepared & Analyzed: 17-Dec-10					
Benzene	BRL		µg/l	1.0						
Chlorobenzene	BRL		µg/l	1.0						
1,1-Dichloroethene	BRL		µg/l	1.0						
cis-1,2-Dichloroethene	BRL		µg/l	1.0						
trans-1,2-Dichloroethene	BRL		µg/l	1.0						
Methylene chloride	BRL		µg/l	2.0						
Tetrachloroethene	BRL		µg/l	1.0						
Toluene	BRL		µg/l	1.0						
1,1,1-Trichloroethane	BRL		µg/l	1.0						
Trichloroethene	BRL		µg/l	1.0						
m,p-Xylene	BRL		µg/l	2.0						
o-Xylene	BRL		µg/l	1.0						
Surrogate: 4-Bromofluorobenzene	*28.7*		µg/l		*30.0*		*96*	*70-130*		
Surrogate: Toluene-d8	*30.2*		µg/l		*30.0*		*101*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*35.2*		µg/l		*30.0*		*117*	*70-130*		
Surrogate: Dibromofluoromethane	*29.9*		µg/l		*30.0*		*100*	*70-130*		
LCS (1026260-BS1)					Prepared & Analyzed: 17-Dec-10					
Benzene	18.7		µg/l		20.0		93	70-130		25
Chlorobenzene	17.3		µg/l		20.0		86	70-130		25
1,1-Dichloroethene	19.1		µg/l		20.0		95	70-130		25
cis-1,2-Dichloroethene	19.0		µg/l		20.0		95	70-130		25
trans-1,2-Dichloroethene	19.3		µg/l		20.0		97	70-130		25
Methylene chloride	19.0		µg/l		20.0		95	70-130		25
Tetrachloroethene	18.6		µg/l		20.0		93	70-130		25
Toluene	19.1		µg/l		20.0		96	70-130		25
1,1,1-Trichloroethane	22.7		µg/l		20.0		114	70-130		25
Trichloroethene	20.0		µg/l		20.0		100	70-130		25
m,p-Xylene	38.5		µg/l		40.0		96	70-130		25
o-Xylene	18.6		µg/l		20.0		93	70-130		25
Surrogate: 4-Bromofluorobenzene	*30.3*		µg/l		*30.0*		*101*	*70-130*		
Surrogate: Toluene-d8	*30.6*		µg/l		*30.0*		*102*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*33.9*		µg/l		*30.0*		*113*	*70-130*		
Surrogate: Dibromofluoromethane	*30.5*		µg/l		*30.0*		*102*	*70-130*		
LCS Dup (1026260-BSD1)					Prepared & Analyzed: 17-Dec-10					
Benzene	18.6		µg/l		20.0		93	70-130	0.4	25
Chlorobenzene	17.5		µg/l		20.0		88	70-130	1	25
1,1-Dichloroethene	19.2		µg/l		20.0		96	70-130	0.5	25
cis-1,2-Dichloroethene	18.6		µg/l		20.0		93	70-130	2	25
trans-1,2-Dichloroethene	18.8		µg/l		20.0		94	70-130	3	25
Methylene chloride	18.2		µg/l		20.0		91	70-130	4	25
Tetrachloroethene	17.7		µg/l		20.0		88	70-130	5	25
Toluene	18.6		µg/l		20.0		93	70-130	3	25
1,1,1-Trichloroethane	22.4		µg/l		20.0		112	70-130	1	25
Trichloroethene	18.6		µg/l		20.0		93	70-130	7	25
m,p-Xylene	37.7		µg/l		40.0		94	70-130	2	25
o-Xylene	18.7		µg/l		20.0		93	70-130	0.3	25
Surrogate: 4-Bromofluorobenzene	*30.1*		µg/l		*30.0*		*100*	*70-130*		
Surrogate: Toluene-d8	*30.5*		µg/l		*30.0*		*102*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*33.6*		µg/l		*30.0*		*112*	*70-130*		
Surrogate: Dibromofluoromethane	*29.7*		µg/l		*30.0*		*99*	*70-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1026260 - SW846 5030 Water MS										
Matrix Spike (1026260-MS1)			**Source: SB22313-02**		Prepared: 17-Dec-10 Analyzed: 18-Dec-10					
Benzene	21.9		µg/l		20.0	1.2	104	70-130		30
Chlorobenzene	56.6		µg/l		20.0	38.3	91	70-130		30
1,1-Dichloroethene	21.7		µg/l		20.0	BRL	108	70-130		30
cis-1,2-Dichloroethene	47.0		µg/l		20.0	25.4	108	70-130		30
trans-1,2-Dichloroethene	20.6		µg/l		20.0	0.6	100	70-130		30
Methylene chloride	20.4		µg/l		20.0	BRL	102	70-130		30
Tetrachloroethene	21.2		µg/l		20.0	BRL	106	70-130		30
Toluene	21.0		µg/l		20.0	BRL	105	70-130		30
1,1,1-Trichloroethane	26.9	QM7	µg/l		20.0	BRL	134	70-130		30
Trichloroethene	89.4		µg/l		20.0	64.8	123	70-130		30
m,p-Xylene	42.2		µg/l		40.0	BRL	105	70-130		30
o-Xylene	20.3		µg/l		20.0	BRL	102	70-130		30
Surrogate: 4-Bromofluorobenzene	*30.5*		µg/l		*30.0*		*102*	*70-130*		
Surrogate: Toluene-d8	*30.5*		µg/l		*30.0*		*102*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*33.6*		µg/l		*30.0*		*112*	*70-130*		
Surrogate: Dibromofluoromethane	*29.9*		µg/l		*30.0*		*100*	*70-130*		
Matrix Spike Dup (1026260-MSD1)			**Source: SB22313-02**		Prepared: 17-Dec-10 Analyzed: 18-Dec-10					
Benzene	17.8		µg/l		20.0	1.2	83	70-130	22	30
Chlorobenzene	52.8		µg/l		20.0	38.3	72	70-130	23	30
1,1-Dichloroethene	16.9		µg/l		20.0	BRL	85	70-130	25	30
cis-1,2-Dichloroethene	42.7		µg/l		20.0	25.4	86	70-130	22	30
trans-1,2-Dichloroethene	16.9		µg/l		20.0	0.6	81	70-130	21	30
Methylene chloride	16.3		µg/l		20.0	BRL	82	70-130	22	30
Tetrachloroethene	16.8		µg/l		20.0	BRL	84	70-130	23	30
Toluene	17.1		µg/l		20.0	BRL	86	70-130	21	30
1,1,1-Trichloroethane	21.6		µg/l		20.0	BRL	108	70-130	22	30
Trichloroethene	83.7		µg/l		20.0	64.8	95	70-130	26	30
m,p-Xylene	34.2		µg/l		40.0	BRL	86	70-130	21	30
o-Xylene	16.8		µg/l		20.0	BRL	84	70-130	19	30
Surrogate: 4-Bromofluorobenzene	*30.5*		µg/l		*30.0*		*102*	*70-130*		
Surrogate: Toluene-d8	*30.0*		µg/l		*30.0*		*100*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*34.4*		µg/l		*30.0*		*115*	*70-130*		
Surrogate: Dibromofluoromethane	*29.7*		µg/l		*30.0*		*99*	*70-130*		

Notes and Definitions

GS1	Sample dilution required for high concentration of target analytes to be within the instrument calibration range.
QM7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
Hanibal C. Tayeh, Ph.D.
Nicole Leja

MassDEP Analytical Protocol Certification Form

Laboratory Name: Spectrum Analytical, Inc.	**Project #:** 6883-09-0004
Project Location: Nyanza Chemical Waste Dump - Ashland, MA	**RTN:**
This form provides certifications for the following data set:	SB22313-01 through SB22313-06
Matrices: Ground Water Water	

CAM Protocol

✓ 8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	✓ Yes No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	✓ Yes No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	✓ Yes No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	✓ Yes No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?	✓ Yes No

Responses to questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	Yes ✓ No

***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

H	Were all QC performance standards specified in the CAM protocol(s) achieved?	Yes ✓ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ✓ No

All negative responses are addressed in a case narrative on the cover page of this report.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Hanibal C. Tayeh, Ph.D.
President/Laboratory Director
Date: 12/29/2010

SB 22313 e

CHAIN OF CUSTODY RECORD

SPECTRUM ANALYTICAL, INC.
Featuring HANIBAL TECHNOLOGY

Page 1 of 1.

Special Handling:
- [x] Standard TAT - 7 to 10 business days
- [ ] Rush TAT - Date Needed:
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- All samples are disposed of after 60 days unless otherwise instructed.

Report To:	Invoice To:	Project No.6883-09-0004
CEA	CEA	
127 Hartwell Street	(Special pricing)	MA.DEP
West Boylston, MA 01583		Nyanza Chemical Waste Dump
		Ashland Ma.
		Sampler: Mark Hagle

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8= $NaHSO_4$ 9= 10=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3 = _____

G= Grab C= Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Analyses: EPA 8260B	MS/MSD	Notes:
22313-01	NCWD-GW-DEP-MW-1-12-9-10	12/9/10	0917	G	GW	2	2				X		Special Spectrum Pricing
-02	NCWD-GW-DEP-MW-2-12-9-10		1023	G		2	3				X	X	* Provide MCP * CAM Report
-03	NCWD-GW-DEP-MW-3-12-9-10		1137	G		2	3				X		
-04	NCWD-GW-DEP-MW-4-12-9-10		1333	G		2	3				X		
0	NCWD-GW-DEP-MW- 12-9-10												MiH-
	NCWD-GW-DEP-MW- 12-9-10												MiH,
-05	NCWD-GW-DUP-12-9-19	12/9/10	—	G	GW	2	3				X		
-06	NCWD-GW-TB-12/9/10	12/9/10	—	G	W	2	2				X		

Relinquished by:	Received by:	Date:	Time:
		12/10/10	1203
		12/10/10	17:00

JFRIGON@CEA-INC.COM

[x] Fax results when available to (508) 835-8822

[x] E-mail results when available to dazukauskas@ceainc.com

Condition upon Receipt: [x] Iced [ ] Ambient 3.2°

Chain of Custody Service • Agawam, Massachusetts 01001 • 413-789-9018 • Fax 413-789-4076 • www.spectrum-analytical.com