2015 ANNUAL REPORT
SHEPLEY'S HILL LANDFILL
FORMER FORT DEVENS ARMY INSTALLATION

NOVEMBER 2016

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2015 ANNUAL REPORT

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FORMER FORT DEVENS ARMY INSTALLATION

DEVENS, MASSACHUSETTS

NOVEMBER 2016

CERTIFICATION:

I hereby certify that the enclosed Report, shown and marked in this submittal, is that proposed to be incorporated with Contract Number W912WJ-15-C-0002. This Document has been prepared in accordance with USACE Scope of Work and is hereby submitted for Government Approval.

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ABBREVIATIONS, ACRONYMS, AND SYMBOLS

Accutest	Accutest Laboratories
ADR	Automated Data Review
AOC	Area of Contamination
AR	Annual Report
ATP	Arsenic Treatment Plant
bgs	Below Ground Surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Clean-in-Place
CMR	Code of Massachusetts Regulations
COC	Contaminant of Concern
CSA/CAAA	Comprehensive Site Assessment and Corrective Actions Alternatives Analysis
CSM	Conceptual Site Model
cy	Cubic Yard
DO	Dissolved Oxygen
DPT	Direct Push Technology
DTW	Depth to Water
EPA	Environmental Protection Agency
EVS	Environmental Visualization System
ESD	Explanation of Significant Differences
EW	Extraction Well
FBRO	Filter bottom roll-off
FM	flux maintenance
FS	Feasibility Study
FYR	Five Year Review
Gatsby	Gatsby Grounds Co. Inc.
Global	Global Remediation Services Inc.
gpm	gallons per minute
GWTP	Groundwater Treatment Plant

H&S	H&S Environmental, Inc.
IC	Institutional Control
I/O	Input/Output
IPC	Inclined Plate Clarifier
KGS	KOMAN Government Solutions, LLC.
LEL	Lower Explosive Limit
LGP	Landfill Gas Points
LTM	Long-Term Monitoring
LTMMP	Long Term Monitoring and Maintenance Plan
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan
M2S	M2S JV, LLC
MA	Massachusetts
MassDEP	Massachusetts Department of Environmental Protection
MCL	Maximum Contaminant Level
MCP	Massachusetts Contingency Plan
MF	Microfiltration
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NAVD	North American Vertical Datum
NIA	North Impact Area
NTCRA	Non-Time Critical Removal Action
O&M	Operations and Maintenance
ORP	Oxidation reduction potential
PCB	Polychlorinated Biphenyl
PID	Photoionization detector
POTW	Publicly-Owned Treatment Works
ppm	parts per million
PSP	Plow Shop Pond
PVC	Polyvinyl chloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan

QC	Quality Control
QSM	Quality Systems Manual
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
SA	Study Area
SDG	Sample Delivery Group
SOP	Standard Operating Procedure
SHL	Shepley's Hill Landfill
SVOC	Semi-volatile Organic Compound
TI	Technical Impracticability
TPH	Total Petroleum Hydrocarbons
TTO	Total Toxic Organics
USACE-NAE	U. S. Army Corps of Engineers, New England District
µg/L	Micrograms per liter
VOC	Volatile Organic Compound

1.0 INTRODUCTION

KOMAN Government Solutions, LLC (KGS) prepared this Annual Report (AR) for the U. S. Army to meet the required reporting for the Shepley's Hill Landfill (SHL), located at the former Fort Devens, Massachusetts. This AR discusses the operation and maintenance (O&M) of the existing groundwater extraction, treatment and discharge system, landfill monitoring and maintenance, and groundwater monitoring results for 2015. These activities were conducted as part of monitoring under the *Final Long Term Maintenance and Monitoring Plan* (LTMMP) *Update* (Sovereign, 2015).

1.1 Background

The former Fort Devens, Massachusetts (MA) is located approximately 35 miles northwest of the city of Boston, within the towns of Ayer, Shirley (Middlesex County), Harvard and Lancaster (Worcester County). The former Fort Devens was established in 1917 for military training and logistical support during World War I. Fort Devens became a permanent base in 1931 and continued service until its Base Realignment and Closure (BRAC) Committee closure in 1996. **Figure 1-1** depicts the area and topography of the former base and surrounding area.

SHL encompasses approximately 84 acres in the northeast corner of the main post of the former Fort Devens, as shown on **Figure 1-2**. The landfill is bordered to the northeast by Plow Shop Pond (PSP), to the west by Shepley's Hill, to the south by recent commercial development, and to the east by land formerly containing a railroad roundhouse. Nonacoicus Brook, which drains PSP, is located north of the landfill in the North Impact Area (NIA), which is depicted on **Figure 1-3**.

SHL was reportedly operating by the early 1940s; however, evidence from test pits within the landfill suggests earlier usage, possibly as early as the mid-nineteenth century. The landfill contains a variety of waste materials including, but not limited to, incinerator ash, demolition debris, asbestos, sanitary wastes, and glass. The maximum depth of the refuse occurs in the central portion of the landfill and is estimated to extend about 40 feet below ground surface (bgs). The volume of waste in the landfill has been estimated at over 1.3 million cubic yards (cy), of which approximately 160,000 cy (11%) is below the water table. The saturated wastes appear to be emplaced in a wetland; at least two areas previously mapped as wetlands were filled (Harding ESE, 2002), and the waste has been found to be underlain by peat deposits (Sovereign, 2011a).

The Massachusetts Department of Environmental Protection (MassDEP) approved the landfill closure plan in 1985. The landfill was closed in five phases between 1987 and 1993 in accordance with 310 Code of Massachusetts Regulations (CMR) 19.000. Closure consisted of capping the landfill with a 30 to 40-mil polyvinyl chloride (PVC) membrane, covering the cap with soil and vegetation, and installing gas vents. Closure also included installation of wells to monitor groundwater quality around the landfill and construction of drainage swales to control surface water runoff. MassDEP issued a Landfill Capping Compliance Letter approving the closure in February 1996.

Subsequent to closure of the landfill, remedial investigations (RIs) completed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) evaluated soil, sediment, surface water, and groundwater conditions at and in the immediate vicinity of the landfill. The results confirmed the presence of various contaminants, particularly

certain inorganics, including arsenic, and volatile organic compounds (VOCs), in groundwater, sediment, and surface water at and adjacent to SHL. A Feasibility Study (FS) and Record of Decision (ROD) resulted in a remedy that required long term monitoring and maintenance of the existing landfill cap, and groundwater monitoring. **Table 1-1** lists the relevant contaminants of concern (COCs) and their target cleanup levels.

As described in the ROD (USACE, 1995), the Remedial Action Objectives (RAO) are to:

- Protect potential residential receptors from exposure to impacted groundwater migrating from the landfill having chemicals in excess of maximum contaminant levels (MCLs); and,
- Prevent impacted groundwater from contributing to the contamination of Plow Shop Pond sediments in excess of human health and ecological risk-based concentrations.

The ROD required the Army to perform groundwater monitoring and five-year reviews to evaluate the effectiveness of the selected remedial action, which at the time relied heavily on the landfill cap to attain groundwater cleanup goals by 2008 and to reduce potential exposure risks. If groundwater contaminant concentrations, primarily arsenic, met risk-based performance standards (cleanup goals) over time, the ROD did not require further action; however, if cleanup goals were not met, the ROD required implementation of a groundwater extraction contingency remedy component. Due to continued contaminant concentrations greater than MCLs, the Army installed and began operating a groundwater extraction and treatment system in March 2006 as a contingency remedy component to address groundwater contamination emanating from the northern portion of the landfill (CH2M Hill, 2005a). Initially the system was operated at an extraction rate of 25 gallons per minute (gpm). In July 2007 the extraction rate was increased from 25 gpm to the full capacity of the plant. Since 2008, the system has been operated at full capacity and in 2015 achieved an average on-line extraction rate of 50 gpm.

In 2011, the Area of Contamination (AOC) 72 RI (AMEC, 2011) concluded that components of the current remedy (landfill capping and groundwater extraction) did not eliminate groundwater flow and arsenic migration from SHL into Red Cove / PSP (AOC 72). The AOC 72 RI results suggested that groundwater discharge contributed arsenic to sediment that could accumulate to levels resulting in conditions that posed unacceptable risks, and therefore a remedy component that minimized arsenic-in-groundwater flux to Red Cove was most protective (AMEC, 2011). Consequently, a low-permeability groundwater barrier wall was installed between the SHL and AOC 72 as part of a Non-Time Critical Removal Action (NTCRA) from August to September 2012 to mitigate arsenic flux to Red Cove/PSP by groundwater flow from the SHL. Documentation of the barrier wall installation was provided in the July 2013, *Final Removal Action Completion Report for Shepley's Hill Landfill Barrier Wall* (Sovereign, 2013a).

One of the SHL project RAOs is to protect potential residents from exposure to impacted groundwater migrating from the landfill at levels that pose a risk to human health and the environment. Because the extent of the impact was not defined at the time, the existing SHL ROD did not specifically address implementation of Land Use Controls (LUCs) for any non-Army property located north of the landfill and within the NIA. Consequently, LUCs were established for the NIA in 2013 and were documented in the December 2013 *Explanation of Significant Differences* (ESD) *for Land Use Controls to Restrict Groundwater Use* (Sovereign, 2013c). Upon submittal of the ESD, a Land Use Control Implementation Plan (LUCIP) was

submitted in August 2014 to describe the procedures for implementing the LUCs in the NIA (Sovereign, 2014c). The area of LUCs is presented on **Figure 1-4**.

1.2 5-Year Review Status

The first two years of landfill post-closure monitoring were conducted in 1996 and 1997. These first two years of monitoring were included in the first *Five Year Review* (FYR), *Shepley's Hill Landfill, Long Term Monitoring* (SWET, 1998) which was issued five years after the final capping of the landfill in 1993. The United States Army Corps of Engineers, New England District (USACE-NAE) conducted the monitoring between 1998 and 2005. In 2000, a comprehensive review of all Former Fort Devens sites was performed and detailed in the *Five Year Review Report for Devens Reserve Forces Training Area, Devens, MA* (HLA, 2000) which included monitoring conducted for SHL Operable Unit from 1996 through 1999. A second comprehensive FYR was completed in 2005 (Nobis, 2005) and included monitoring conducted from 1999 through 2004. In this review, the Army and United States Environmental Protection Agency (EPA) deferred the Protectiveness Statement for the SHL Operable Unit pending completion of landfill cap maintenance in 2009 to repair depressions in the cap as noted in the *Comprehensive Site Assessment Corrective Actions Alternatives Analysis* (CSA/CAAA) which was replaced by the *Draft Final Supplemental Groundwater and Landfill Cap Assessment for Long-Term Monitoring and Maintenance* report issued in June 2009 (AMEC, 2009). The third comprehensive FYR was completed in 2010 (HydroGeoLogic, 2010) and discussed the Contingency Remedy performance. With regard to the Protectiveness Statement, the 2010 FYR concluded the SHL remedy is considered protective in the short-term, because there is no evidence of current exposure.

The fourth FYR was completed in 2015 (H&S 2015). Based on the data reviewed, the response actions related to the Shepley's Hill Landfill are generally performing as designed and meeting the remedial action objectives. Additional items of concern were noted during the technical review of SHL. These issues do not affect the short term protectiveness of the remedy but have resulted in recommendations for additional consideration at the site. These include:

- The remedy ROD and by extension the RD/RA Work Plan do not define containment or the target capture zone. The presence of Institutional Controls (ICs) and LUCs prohibit the use of groundwater as drinking water such that uncertainty in the capture zone does not affect protectiveness.
- Additional site characterization and CSM refinements continue to indicate the existing remedy is unlikely to achieve groundwater cleanup goals per the ROD (i.e., the restoration potential is low due to very complex site conditions causing a high level of remediation difficulty.). Since ICs and LUCs are in place in the NIA, there is not a concern for potential exposure and therefore this does not affect protectiveness of the remedy.

The following are recommendations to the technical concerns noted above.

- Development of site-specific groundwater arsenic background concentration range
- Conceptual Site Model (CSM) refinements with focus on sources of naturally occurring arsenic (bedrock) and natural attenuation processes that exits near the brook in the NIA.
- Define the target capture zone limits

- Evaluate upgradient and downgradient capture zone conditions
- Revise groundwater flow model to evaluate capture zone, and
- Consider TI waiver if analysis supports arsenic concentrations cannot be reduced

Lastly, with regard to the protectiveness statement, the 2015 FYR concluded that the remedy at SHL is considered short term protective because there is no evidence of current exposure and exposure pathways that could result in unacceptable risks are being controlled. Remedy infrastructure components including the landfill cover system, landfill gas venting, arsenic treatment plant for groundwater and barrier wall to prevent impacts to Plow Shop Pond are operating in accordance with design objectives. Appropriate ICs in the form of LUCs in the NIA have been implemented to prevent contact of potential receptors to arsenic-impacted groundwater flowing from SHL into the NIA.

1.3 Remedy Updates and Assessments

In order to assess the adequacy of the landfill cap and the overall remedy at mitigating risks, a *Supplemental Groundwater Investigation and Landfill Cap Assessment* (AMEC, 2009) was initiated by the Army in 2005. The report confirmed potential risks related to arsenic in groundwater in the impacted area north of the capture zone of the groundwater treatment system as previously documented by the Army in the SHL *Record of Decision* (USACE, 1995) and the SHL *Supplemental Groundwater Investigation* (Harding ESE, 2003). A *Supplemental Groundwater Investigation and Landfill Cap Assessment for Long-Term Monitoring and Maintenance – Addendum Report* (Sovereign, 2011a) addressed remaining uncertainties with respect to the extent of impacts in the NIA and long-term source persistence. The Draft Final LTMMP (Sovereign, 2015) also addresses continued efforts to monitor impacts in the NIA.

The Red Cove area of Plow Shop Pond was addressed as part of the RI for AOC 72 (AMEC, 2011). Based on the conclusions put forth in the *Statement of Army Position Following Withdrawal of the Draft Final Focused Feasibility Study for Shepley's Hill Landfill, Devens, MA* (US Army, 2012) and the *AOC 72 Engineering Evaluation/Cost Analysis* (Sovereign, 2011b), which examined long-term remedies for Red Cove sediments, the Army completed construction of a barrier wall in 2012 to mitigate arsenic flux to Red Cove following the completion of a *Final Engineering Evaluation/Cost Analysis, Shepley's Hill Landfill Barrier Wall, Former Fort Devens Army Installation, Devens, Massachusetts (*Sovereign, 2012a) and a *Final Action Memorandum, Shepley's Hill Landfill Barrier Wall, Former Fort Devens Army Installation, Devens, Massachusetts (*Sovereign, 2012b). Barrier wall construction details were presented in the *Final Removal Action Completion Report for Shepley's Hill Landfill Barrier Wall, Former Fort Devens Army Installation, Devens, Massachusetts (*Sovereign 2013a).

In December 2013, a final ESD was submitted to outline the LUCs implemented to restrict groundwater use and protect potential residential receptors from exposure to impacted groundwater migrating from the landfill (Sovereign, 2013c). A LUCIP was subsequently submitted in August 2014 to detail all LUCs described in the ESD, including implementation, maintenance and periodic inspections (Sovereign, 2014c).

1.4 Objectives

The objectives of this AR are as follows:

- Summarize landfill maintenance activities;

- Document landfill cap inspection to identify areas requiring future maintenance;
- Present landfill gas measurements at 18 gas vents and 25 permanent landfill perimeter gas monitoring wells to establish long-term trends with regard to gas production and venting;
- Summarize operations, maintenance, sampling, and reporting associated with the Arsenic Treatment Plant (ATP) and provide recommendations for any modifications;
- Present results of long-term monitoring (LTM) groundwater hydraulic and analytical monitoring including COC concentrations and field parameters
- Present the draft results of the 2015 revised modeling effort that is currently under EPA review, and
- Update the assessment of system hydraulic performance. last presented in the 2014 AR, based on data collected in 2015.

In addition to the recurring events detailed above, the AR also presents the results of any additional events performed throughout the year.

1.5 Report Organization

Section 2 of this report documents the routine landfill maintenance and inspection activities, and also includes the results of gas monitoring in both gas vents and perimeter soil gas wells. **Section 3** of this report presents the ATP operations, maintenance, and monitoring. **Section 4** summarizes the LTMMP groundwater monitoring results including synoptic water levels, barrier wall hydraulic performance monitoring, arsenic concentrations and other water quality data. **Section 5** presents the latest system performance assessment. Finally, **Section 6** presents conclusions and recommendations for future system operations, monitoring, and assessments.

2.0 LANDFILL MAINTENANCE AND MONITORING

As required by the LTMMP (Sovereign, 2015), SHL was inspected and routine maintenance performed in 2015. The annual inspection identifies and corrects any problems pertaining to the effectiveness of the cap system, erosion, and the conditions of vents and sampling points. A summary of the landfill cap maintenance, findings of the inspection, and results of landfill gas sampling are presented in the following sections. The landfill inspection checklist and supporting photographs are presented in **Appendix A**.

2.1 General Landfill Maintenance

The landfill was mowed on 01 and 02 October 2015 by Gatsby Grounds Co., Inc. of Lancaster, MA (Gatsby). Small shrub growth on the margins of the landfill was removed during the mowing event to maintain an effective cap system. The vegetation atop the utility berm was mowed during the October 2015 mowing event. The berm is intact and no effects to the berm were noted. Large growth was removed from the northern and southern swales during the October 2015 mowing activities. Mowing was conducted to the edge of the swales.

2.2 Landfill Inspection

On 7 October 2015, an annual inspection of the Shepley's Hill Landfill was conducted as required by the LTTMP. Features of the landfill that were inspected included the cover system, drainage system, gas vent system, access road, monitoring wells and piezometers. Observations were made regarding the vegetative cover, vegetative types, erosion, settlement and general conditions. The overall condition of the landfill was satisfactory.

A summary of findings and observations are presented below and within the landfill inspection checklist included in **Appendix A** along with supporting photographs.

2.2.1 Cover Surface

There was no evidence of poor conditions affecting the cover surface. No new depressions were observed on the cover surface. No new tree or shrub growth was observed on the landfill surface, and observed growth in the drainage areas was removed during the October 2015 mowing event.

2.2.2 Vegetative Growth

The vegetative growth was normal and appeared to have no major stressed areas. The landfill had been properly mowed during the October 2015 mowing event.

2.2.3 Landfill Gas Vents and Gas Points

The landfill gas vents were observed to be in good condition. All pipes are functioning and screens are present on vents to prevent any wildlife or debris from entering the vents. Additionally, all landfill gas points were observed to be in good condition.

2.2.4 Monitoring Wells and Piezometers

All monitoring wells and piezometers currently part of the LTMMP network are all in good condition.

2.2.5 Drainage Swales

Most of the southern drainage swale exhibited vegetative growth. Large growth was removed during the October 2015 mowing activities. Small growth and wetland plant life were not

disturbed, as they have become a natural retardant to erosive forces. The northern drainage swales in the vicinity of the ATP also exhibited vegetative growth. Large growth was removed from the drainage swales during the October 2015 mowing event, and only small growth remained during the October inspection.

2.2.6 Settlement

No new depressions were observed within the landfill.

2.2.7 Erosion

No erosion was observed across the landfill.

2.2.8 Access Roads

The land fill access road was observed to be in good condition.

2.2.9 Culverts and Catch Basins

Catch basins and culverts along the northern portion of the landfill were in good condition. Some growth was removed during the October 2015 mowing event along the entrance road to the ATP building to ensure proper function. The catch basins and culverts along the southern portion of the landfill were also in good condition.

2.2.10 Security/Fencing

There is no perimeter fencing along much of the wooded western boundary of the landfill (along Shepley's Hill); however, no roads have open access to the landfill. No breaches requiring repair were observed in the existing fence sections. Fence gates across roads that access the landfill are secured with chains and padlocks, and a security fence surrounds the ATP.

2.2.11 Wetland Encroachment

Wetland encroachment was observed in the swales located in the southern portion of the landfill. Overall, the individual areas of encroachment are infrequent and small and confined to the swales. Wetland encroachment is continually controlled by mowing the landfill surface and existing wetland species growth close to swales. This action will prevent the development and expansion of a wetland beyond the swale areas already invaded by wetland species.

2.2.12 Recommendations

During the landfill inspection conducted in October 2015, no landfill monitoring wells were noted as damaged or in need of repair. However, it is important to note that the inspection was limited to the landfill and did not include an inspection of off-landfill wells.

The following recommendations are suggested for 2016:

- Swales should be monitored for expanded growth of wetland species and vegetative growth during each annual inspection.
- Mowing should be continued on an annual basis to maintain the effectiveness of the cover system.
- Continue annual landfill inspections.

2.3 Landfill Gas Monitoring

Annual sampling of landfill gas vents and landfill gas points (LGPs) was completed on 20 October 2015. Sampling activities were conducted in accordance with procedures described in the MassDEP Landfill Technical Guidance Manual. Landfill gas sampling included the following parameters:

- VOCs concentration in parts per million (ppm);
- Percent oxygen (O_2) concentration in ppm;
- Hydrogen sulfide (H_2S) concentration in ppm;
- Percent lower explosive limit (LEL);
- Carbon monoxide (CO) concentration in ppm;
- Percent carbon dioxide (CO_2); and
- Percent methane (CH_4).

The landfill gas sampling was conducted using properly calibrated equipment. A LandTech Gem 5000 was used to measure CO_2 and CH_4, and a QRAE+ multi-meter was used to measure CO, H_2S, LEL and O_2. An Ion Science Tiger photoionization detector (PID) was used to measure total VOCs. Each gas sampling device was connected directly to the sampling port at the top of the probe/vent to measure initial levels of gas concentrations. After the initial measurements were recorded, two probe/vent volumes were purged from each probe/vent. Following purging, the gas sampling equipment was connected directly to the sampling port and post purge gas concentrations were measured and recorded. Refer to **Figure 2-1** for locations of landfill gas vents and LGPs. Results of the annual landfill gas monitoring are presented in **Table 2-1** and are discussed in the following sections. Refer to **Table 2-2** for landfill gas probe construction details. Landfill gas monitoring field forms are provided in **Appendix B**.

2.3.1 Perimeter Gas Monitoring and Results

Annual LGP monitoring was performed on 20 October 2015 during which barometric pressure was low and ranged from 29.88 to 29.90 inches Hg. Elevated levels of methane/LEL were not detected in LGPs located in the northern end of the landfill. However, elevated levels of methane/LEL were detected in a pair of LGPs located on the southern perimeter of the landfill; LGP-05-05X and LGP-09-05X.

2.3.2 Landfill Gas Monitoring and Results

Annual landfill gas vent monitoring was performed on 20 October 2015 in conjunction with the annual LGP sampling. Overall, gas vents in the center of the landfill exhibited the highest levels of methane/LEL and CO_2. However, the 2015 gas monitoring results are within historical limits in this area and throughout the landfill. Post purge methane levels ranged from below instrument detection limits to 24.9% in gas vent GV-15. It should be noted in Table 2-1 LEL measurements of 100% are representative of an overall measurement. Methane concentrations can interfere with total LEL concentrations giving high readings, therefore additional monitoring equipment is used to determine concentrations of H_2S, CO, CO_2, O_2, and methane.

Post-purge CO_2 levels ranged from below instrument detection limits to 24.3% in gas vent GV-17. Post purge O_2 levels ranged from below 1.0% in gas vents GV-9 and GV-12 to 20.9% in gas vent GV-1.

Post-purge VOCs levels ranged from below instrument detection limits in the majority of the gas vents to 0.4 ppm in gas vent GV-9. Post-purge CO levels ranged from below instrument detection limits in the majority of the gas vents to 1.0 ppm in gas vents GV-2, GV-7 and GV-11. All of the landfill gas vents exhibited levels of H_2S below instrument detection limits.

3.0 ARSENIC TREATMENT PLANT OPERATIONS, MAINTENANCE AND MONITORING

The SHL ATP treated and discharged approximately 26.3 million gallons of groundwater between 1 January and 31 December 2015, bringing the cumulative treated volume total to approximately 192.7 million gallons since system startup in 2006.

3.1 Operations

The ATP operations, maintenance, and monitoring history for the period of 1 January through 31 December 2015 are presented in the following sections.

3.1.1 System Description

The treatment system is designed to remove dissolved arsenic from extracted groundwater through co-precipitation with iron followed by microfiltration. The treatment system is housed in a 40-foot by 40-foot steel building and consists of the following components:

- Extraction system (two extraction wells);
- Chlorine dioxide (ClO_2) generation and addition to oxidize iron;
- Coagulation via a contact tank with a direct drive batch tank mixer;
- Microfiltration (MF) of the water to concentrate precipitated solids;
- Solids removal via an inclined plate clarifier (IPC);
- Bag filtration and discharge of the IPC decant water;
- Polymer aided flocculation of sludge using a filter bed roll-off (FBRO); and,
- Treated water discharge to the Devens Publicly Owned Treatment Works (POTW).

The extraction system consists of two extraction wells (EW) located at the northwestern portion of the landfill cap. These extraction wells, EW-1 and EW-4, are capable of achieving the required combined extraction rate of 50 gpm by either operating simultaneously or independently. Extracted groundwater enters the ATP and is dosed with chlorine dioxide which oxidizes and precipitates dissolved metals, including arsenic, iron, and manganese. These precipitates are then filtered by the MF system and the effluent or treated water is discharged to the Devens POTW collection system. Every 15 minutes, the MF control unit conducts flux maintenance (FM), which backwashes the filtered precipitates from the membranes. These solids are fed to the IPC and allowed to settle out of suspension and form a residual sludge. The backwash effluent supernatant is fed through two bag filters configured in parallel and discharged to the plant effluent sump. The sludge is then pumped out of the IPC, dosed with polymer to increase flocculation, and pumped to the FBRO. The accumulated sludge in the FBRO is removed from the plant at least twice a month for disposal.

A summary of on-line hours, flow totals, and operating status for each month is shown in **Table 3-1**. Historical monthly treatment totals are shown in **Table 3-2**.

3.1.2 System Efficiency and Routine Maintenance

During 2015, the treatment plant was operational approximately 85% of the total available hours during the calendar year (i.e., “up-time”), which is consistent with the 2014 average up-time. A significant part the non-operational time is due to routine plant maintenance and system repairs and performing clean-in-place (CIP) maintenance on the MF skid. Additional downtime is associated with non-routine systems maintenance, repairs, and upgrades as noted below in **Section 3.2.** When online, the average flow through the plant during the year was 58.9 gpm. The

plant achieved an effective average extraction rate (i.e., the extraction rate calculated by dividing the volume pumped by the elapsed time not the time actually on-line) of 50.0 gpm over the year. This is a significantly higher effective flow rate than in previous years due to upgrades made to the ATP to increase throughput. Further, after the system upgrades early in the year (discussed in Section 3.2), the average up-time for the system during the last six months of the year was 90%, and the average effective flow for those six months was almost 55 gpm.

The ATP system continues to generate a significant amount of sludge. The FBRO was emptied every one to two weeks in 2015, depending on the flow and after treatment of approximately 650,000 to 850,000 gallons of groundwater. The cause of the high sludge generation is the high concentration of inorganics (primarily iron) in the influent. Influent arsenic concentrations have continued to decrease when compared to influent arsenic concentrations at the time of startup of the ATP in 2006; however, the average annual combined inorganic concentrations (iron, arsenic, and manganese) remain high at approximately 64.5 ppm. Influent inorganic loading is discussed in more detail in **Section 3.3.1.**

A subcontracted vendor, Global Remediation Services Inc. (Global), uses a vacuum truck to remove the dewatered sludge from the FBRO. The sludge is transported by Global under a Non-Hazardous Waste Manifest for disposal at Turnkey Landfill, which is operated by Waste Management in Rochester, New Hampshire. By coordinating FBRO pump-outs with Global before the container was full, the sludge removal process was optimized which resulted in zero downtime due to the FBRO operations for the ATP in 2015. A total of 406.00 tons of sludge were removed in 2015. The FBRO pump-out history for 2015 is shown in **Table 3-3**.

The ATP microfiltration system continues to require periodic CIP procedures to prevent long-term fouling of the filter membranes. The CIP procedure is a multistep process that begins by flushing potable water though the MF skid after it is taken offline. Next, a 98% sulfuric acid (H_2SO_4) solution is cycled through the MF skid followed by a flush of potable water, a cycle of a 25% sodium hydroxide (NaOH) solution and then another flush of potable water. Prior to restart, the MF skid is filled with potable water one last time. The acid and caustic solutions are cycled through the MF skid at approximately 90°F and allow for the dissolution of the iron and manganese precipitate that accumulate on the filter membranes during forward flow.

Modifications have been made to the CIP procedure since March 2009. Prior to March 2009, the CIP events were conducted for approximately 30 hours every two weeks. The Army has continued to optimize system operations, and currently CIP events are conducted approximately every 17 to 25 days. The optimization was accomplished by further modifying the CIP procedure to include air scouring during acid and caustic circulation to facilitate the removal of precipitate. This modification appears to have increased the effectiveness of the CIP events, thereby increasing the time between CIPs and also resulting in a greater average extraction rate.

Optimizations to the CIP process have reduced the likelihood that an extended CIP (prolonged acid and caustic circulation times) or double CIP (acid solution recirculation/soak repeated after caustic solution recirculation) is conducted. Currently, extended CIPs are only conducted in situations when the level of filter fouling is greater than normal, most likely as a result of non-optimal dosage concentration of chlorine dioxide. The CIP process continues to be evaluated and refined to improve the process and minimize system non-pumping time. All system non-operational time associated with CIP procedures are detailed in **Table 3-1** for each month.

3.2 Non-Routine System Maintenance, Repairs, and Upgrades

This section details major system non-routine maintenance activities encountered or implemented, along with system upgrades completed during 2015. All shutdown and maintenance events, along with associated system downtimes, are included in **Table 3-1** for each month.

3.2.1 Microfilter Module Upgrades

As detailed in the 2014 Annual Report, upgrades to the MF skid occurred between 5 January 2015 to 16 January 2015. During this period, two new MF modules were installed on the existing MF skid to bring the ATP MF modules to a total of ten. The new MF modules operate in parallel and allow for the increase of the average flow rate and throughput of the ATP. As a part of this ATP upgrade, the following modifications were also made to accommodate the two new MF modules and ensure full and successful continued operation of the ATP:

- Replacement of the current contact, filter feed, and backwash tanks with larger volume vessels capable of supporting the increased flow rate of the ATP;
- Replacement of one of the effluent pumps to support the increased flow rate of the ATP;
- Completion of miscellaneous required plumbing and electrical modifications/upgrades;
- Increase of the ClO_2 dosing; and
- Completion of miscellaneous control, software and associated electrical modifications/upgrades.

On 1 June 2015, an isolation valve was installed on the discharge side of each MF module. The isolation valves allow for the manual isolation of each MF module during backwash events to increase air scour effectiveness and during CIP activities to focus acid and caustic circulation at the filters requiring a deeper cleaning.

3.2.2 Basket Strainer Rotating Assembly Replacement

On 30 January 2015, the rotating assembly inside the MF skid basket strainer was replaced. The original rotating assembly had been approaching the end of its useful life, and to be proactive it was replaced before it could fail.

3.2.3 Effluent Pump Foot Valve Replacement

On 22 February 2015, the foot valve for effluent pump #1 failed due to normal operational wear. This rendered effluent pump #1 inoperable. Because the foot valves for each effluent pump are located at the bottom of the effluent floor sump and their suction lines are secured to the side walls, removal from grade was not possible.

Consequently, a confined space entry of the effluent sump was conducted on 7 October 2015 to remove and replace the faulty foot valve for effluent pump #1 and to proactively replace the foot valve for effluent pump #2. As part of reinstallation, the foot valves and the associated suction lines were attached to the sump wall in a manner that will allow for future removal without entry into the sump.

*3.2.4 Chlorine Dioxide Feed Pum*p

On 15 March 2015, the chlorine dioxide feed pump failed due to normal operational wear causing a low flow alarm which caused the system to shutdown. The feed pump was promptly replaced on the same day, and the system was restarted.

3.2.5 Hot Water Heater Replacement

On 10 April 2015, the existing 60-gallon hot water heater was replaced with a new 120-gallon hot water heater. Due to MF upgrades in January 2015, additional hot water was required during CIP activities.

3.2.6 Microfiltration Solenoid Valve Output Module Replacement

On 20 June 2015, the Output Module that controls the operation of the air scour solenoid valve ceased operating. The Output Module was replaced on 21 June 2015, and no damage to the solenoid valve was determined to have occurred during the system failure events.

*3.2.7 Chlorine Gas Regulator Rebuil***d**

On 22 July 2015, the system was shut down due to a faulty chlorine gas regulator. The failure of the regulator was attributed to corrosion. On 24 July 2015, the regulator was rebuilt, and the system was restarted.

3.2.7.1 Chlorine Dioxide Skid Potable Water Booster Pump Solenoid Valve Replacement

On 2 October 2015, the system shutdown due to failure of a solenoid valve located on the chlorine dioxide skid potable water booster pump. The failure of the solenoid valve was attributed to normal operational wear. The system was restarted on 3 October 2015 following replacement of the solenoid valve.

3.2.8 EW-1 Pump, Motor and Power Cable Replacement

On 30 November 2015, the Variable Frequency Drive (VFD) for extraction well EW-1 indicated a pump motor over current fault. On 4 December 2015, Geosearch Inc. of Fitchburg, Massachusetts removed the pump and motor from EW-1. The pump, motor and power cable were subsequently replaced and reinstalled into the well. The pump intake was then set at 60 feet below grade.

3.3 ATP Monitoring

The following sections detail ATP influent and effluent sampling for arsenic and other COCs conducted during 2015. The associated laboratory analytical reports are included as **Appendix C**, and data validation is further discussed in **Section 5.5.5**.

3.3.1 ATP Influent Monitoring

3.3.1.1 Influent Inorganic Monitoring

Influent inorganic loading characteristics are assessed quarterly. Influent inorganic sampling is not required either by the ATP's MassDevelopment Landfill Discharge Permit or by the LTMMP, but is monitored to gauge system loading and to ensure that a sufficient iron concentration is maintained to promote iron and arsenic co-precipitation and coagulation. The original system design recommended a minimum iron concentration of 40 ppm. Current influent iron concentrations remain well above this level. The ATP was designed with a ferric chloride addition system with ability to add ferric chloride to the influent if deemed necessary based on results of influent organic sampling; however, due to dissolved iron concentrations in the groundwater, this component of the system was never used. It has subsequently been decommissioned.

The total inorganic loading (iron, arsenic, and manganese) has declined since system start-up in 2006, but remains high enough for effective treatment, averaging 64.45 ppm for 2015. Individual average concentrations for iron, arsenic and manganese were 59.31, 2.74 and 2.40 ppm, respectively. Influent loading concentrations of iron, arsenic, and manganese are presented in **Table 3-4** and graphically illustrated in **Figure 3-1**.

3.3.1.2 Influent Dissolved Gases and VOC Monitoring

As required by the LTMMP, annual ATP influent sampling was conducted for VOCs and dissolved gas (methane and ethane) using off-site analysis on 9 September 2015. Influent samples were collected by an ATP operator and submitted to Accutest Laboratories of Marlborough, Massachusetts (Accutest) for analysis.

The concentrations of methane were 1,770 micrograms per liter (µg/L) and 858 µg/L in the influent sampled from EW-01 and EW-04, respectively. Current methane concentrations are just slightly above the 2014 sampling results. Ethane was not detected above laboratory detection limits in the influent samples. Results of influent ethane concentrations sampling are consistent with 2014 sampling results.

Results of the influent VOC sampling indicated total VOC concentrations of 24.9 µg/L and 4.21 µg/L in influent sampled from EW-01 and EW-04, respectively. These VOC concentrations included detections of p/m Xylene, Ethyl ether, Benzene, 1,4 Dichlorobenzene and Chlorobenzene. Extraction wells EW-01 contained an estimated chlorobenzene concentration of 0.76 µg/L, 1.1 µg/L of benzene, an estimated 1,4 dichlorobenzene concentration of 0.93 µg/L, 14.7 µg/L of p/m xylenes and 7.4 µg/L of ethyl ether. Extraction well EW-04 contained an estimated chlorobenzene concentration of 0.51 µg/L and an estimated ethyl ether concentrations of 3.7 µg/L. No other VOCs were detected at EW-04. Detections of low concentrations of VOCs in ATP influent are consistent with historic sampling results.

Annual influent dissolved gas and VOC sampling results are detailed in **Table 3-5**.

3.3.2 ATP Landfill Discharge Permit and Effluent Monitoring

The USACE is authorized to discharge treated groundwater from the ATP to the Devens Municipal Sewerage System in accordance with Landfill Discharge Permit Number 020. The current permit, which mandates effluent sampling for arsenic and other select parameters on a monthly, quarterly, and/or annual basis, was last amended on 28 June 2013 and is in effect until 28 June 2016. The current permit was subsequently modified on 11 July 2014 to increase the maximum allowable daily discharge flow from the ATP from 72,000 gallons per day to 93,600 gallons per day in preparation for the 2015 system upgrades.

3.3.2.1 Permit Required Effluent Arsenic Monitoring

In accordance with the ATP's discharge permit, the collection of effluent samples for the off-site analysis of arsenic concentration is required on a monthly basis. The discharge permit contains a Special Condition which applies an effluent limitation of 75 µg/L of arsenic for each monthly sampling event. Effluent samples were collected by an ATP operator each month throughout the year and submitted to Accutest of Marlborough, Massachusetts for analysis.

Overall the plant has been effective at removing arsenic from the influent water stream. All results were less than the effluent limitation of 75 µg/L. The monthly effluent arsenic results

ranged from 5.5 µg/L (September 2015) to 58.4 µg/L (March 2015) with an average effluent arsenic concentration of 18.9 µg/L. Monthly effluent arsenic sampling results are detailed in **Table 3-6**.

3.3.2.2 Quarterly Permit Required Effluent Monitoring

The ATP's discharge permit requires quarterly sampling of plant effluent for metals (barium, manganese, and magnesium) and other select parameters (chloride, nitrate, and sulfate) for laboratory analysis. Quarterly effluent samples were collected on 5 March, 5 June, 9 September, and 7 December 2015. All samples were submitted to Accutest for analysis. Concentrations of all parameters sampled as part quarterly effluent monitoring were within permit defined discharge limitations. Quarterly effluent sampling results are included in **Table 3-7**.

3.3.2.3 Annual Permit Required Effluent Monitoring

The ATP's discharge permit requires annual sampling of plant effluent for laboratory analysis of select metals along with Total Toxic Organics (TTO) and Total Petroleum Hydrocarbons (TPH). TTO is determined by the summation of results of VOCs, semi-volatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs). Annual effluent samples were collected during the 9 September 2015 quarterly event and submitted to Accutest for analysis. Concentrations of all parameters sampled as part annual effluent monitoring were within permit defined discharge limitations. Annual effluent sampling results are shown in **Table 3-8**.

3.4 ATP Optimization

The deployment of pressure transducers in the extraction wells and the MF module upgrades in the beginning of January 2015 has allowed for further optimization of the ATP. The pressure transducers deployed in the extraction wells have eliminated the potential exposure of the well screen to air that is known to cause iron fouling. Thus, system downtime has been reduced and the system can now be controlled in a manner to optimize flow rates to best meet hydrogeologic capture goals. The MF module upgrades have increased the total number of MF modules to a total of ten and has allowed for the increase of the average flow rate and throughput of the ATP.

3.5 Recommendations

The following recommendations and follow-up actions were conducted in 2015:

- To increase air scour effectiveness for each MF module, it was recommended to install isolation valves on the discharge side of each MF module to allow for the manual isolation of each MF module. This work was subsequently conducted in June 2015.
- To limit the necessity of confined space entry activities at the ATP, it was recommended that all equipment located within the plant sumps were accessible at floor grade. Consequently, the foot valves and associated suction lines located within the effluent sump of the plant were attached to the sump wall in a manner that would allow for future removal within sump entry in October 2015.

The plant will continue to operate at 50+ gpm each month with continued maintenance to include the following:

- To prevent unscheduled downtime due to the build-up of precipitate within the system influent piping that could restrict influent flow, influent piping will be inspected annually and cleaned, if necessary, during a scheduled CIP event.
- To minimize operational downtime associated with equipment failure, system components will be regularly inspected and replaced prior to the end of their operational life.

4.0 LAND USE CONTROLS

In accordance with the Land Use Control Implementation Plan (LUCIP) (Sovereign, 2014), monitoring and maintenance activities are required to occur annually. These include Institutional Controls and Affirmative Measures. The Institutional Controls include monitoring the LUCs in accordance with the LTMMP as well as the Town of Ayer and MassDEP enforcement related to the moratorium on removing groundwater in the NIA. Affirmative measures include reminder mailings to area residents and property owners in the NIA and annual meetings between the Army and BOH to review the groundwater restrictions.

As outlined in the LUCIP (Sovereign, 2014) Monitoring and Maintenance activities include annual review to ensure LUC performance objectives are met. These include:

Institutional controls

- The Area of LUCs is actively monitored in accordance with the SHL Long Term Monitoring & Maintenance Plan (LTMMP) and any required changes to the area of LUCs will be made to the plan; and
- Monitor and report on the implementation and enforcement of the ICs by the Town of Ayer and MassDEP, including the restriction of groundwater extraction and use within the NIA; record any instances where the groundwater use was identified and corrective actions taken.

Alternative Measures

- Reminder mailings of the pamphlet (**Appendix I**) and contact information will be distributed annually;
- A list of all property owners and resident addresses within the Area of LUCs will be generated for implementation of the LUCIP actions noted;
- Distribution of the LUCIP to appropriate parties; and
- The Army will meet with the BOH annually, or if a change in the groundwater contamination distribution in the aquifer occurs.

A review of the ICs was conducted in 2015. An interview was conducted with the Ayer Board of Health on May 12, 2015 to confirm no new drinking water or irrigation wells were installed in the LUC area and that they are aware of no additional wells installed in the area to their knowledge. During 2015 LTM activities no changes were observed in the LUC area.

Alternative measures identified in the LUCIP including educational pamphlets were mailed to owners and residents of the NIA in May 2015 to ensure that owners and residents were informed of the restriction of groundwater use north of SHL in the Town of Ayer, Massachusetts. The list was identified using information from Ayer Assessor's Office and Ayer DPW.

The boundaries of the LUC area are detailed on **Figure 1-4**, and a copy of the pamphlet is included in **Appendix I**. A copy of the LUCIP checklist is included in Appendix I. . A door to door survey was completed in 2014, the next door to door survey will be completed in 2019. It should be noted no deficiencies were observed.

5.0 GROUNDWATER AND HYDRAULIC MONITORING

Groundwater monitoring activities were conducted at SHL in accordance with the *Long Term Monitoring and Maintenance Plan (LTMMP) Update* (Sovereign, 2015). LTM samples were collected in June 2015 (spring semi-annual) and October 2015 (fall annual). The results of these sampling events are presented in the following sections.

5.1 Long Term Monitoring and Maintenance Plan Modifications

The LTMMP was updated **(Sovereign, 2015)** and implemented. The spring and fall events were conducted in accordance with LTMMP. **Table 5-1** details the monitoring wells/piezometers currently included in the LTM program as detailed in the 2015 Final LTMPP Update (Sovereign, 2015). **Figure 5-1** displays the monitoring wells/piezometers locations in the LTMMP monitoring network.

5.2 Groundwater Elevation Monitoring

5.2.1 Barrier Wall Performance Monitoring

During the construction of the barrier wall in 2012, five (5) sets of overburden groundwater piezometers (PZ-12-01 through PZ-12-10) were installed along the barrier wall alignment, with one point per set located up-gradient of the barrier wall (westerly side) and the other down-gradient (easterly side) of the barrier wall, to provide hydraulic performance monitoring data for the barrier wall. The locations of the barrier wall piezometers are presented on **Figure 1-2**.

These piezometers were gauged during the spring and fall 2015 site-wide gauging events to monitor barrier wall performance. During each monitoring event, an electronic water level meter was used to measure depth to water (DTW) with an accuracy of ± 0.01 feet from the top of casing of each piezometer. The results of the monitoring events demonstrated a difference in hydraulic head at each piezometer couplet location along the barrier wall. The maximum hydraulic head differential observed in paired piezometers during the June and October 2015 monitoring events were 1.79 ft. and 1.37 ft., respectively, in PZ-12-09 and PZ-12-10, which are located at the southern end of the wall. The minimum head differential observed in paired piezometers during the June and October 2015 monitoring events were minus 1.24 ft and minus 1.17 ft., respectively, in PZ-12-01 and PZ-10-02, which are located at the northern end of the wall. It is presumed that the greater head differential to the south is due to a combination of a less saturated thickness in the southern portion of the barrier wall as compared to the northern portion and the expected increase in velocity (and corresponding lowering of hydraulic head) of the groundwater as it flows north. A summary of barrier wall piezometer hydraulic monitoring data collected in June and October 2015 including the differential in water table elevations between each pair of piezometers is presented in **Table 5-2**.

Vector analysis was conducted to evaluate hydraulic gradients at the barrier wall. This included triangles west of the barrier wall: PZ-12-10/PZ-12-08/SHM-10-07, RSK27A/PZ-12-08/SHM-10-07, RSK27A/PZ-12-08/PZ-12-06,RSK27A/RSK28A/PZ-12-06,PZ-12-04/RSK28A/PZ-12-06, PZ-12-04/RSK28A/RSK32A, PZ-12-04/SHL-20/RSK32A, PZ-12-02/SHL-20/RSK34, RSK34/SHL-20/RSK32A,RSK34/PZ-12-02/RSK35A,and RSK34/SHM-11-06/RSK35A. Wells located east of the barrier wall included PZ-12-09/RSK25/RSK37, RSK15/RSK25/RSK37, RSK15/RSK25/PZ-12-07, RSK15/PZ-12-05/PZ-12-07, RSK19/PZ-12-03/PZ-12-01, RSKl9/RSK7 /PZ-12-01, N2P2/RSK7 /PZ-12-01, N2P2/SHP-01-37X/PZ-12-01, RSK35A/SHP-

01-37X/PZ-12-0l, RSK35A/SHP-01-37X/SHP-05-44, and SHP-01-36X/SHP-01-37X/SHP-05-44. These are included in **Appendix J**.

5.2.2 Site-Wide Monitoring Events

Groundwater elevations at SHL monitoring wells and piezometers, including the barrier wall piezometers, were gauged as part of site-wide monitoring events in June and October 2015. During each event, an electronic water level meter was used to measure DTW with an accuracy of ± 0.01 feet from the top of casing of each monitoring well/piezometer. At staff gauges, the water level was read to the nearest 0.01 ft from the measurements on the staff.

The results of each 2015 site-wide monitoring event illustrate a general groundwater flow from the southwest to the north towards Nonacoicus Brook with a deflection of groundwater flow to the north in the area west of the barrier wall. **Table 5-1** provides the relevant characteristics of the LTMMP monitoring wells/piezometers including the geological unit(s) the wells are screened in and screen depths or elevations. Groundwater elevations for all monitoring events are listed in **Table 5-3**. Groundwater contour maps showing the water table elevations measured in June and October 2015 are presented as **Figures 5-2 and 5-3**, respectively.

5.3 Groundwater Sampling

As required by the LTMMP, semi-annual groundwater sampling events were conducted at SHL in the spring and fall of 2015. Groundwater samples were obtained from a total of 24 monitoring well locations during the spring sampling event from June 4 through June 9, 2015. Groundwater samples were obtained from a total of 93 monitoring well locations during the fall sampling event from October 21 through October 29, 2015. One well (SHM-13-08) was sampled on December 22, 2015 due to an obstruction in October which prevented sampling at that time.

All groundwater samples were collected in accordance with the EPA Low Stress Purging and Sampling Procedures, Revision 3 (USEPA, 2010) and were field filtered using a 0.45-µm filter. Groundwater was purged using either a stainless steel bladder pump with a compressed nitrogen gas source or a peristaltic/inertial pump depending on the well screen elevation within the monitoring well. Groundwater was purged through a properly-calibrated YSI multi-meter and a turbidity meter to monitor groundwater chemistry parameters, and samples were collected upon achievement of field parameter stability. If the field parameters did not stabilize within 2 hours, samples were collected at the 2 hour time mark, in accordance with the EPA Standard Operation Procedure (SOP). All samples were submitted to Accutest in Marlborough, MA for the following analyses: dissolved (field filtered) metals (arsenic, iron and manganese), sulfate, total alkalinity, dissolved organic carbon (DOC), and chloride. As part of this sampling program, QA/QC procedures included the use of duplicate samples, MS/MSDs.

A summary of 2015 groundwater sampling results is provided in **Table 5-4**. All groundwater monitoring field forms from each groundwater sampling event are provided in **Appendix E**.

5.4 Groundwater Sampling Results

5.4.1 Arsenic Concentration Results

Dissolved arsenic results from the sampling events conducted in 2015 are as follows:

- Results of the June 2015 groundwater sampling event documented concentrations of dissolved arsenic above the established cleanup level of 10 µg/L in groundwater sampled

from 12 of the 24 monitoring wells/piezometers, with the highest concentration of 2,460 µg/L detected in SHM-13-06.

- Results of the October 2015 groundwater sampling event documented concentrations of dissolved arsenic above the established cleanup level of 10 µg/L in groundwater sampled from 59 of the 93 monitoring wells/piezometers, with the highest concentration of 5,450 µg/L detected in SHM-10-15.

Figure 5-4 presents dissolved arsenic concentration results for the 2015 sampling events. **Table 5-4** presents detailed results of the sampling events. A summary of historic arsenic concentration data through 2015 for selected monitoring wells/piezometers is provided in **Table 5-5**. Arsenic concentration data for select wells is plotted in chart format in **Appendix F**.

5.4.2 Arsenic Concentration Trends

Arsenic data from 43 site-wide monitoring wells with a minimum of five rounds of recent data were evaluated using ProUCL Mann-Kendall statistical software for environmental applications. Mann-Kendall tests were performed on the data set for each monitoring well to determine statistically significant trends in total or dissolved arsenic concentrations. The arsenic concentration trends identified were either decreasing or increasing or had insufficient statistical evidence of a significant trend at the specified level of significance. In the cases where a laboratory result was below the laboratory detection limit, a value of one was used for these data points in the analysis.

Based on the results of the ProUCL analysis, the following data trends were identified:

Statistically Significant Evidence of a Decreasing Trend	Statistically Significant Evidence of an Increasing Trend	Insufficient Statistical Evidence of a Significant Trend
N-5, P-1	SHL-22	SHL-8D
SHL-5	SHM-05-41C	SHL-8S
SHM-96-5B	SHM-10-02	SHL-9
SHM-05-41A		SHL-15
SHM-05-41B		SHL-23
SHM-10-13		SHM-05-40X
SHM-10-15		SHM-05-42A
SHM-13-03		SHM-05-42B
SHM-13-06		SHM-07-03
SHM-13-07		SHM-10-03
SHM-93-22C		SHM-10-04
SHM-96-5C		SHM-10-05A
SHM-99-31C		SHM-10-06
SHM-99-32X		SHM-10-06A

Statistically Significant Evidence of a Decreasing Trend	Statistically Significant Evidence of an Increasing Trend	Insufficient Statistical Evidence of a Significant Trend
		SHM-10-07
		SHM-10-08
		SHM-10-10
		SHM-10-11
		SHM-10-12
		SHM-10-14
		SHM-10-16
		SHM-13-02
		SHM-13-04
		SHM-13-05
		SHM-13-08
		SHM-93-22B
		SHP-99-29X

ProUCL outputs for each well are included as **Appendix G**. It should be noted that insufficient data exists for the below locations. The ProUCL software requires a minimum of three data points to create a trend.

EPA-PZ-2012 1A/B	SHM-13-01
EPA-PZ-2012 2A/B	SHM-13-14S/D
EPA-PZ-2012 3A/B	SHM-13-15
EPA PZ-2012 4 A/B	SHP-13-03
EPA PZ-2012 5A/B	EPA PZ-2012 7 A/B
EPA PZ-2012 6A/B	SHL-12
SHL-24	

5.4.3 Other COC Results

The other COCs detected at concentrations above established cleanup levels in groundwater sampled from LTMMP network monitoring wells/piezometers during the 2015 groundwater sampling events included iron, manganese, and sodium. Concentrations of dissolved iron, above the established cleanup level of 9,100 µg/l, were detected in groundwater collected from 11 monitoring wells/piezometers during the June 2015 groundwater sampling event and 40 monitoring wells/piezometers during the October 2015 sampling event. The highest

concentration of dissolved iron (113,000 µg/l) was detected in groundwater sampled from SHM-13-08 in June 2015.

Concentrations of dissolved manganese above the established cleanup level of 1,715 µg/l were detected in groundwater collected from 10 monitoring wells/piezometers during the June 2015 groundwater sampling event and 36 monitoring wells/piezometers during the October 2015 groundwater sampling event. The highest concentration of dissolved manganese (16,000 µg/l) was detected in groundwater sampled from SHM-10-10 in October 2015.

5.4.4 Groundwater Monitoring Field Parameters

Water quality parameters were collected during groundwater sampling. Groundwater was purged through a flow-through cell equipped with a YSI multi-meter and used to monitor field parameters including pH, specific conductivity, DO, temperature, and oxidation reduction potential (ORP). ORP is a particularly significant field parameter at SHL. Since arsenic and iron are mobilized under reducing conditions, be they landfill-induced or due to natural conditions, higher iron and arsenic concentrations are expected in locations where negative ORP values indicate reducing conditions. All monitoring wells/piezometers from which groundwater samples, that contained dissolved arsenic concentrations above the established MCL of 10 µg/l, were collected also exhibited negative ORP values with the exception of SHM-13-04 during the June 2015 event and SHL-5, SHL-22, SHM-93-22B, SHP-99-29X, SHP-01-37X and SHM-05-41A during the October 2015 event.

Arsenic concentrations and associated field ORP measurements from the June and October 2015 groundwater sampling events are detailed in **Table 5-4** along with additional field parameter measurements collected during the 2015 sampling events.

5.4.5 Data Validation

Data validation was performed for each sample delivery group (SDG) from the groundwater profiling, the groundwater sampling events, and the ATP influent and effluent monitoring using the ADR.net (Automated Data Review) software along with a chemist review of the ADR results. The ADR output was adjusted by the chemist based on professional judgment to complete the validation process. The laboratory's analytical data packages were reviewed to assess adherence to acceptable laboratory practices and the data validation requirements specified in Massachusetts Department of Environmental Protection (MassDEP), Massachusetts Contingency Plan (MCP) Compendium of Analytical Methods, EM-200-1-10, and the Department of Defense Quality Systems Manual (QSM) for Environmental Laboratories, and applicable analytical methods. The level of data validation was performed with reference to the project Quality Assurance Project Plan (QAPP) and EPA Region I Tier II Guidance. For Tier II data review, data quality objectives were assessed by review of the Contract Laboratory Program-like summary forms, with no review of the associated raw data. Laboratory analytical reports are included as **Appendix C,** and data validation reports are included in **Appendix D.**

5.5 Monitoring Program Optimization

An update to the LTM well network was included in the Final *Long Term Monitoring and Maintenance Plan Update* (Sovereign, 2015). The LTMMP groundwater monitoring wells were selected for assessment of remediation effectiveness from existing wells based on historical analytical results and both hydrologic and geochemical monitoring and modeling to provide representative samples in key sub-areas of the SHL remedy. The LTM includes wells in the

upgradient area entering the aquifer at the SHL; landfill area wells within the landfill; barrier wall area wells to monitor performance of the barrier wall; nearfield area wells to evaluate hydraulic capture at the ATP; and NIA wells to monitor groundwater downgradient of the ATP. It is recommended hydraulic measurements at the two extraction wells, EW-1 and EW-4 be included in the semi-annual hydraulic monitoring.

6.0 SYSTEM PERFORMANCE METRICS AND ASSESSMENT

Annual performance assessments have been focused on system hydraulics and capture/control of groundwater at the north end of SHL. Consistent with EPA guidance including A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems (USEPA, 2008), a multiple lines of evidence approach was taken with respect to performance assessment. The assessment components include the following:

- Hydraulic Capture Zone Analysis
  - Gradient Vector Analysis
  - Comparison to Numerical Model Results
  - Capture Zone Width Calculation
  - Drawdown Assessment
- Geochemical Monitoring
  - Advective Travel Time Analysis
  - Geochemical Assessment

Table 6-1 provides a description of each assessment component, its data requirements, and a brief summary of the results. Additional details are provided in the following sections.

6.1 Hydraulic Capture Assessment

Those components of the hydraulic capture assessment that have been updated for 2015 are presented in the following subsections. The evaluation of capture continues using the same lines of evidence as have been evaluated in past Annual Reports as noted above.

In the 2014 Annual Report, the field measured water levels from April and October 2014 were used for the gradient vector analysis, with the results then being compared to the 2013 analysis summary.

The capture zone analysis using groundwater model simulations included in this Annual Report represents the third year that a revised version (SHL-300) of the model has been used. The model revision and capture simulation results are described further below.

Both the gradient vector analysis and numerical model results have been updated using data from 2014 and are provided in the subsections below. Because these two lines of evidence provide the strongest indication of capture, the capture zone width calculation and drawdown assessment have not been updated, but are included in **Table 6-1**.

6.1.1 Gradient Vector Analysis

Gradient analyses presented in previous annual reports involved the calculation of gradient vectors for selected well triplets (3 adjacent wells with similar screened intervals) using data from synoptic water level surveys. The conclusion noted in the 2014 Annual Report was that gradient vectors in the near-field area are generally directed toward the extraction wells, while far-field wells exhibit an equal or greater apparent variation due to seasonal changes in water table elevation.

For this Annual Report, the well triplets used historically in the 2007 to 2014 Annual Reports were used to evaluate flow vectors. The results of the 2015 analysis are presented on **Figure 6-1** along with historic vectors from past evaluations conducted from 2007 to 2014 and are consistent

with vectors from previous data sets. In summary the well triplet immediately east of the extraction wells show flow towards the extraction system, while the other well triplet shows greater apparent variation due to seasonal changes in water table elevation. While not definitive by itself, the gradient vector evaluation is a valuable line of evidence for capture effectiveness and provides a basis to compare numerical model results for consistency.

6.1.2 Comparison to Numerical Model Results

The SHL groundwater flow numerical model underwent a significant revision in 2015. A memo summarizing the revisions and presenting preliminary results of the revised model is included in **Appendix H**. This modeling effort updated the previous numerical flow model for the Site described in the 2013 Groundwater Modeling Report (Sovereign, 2013). The model revisions were developed through discussions with USEPA and MADEP during a two-day meeting conducted in April 2015. In general, it was agreed that the areal extent of the 2013 model, designated as SHL200, was appropriate and that input boundary conditions should be revised to reflect available site-specific temporal data. The revised model simulates temporal site conditions based on available data by quarterly stress period and provides an appropriate tool to help develop our understanding of the complex flow system at the Site. The revised model was utilized to evaluate flow paths near the landfill, to evaluate the performance of the existing groundwater capture system and to better understand groundwater flow downgradient from the capture system.

6.1.2.1 Model Extent and Layering

The model is consistent with the 2013 model and consists of 318 rows and 312 columns with variable grid spacing from 10 to 500 feet. Finer grid spacing is used near the groundwater extraction wells where grid spacing is as fine as 10 feet by 10 feet, in order to better simulate water level changes in response to pumping. The model covers an area of approximately 4.3 square miles and extends approximately 2.5 miles from the Nashua River on the western boundary to the eastern edge of Grove Pond on the eastern boundary.

The layering in the 2013 model was revised to include a second bedrock layer that simulates an upper fractured bedrock zone overlying more competent bedrock. In the 2013 model, the bedrock layer (Layer 5) was specified as 100 feet thick. The revised model specifies the fractured bedrock in Layer 5 with a thickness of 50 feet and includes an additional Layer 6 to simulate more competent bedrock; Layer 6 has a thickness of 250 feet.

Consistent with the 2013 model, Layers 1 to 3 represent the silty sand overburden encountered over much of the Site. The overburden layer thicknesses were revised to provide three layers of equal thickness; this was achieved by dividing the approximate saturated thickness above the till by 3. Layer 4 represents till overlying bedrock with variable thickness in the vicinity of the landfill and a uniform thickness of five feet in the remainder of the model area. In the SHL vicinity and North Impact Area (NIA), the top elevation of the till and the bedrock surfaces were developed using the 3D Environmental Visualization System (EVS) model developed for the Site with data from observed elevations of till and bedrock obtained from boring logs.

6.1.2.2 Model Analysis

The calibrated post-barrier wall sub-model (SHL300T2) was used to evaluate capture of the ATP through particle track analysis using MODPATH. To predict the extent of the capture zone at 2015 pumping rates, particles were released in a ring around each recovery well and particles

were tracked in reverse starting at the end of the SHL300T2 simulation. The results of the analysis indicate that at the current 2015 pumping rates, the zone of capture extends across the full width of the landfill.

An additional analysis using forward particle tracking was conducted to evaluate flow paths from site monitoring well locations where arsenic exceedances have been observed. The particles were released at the beginning of the simulation in 2012. The results of the analysis indicate that particles released in landfill monitoring wells located upgradient from the ATP are captured. The flow paths from monitoring wells downgradient of the ATP in the NIA migrate in a northwesterly direction towards Nonacoicus Brook. It should be noted that the flow paths follow a more westerly direction compared to the flow paths predicted by the 2013 model (Sovereign, 2015). In addition, some particles do not discharge directly to Nonacoicus Brook but migrate beneath the brook before discharging to the brook further downstream. This is likely due to the localized hydraulic influence at the beaver dam in Nonacoicus Brook. This is consistent with the vertical gradients observed in SHM-13-14S and SHM-13-14D that indicates the direction of flow fluctuates and is not consistently upward.

At the request of EPA, additional forward particle track analysis was implemented through monitoring locations SHM-11-06 and SHP-05-44. The analysis included the release of evenly spaced particles along the transect in Layers 1 through 5. Particle start time was specified to simulate the current operation of the groundwater capture system since upgrades were completed in 2014. The results of the analysis indicate that the ATP with the exception of the outermost western edge captures most particles released across the section. The particles at the western edge originate at shallow depths in the overburden and bedrock, and migrate towards SHL-23 and then northwesterly towards Nonacoicus Brook. Arsenic concentrations in monitoring wells along this flow path (SHL-23, EPA-PZ2012-7A, SHM-07-03, SHM-10-01) are below the cleanup level of 10 µg/L, indicating that the shallow area on the western edge of the landfill is not a significant source of arsenic.

6.1.2.3 Model Conclusions

The 2015-revised model is a reasonable representation of the complex hydrogeologic conditions present at the Site. Through the specification of measured temporal boundary conditions and calibration of simulated groundwater elevations to measured targets over the time period 2006 to 2015, the model simulates average quarterly hydraulic conditions over the model period and provides a useful tool to evaluate groundwater flow at the Site.

6.1.3 Geochemical Monitoring Assessment

As presented in **Section 5.0** and based on available monitoring data, elevated metals concentrations and negative redox potential persist approximately 1,250 feet downgradient of the landfill toe. Maximum arsenic concentrations in this area are at ppm levels and impacted groundwater primarily occurs in the lower half of the overburden aquifer, where its vertical position as it extends downgradient is controlled by the elevation of the bedrock-overburden contact. Impacted groundwater also exists outside the landfill footprint in the vicinity of Red Cove. In contrast to the NIA, maximum arsenic concentrations near Red Cove are lower and, because the overburden aquifer is considerably thinner at this location, the magnitude of mass flux toward the pond historically has been much smaller (and appears to be restricted now that the barrier wall has been completed).

Arsenic concentrations in downgradient wells vary as detailed in **Section 5.4**. As discussed in **Section 6.1**, the extraction wells are preventing flow of groundwater from the landfill, yet the persistence of arsenic in wells downgradient of the extraction system indicates that other geochemical conditions in that area have a stronger impact on the mobilization of arsenic from naturally occurring sources and that it will take a considerable amount of time to reduce downgradient arsenic concentrations.

6.3 Performance Assessment Summary

Consistent with EPA guidance including *A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems* (USEPA, 2008), a multiple lines of evidence approach was taken with respect to the performance assessment. The individual assessment components, their data requirements, and a brief summary of the results are provided in **Table 6-1**.

With respect to the hydraulic capture zone analysis, the lines of evidence evaluated above indicate correspondence to the expected aquifer response to pumping resulting in the capture of groundwater at the north end of SHL. Despite apparent minor seasonal fluctuations and brief system operational shutdowns, the extraction wells are effective in maintaining a capture zone across the toe of the landfill as designed.

With respect to the geochemical monitoring data, conditions in the downgradient aquifer including the ongoing arsenic mobilization in the NIA demonstrate that it will take hundreds of years to 'flush' residual carbon and remobilized arsenic in groundwater from the area of attainment (Sovereign, 2011a). While the existing hydraulic data shows the ATP is achieving capture of groundwater at the north end of SHL, the remedy is not capable of achieving MCLs throughout the area of attainment in a reasonable amount of time and, even if the system were capable, it would need to operate indefinitely to maintain any improvements in groundwater quality as the on-going presence of oxygen-depleted groundwater beneath the landfill will continue to mobilize arsenic in hydrated ferric oxide coated sands for the foreseeable future.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations resulting from the landfill monitoring and maintenance, remedy operations and performance, and long-term monitoring at the SHL during 2015 are summarized in the following sections.

7.1 Conclusions

7.1.1 Landfill Monitoring and Maintenance

- In order to maintain the effectiveness of the existing landfill cover system as a remedy component of the SHL, inspection, monitoring, and maintenance of the landfill and the cap system was completed during 2015, as detailed in **Section 2.0**.
- The landfill was mowed in October 2015. Small trees and shrub growth were removed in various areas during the mowing event to maintain an effective cap system.
- Landfill gas vents results were generally consistent with historical results and indicate proper landfill gas venting.

7.1.2 SHL Remedy Operations and Performance

- The overall condition of the landfill the cap system is satisfactory and the cap continues to impede the infiltration of surface water to the underlying aquifer resulting in the diversion of groundwater flow to the north.
- The consistency of landfill gas vent results with historical data confirms that the cap continues to maintain an effective barrier to meteoric water infiltration to the landfill.
- The barrier wall has proven effective in mitigating flow to Red Cove/Plow Shop Pond as demonstrated through hydraulic monitoring. Results of the hydraulic monitoring events conducted in 2015 demonstrated a difference in hydraulic head at each piezometer couplet location along the barrier wall. With the barrier wall in place, flow patterns in the Red Cove area have changed permanently, with reduced gradient toward the pond east of the wall and greater gradient to the north on the west side of the wall.
- During 2015, the ATP was operational approximately 85% of the total available hours during the calendar year. The percentage of time the plant was operable increased since 2014 due to upgrades made to the system in the first half of the year. The upgrade that made the largest enhancement to system throughput was addition of two new microfiltration modules. Other upgrades decreased the amount of time that the system is down due to fouling.
- When online, the ATP achieved an average extraction rate of 58.9 gpm in 2015, with an average *effective* extraction rate of 50 gpm, which is significantly greater than the approximately 44 gpm 2014 extraction rate.
- An average effluent arsenic concentration of 18.9 µg/L was achieved by the ATP in 2015, which is well below the Special Permit Condition discharge limitation of 75 µg/L.
- The hydraulic capture zone assessment indicates that the extraction well field is capturing the majority of groundwater migrating beneath the landfill northward to the landfill toe and extraction system.

7.1.3 Groundwater Monitoring

- The results of each 2015 site-wide monitoring event illustrate a general groundwater flow from the southwest to the north towards Nonacoicus Brook with a deflection of groundwater flow to the north in the area west of the barrier wall.

- Based on arsenic concentration data at wells on either side of the barrier wall, it appears that the wall is effective in reducing the flow of groundwater from the landfill to the east.
- Arsenic data from monitoring wells downgradient of the extraction well capture zone exhibit both increasing and decreasing arsenic concentrations.
- With respect to the geochemical monitoring data, conditions in the downgradient aquifer demonstrate that the ATP remedy is not capable of achieving MCLs throughout the area of attainment.

7.2 Recommendations

The following provides recommendations for landfill monitoring and maintenance, SHL remedy operations and performance, and groundwater monitoring.

7.2.1 Landfill Monitoring and Maintenance

Based on the site inspection conducted in October 2015, the following recommendations were made with respect to landfill maintenance: (NEED from Sovereign)

- Swales should be monitored for expanded growth of wetland species and vegetative growth during each annual inspection.
- Mowing should be continued on an annual basis to maintain the effectiveness of the cover system.

7.2.2 SHL Remedy Operations and Performance

The following recommendations are made with respect to the operation and maintenance of the ATP:

- To prevent unscheduled downtime due to the build-up of precipitate within the system influent piping that could restrict influent flow, influent piping should be inspected annually and cleaned if necessary during a scheduled CIP event.
- To minimize operational downtime associated with equipment failure, system components should be regularly inspected and replaced prior to the end of their operational life.

7.2.3 Groundwater Monitoring

Based on the results of the groundwater monitoring program to date, no additional recommendations are made with respect to groundwater monitoring.

8.0 REFERENCES

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FIGURES

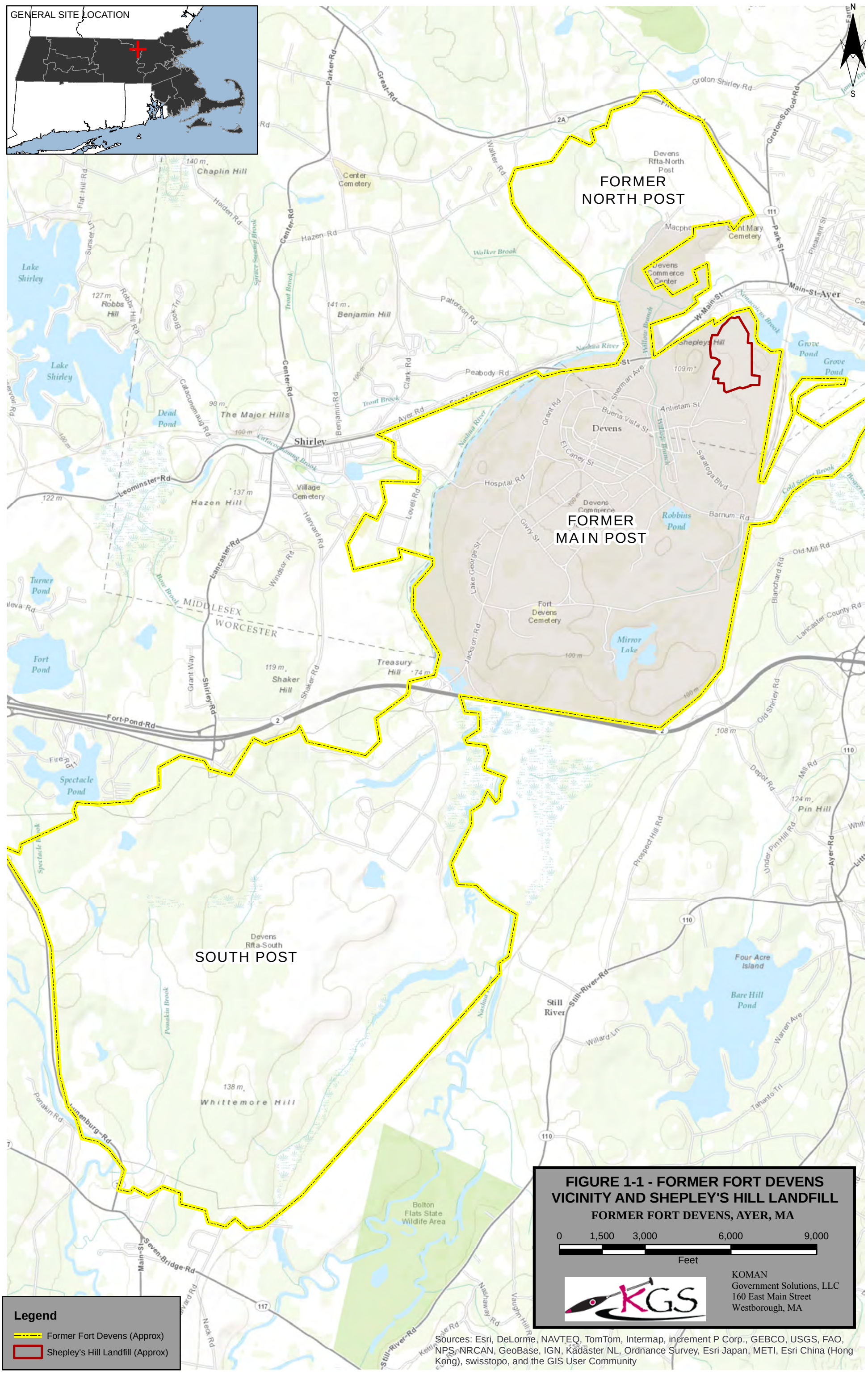
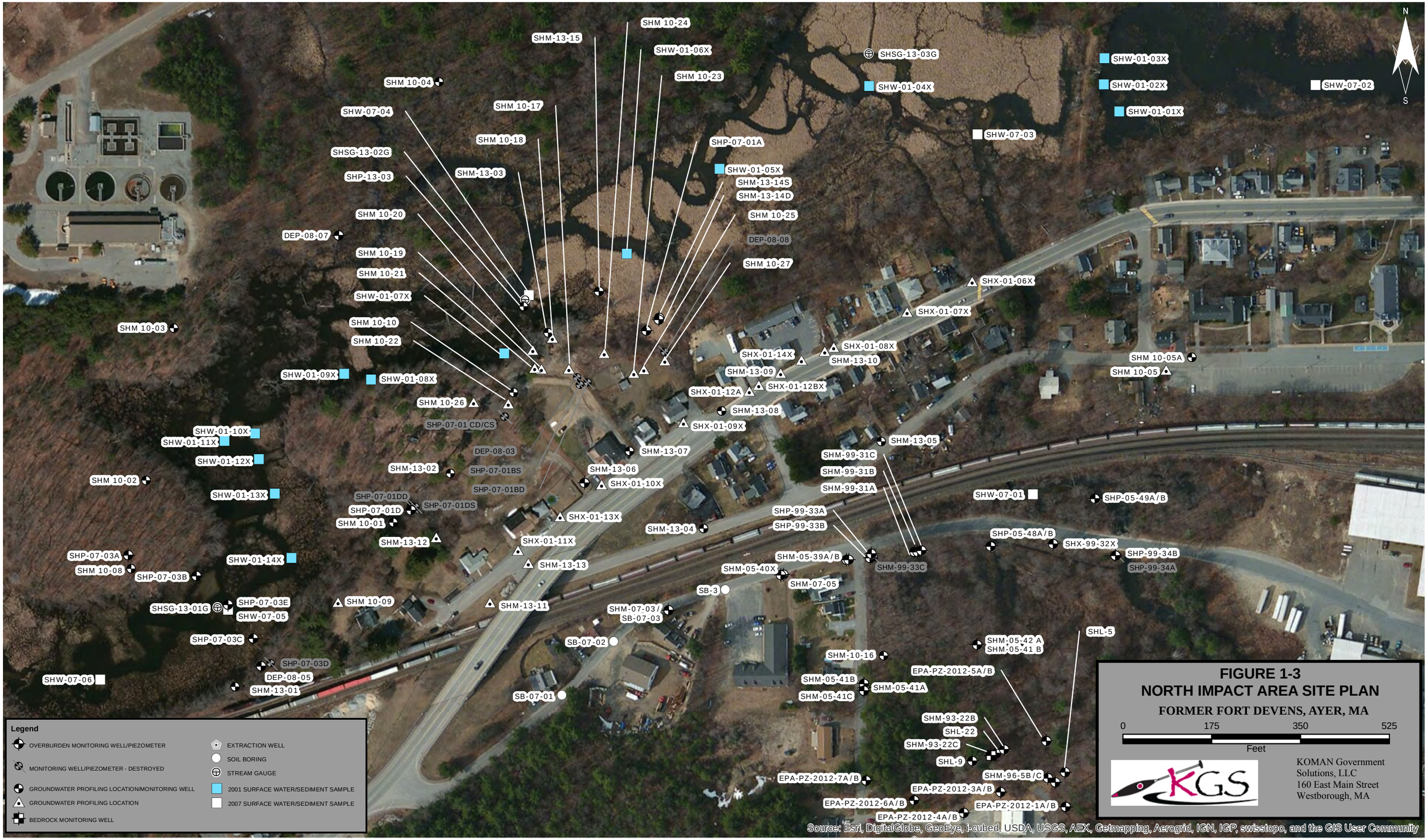


FIGURE 1-1 - FORMER FORT DEVENS VICINITY AND SHEPLEY'S HILL LANDFILL

FORMER FORT DEVENS, AYER, MA

01/29/2014 ROV Updated 03/23/2015 ROV

01/28/2013 ROV Updated 03/23/2014 ROV



Note: Surface water and sediment sample locations taken from "Sediment and Surface Water Sampling Locations, Devens, Ayer, Massachusetts" by AMEC Earth & Environmental, Inc. dated Dec. 4, 2008.

08/09/2013 ROV Updated 03/23/2015 ROV

03/25/2015 ROV

FIGURE 2-1 - SHEPLEY'S HILL LANDFILL GAS POINTS AND VENTS

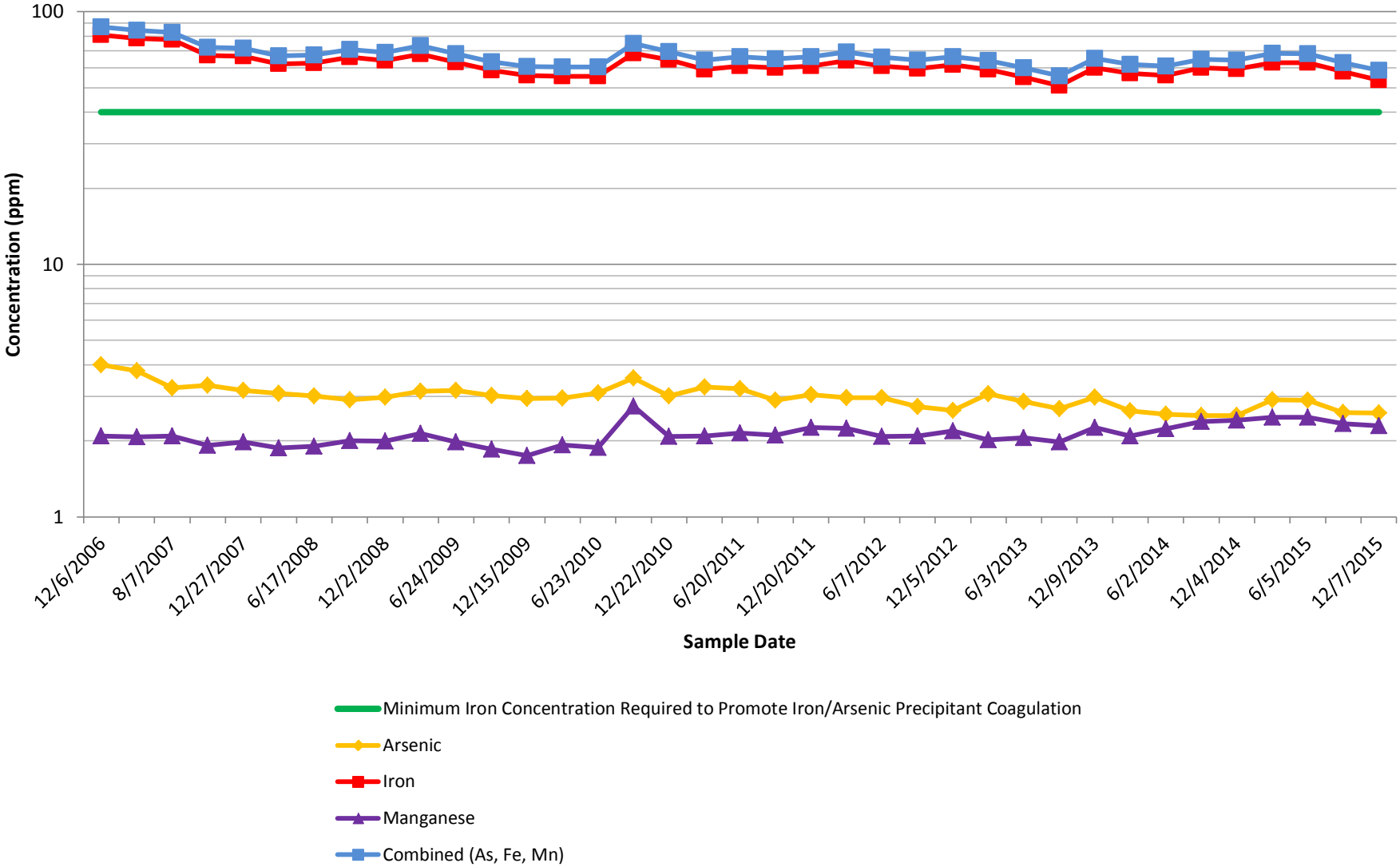
FORMER FORT DEVENS, AYER, MA

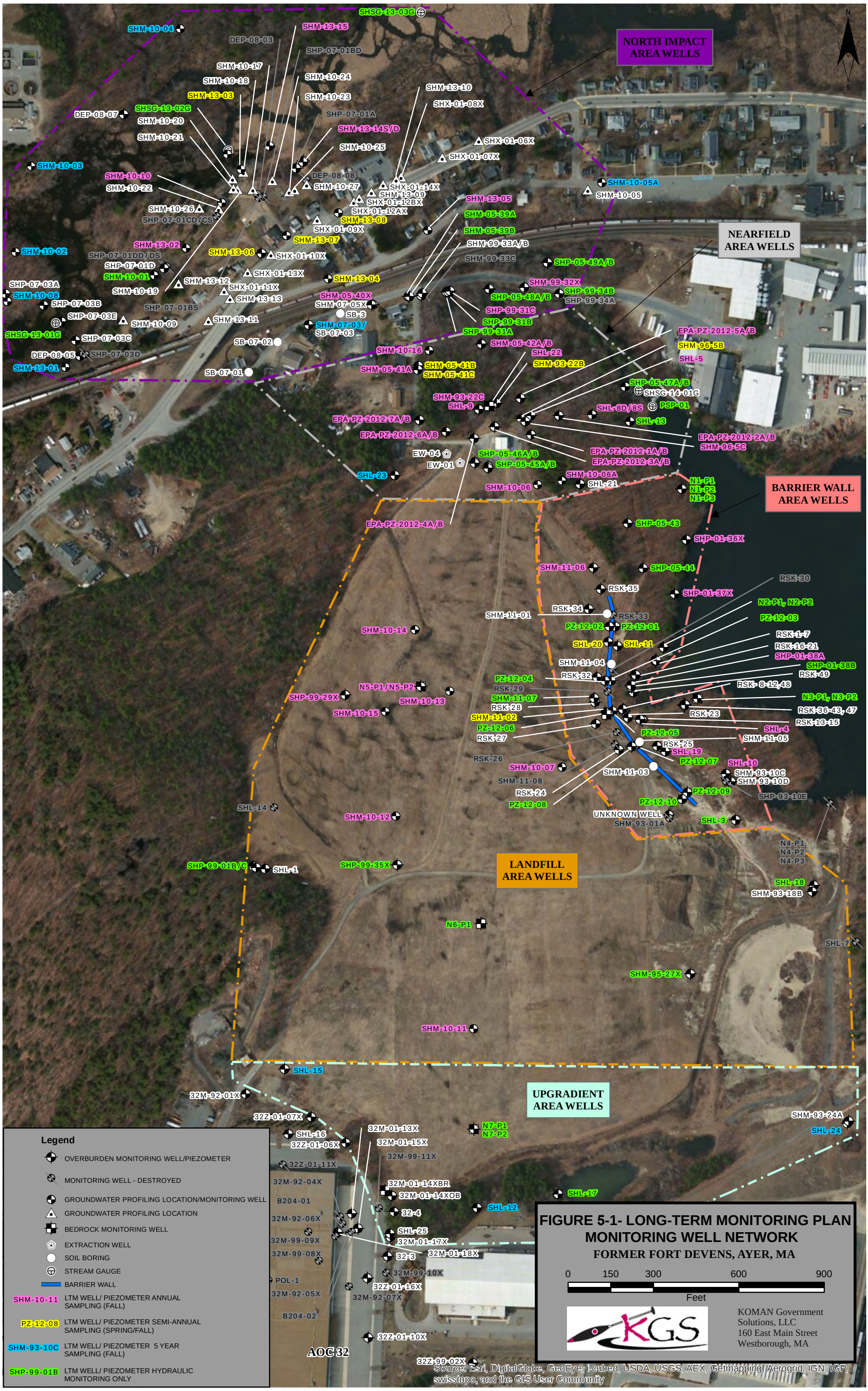
0 125 250 500 750

Feet

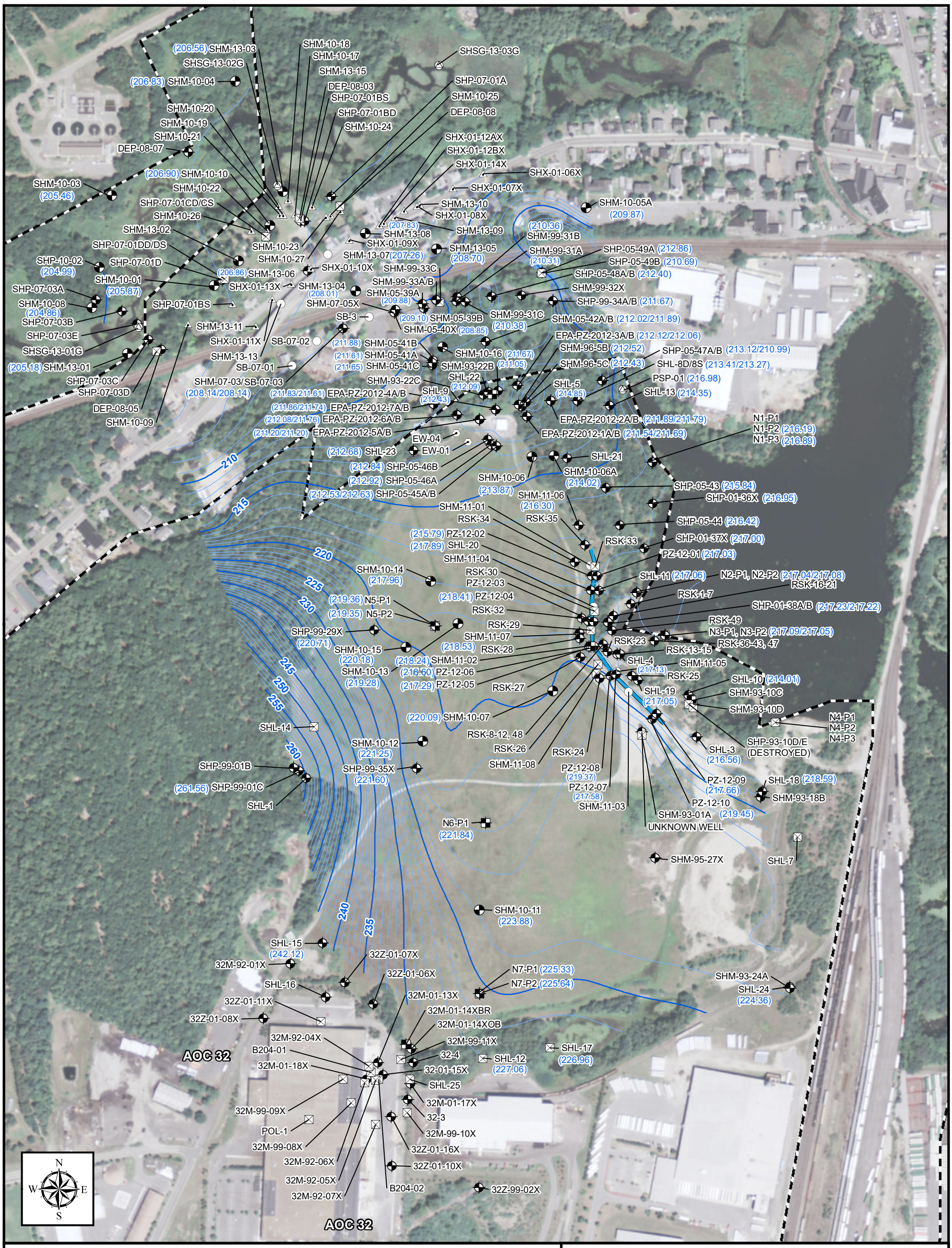
03/11/2013 ROV, Updated 03/23/2015 ROV

Figure 3-1
Influent Metals Concentrations - GWTP
Shepley's Hill Landfill





01/28/2013 ROV Updated 03/23/2015 ROV



Legend

- Overburden Monitoring Well/Piezometer
- Monitoring Well - Destroyed
- Groundwater Profiling Location/Monitoring Well
- Groundwater Profiling Location
- Bedrock Monitoring Well
- Extraction Well
- Soil Boring
- Stream Gauge
- Barrier Wall
- PZ-12-07 Well/Boring/Gauge Identification
- Contour (5 Foot Interval)
- Contour (1 Foot Interval)
- (221.84) Groundwater Elevation - June 2015
- Former Fort Devens Boundary

References: HGL. LTMMP 2012.

Notes:
SHL-10 was not used in contouring
Aerial Sources: 2011, Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Groundwater Elevations - June 2015 Northern Impact Area and Shepley's Hill Landfill Site Plan

2015 Annual Report
Northern Impact Area

Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

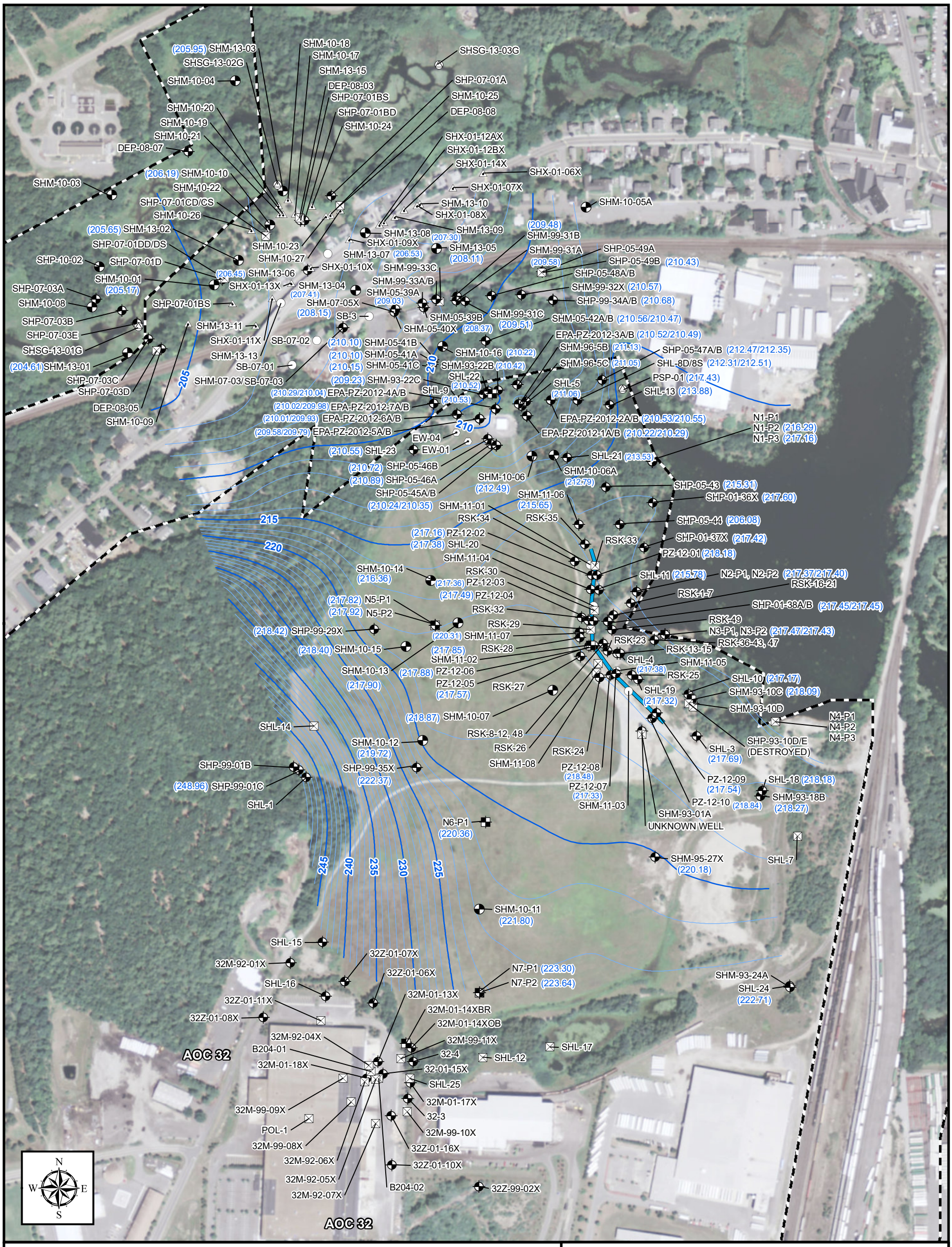
KOMAN Government Solutions, LLC
160 East Main Street, Suite 2F, Westborough, MA 01581

0 200 400
Feet

Date: 07/01/2016

Figure 5-2

KGS



Legend

- Overburden Monitoring Well/Piezometer
- Monitoring Well - Destroyed
- Groundwater Profiling Location/Monitoring Well
- Groundwater Profiling Location
- Bedrock Monitoring Well
- Extraction Well
- Soil Boring
- Stream Gauge
- Barrier Wall
- PZ-12-07 Well/Boring/Gauge Identification
- Contour (5 Foot Interval)
- Contour (1 Foot Interval)
- (210.57) Groundwater Elevation - October 2015
- Former Fort Devens Boundary

References: HGL. LTMMP 2012.

Notes:
SHP-05-44 and SHL-10 were not used in contouring
Aerial Sources: 2011, Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Groundwater Elevations October 2015 - Northern Impact Area and Shepley's Hill Landfill Site Plan

2015 Annual Report
Northern Impact Area

Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

KOMAN Government Solutions, LLC
160 East Main Street, Suite 2F, Westborough, MA 01581

0 200 400
Feet

Date: 07/01/2016

Figure 5-3

KGS

Legend

- Overburden Monitoring Well/Piezometer
- Monitoring Well - Destroyed
- Groundwater Profiling Location/Monitoring Well
- Groundwater Profiling Location
- Bedrock Monitoring Well
- Extraction Well
- Soil Boring
- Stream Gauge
- Barrier Wall
- PZ-12-07 Well/Boring/Gauge Identification
- Former Fort Devens Boundary

Notes:
All concentrations in micrograms per liter (µg/L)
J = Estimated Results
U = Non-detect

References: HGL. LTMMP 2012.

Aerial Sources: 2011, Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Dissolved Arsenic in Groundwater June & October 2015 Northern Impact Area and Shepley's Hill Landfill Site Plan

2015 Annual Report
Northern Impact Area

Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

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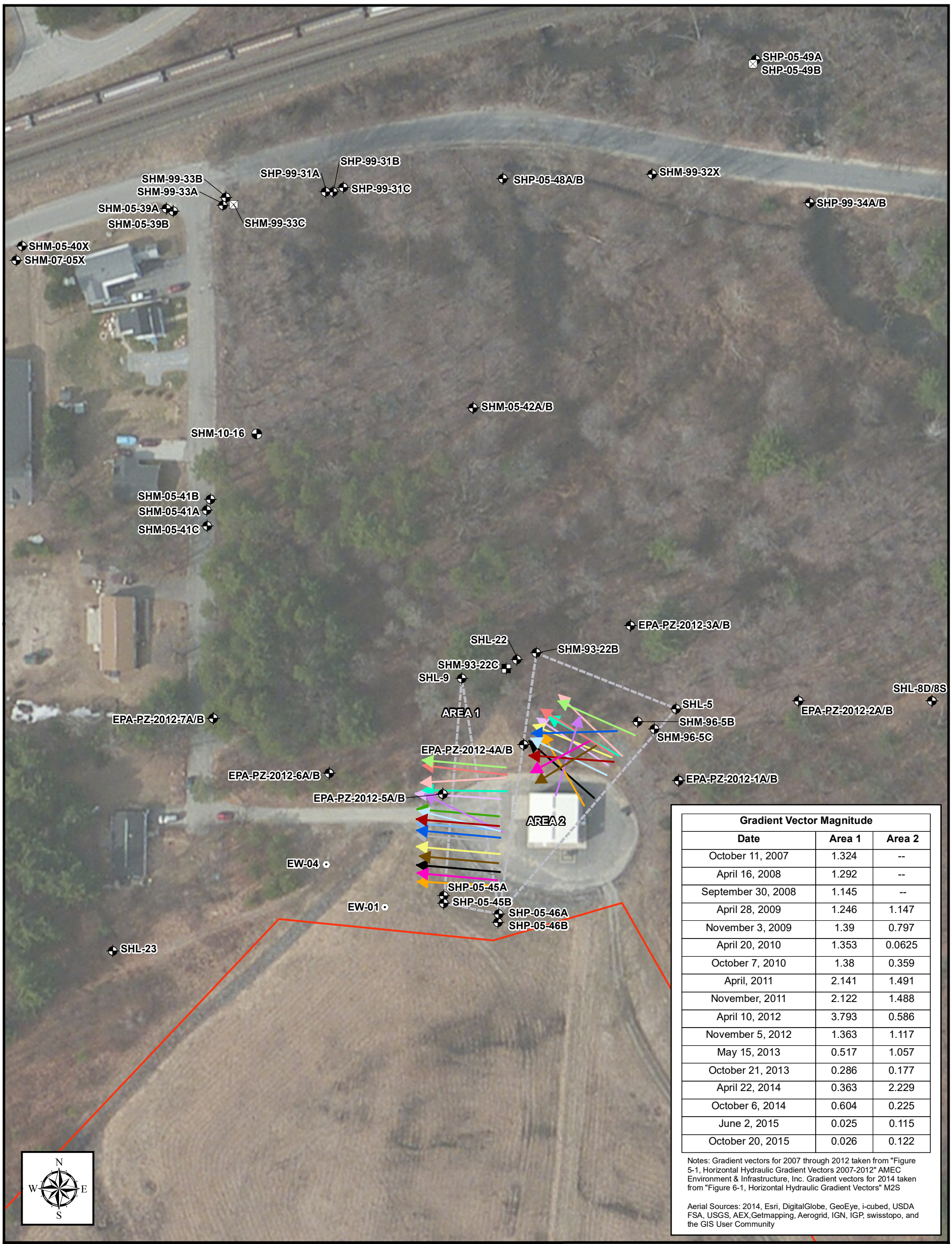
0 200 400
Feet

Date: 05/02/2016

Figure 5- 4

KGS



Gradient Vector Magnitude		
Date	Area 1	Area 2
October 11, 2007	1.324	--
April 16, 2008	1.292	--
September 30, 2008	1.145	--
April 28, 2009	1.246	1.147
November 3, 2009	1.39	0.797
April 20, 2010	1.353	0.0625
October 7, 2010	1.38	0.359
April, 2011	2.141	1.491
November, 2011	2.122	1.488
April 10, 2012	3.793	0.586
November 5, 2012	1.363	1.117
May 15, 2013	0.517	1.057
October 21, 2013	0.286	0.177
April 22, 2014	0.363	2.229
October 6, 2014	0.604	0.225
June 2, 2015	0.025	0.115
October 20, 2015	0.026	0.122

Notes: Gradient vectors for 2007 through 2012 taken from "Figure 5-1, Horizontal Hydraulic Gradient Vectors 2007-2012" AMEC Environment & Infrastructure, Inc. Gradient vectors for 2014 taken from "Figure 6-1, Horizontal Hydraulic Gradient Vectors" M2S

Aerial Sources: 2014, Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX,Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Overburden Monitoring Well/Piezometer
- Monitoring Well - Destroyed
- Groundwater Profiling Location/Monitoring Well
- Bedrock Monitoring Well
- Extraction Well
- Landfill Cap Boundary (Approximate)
- Well Triplets/Vector Area
- PZ-12-07 Well/Boring/Gauge Identification
- October 15, 2007 Gradient Vector
- April 16, 2008 Gradient Vector
- September 30, 2008 Gradient Vector
- April 28, 2009 Gradient Vector
- November 3, 2009 Gradient Vector
- April 20, 2010 Gradient Vector
- October 7, 2010 Gradient Vector
- April 2011 Gradient Vector
- November 2011 Gradient Vector
- April 10, 2012 Gradient Vector
- November 5, 2012 Gradient Vector
- May 15, 2013 Gradient Vector
- October 21, 2013 Gradient Vector
- April 22, 2014 Gradient Vector
- October 6, 2014 Gradient Vector
- June 2, 2015 Gradient Vector
- October 20, 2015 Gradient Vector

Horizontal Hydraulic Gradient Vectors Northern Impact Area and Shepley's Hill Landfill Site Plan

2015 Annual Report
Northern Impact Area

Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

KOMAN Government Solutions, LLC
160 East Main Street, Suite 2F, Westborough, MA 01581

0 40 80
Feet

Date: 07/01/2016

Figure 6-1

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TABLES

Table 1-1
Contaminants of Concern (COC) Clean Up Levels
Shepley's Hill Landfill
Devens, Massachusetts

COC	Cleanup Level (µg/L)	Selection Basis
Arsenic	10	MCL[1]
Chromium	100	MCL
1,2-Dichlorobenzene	600	MCL
1,4-Dichlorobenzene	5	MCL
1,2-Dichloroethane	5	MCL
Lead	15	Action Level
Manganese	1715	Background [2]
Nickel	100	MCL[3]
Sodium	20000	Health Advisory
Aluminum	6870	Background
Iron	9100	Background

Notes:

[1] Revised from ROD clean-up level of 50 µg/L

[2] Revised ROD clean-up level based on background evaluation

[3] MCL = Maximum Contaminant Level

Table 2-1
Annual Landfill Gas Monitoring
Shepley's Hill Landfill
Devens, Massachusetts
October 2015

Date: 10/20/15 **Weather: Partly Cloudy, 60 Degrees F** **Field Team: Teague Baker, Samantha Landry**

		Initial Readings									Post Purge Readings							
ID	Time	VOC (ppm)	O_2 (%)	H_2S (ppm)	LEL (%)	CO (ppm)	CO_2 (%)	CH_4 (%)	rge Rate (lp	rge Time (s	VOC (ppm)	O_2 (%)	H_2S (ppm)	LEL (%)	CO (ppm)	CO_2 (%)	CH_4 (%)	Bar. Pres.("Hg)
GV-1	9:21	0.0	20.8	0.0	0.0	0.0	0.1	0.0	4	167	0.0	20.9	0.0	0.0	0.0	0.0	0.0	29.90
GV-2	10:50	0.1	19.4	0.0	27.0	0.0	1.2	0.8	4	167	0.1	16.4	0.0	83.0	1.0	4.2	2.5	--
GV-3	8:50	0.0	20.5	0.0	0.0	0.0	0.0	0.0	4	167	0.0	20.5	0.0	0.0	0.0	0.1	0.1	--
GV-4	9:00	0.1	10.0	0.0	71.0	0.0	8.7	2.1	4	167	0.2	10.1	0.0	100.0	0.0	10.1	3.1	--
GV-5	9:12	0.1	19.7	0.0	4.0	0.0	0.6	0.1	4	167	0.0	20.5	0.0	0.0	0.0	0.4	0.0	29.88
GV-6	13:16	0.0	3.3	0.0	100.0	0.0	13.7	7.6	4	167	0.0	1.7	0.0	100.0	0.0	14.8	7.8	--
GV-7	11:30	0.0	5.4	0.0	100.0	0.0	11.6	8.2	4	167	0.0	1.1	0.0	100.0	1.0	14.1	7.9	29.89
GV-8	11:39	0.0	12.7	0.0	45.0	0.0	6.2	1.4	4	167	0.0	10.6	0.0	27.0	0.0	7.3	0.8	--
GV-9	13:24	0.2	7.1	0.0	100.0	0.0	11.2	5.9	4	167	0.4	0.7	0.0	100.0	0.0	19.1	17.8	29.88
GV-10	13:03	0.0	4.2	0.0	100.0	0.0	11.6	4.2	4	167	0.0	2.0	0.0	100.0	0.0	12.4	4.3	--
GV-11	12:54	0.0	14.1	0.0	0.0	0.0	4.5	1.1	4	167	0.0	13.7	0.0	22.0	1.0	4.8	0.6	29.89
GV-12	13:35	0.1	7.5	0.0	100.0	0.0	10.2	8.3	4	167	0.0	0.8	0.0	100.0	0.0	14.6	11.8	29.88
GV-13	13:45	0.1	20.1	0.0	15.0	0.0	0.7	0.4	4	167	0.1	19.3	0.0	32.0	0.0	1.2	0.8	--
GV-14	14:00	0.1	20.4	0.0	15.0	0.0	0.6	0.3	4	167	0.0	13.9	0.0	100.0	0.0	7.0	11.9	--
GV-15	16:15	0.1	20.6	0.0	23.0	0.0	0.7	0.6	4	375	0.1	3.1	0.0	100.0	0.0	21.2	24.9	--
GV-16	15:55	0.1	20.1	0.0	27.0	0.0	23.7	17.3	4	375	0.2	6.1	0.0	100.0	0.0	16.7	11.0	--
GV-17	16:08	0.2	2.2	0.0	100.0	0.0	23.2	21.5	4	375	0.1	1.1	0.0	100.0	0.0	24.3	22.8	--
GV-18	16:25	0.1	5.6	0.0	100.0	0.0	21.2	29.1	4	375	0.2	8.8	0.0	100.0	0.0	17.1	24.1	--
LGP-01-01X	9:45	0.0	20.6	0.0	0.0	0.0	0.7	0.0	2	83	0.0	20.5	0.0	0.0	0.0	0.7	0.0	29.90
LGP-09-01XA	9:33	0.0	20.8	0.0	0.0	0.0	0.8	0.0	2	157	0.0	20.3	0.0	0.0	0.0	0.9	0.0	--
LGP-09-01XB	9:40	0.0	20.2	0.0	0.0	0.0	0.9	0.0	2	157	0.0	20.2	0.0	0.0	0.0	0.9	0.0	--
LGP-01-02X	9:58	0.0	20.3	0.0	0.0	0.0	1.1	0.0	2	83	0.0	20.2	0.0	0.0	0.0	1.3	0.0	--
LGP-09-02X	9:52	0.0	20.1	0.0	0.0	0.0	1.4	0.0	2	204	0.0	20.0	0.0	0.0	0.0	0.3	0.0	--
LGP-01-03X	10:10	0.0	20.3	0.0	0.0	0.0	1.1	0.0	2	83	0.0	20.3	0.0	0.0	0.0	1.1	0.0	--
LGP-09-03X	10:19	0.0	20.1	0.0	0.0	0.0	1.2	0.0	2	167	0.0	20.2	0.0	0.0	0.0	1.3	0.0	--
LGP-01-04X	11:11	0.0	20.1	0.0	0.0	0.0	0.7	0.0	2	83	0.0	20.2	0.0	0.0	0.0	0.8	0.0	29.89
LGP-09-04X	11:18	0.0	20.8	0.0	0.0	0.0	0.8	0.0	2	120	0.0	20.3	0.0	0.0	0.0	0.9	0.0	--
LGP-05-05X	15:35	0.2	14.4	0.0	6.0	0.0	6.0	0.0	2	93	0.3	1.1	0.0	44.0	0.0	18.9	1.5	29.88
LGP-09-05X	15:40	0.6	9.3	0.0	65.0	0.0	13.1	1.7	2	167	0.3	0.5	0.0	100.0	0.0	24.7	9.1	--
LGP-05-06X	15:23	0.0	17.0	0.0	0.0	0.0	3.7	0.0	2	93	0.0	17.3	0.0	0.0	0.0	3.5	0.0	--
LGP-09-06X	15:30	0.2	14.1	0.0	0.0	0.0	5.6	0.0	2	120	0.0	14.1	0.0	0.0	0.0	5.8	0.0	--
LGP-05-07X	15:17	0.1	10.8	0.0	0.0	0.0	7.3	0.0	2	65	0.0	8.1	0.0	0.0	0.0	12.7	0.0	--
LGP-05-08X	15:05	0.0	16.9	0.0	0.0	0.0	7.2	0.0	2	93	0.0	4.7	0.0	0.0	0.0	14.8	0.0	--
LGP-09-08X	15:10	0.1	10.5	0.0	5.0	0.0	13.9	0.0	2	185	0.1	0.7	0.0	9.0	0.0	20.3	0.3	--
LGP-05-09X	14:55	0.0	16.0	0.0	0.0	0.0	5.1	0.0	2	93	0.0	14.0	0.0	0.0	0.0	6.6	0.0	--
LGP-09-09X	15:00	0.1	11.3	0.0	0.0	0.0	9.7	0.0	2	185	0.0	3.7	0.0	0.0	6.0	16.7	0.0	--
LGP-05-10X	14:40	0.0	14.8	0.0	0.0	0.0	5.3	0.0	2	93	0.0	6.7	0.0	0.0	0.0	10.2	0.0	--
LGP-09-10X	14:45	0.1	10.4	0.0	0.0	0.0	9.7	0.0	2	148	0.0	2.9	0.0	5.0	0.0	16.5	0.0	--
LGP-05-11X	14:25	0.1	15.5	0.0	0.0	0.0	5.5	0.0	2	83	0.0	8.5	0.0	0.0	0.0	11.6	0.0	--
LGP-09-11X	14:30	0.3	7.7	0.0	20.0	0.0	14.1	0.5	2	139	0.1	2.9	0.0	2.0	3.0	17.2	0.0	--
LGP-05-13X	14:20	0.1	14.8	0.0	0.0	0.0	4.4	0.0	2	56	0.1	9.5	0.0	0.0	0.0	8.2	0.0	--
LGP-05-14X	14:10	0.2	15.7	0.0	13.0	0.0	4.7	0.4	2	93	0.1	9.9	0.0	6.0	5.0	9.6	0.1	
LGP-09-15X	13:50	0.1	16.3	0.0	0.0	0.0	4.6	0.0	2	111	0.0	15.3	0.0	0.0	0.0	6.1	0.0	--

Table 2-2
Landfill Gas Probe Construction Detail
Shepley's Hill Landfill
Devens, Massachusetts

Gas Probe ID	Gas Probe Screen Interval (ft)	Screen Length (ft)
LGP-01-01X	6.4-7.4	1
LGP-09-01XA	7.0-17.0	10
LGP-09-01XB	19.0-28.0	9
LGP-01-02X	5.0-6.0	1
LGP-09-02X	6.0-21.0	15
LGP-01-03X	5.0-6.0	1
LGP-09-03X	6.0-18.0	12
LGP-01-04X	3.0-4.0	1
LGP-09-04X	4.0-9.0	5
LGP-05-05X	6.0-7.0	1
LGP-09-05X (1)	7.0-14.5	7.5
LGP-05-06X	6.0-7.0	1
LGP-09-06X	7.0-12.0	5
LGP-05-07X(2)	3.0-4.0	1
LGP-05-08X	6.0-7.0	1
LGP-09-08X	7.0-19.0	12
LGP-05-09X	6.0-7.0	1
LGP-09-09X	7.0-19.0	12
LGP-05-10X	6.0-7.0	1
LGP-09-10X	7.0-14.0	7
LGP-05-11X	5.0-6.0	1
LGP-09-11X	7.0-14.0	7
LGP-05-13X	2.0-3.0	1
LGP-05-14X	6.0-7.0	1
LGP-09-15X	4.0-10.0	6

Notes:
(1) Bedrock was encountered at a depth of 15'.Proposed total depth (19.60') was unattainable due to refusal.
(2) Bedrock was encountered at a depth of 4'. Installation of additonal gas probe was unattainable due to refusal.

Table 3-1
Operations Summary - GWTP
January 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
01/01/2015	24	72,000	50.0	System online and operating.
01/02/2015	20	59,000	50.4	System offline from 1120 to 1550 for polymer skid, FBRO, and clarifier maintenance. Air sparged IPC. Manually pumped excess sludge.
01/03/2015	15.0	46,800	52.0	System offline from 0015 to 0915 due to thickener high level alarm caused by plugged bag filters. Bag filters replaced. Air sparged IPC. Manually pumped excess sludge.
01/04/2015	24	72,100	50.1	System online and operating.
01/05/2015	9.6	30,800	53.7	System offline at 0934 for system upgrades. Manually pumped excess sludge.
01/06/2015	0.3	1,200	60.0	System offline for system upgrades. Drained system sumps. Manually pumped excess sludge.
01/07/2015	0	0	0.0	System offline for system upgrades. FBRO pumped out.
01/08/2015	5.0	16,400	54.7	System online at 1628 following system upgrades and periodically offline from 1630 to 2230 to make post upgrade adjustments.
01/09/2015	17.5	57,500	54.8	System offline periodically offline throughout day to make post upgrade adjustments. Air sparged IPC. Manually pumped excess sludge.
01/10/2015	20.5	65,200	53.0	System offline from 1545 to 1915 due to low ClO2 flow. Reset ClO2 skid and restarted system.
01/11/2015	6.2	20,900	56.5	System offline at 0610 due to low ClO2 flow.
01/12/2015	1.6	8,700	91.8	System online at 0745. Reset ClO2 skid. System offline at 0920 for an extended CIP. Air sparged IPC. Manually pumped excess sludge.
01/13/2015	0	0	0.0	System offline for extended CIP.
01/14/2015	6.6	19,800	50.2	System online at 1725 following extended CIP.
01/15/2015	24	73,500	51.0	System online and operating. Air sparged IPC. Manually pumped excess sludge.
01/16/2015	19.4	70,000	60.1	System offline from 1155 to 1430 to clean influent line. Air sparged IPC. Manually pumped excess sludge.
01/17/2015	20.0	66,200	55.3	System offline at 0529 due to T1 high level alarm. Drained T1 and restarted system at 0932. Air sparged IPC. Manually pumped excess sludge.
01/18/2015	24	78,300	54.4	System online and operating.
01/19/2015	24	77,900	54.1	System online and operating. Air sparged IPC. Manually pumped excess sludge.
01/20/2015	24	78,000	54.2	FBRO pump out. System online and operating. Air sparged IPC. Manually pumped excess sludge.
01/21/2015	24	79,600	55.3	System online and operating.
01/22/2015	22.6	75,500	55.6	System offline at 1638 due to T1 high level alarm. Drained T1 and restarted system at 1801. Air sparged IPC. Manually pumped excess sludge.
01/23/2015	24	78,900	54.8	System online and operating. Air sparged IPC. Manually pumped excess sludge.
01/24/2015	23.0	75,500	54.8	System offline at 1753 due to T1 high level alarm. Drained T1 and restarted system at 1855. Air sparged IPC. Manually pumped excess sludge.
01/25/2015	24	79,400	55.1	System online and operating.
01/26/2015	7.4	25,500	57.3	System offline from 0610 to 1015 due to basket strainer alarm. System shutdown at 1130 in preparation for oncoming blizzard.
01/27/2015	0	0	0.0	System offline due to blizzard.
01/28/2015	14.8	48,900	54.9	System restarted at 0910 following blizzard. Air sparged IPC. Manually pumped excess sludge.
01/29/2015	19.5	66,000	56.4	System offline from 0715 to 1145 for Cl2 gas change. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
01/30/2015	23.7	77,100	54.3	System offline from 0840 to 0900 to replace rotating assembly for basket strainer. Air sparge IPC. Manually pump excess sludge.
01/31/2015	24	79,400	55.1	System online and operating.

Total	**492.1**	**1,600,100**	
Total Available Hours	**744**	**Average On-line Flow**	**54.2**
Percent Online	**66**		

Note:
Flowrate in Gallons per Minute (GPM)
Clean in Place (CIP)

Table 3-1
Operations Summary - GWTP
February 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
02/01/2015	24	79,200	55.0	System online and operating
02/02/2015	24	79,100	54.9	System online and operating
02/03/2015	24	79,800	55.4	System online and operating. Air sparged IPC. Manually pumped excess sludge.
02/04/2015	24	80,000	55.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
02/05/2015	24	78,500	54.5	System online and operating
02/06/2015	24	80,000	55.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
02/07/2015	24	79,700	55.3	System online and operating
02/08/2015	13	44,600	57.2	System offline at 1300 due to high level in FBRO.
02/09/2015	0.6	1,900	57.6	System offline. Plant inaccessible due to snow storm.
02/10/2015	9.5	30,600	53.7	System restarted at 1430. Air sparged IPC. Manually pumped excess sludge.
02/11/2015	24	81,800	56.8	System online and operating. Pumped FBRO out. Air sparged IPC. Manually pumped excess sludge.
02/12/2015	24	86,700	60.2	System online and operating. Air sparged IPC. Manually pumped excess sludge.
02/13/2015	24	89,200	61.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
02/14/2015	21.5	81,500	63.2	System offline between 0300 and 0530 due to ClO2 dosing alarm. Air sparged IPC. Manually pumped excess sludge.
02/15/2015	24	88,600	61.5	System online and operating
02/16/2015	24	90,500	62.8	System online and operating
02/17/2015	24	88,800	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
02/18/2015	9	37,800	70.0	System offline at 0900 for CIP.
02/19/2015	8.4	31,900	63.5	System online at 1538 following completion of CIP activities.
02/20/2015	19	71,000	62.3	FBRO pump out. System offline at 1900 due to high effluent sump alarm and SCADA system failure
02/21/2015	0.3	900	60.0	System offline due to SCADA system failure.
02/22/2015	2	7,500	62.5	System restarted at 1105. Air sparged IPC. Manually pumped excess sludge. System offline at 1305 due to high drainage sump alarm, high thickner level alarm, and high/low treated water pH alarm.
02/23/2015	5.5	22,500	68.2	System online at 1830 after repairs to system effluent lines. Air sparged IPC. Manually pumped excess sludge.
02/24/2015	16.5	60,700	61.3	System offline from 1125 to 1440 to complete repairs to effluent lines. System offline at 1945 due to H2O pump alarm.
02/25/2015	14.6	50,800	58.1	System online at 0925. FBRO pump out. Air sparged IPC. Manually pumped sludge.
02/26/2015	24	87,800	61.0	System online and operating. Air sparged IPC. Manually pumped excess sludge.
02/27/2015	21.1	79,000	62.5	System offline from 0940 to 1235 to replace potable water solenoid valve on ClO2 skid. Air sparged IPC. Manually pumped sludge.
02/28/2015	24	89,400	62.1	System online and operating

Total	**500.8**	**1,779,800**	
Total Available Hours	**672**	**Average On-line Flow**	**59.2**
Percent Online	**75**		

Note:

Flowrate in Gallons per Minute (GPM)

Table 3-1
Operations Summary - GWTP
March 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
03/01/2015	24	90,000	62.5	System online and operating.
03/02/2015	24	81,200	56.4	System online and operating. Air sparged IPC. Manually pumped excess sludge.
03/03/2015	24	76,800	53.3	System online and operating.
03/04/2015	24	78,000	54.2	System online and operating.
03/05/2015	24	79,300	55.1	FBRO pump out. System online and operating. Air sparged IPC. Manually pumped excess sludge.
03/06/2015	24	79,300	55.1	System online and operating. Air sparged IPC. Manually pumped excess sludge.
03/07/2015	24	79,000	54.9	System online and operating.
03/08/2015	24	76,600	53.2	System online and operating.
03/09/2015	24	79,100	54.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
03/10/2015	24	79,400	55.1	System online and operating.
03/11/2015	18.3	62,400	56.7	System offline from 0810 to 1350 due to Cl2 gas cylinder change. Air sparged IPC. Manually pumped excess sludge.
03/12/2015	24	79,400	55.1	System online and operating.
03/13/2015	24	78,600	54.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
03/14/2015	24	79,400	55.1	System online and operating.
03/15/2015	19.1	65,500	57.1	System offline from 1808 to 2300 due to ClO2 low flow alarm. Replaced feed pump motor on ClO2 skid and restarted system. Air sparged IPC. Manually pumped excess sludge.
03/16/2015	24	79,100	54.9	System online and operating.
03/17/2015	1.9	9,300	80.9	System offline at 0120 due to high TMP alarm. System online from 0725 to 0800 to inspect status of system. FBRO pump out. System offline at 0800 to initiate CIP. Site-wide power failure at 1800 due to area stores. CIP is interrupted.
03/18/2015	5.7	18,900	55.6	Power restored at 0800. Continued CIP. System restarted at 1820 following CIP activities.
03/19/2015	24	79,400	55.1	System online and operating.
03/20/2015	24	79,100	54.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
03/21/2015	24	78,900	54.8	System online and operating.
03/22/2015	12.8	44,800	58.2	System offline at 1250 due to high MF TMP.
03/23/2015	0.8	2,500	55.6	Initiated CIP.
03/24/2015	8.3	29,000	58.6	System online at 1545 following CIP activitites.
03/25/2015	24	82,600	57.4	System online and operating.
03/26/2015	24	86,300	59.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
03/27/2015	24	88,700	61.6	FBRO pump out. System online and operating. Air sparged IPC. Manually pumped excess sludge.
03/28/2015	24	86,400	60.0	System online and operating.
03/29/2015	17.25	57,100	55.2	System offline at 1715 due to high MF TMP.
03/30/2015	2.7	6,000	37.5	System online between 0710 and 0950 to check status. Initiated extended CIP.
03/31/2015	0	0	0.0	System offline for extend CIP.

Total	**590.8**	**1,992,100**	
Total Available Hours	**744**	**Average On-line Flow**	**56.2**
Percent Online	**79**		

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 3-1
Operations Summary - GWTP
April 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
04/01/2015	6.8	23,700	58.5	System restarted at 1715 following completion of an extend CIP.
04/02/2015	24	82,500	57.3	System online and operating. FBRO pump out. Air sparged IPC. Manually pumped excess sludge.
04/03/2015	24	83,000	57.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
04/04/2015	24	82,800	57.5	System online and operating.
04/05/2015	24	83,300	57.8	System online and operating.
04/06/2015	24	83,000	57.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
04/07/2015	24	82,500	57.3	System online and operating.
04/08/2015	24	83,800	58.2	System online and operating.
04/09/2015	24	82,800	57.5	System online and operating. FBRO pump out. Air sparged IPC. Manually pumped excess sludge.
04/10/2015	23.6	81,500	57.6	System offline from 1350 to 1405 to install new 120-gal hot water heater. Air sparged IPC. Manually pumped excess sludge.
04/11/2015	24	82,600	57.4	System online and operating.
04/12/2015	24	81,300	56.5	System online and operating.
04/13/2015	7.5	27,400	60.9	System offline at 0730 for CIP.
04/14/2015	8.5	28,300	55.5	System online at 1530 following CIP activities.
04/15/2015	24	83,300	57.8	System online and operating.
04/16/2015	24	82,300	57.2	System online and operating. FBRO pump out. Air sparged IPC. Manually pumped excess sludge.
04/17/2015	24	84,000	58.3	System online and operating. Air sparged IPC. Manually pumped excess sludge.
04/18/2015	24	82,900	57.6	System online and operating.
04/19/2015	24	82,800	57.5	System online and operating.
04/20/2015	24	82,900	57.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
04/21/2015	24	83,100	57.7	System online and operating.
04/22/2015	24	83,900	58.3	System online and operating.
04/23/2015	7.8	26,300	56.6	System offline at 0745 for CIP. FBRO pump out.
04/24/2015	9.0	31,400	58.1	System online at 1500 following CIP activitites.
04/25/2015	24	81,800	56.8	System online and operating.
04/26/2015	24	83,500	58.0	System online and operating.
04/27/2015	24	82,800	57.5	System online and operating. Air sparged IPC. Manually pumped excess sludge.
04/28/2015	24	83,500	58.0	System online and operating.
04/29/2015	24	82,800	57.5	System online and operating.
04/30/2015	24	73,100	50.8	System online and operating.

Total	**639.1**	**2,198,900**	
Total Available Hours	**720**	**Average On-line Flow**	**57.3**

Percent Online	**89**

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 3-1
Operations Summary - GWTP
May 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
05/01/2015	7.4	16,200	36.4	System offline at 0725 for an extended CIP.
05/02/2015	0	0	0.0	System offline for an extended CIP.
05/03/2015	0	0	0.0	System offline for an extended CIP.
05/04/2015	7.5	27,200	60.4	System online at 1630 following CIP activities.
05/05/2015	24	86,100	59.8	System online and operating. Air sparged IPC. Manually pumped excess sludge.
05/06/2015	24	82,400	57.2	System online and operating.
05/07/2015	24	82,200	57.1	System online and operating. FBRO pump out. Air sparged IPC. Manually pumped excess sludge.
05/08/2015	23.8	79,700	55.9	System offline from 1200 to 1215 to change Cl2 cylinders. Air sparged IPC. Manually pumped excess sludge.
05/09/2015	24	81,500	56.6	System online and operating.
05/10/2015	24	80,400	55.8	System online and operating.
05/11/2015	24	79,900	55.5	System online and operating.
05/12/2015	24	74,900	52.0	System online and operating. Air sparged IPC. Manually pumped excess sludge.
05/13/2015	24	74,900	52.0	System online and operating.
05/14/2015	7.0	23,400	55.7	System offline at 0700 for CIP.
05/15/2015	9.5	32,000	56.1	System online at 1430 following CIP activities.
05/16/2015	24	80,800	56.1	System online and operating.
05/17/2015	24	80,800	56.1	System online and operating.
05/18/2015	23.7	80,300	56.5	System offline from 0955 to 1015 to update turbiditimeter firmware. Air sparged IPC. Manually pumped excess sludge.
05/19/2015	24	81,000	56.3	System online and operating.
05/20/2015	24	81,300	56.5	System online and operating.
05/21/2015	24	82,600	57.4	System online and operating. FBRO pump out. Air sparged IPC. Manually pumped excess sludge.
05/22/2015	24	81,900	56.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
05/23/2015	24	81,000	56.3	System online and operating.
05/24/2015	24	80,100	55.6	System online and operating.
05/25/2015	24	81,600	56.7	System online and operating.
05/26/2015	24	80,800	56.1	System online and operating. Air sparged IPC. Manually pumped excess sludge.
05/27/2015	24	80,800	56.1	System online and operating.
05/28/2015	24	80,800	56.1	System online and operating.
05/29/2015	24	81,100	56.3	System online and operating. Air sparged IPC. Manually pumped excess sludge.
05/30/2015	24	81,200	56.4	System online and operating.
05/31/2015	24	81,400	56.5	System online and operating.

Total	**630.8**	**2,118,300**	
Total Available Hours	**744**	**Average On-line Flow**	**56.0**
Percent Online	**85**		

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 3-1
Operations Summary - GWTP
June 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
06/01/2015	7.5	27,200	60.4	System offline at 0730 for an extended CIP and the installation of ball valves on the header of each MF module.
06/02/2015	0	0	0.0	System offline for an extended CIP. FBRO pumped out.
06/03/2015	14.5	47,700	54.8	System online at 0930 following CIP activities.
06/04/2015	24	83,300	57.8	System online and operating.
06/05/2015	24	83,000	57.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
06/06/2015	24	83,700	58.1	System online and operating.
06/07/2015	24	83,400	57.9	System online and operating.
06/08/2015	24	82,900	57.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
06/09/2015	24	83,400	57.9	System online and operating.
06/10/2015	24	83,500	58.0	System online and operating.
06/11/2015	24	82,800	57.5	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
06/12/2015	24	83,900	58.3	System online and operating.
06/13/2015	24	83,000	57.6	System online and operating.
06/14/2015	24	83,600	58.1	System online and operating.
06/15/2015	24	83,000	57.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
06/16/2015	24	82,800	57.5	System online and operating.
06/17/2015	8.0	29,000	60.4	System offline at 0800 for a CIP.
06/18/2015	10.2	35,600	58.4	System online at 1350 following CIP activities.
06/19/2015	24	82,900	57.6	System online and operating.
06/20/2015	23.5	77,700	55.1	System offline at 2330 due to I/O card failure.
06/21/2015	0	0	0.0	Replaced I/O card. Initiated emergency CIP.
06/22/2015	9.2	31,500	57.3	System online at 1450 following CIP activities.
06/23/2015	24	83,800	58.2	System online and operating.
06/24/2015	24	83,100	57.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
06/25/2015	24	83,000	57.6	System online and operating.
06/26/2015	24	83,800	58.2	System online and operating. Air sparged IPC. Manually pumped excess sludge.
06/27/2015	24	84,100	58.4	System online and operating.
06/28/2015	24	82,600	57.4	System online and operating.
06/29/2015	24	80,400	55.8	System online and operating. Air sparged IPC. Manually pumped excess sludge.
06/30/2015	24	76,400	53.1	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.

Total	**600.8**	**2,071,100**	
Total Available Hours	**720**	**Average On-line Flow**	**57.5**
Percent Online	**83**		

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 1
Operations Summary - GWTP
July 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
07/01/2015	24	73,600	51.1	System online and operating.
07/02/2015	16.7	55,200	55.2	System offline at 0915 for one-day CIP. System online at 1635 following CIP Activities.
07/03/2015	24	78,700	54.7	System online and operating.
07/04/2015	24	66,100	45.9	System online and operating.
07/05/2015	24	56,700	39.4	System online and operating.
07/06/2015	8.0	18,700	39.0	System offline at 0800 for an extended CIP.
07/07/2015	0	0	0.0	System offline for an extend CIP
07/08/2015	8.0	29,500	61.5	System online at 1600 following the extend CIP. Air sparged IPC. Manually pumped excess sludge.
07/09/2015	24	83,200	57.8	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
07/10/2015	24	83,600	58.1	System online and operating. Air sparged IPC. Manually pumped excess sludge.
07/11/2015	24	86,000	59.7	System online and operating.
07/12/2015	24	85,600	59.4	System online and operating.
07/13/2015	24	85,500	59.4	System online and operating. Air sparged IPC. Manually pumped excess sludge.
07/14/2015	24	82,700	57.4	System online and operating.
07/15/2015	24	79,100	54.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
07/16/2015	24	80,300	55.8	System online and operating.
07/17/2015	23.8	75,200	52.8	System offline briefly to change Cl2 gas cylinders. Air sparged IPC. Manually pumped excess sludge.
07/18/2015	24	74,400	51.7	System online and operating.
07/19/2015	24	72,800	50.6	System online and operating.
07/20/2015	8.0	26,400	55.0	System offline at 0800 for CIP activities.
07/21/2015	8.5	30,600	60.0	System online at 1530 following CIP activities. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
07/22/2015	11.9	44,300	62.0	System offline at 1155 due to Cl gas leak from regulators on Cl2 gas cylinders.
07/23/2015	0	0	0.0	System offline due to faulty Cl2 gas regulators.
07/24/2015	14.3	51,100	59.8	System online at 0945 following replacement of Cl2 gas regulators. Air sparged IPC. Manually pumped excess sludge.
07/25/2015	24	88,100	61.2	System online and operating.
07/26/2015	24	87,700	60.9	System online and operating.
07/27/2015	24	88,200	61.3	System online and operating. Air sparged IPC. Manually pumped excess sludge.
07/28/2015	24	88,100	61.2	System online and operating.
07/29/2015	24	87,700	60.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
07/30/2015	24	89,400	62.1	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
07/31/2015	24	88,500	61.5	System online and operating.

Total	**603.1**	**2,037,000**	
Total Available Hours	**744**	**Average On-line Flow**	**56.3**
Percent Online	**81**		

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 3-1
Operations Summary - GWTP
August 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
08/01/2015	24	89,100	61.9	System online and operating.
08/02/2015	24	89,500	62.2	System online and operating.
08/03/2015	24	89,200	61.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/04/2015	14.3	53,800	62.6	System offline at 1420 due to area wide power failure.
08/05/2015	1.0	5,200	86.7	System online at 0800 to conduct system diagnostics following power loss. System offline at 0900 for CIP.
08/06/2015	11.0	40,400	61.2	System online at 1300 following CIP activities.
08/07/2015	24	88,900	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/08/2015	24	90,000	62.5	System online and operating.
08/09/2015	24	89,400	62.1	System online and operating.
08/10/2015	24	89,600	62.2	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/11/2015	24	88,900	61.7	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
08/12/2015	24	89,100	61.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/13/2015	24	89,200	61.9	System online and operating.
08/14/2015	24	88,900	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/15/2015	24	89,000	61.8	System online and operating.
08/16/2015	24	90,100	62.6	System online and operating.
08/17/2015	24	89,400	62.1	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/18/2015	24	89,600	62.2	System online and operating.
08/19/2015	24	89,800	62.4	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/20/2015	24	88,100	61.2	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
08/21/2015	24	90,000	62.5	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/22/2015	24	89,100	61.9	System online and operating.
08/23/2015	24	88,600	61.5	System online and operating.
08/24/2015	24	89,300	62.0	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/25/2015	7.6	29,900	65.7	System offline at 0735 for CIP activities.
08/26/2015	11.3	41,900	62.1	System online at 1245 following CIP activities.
08/27/2015	24	89,000	61.8	System online and operating.
08/28/2015	24	90,400	62.8	System online and operating. Air sparged IPC. Manually pumped excess sludge.
08/29/2015	24	89,100	61.9	System online and operating.
08/30/2015	24	89,400	62.1	System online and operating.
08/31/2015	13.3	51,000	63.8	System offline at 1320 due to FBRO at capacity.

Total	**658.5**	**2,454,900**	
Total Available Hours	**744**	**Average On-line Flow**	**62.1**
Percent Online	**89**		

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 3-1
Operations Summary - GWTP
September 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
09/01/2015	15.5	56,100	60.3	System online at 0830 following FBRO pump out. Air sparged IPC. Manually pumped excess sludge.
09/02/2015	24	88,400	61.4	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/03/2015	24	89,500	62.2	System online and operating.
09/04/2015	24	89,300	62.0	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/05/2015	24	89,600	62.2	System online and operating.
09/06/2015	24	89,200	61.9	System online and operating.
09/07/2015	24	89,600	62.2	System online and operating.
09/08/2015	24	89,700	62.3	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/09/2015	24	88,800	61.7	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
09/10/2015	24	89,200	61.9	System online and operating.
09/11/2015	24	89,300	62.0	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/12/2015	24	89,400	62.1	System online and operating.
09/13/2015	24	88,800	61.7	System online and operating.
09/14/2015	24	89,000	61.8	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/15/2015	24	90,000	62.5	System online and operating.
09/16/2015	7.8	29,800	64.1	System offline at 0745 for CIP activities. FBRO pumped out.
09/17/2015	9.3	33,300	60.0	System online at 1445 following CIP activities.
09/18/2015	24	89,200	61.9	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/19/2015	24	89,300	62.0	System online and operating.
09/20/2015	24	90,000	62.5	System online and operating.
09/21/2015	24	89,400	62.1	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/22/2015	24	88,800	61.7	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
09/23/2015	24	89,000	61.8	System online and operating.
09/24/2015	24	88,800	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/25/2015	24	90,100	62.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/26/2015	24	89,700	62.3	System online and operating.
09/27/2015	24	89,200	61.9	System online and operating.
09/28/2015	24	89,500	62.2	System online and operating. Air sparged IPC. Manually pumped excess sludge.
09/29/2015	24	90,000	62.5	System online and operating.
09/30/2015	24	88,300	61.3	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.

Total	**680.5**	**2,530,300**	
Total Available Hours	**720**	**Average On-line Flow**	**62.0**
Percent Online	**95**		

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 3-1
Operations Summary - GWTP
October 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
10/01/2015	24	88,900	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
10/02/2015	16.7	57,800	57.8	Air sparged IPC. Manually pumped excess sludge. System offline at 1640 due to failure of a solenoid valve on the sodium chlorite skid.
10/03/2015	12.7	50,400	66.3	System online at 1120 following replacement of solenoid valve.
10/04/2015	24	88,800	61.7	System online and operating.
10/05/2015	24	89,400	62.1	System online and operating.
10/06/2015	24	89,500	62.2	System online and operating. Air sparged IPC. Manually pumped excess sludge.
10/07/2015	7.5	29,500	65.6	System offline at 0730 to repair the foot valves and intake pipes of the effluent pumps. Upon completion of repairs, a CIP was initiated. FBRO pumped out.
10/08/2015	9.3	33,000	59.5	System online at 1445 following CIP activities.
10/09/2015	24	89,600	62.2	System online and operating. Air sparged IPC. Manually pumped excess sludge.
10/10/2015	24	89,000	61.8	System online and operating.
10/11/2015	24	88,900	61.7	System online and operating.
10/12/2015	24	89,700	62.3	System online and operating. Air sparged IPC. Manually pumped excess sludge.
10/13/2015	24	89,100	61.9	System online and operating.
10/14/2015	24	89,400	62.1	System online and operating.
10/15/2015	24	88,900	61.7	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
10/16/2015	24	89,600	62.2	System online and operating.
10/17/2015	24	88,800	61.7	System online and operating.
10/18/2015	24	89,000	61.8	System online and operating.
10/19/2015	24	89,700	62.3	System online and operating. Air sparged IPC. Manually pumped excess sludge.
10/20/2015	24	89,200	61.9	System online and operating.
10/21/2015	24	89,000	61.8	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
10/22/2015	24	89,500	62.2	System online and operating.
10/23/2015	24	88,900	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
10/24/2015	24	89,100	61.9	System online and operating.
10/25/2015	24	89,000	61.8	System online and operating.
10/26/2015	24	88,800	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
10/27/2015	24	89,400	62.1	System online and operating.
10/28/2015	24	88,700	61.6	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
10/29/2015	24	88,800	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
10/30/2015	24	89,100	61.9	System online and operating.
10/31/2015	24	89,100	61.9	System online and operating.

Total	**694.1**	**2,577,600**	
Total Available Hours	**744**	**Average On-line Flow**	**61.9**
Percent Online	**93**		

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 3-1
Operations Summary - GWTP
November 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
11/01/2015	24	93,000	64.6	System online and operating.
11/02/2015	24	88,800	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
11/03/2015	24	88,900	61.7	System online and operating.
11/04/2015	7.8	32,400	69.7	System offline at 0745 for CIP activities.
11/05/2015	9.4	34,200	60.5	System online at 1435 following CIP activities. FBRO pumped out.
11/06/2015	24	89,600	62.2	System online and operating. Air sparged IPC. Manually pumped excess sludge.
11/07/2015	24	88,700	61.6	System online and operating.
11/08/2015	24	89,800	62.4	System online and operating.
11/09/2015	24	88,800	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
11/10/2015	24	90,000	62.5	System online and operating.
11/11/2015	24	88,300	61.3	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
11/12/2015	24	88,700	61.6	System online and operating.
11/13/2015	24	89,400	62.1	System online and operating. Air sparged IPC. Manually pumped excess sludge.
11/14/2015	24	89,400	62.1	System online and operating.
11/15/2015	24	89,100	61.9	System online and operating.
11/16/2015	24	90,200	62.6	System online and operating. Air sparged IPC. Manually pumped excess sludge.
11/17/2015	24	89,000	61.8	System online and operating.
11/18/2015	24	88,400	61.4	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
11/19/2015	24	88,900	61.7	System online and operating.
11/20/2015	24	88,900	61.7	System online and operating. Air sparged IPC. Manually pumped excess sludge.
11/21/2015	24	89,200	61.9	System online and operating.
11/22/2015	21	80,900	64.2	System offline at 1645 due to low water alarm in EW-4. System restarted at 1945 after reducing flow from EW-4.
11/23/2015	24	88,400	61.4	System online and operating. Air sparged IPC. Manually pumped excess sludge.
11/24/2015	24	89,500	62.2	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
11/25/2015	24	88,000	61.1	System online and operating. Air sparged IPC. Manually pumped excess sludge.
11/26/2015	24	89,600	62.2	System online and operating.
11/27/2015	24	89,600	62.2	System online and operating.
11/28/2015	24	88,900	61.7	System online and operating.
11/29/2015	24	89,700	62.3	System online and operating.
11/30/2015	19	53,700	48.4	System offline at 1830 due to over current alarm in EW-1.

Total	**680.7**	**2,522,000**	
Total Available Hours	**720**	**Average On-line Flow**	**61.8**
Percent Online	**95**		

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 3-1
Operations Summary - GWTP
December 2015
Shepley's Hill Landfill
Devens, Massachusetts

Date	Hours Online	Gallons Discharged	Average Effluent Flowrate	Status
12/01/2015	0	0	0.0	System offline due to pump motor failure in EW-1.
12/02/2015	0	0	0.0	Initiated CIP activities. FBRO pumped out.
12/03/2015	0	1,500	0.0	Completed CIP activities. System remains offline due to pump motor failure in EW-1.
12/04/2015	10.5	38,300	60.8	Replaced pump and motor in EW-1. Restarted the sytem at 1330.
12/05/2015	24	89,400	62.1	System online and operating.
12/06/2015	24	89,300	62.0	System online and operating.
12/07/2015	24	88,600	61.5	System online and operating. Air sparged IPC. Manually pumped excess sludge.
12/08/2015	24	90,000	62.5	System online and operating.
12/09/2015	24	88,800	61.7	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
12/10/2015	24	88,200	61.3	System online and operating. Air sparged IPC. Manually pumped excess sludge.
12/11/2015	21.3	79,600	62.4	System offline at 2115 due to thickener level alarm.
12/12/2015	13.4	50,600	62.9	System restarted at 1035 upon replacement of bag filters.
12/13/2015	24	88,600	61.5	System online and operating.
12/14/2015	24	89,900	62.4	System online and operating. Air sparged IPC. Manually pumped excess sludge.
12/15/2015	24	89,400	62.1	System online and operating.
12/16/2015	24	89,200	61.9	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
12/17/2015	24	89,400	62.1	System online and operating.
12/18/2015	24	88,600	61.5	System online and operating. Air sparged IPC. Manually pumped excess sludge.
12/19/2015	24	89,600	62.2	System online and operating.
12/20/2015	24	89,600	62.2	System online and operating.
12/21/2015	24	89,300	62.0	System online and operating. Air sparged IPC. Manually pumped excess sludge.
12/22/2015	24	88,700	61.6	System online and operating.
12/23/2015	24	89,500	62.2	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
12/24/2015	24	88,200	61.3	System online and operating.
12/25/2015	24	89,900	62.4	System online and operating.
12/26/2015	24	88,900	61.7	System online and operating.
12/27/2015	24	89,600	62.2	System online and operating.
12/28/2015	24	89,500	62.2	System online and operating. Air sparged IPC. Manually pumped excess sludge.
12/29/2015	24	89,500	62.2	System online and operating.
12/30/2015	24	88,200	61.3	System online and operating. FBRO pumped out. Air sparged IPC. Manually pumped excess sludge.
12/31/2015	24	89,500	62.2	System online and operating. Air sparged IPC. Manually pumped excess sludge.

Total	**645.2**	**2,399,400**	
Total Available Hours	**744**	**Average On-line Flow**	**62.0**
Percent Online	**87**		

Note:

Flowrate in Gallons per Minute (GPM)

Clean in Place (CIP)

Table 3-2
Monthly Discharge Totals - GWTP
Shepley's Hill Landfill
Devens, Massachusetts

Month	Discharge Flow (gallons)	Month	Discharge Flow (gallons)	Month	Discharge Flow (gallons)
startup 8&9/2005	213,900	Nov-10	1,869,600	Aug-15	2,454,900
Mar-06	555,800	Dec-10	1,833,600	Sep-15	2,530,300
Apr-06	833,600	Jan-11	1,907,600	Oct-15	2,577,600
May-06	941,700	Feb-11	1,766,400	Nov-15	2,522,000
Jun-06	979,000	Mar-11	1,413,900	Dec-15	2,399,400
Jul-06	646,600	Apr-11	1,834,200		
Aug-06	327,200	May-11	2,064,700		
Sep-06	453,500	Jun-11	1,872,000		
Oct-06	597,500	Jul-11	1,642,500		
Nov-06	562,500	Aug-11	1,904,500		
Dec-06	606,800	Sep-11	1,825,500		
Jan-07	739,600	Oct-11	1,438,700		
Feb-07	0	Nov-11	1,907,200		
Mar-07	672,400	Dec-11	1,843,300		
Apr-07	854,000	Jan-12	1,814,900		
May-07	974,700	Feb-12	1,641,400		
Jun-07	942,200	Mar-12	1,530,400		
Jul-07	970,500	Apr-12	1,512,300		
Aug-07	1,563,400	May-12	1,374,700		
Sep-07	1,809,100	Jun-12	1,938,100		
Oct-07	1,616,000	Jul-12	1,557,500		
Nov-07	1,436,200	Aug-12	1,595,800		
Dec-07	1,629,200	Sep-12	1,807,400		
Jan-08	1,589,100	Oct-12	1,729,100		
Feb-08	1,418,100	Nov-12	1,979,100		
Mar-08	1,596,600	Dec-12	1,915,900		
Apr-08	1,586,500	Jan-13	1,776,000		
May-08	1,616,300	Feb-13	1,310,700		
Jun-08	1,424,400	Mar-13	1,926,400		
Jul-08	1,591,800	Apr-13	2,055,600		
Aug-08	1,101,700	May-13	1,492,100		
Sep-08	1,652,800	Jun-13	2,055,700		
Oct-08	1,238,900	Jul-13	2,023,050		
Nov-08	1,649,500	Aug-13	2,185,000		
Dec-08	1,521,400	Sep-13	1,679,300		
Jan-09	1,602,500	Oct-13	1,697,700		
Feb-09	1,625,700	Nov-13	1,865,600		
Mar-09	909,400	Dec-13	2,054,300		
Apr-09	1,292,500	Jan-14	1,905,500		
May-09	1,631,000	Feb-14	1,773,000		
Jun-09	1,793,400	Mar-14	2,108,500		
Jul-09	1,830,700	Apr-14	1,696,300		
Aug-09	1,935,700	May-14	2,124,000		
Sep-09	1,879,100	Jun-14	1,943,600		
Oct-09	1,832,600	Jul-14	2,019,100		
Nov-09	1,909,100	Aug-14	2,182,900		
Dec-09	1,773,100	Sep-14	1,871,900		
Jan-10	2,030,000	Oct-14	1,646,600		
Feb-10	1,695,500	Nov-14	1,980,900		
Mar-10	1,922,900	Dec-14	1,948,100		
Apr-10	1,986,900	Jan-15	1,600,100		
May-10	1,997,200	Feb-15	1,779,800		
Jun-10	1,882,400	Mar-15	1,992,100		
Jul-10	1,606,700	Apr-15	2,198,900		
Aug-10	1,552,700	May-15	2,118,300		
Sep-10	1,207,200	Jun-15	2,071,100		
Oct-10	1,768,600	Jul-15	2,037,000		

Cummulative Total	192,701,050

Table 3-3
Shepley's Hill Landfill GWTP
2015 Filter Bed Roll-Off Disposal Totals

Date	Sludge Removed for Disposal (Tons)
01/07/2015	11.23
01/20/2015	10.96
01/29/2015	8.75
02/11/2015	11.36
02/20/2015	11.87
02/25/2015	6.49
03/05/2015	9.76
03/17/2015	9.96
03/26/2015	9.85
04/02/2015	8.65
04/09/2015	9.28
04/16/2015	10.13
04/23/2015	8.13
05/07/2015	10.42
05/21/2015	11.22
06/02/2015	9.70
06/11/2015	9.56
06/18/2015	7.69
06/30/2015	9.58
07/09/2015	9.97
07/21/2015	11.13
07/30/2015	10.01
08/11/2015	11.23
08/20/2015	10.47
09/01/2015	11.22
09/09/2015	10.72
09/16/2015	10.25
09/22/2015	9.17
09/30/2015	10.77
10/07/2015	10.76
10/15/2015	8.10
10/21/2015	10.12
10/28/2015	9.83
11/05/2015	8.51
11/11/2015	9.47
11/17/2015	8.81
11/24/2015	9.43
12/02/2015	8.37
12/09/2015	9.06
12/16/2015	9.22
12/23/2015	8.11
12/30/2015	7.34
YEARLY TOTAL	**406.66**

Note:

All Filter Bed Roll-off disposal activities complted by Gobal Remdiation Services Inc. (East Taunton, MA)

All Filter Bed Roll-off sludge disposed of at Waste Management Turnkey Landfill (Rochester, NH)

Table 3-4
Shepley's Hill Landfill GWTP
As/Fe/Mn Influent Concentrations

		EW-01			EW-04			Total			
Date	**Flow**	**As**	**Fe**	**Mn**	**As**	**Fe**	**Mn**	**As**	**Fe**	**Mn**	**Total**
12/6/2006	40	2.77	92.00	2.47	5.00	72.00	1.75	3.89	82.00	2.11	88.00
12/6/2006	50	2.76	90.00	2.45	5.24	72.00	1.73	4.00	81.00	2.09	87.09
12/7/2006	25	2.64	87.00	2.43	4.93	70.00	1.71	3.79	78.50	2.07	84.36
8/7/2007	55	2.40	88.00	2.46	4.09	67.00	1.71	3.25	77.50	2.09	82.83
9/11/2007	55	2.58	80.00	2.32	4.04	54.00	1.52	3.31	67.00	1.92	72.23
12/27/2007	51	2.45	77	2.29	3.88	56	1.66	3.17	66.50	1.98	71.64
3/6/2008	52	2.43	74	2.2	3.74	50	1.55	3.09	62.00	1.88	66.96
6/17/2008	52	2.43	75.00	2.20	3.59	50.00	1.60	3.01	62.50	1.90	67.41
9/10/2008	52	2.22	78.00	2.22	3.60	54.00	1.78	2.91	66.00	2.00	70.91
12/2/2008	52	2.33	78.0	2.25	3.63	50.0	1.73	2.98	64.0	1.99	68.97
4/13/2009	53	2.51	81.0	2.37	3.77	55.0	1.90	3.14	68.0	2.14	73.28
6/24/2009	53	2.41	78.0	2.22	3.91	48.0	1.73	3.16	63.0	1.98	68.14
9/15/2009	54	2.32	76.0	2.14	3.72	41.0	1.56	3.02	58.5	1.85	63.37
12/15/2009	52	2.36	72.0	1.99	3.53	40.0	1.51	2.95	56.0	1.75	60.70
3/16/2010	52	2.37	73.0	2.19	3.54	38.0	1.66	2.96	55.5	1.93	60.38
6/23/2010	52	2.4	72.0	2.09	3.78	39.0	1.67	3.09	55.5	1.88	60.47
9/24/2010	50	2.79	81.0	3.3	4.29	56.0	2.19	3.54	68.5	2.75	74.79
12/22/2010	55	2.21	81.0	2.17	3.81	48.0	1.99	3.01	64.5	2.08	69.59
3/16/2011	55	2.14	76.0	2.22	4.38	42.0	1.96	3.26	59.0	2.09	64.35
6/20/2011	56	2.08	72.0	2.12	4.36	50.0	2.17	3.22	61.0	2.15	66.37
9/13/2011	56	2.04	74.0	2.05	3.75	46.0	2.16	2.90	60.0	2.11	65.00
12/20/2011	56	2.19	77.0	2.26	3.91	45.0	2.26	3.05	61.0	2.26	66.31
3/6/2012	49	2.23	81.0	2.26	3.71	47.0	2.22	2.97	64.0	2.24	69.21
6/7/2012	50	2.28	74.0	2.03	3.66	48.0	2.13	2.97	61.0	2.08	66.05
9/14/2012	50	2.31	76.0	2.13	3.15	43.0	2.04	2.73	59.5	2.09	64.31
12/5/2012	50	2.04	78.0	2.25	3.25	45.0	2.12	2.64	61.5	2.19	66.33
3/1/2013	50	2.29	73.0	2.04	3.85	45.0	2.00	3.07	59.0	2.02	64.09
6/3/2013	50	2.05	63.0	1.86	3.67	47.0	2.26	2.86	55.0	2.06	59.92
9/10/2013	50	1.91	65.0	1.97	3.44	37.0	1.98	2.68	51.0	1.98	55.65
12/9/2013	52	2.13	78.0	2.33	3.82	42.0	2.19	2.97	60.0	2.26	65.23
3/6/2014	50	1.98	72.0	2.10	3.28	42.0	2.08	2.63	57.0	2.09	61.72
6/2/2014	49	1.90	73.0	2.26	3.19	39.0	2.21	2.54	56.0	2.24	60.78
9/5/2014	50	1.83	76.1	2.32	3.20	43.9	2.44	2.52	60.0	2.38	64.90
12/4/2014	50.1	1.80	73.6	2.29	3.24	45.0	2.52	2.52	59.3	2.41	64.23
3/5/2015	56.2	2.00	75.5	2.34	3.82	50.3	2.61	2.91	62.9	2.48	68.29
6/5/2015	57.6	2.09	75.5	2.35	3.69	50.1	2.61	2.89	62.8	2.48	68.17
9/9/2015	61.7	1.89	72.5	2.28	3.28	43.3	2.39	2.59	57.9	2.34	62.82
12/7/2015	62.0	1.92	68.3	2.24	3.24	39.0	2.35	2.58	53.7	2.30	58.53

Note:
Concentrations reported in mg/l (ppm)
Flow reported in gallons per a minute (gpm)

Table 3-5
Influent VOC Dissolved Gasses Concentrations - GWTP
Shepley's Hill Landfill
Devens, Massachusetts
September 9, 2015

EW-01			EW-04		
Analyte	**Result**		**Analyte**	**Result**	
Methyene Chloride	ND		Methyene Chloride	ND	
1,1-Dichloroethane	ND		1,1-Dichloroethane	ND	
Chloroform	ND		Chloroform	ND	
Carbon Tetrachloride	ND		Carbon Tetrachloride	ND	
1,2-Dichloropropane	ND		1,2-Dichloropropane	ND	
Dibromochloromethane	ND		Dibromochloromethane	ND	
1,1,2-Trichloroethene	ND		1,1,2-Trichloroethene	ND	
Tetrachloroethene	ND		Tetrachloroethene	ND	
Chlorobenzene	0.76	J	Chlorobenzene	0.51	J
Trichlorofluoromethane	ND		Trichlorofluoromethane	ND	
1,2-Dichloroethane	ND		1,2-Dichloroethane	ND	
1,1,1-Trichloroethane	ND		1,1,1-Trichloroethane	ND	
Bromodichloromethane	ND		Bromodichloromethane	ND	
trans-1,3-Dichloropropene	ND		trans-1,3-Dichloropropene	ND	
cis-1,3-Dichloropropene	ND		cis-1,3-Dichloropropene	ND	
1,1-Dichloropropene	ND		1,1-Dichloropropene	ND	
Bromoform	ND		Bromoform	ND	
1,1,2,2-Tetrachloroethane	ND		1,1,2,2-Tetrachloroethane	ND	
Benzene	1.1		Benzene	ND	
Toluene	ND		Toluene	ND	
Ethylbenzene	ND		Ethylbenzene	ND	
Chloromethane	ND		Chloromethane	ND	
Bromomethane	ND		Bromomethane	ND	
Vinyl chloride	ND		Vinyl chloride	ND	
Chloroethane	ND		Chloroethane	ND	
1,1-Dichloroethene	ND		1,1-Dichloroethene	ND	
trans-1,2-Dichloroethe	ND		trans-1,2-Dichloroethe	ND	
Trichloroethene	ND		Trichloroethene	ND	
1,2-Dichlorobenzene	ND		1,2-Dichlorobenzene	ND	
1,3-Dichlorobenzene	ND		1,3-Dichlorobenzene	ND	
1,4-Dichlorobenzene	0.93	J	1,4-Dichlorobenzene	ND	
Methyl tert butyl ether	ND		Methyl tert butyl ether	ND	
p/m-Xylene	14.7		p/m-Xylene	ND	
o-Xylene	ND		o-Xylene	ND	
cis-1,2-Dichlorothene	ND		cis-1,2-Dichlorothene	ND	
Dibromomethane	ND		Dibromomethane	ND	
1,2,3-Trichloropropane	ND		1,2,3-Trichloropropane	ND	
Styrene	ND		Styrene	ND	
Dichlorodifluoromethane	ND		Dichlorodifluoromethane	ND	
Acetone	ND		Acetone	ND	
Carbon disulfide	ND		Carbon disulfide	ND	
2-Butanone	ND		2-Butanone	ND	
4-Methyl-2-pentone	ND		4-Methyl-2-pentone	ND	
2-Hexanone	ND		2-Hexanone	ND	
Bromochloromethane	ND		Bromochloromethane	ND	
Tetrahydrofuran	ND		Tetrahydrofuran	ND	
2,2-Dichloropropane	ND		2,2-Dichloropropane	ND	
1,2-Dibromoethane	ND		1,2-Dibromoethane	ND	
1,3-Dichloropropane	ND		1,3-Dichloropropane	ND	
1,1,1,2-Tetrachloroethane	ND		1,1,1,2-Tetrachloroethane	ND	
Bromobenzene	ND		Bromobenzene	ND	
n-Butylbenzene	ND		n-Butylbenzene	ND	
sec-Butylbenzene	ND		sec-Butylbenzene	ND	
tert-Butylbenzene	ND		tert-Butylbenzene	ND	
o-Chlorotoluene	ND		o-Chlorotoluene	ND	
p-Chorotoluene	ND		p-Chorotoluene	ND	
1,2-Dibromo-3-chloropropane	ND		1,2-Dibromo-3-chloropropane	ND	
Hexachlorobutadiene	ND		Hexachlorobutadiene	ND	
Isopropylbenzene	ND		Isopropylbenzene	ND	
p-Isopropyltoluene	ND		p-Isopropyltoluene	ND	
Naphthalene	ND		Naphthalene	ND	
n-Propylbenzene	ND		n-Propylbenzene	ND	
1,2,3-Trichlorobenzene	ND		1,2,3-Trichlorobenzene	ND	
1,2,4-Trichlorobenzene	ND		1,2,4-Trichlorobenzene	ND	
1,3,5-Trimethylbenzene	ND		1,3,5-Trimethylbenzene	ND	
1,2,4-Trimethylbenzene	ND		1,2,4-Trimethylbenzene	ND	
Ethyl ether	7.4		Ethyl ether	3.7	J
Isopropyl Ether	ND		Isopropyl Ether	ND	
Ethyl-tert-butyl-ether	ND		Ethyl-tert-butyl-ether	ND	
Tertiary-amyl Methyl Ether	ND		Tertiary-amyl Methyl Ether	ND	
1,4-Dioxane	ND		1,4-Dioxane	ND	
EW-01 Totals	**24.89**		**EW-04 Totals**	**4.21**	

EW-01		EW-04	
Analyte	**Result**	**Analyte**	**Result**
Methane	1,770	Methane	858
Ethane	ND	Ethane	ND

Notes:
J = Value is below the reportable detection limit but greater than the method detection limits, the value is estimated
ND = Non-detect at laboratory detection limit.
All units in µg/L.

Table 3-6
Monthy Effluent Arsenic Sampling Results - GWTP
Shepley's Hill Landfill
Devens, Massachusetts

Date	Effluent Arsenic Concentration (ppb)	Date	Effluent Arsenic Concentration (ppb)	Date	Effluent Arsenic Concentration (ppb)
08/29/2005	1.5	11/17/2009	11.6	07/01/2014	45.3
08/30/2005	1.2	12/15/2009	43	08/07/2014	68.0
08/31/2005	17.1	12/22/2009	9.4	09/05/2014	37.7
09/01/2005	1	01/07/2010	25.2	10/01/2014	10.6
09/02/2005	1	02/18/2010	33.1	11/06/2014	742
09/06/2005	1	03/16/2010	3.2	11/14/2014	5.2
09/08/2005	0.9	04/21/2010	14.4	12/04/2014	11.1
09/09/2005	3	05/13/2010	10.4	01/02/2015	34.8
03/10/2006	0.9	06/23/2010	24.6	02/12/2015	27.5
03/15/2006	2	07/15/2010	17.5	03/05/2015	58.4
03/23/2006	1	08/19/2010	29	04/10/2015	6.6
04/07/2006	2	09/24/2010	13.9	05/07/2015	6.5
04/14/2006	1.3	10/27/2010	22.3	06/05/2015	11.1
04/20/2006	9	11/23/2010	26.1	07/10/2015	11.2
04/27/2006	2	12/22/2010	10.3	08/10/2015	37.4
05/22/2006	2	01/24/2011	55.8	09/09/2015	5.5
06/27/2006	ND	02/16/2011	9.8	10/06/2015	6.2
07/12/2006	2	03/16/2011	14.1	11/02/2015	15.5
08/31/2006	13	04/21/2011	17.4	12/07/2015	5.9
09/28/2006	28	05/16/2011	7.7		
10/16/2006	4	06/20/2011	5.2		
11/14/2006	2	07/22/2011	4.6		
12/26/2006	34	08/11/2011	2.3		
01/05/2007	19	09/13/2011	38.1		
01/16/2007	2	10/24/2011	20.3		
01/23/2007	4	11/21/2011	12.5		
01/30/2007	1	12/20/2011	15.1		
03/22/2007	1	01/24/2012	18.2		
04/11/2007	ND	02/07/2012	28.1		
05/16/2007	1.2	03/06/2012	16.1		
06/13/2007	1.3	04/13/2012	269.3		
07/12/2007	1.4	04/30/2012	14.9		
08/07/2007	1.5	05/14/2012	90.5		
09/11/2007	1.3	05/25/2012	8.7		
10/10/2007	1.2	06/07/2012	12.7		
11/06/2007	1.3	07/02/2012	23.0		
12/27/2007	1.2	08/03/2012	17.1		
01/10/2008	3	09/14/2012	23.9		
02/13/2008	1	10/10/2012	15.6		
03/06/2008	1.1	11/06/2012	32.9		
04/10/2008	1	12/05/2012	11.9		
05/15/2008	1	01/02/2013	14.3		
06/17/2008	1	02/06/2013	15.7		
07/08/2008	1.25	03/01/2013	15.1		
08/06/2008	1	04/03/2013	14.1		
09/10/2008	5.3	05/01/2013	13.9		
10/14/2008	1.1	06/03/2013	20.5		
11/04/2008	1	07/08/2013	15.5		
12/02/2008	0.87	08/05/2013	15.0		
01/13/2009	1.3	09/10/2013	11.0		
02/03/2009	1.6	10/02/2013	13.9		
03/05/2009	1.1	11/12/2013	19.2		
04/13/2009	24.7	12/09/2013	20.7		
05/26/2009	6.1	01/06/2014	17.8		
06/24/2009	25.2	02/06/2014	20.2		
07/16/2009	6.3	03/06/2014	19.2		
08/18/2009	9.7	04/03/2014	15.1		
09/15/2009	3.5	05/05/2014	19.3		
10/20/2009	15.5	06/09/2014	7.2		

Notes:
Tables Includes all daily/weekly (when required) Arsenic sampling results
ND - Non-detect

Table 3-7
Quarterly Effluent Sampling Results - GWTP
Shepley's Hill Landfill
Devens, Massachusetts

Sample Date	09/02/2005	03/15/2006	06/27/2006	09/02/2006	12/26/2006	03/22/2007	06/13/2007	09/11/2007	12/27/2007	03/06/2008	06/17/2008	09/10/2008	12/02/2008	04/13/2009	06/24/2009	09/15/2009
Analyte																
BOD	NA	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, Total Suspended	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, Total	ND	ND	0.007	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
Chloride	54	44	50	100	50	68	56	60	67	80	60	58	62	63	58	58
pH	6.7	5.8	6.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate	ND	ND	ND	ND	ND	ND	0.18	0.32	0.21	0.36	0.26	0.16	0.3	0.19	0.14	0.14
Sulfate	ND	ND	ND	2.6	160	70	2.2	2.7	3.3	3	3.1	2.8	3.2	3.3	7.9	7.9
Oil & Grease	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Metals																
Aluminium	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
Anitmony	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
Arsenic	0.001	0.002	ND	0.028	0.034	0.002	0.0013	0.0013	0.0012	0.0011	0.00094	0.0053	0.00087	0.0247	0.0252	0.0035
Barium	ND	0.02	0.03	0.02	0.015	0.029	0.023	0.023	0.023	0.023	0.022	0.024	0.022	0.022	0.023	0.024
Beryllium	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND	NA	NA	NA	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper	ND	ND	ND	ND	0.026	0.017	0.015	0.0049	0.0076 J	0.015	0.13	0.0096 J	0.011	0.0054 J	0.0059 J	0.01
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0022 J
Magnesium	ND	8.5	8.8	9.1	8.4	8.1	7.5	7.1	7.6	6.9	6.9	7.1	6.8	6.8	6.9	6.6
Manganese	ND	0.87	2.1	0.26	0.876	0.709	0.001	0.0026	0.0011 J	0.0008 J	ND	0.0026 J	ND	0.017	0.02	0.0041 J
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	0.0002 J	0.0002 J	0.0005 J	ND	ND	ND	ND	0.00003 J
Nickel	ND	ND	ND	ND	ND	0.010	0.005	--	--	--	--	--	--	--	--	--
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	0.0009 J	ND	ND	ND	ND	ND	ND	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
Zinc	ND	ND	ND	ND	ND	0.007	0.005	--	--	--	--	--	--	--	--	--
VOCs																
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--

Notes:
All unit in mg/l, except for pH (standard pH units)
NA: Not Analyzed
ND: Non-detect at laboratory detection limit
--: Parameter no longer requirerd per Discharge Permit # 020
**: Metal is no longer required as part of quaterly sampling. Metal sampled as part of annual sampling per Discharge Permit # 020
All detection limits are below discharge limits
J: Estimated value. The Target analyte concentration is below the quanitation limit (RL), but above the Method Dectection Limit (MDL)

Table 3-7
Quarterly Effluent Sampling Results - GWTP
Shepley's Hill Landfill
Devens, Massachusetts

Sample Date	12/08/2009	03/16/2010	06/23/2010	09/24/2010	12/22/2010	03/16/2011	06/20/2011	09/13/2011	12/20/2011	03/06/2012	06/07/2012	09/14/2012	12/05/2012	03/01/2013	06/03/2013	09/10/2013
Analyte																
BOD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solids, Total Suspended	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, Total	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	62	68	67	59	73	44	28	44	42	46	36	28	43	41.2	28	35
pH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate	0.18	0.38	0.69	0.15	0.35	0.06	0.12	0.09 J	0.09 J	0.06 J	0.07 J	0.099 J	0.12	ND	0.081 J	0.10
Sulfate	4.3	4.6	5.3	4.4	3.9	4	3.5	3.6	3.5	3.4	2.6	58	3.9	3.35	2.97	3.64
Oil & Grease	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Metals																
Aluminium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anitmony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	0.043	0.0032	0.0246	0.0139	0.0103	0.0141	0.0052	0.0381	0.0151	0.0161	0.0127	0.0239	0.0119	0.0151	0.0205	0.0110
Barium	0.021	0.022	0.018	0.025	0.021	0.024	0.018	0.023	0.023	0.023	0.022	0.020	0.023	0.023	0.020	0.021
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	NA	NA	NA	ND	**	**	**	ND	**	**	**	**	**	**	**	**
Chromium	ND	ND	ND	ND	**	**	**	ND	**	**	**	**	**	**	**	**
Copper	0.015	0.0088 J	0.013	0.0063 J	**	**	**	0.009 J	**	**	**	**	**	**	**	**
Lead	ND	ND	ND	ND	**	**	**	ND	**	**	**	**	**	**	**	**
Magnesium	6.5	6.4	5.7	5.7	6	6	5.9	5.8	6.2	6.2	5.9	5.2	6.2	5.6	5.5	5.1
Manganese	0.029	0.0026 J	0.017	0.656	0.007	1.09	0.912	0.66	1.1	0.757	1.15	0.031	0.279	1.27	1.19	1.40
Mercury	0.00002 J	ND	ND	ND	**	**	**	ND	**	**	**	**	**	**	**	**
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	ND	ND	ND	ND	**	**	**	ND	**	**	**	**	**	**	**	**
Silver	ND	ND	ND	ND	**	**	**	ND	**	**	**	**	**	**	**	**
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
All unit in mg/l, except for pH (standard pH units)
NA: Not Analyzed
ND: Non-detect at laboratory detection limit
--: Parameter no longer requirerd per Discharge Permit # 020
**: Metal is no longer required as part of quaterly sampling. Metal sampled as part of annual sampling per Discharge Permit # 020
All detection limits are below discharge limits
J: Estimated value. The Target analyte concentration is below the quanitation limit (RL), but above the Method Dectection Limit (MDL)

Table 3-7
Quarterly Effluent Sampling Results - GWTP
Shepley's Hill Landfill
Devens, Massachusetts

Sample Date	12/09/2013	03/06/2014	06/02/2014	09/05/2014	12/04/2014	03/05/2015	06/05/2015	09/09/2015	12/07/2015
Analyte									
BOD	--	--	--	--	--	--	--	--	--
Solids, Total Suspended	--	--	--	--	--	--	--	--	--
Cyanide, Total	--	--	--	--	--	--	--	--	--
Chloride	39	37	41	39	38.7	38.0	34.0	33.7	33.5
pH	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate	0.054 J	0.077 J	0.098 J	0.43	0.43	ND	0.20	0.34	0.22
Sulfate	4.30	4.97	4.74	4.8 J	6.0 J	3.4 J	3.5	3.7 J	6.5 J
Oil & Grease	--	--	--	--	--	--	--	--	--
Total Metals									
Aluminium	--	--	--	--	--	--	--	--	--
Anitmony	--	--	--	--	--	--	--	--	--
Arsenic	0.0207	0.0192	0.0072	0.0377	0.0111	0.0584	0.0111	0.0055	0.0059
Barium	0.023	0.025	0.023	0.025	ND	ND	ND	ND	ND
Beryllium	--	--	--	--	--	--	--	--	--
Cadmium	**	**	**	**	**	**	**	**	**
Chromium	**	**	**	**	**	**	**	**	**
Copper	**	**	**	**	**	**	**	**	**
Lead	**	**	**	**	**	**	**	**	**
Magnesium	5.8	6.3	5.3	6.14	6.37	6.06	6.11	5.88	5.74
Manganese	0.908	1.59	1.64	1.62	1.55	1.69	1.67	1.75	1.77
Mercury	**	**	**	**	**	**	**	**	**
Nickel	--	--	--	--	--	--	--	--	--
Selenium	**	**	**	**	**	**	**	**	**
Silver	**	**	**	**	**	**	**	**	**
Thallium	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--
VOCs									
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	--	--

Notes:
All unit in mg/l, except for pH (standard pH units)
NA: Not Analyzed
ND: Non-detect at laboratory detection limit
--: Parameter no longer requirerd per Discharge Permit # 020
**: Metal is no longer required as part of quaterly sampling. Metal sampled as part of annual sampling per Discharge Permit # 020
All detection limits are below discharge limits
J: Estimated value. The Target analyte concentration is below the quanitation limit (RL), but above the Method Dectection Limit (MDL)

Table 3-8
Annual Effluent Sampling Results - GWTP
Shepley's Hill Landfill
Devens, Massachusetts
September 9, 2015

Analyte	Conc. (mg/l)	Analyte	Conc. (mg/l)	Analyte	Conc. (mg/l)	Analyte	Conc. (mg/l)
VOCs		**Semi-volatiles**		**Pesticdes and PCBSs**		**Metals and TPH**	
Methylene chloride	ND	Acenapthene	ND	Delta-BHC	ND	Chromium (Total)	ND
1,1-Dichloroethane	ND	Benzidine	ND	Lindane	ND	Cadmium	ND
Chloroform	0.00041 J	1,2,4-Trichlorobenzene	ND	Alpha-BHC	ND	Copper	ND
Carbon tetrachloride	ND	Hexachlorobenzene	ND	Beta-BHC	ND	Lead	ND
1,2-Dichloropropane	ND	Bis(2-chloroethyl)ether	ND	Heptachlor	ND	Silver	ND
Dibromochloromethane	ND	2-Chloronaphthalene	ND	Aldrin	ND	Selenium	ND
1,1,2-Trichloroethane	ND	3,3'-Dichlorobenzidine	ND	Heptachlor epoxide	ND	Mercury	ND
2-Chloroethylvinyl ether	ND	2,4-Dinitrololuene	ND	Endrin	ND		
Tetrachloroethene	ND	2,6-Dinitrololuene	ND	Endrin aldehyde	ND	TPH	ND
Chlorobenzene	ND	Azobenzene	ND	Endrin ketone	ND		
Trichlorofluoromethane	ND	Fluoranthene	ND	Dieldrin	ND		
1,2-Dichloroethane	ND	4-Chlorophenyl phenyl ether	ND	4,4'-DDE	ND		
1,1,1-Trichloroethane	ND	4-Bromophenyl phenyl ether	ND	4,4'-DDD	ND		
Bromodichloromethane	ND	Bis(2-chloroisopropyll)ether	ND	4,4'-DDT	ND		
trans-1,3-Dichloropropene	ND	Bis(2-chloroethoxy) methane	ND	Endosulfan I	ND		
cis-1,3-Dichloropropene	ND	Hexachlorobutadiene	ND	Endosulfan II	ND		
Bromoform	ND	Hexachlorocyclopentadiene	ND	Endosulfan sulfate	ND		
1,1,2,2-Tetrachloroethane	ND	Hexachloroethane	ND	Methoxychlor	ND		
Benzene	0.00057	Isophorone	ND	Toxaphene	ND		
Toluene	ND	Naphthalene	ND	Chlordane	ND		
Ethylbenzene	ND	Nitrobenzene	ND	cis-Chlordane	ND		
Chloromethane	ND	NDPA/DPA	ND	trans-Chlordane	ND		
Bromomethane	ND	n-Nitrosodi-n-propylamine	ND				
Vinyl chloride	ND	Bis(2-ethylhexy)phthalate	ND	Aroclor 1016	ND		
Chloroethane	ND	Butyl benzyl phthalate	ND	Aroclor 1221	ND		
1,1-Dichloroethene	ND	Di-n-butylphthalate	ND	Aroclor 1232	ND		
trans-1,2-Dichloroethene	ND	Di-n-octylphthalate	ND	Aroclor 1242	ND		
cis-1,2-Dichloroethene	ND	Diethyl phthalate	0.00052 J	Aroclor 1248	ND		
Trichloroethene	ND	Dimethyl phthalate	ND	Aroclor 1254	ND		
1,2-Dichlorobenzene	ND	Benzo(a)anthracene	ND	Aroclor 1260	ND		
1,3-Dichlorobenzene	ND	Benzo(a)pyrene	ND				
1,4-Dichlorobenzene	ND	Benzo(b)fluoranthene	ND				
p/m-Xylene	ND	Benzo(k)fluoranthene	ND				
o-Xylene	ND	Chrysene	ND				
Xylene (Total)	0.0052	Acenaphthylene	ND				
Styrene	ND	Anthracene	ND				
Acetone	ND	Benzo(ghi)perylene	ND				
Carbon disulfide	ND	Flourene	ND				
2-Butanone	ND	Phenanthrene	ND				
Vinyl acetate	ND	Dibenzo(a,h)anthracene	ND				
4-Methyl-2-pentanone	ND	Indeno(1,2,3-cd)pyrene	ND				
2-Hexanone	ND	Pyrene	ND				
Acrylonitrile	ND	Aniline	ND				
Dibromomethane	ND	4-Chloroaniline	ND				
Acrolein	ND	1-Methylnaphthalene	ND				
		2-Nitroaniline	ND				
		3-Nitroaniline	ND				
		4-Nitroaniline	ND				
		Dibenzofuran	ND				
		2-Methylnapthalene	ND				
		n-Nitrosodimethylamine	ND				
		2,4,6-Trichlorophenol	ND				
		p-Chloro-m-cresol	ND				
		2-Chlorophenol	ND				
		2,4-Dichlorophenol	ND				
		2,4-Dimethylphenol	ND				
		2-Nitrophenol	ND				
		4-Nitrophenol	ND				
		4,6-Dinitro-o-cresol	ND				
		Pentachlorophenol	ND				
		Phenol	ND				
		2-Methylphenol	ND				
		3-Methylphenol/4-Methylphenol	ND				
		2,4,5-Trichlorophenol	ND				
		Benzoic Acid	ND				
		Benzyl Alcohol	ND				
		Carbazole	ND				

Notes:
ND - Non-detect
J: Estimated value. The Target analyte concentration is below the quanitation limit (RL), but above the Method Dectection Limit (MDL)

TABLE 5-1
Shepley's Hill Landfill
Long Term Monitoring Network

Monitoring Interval	Well ID	TOC Elevation (ft msl)	Screen Interval (ft bgs)	Screen Elevation (ft msl)	Interval Description	DQO for Inclusion within the LTMMP
UPGRADIENT AREA						
	SHL-12	248.67	--	--	Shallow Overburden/WT	Wells upgradient of source are necessary for determining groundwater parameters of what is entering the source zone
	SHL-15	259.93	--	--	Shallow Overburden/WT	Wells upgradient of source are necessary for determining groundwater parameters of what is entering the source zone
	SHL-24	239.6	110.0 - 120.0*	126.7 - 116.7	Deep Overburden	Wells upgradient of source are necessary for determining groundwater parameters of what is entering the source zone
LANDFILL AREA						
	N5-P1	242.62	144.0 - 149.0*	96.39 - 91.39	Bedrock	Well provides the bedrock monitoring within the landfill source area. Sampled historically, use to chart trends in source zone chemistry.
	SHP-99-29X	243.32	19.0 - 29.0	222.38 - 212.38	Shallow Overburden/WT	Similar screen interval and close proximity to N5-P2, however much higher As concentrations. Sampled historically, use to chart trends in source zone chemistry.
	SHM-10-07	246.87	40.0 - 50.0	206.87 - 196.87	Mid-Depth Overburden	Provides an additional sampling point within the Landfill Area, east of historically sampled wells.
	SHM-10-11	263.2	50.0 - 60.0	210.86 - 200.86	Deep Overburden	Wells upgradient of source are necessary for determining groundwater parameters of what is entering the source zone
	SHM-10-12	254.6	45.0 - 55.0	207.02 - 197.02	Mid-Depth Overburden	Provides an additional sampling point within the Landfill Area, south of historically sampled wells.
	SHM-10-13	244.75	60.0 - 70.0	184.75 - 174.75	Deep Overburden	Provides an additional deep sampling point within the Landfill Area, east of historically sampled wells.
	SHM-10-14	237.61	60.0 - 80.0	177.61 - 157.61	Deep Overburden	Provides an additional deep sampling point within the Landfill Area, north of historically sampled wells.
	SHM-10-15	243.76	45.0 - 55.0	198.76 - 188.76	Mid-Depth Overburden	Provides an additional sampling point within the Landfill Area, south and east of historically sampled wells.
BARRIER WALL AREA						
	SHL-11	235.48	12.0 - 27.0	221.97 - 206.97	Shallow Overburden/WT	Evaluates barrier wall contaminant removal performance. Sampled historically, use to chart trends in source zone chemistry.
	SHL-20	235.96	39.0 - 49.0	195.69 - 185.69	Deep Overburden/Till	Evaluates barrier wall contaminant removal performance. Sampled historically, use to chart trends in source zone chemistry.
	SHM-11-02	240.77	52.0 - 66.0	186.63 - 172.63	Bedrock	Monitors/evaluates possiblility of As migration through bedrock beneath the barrier wall.
	SHL-4	227.54	3.0 - 13.0	222.50 - 212.50	Shallow Overburden/WT	Historically sampled annually, continued annual sampling to monitor As concentrations on downgradient side of barrier wall.
	SHL-10	247.95	24.0 - 39.0	222.58 - 212.58	Shallow Overburden/WT	Historically sampled bi-annually; remains part of LTM plan to monitor As concentrations on the downgradient/southern side of the barrier wall
	SHL-19	240.52	20.0 - 30.0	218.43 - 208.43	Shallow Overburden/WT	Historically sampled annually, continued annual sampling to monitor As concentrations on downgradient side of barrier wall.
	SHM-11-06	236.2	25.0 - 35.0	208.27 - 198-27	Shallow Overburden	Added to annual sampling to monitor As concentrations as groundwater migrates north along the barrier wall
	SHP-01-36X	224.84	3.0 - 8.0	217.10 - 212.10	Shallow Overburden/WT	Historically sampled annually, continued annual sampling to monitor As concentrations along Plow Shop Pond edge.
	SHP-01-37X	222.84	1.0 - 6.0	217.64 - 212.64	Shallow Overburden/WT	Historically sampled annually, continued annual sampling to monitor As concentrations along Plow Shop Pond edge.
	SHP-01-38A	220.9	1.5 - 6.5	217.27 - 212.27	Shallow Overburden/WT	Historically sampled annually, continued annual sampling to monitor As concentrations along Plow Shop Pond edge and downgradient of the barrier wall

TABLE 5-1
Shepley's Hill Landfill
Long Term Monitoring Network

Monitoring Interval	Well ID	TOC Elevation (ft msl)	Screen Interval (ft bgs)	Screen Elevation (ft msl)	Interval Description	DQO for Inclusion within the LTMMP
NEARFIELD AREA						
	SHM-93-22B	219.42	82.3 - 92.3	136.62 - 126.63	Mid-Depth Overburden	Sampled historically, to evaluate ATP effectiveness and trends.
	SHM-96-5B	218.95	80.0 - 90.0	137.43 - 127.43	Base of Sand/Till	Sampled historically, to evaluate ATP effectiveness and trends.
	SHM-05-41B	222.3	62.0 - 64.0	160.6 - 158.6	Mid-Depth Overburden	Sampled historically, to evaluate ATP effectiveness and trends.
	SHM-05-41C	222.56	88.0 - 93.0	134.94 - 129.94	Deep Overburden/Till	Sampled historically, to evaluate ATP effectiveness and trends.
	SHL-5	217.62	3.0 - 13.0	213.81 - 203.81	Shallow Overburden/WT	Historically sampled historically to evaluate ATP effectiveness and trends; relatively low detections (<50 ug/L since March 1993) so reduced sampling to annually.
	SHL-8S	220.99	52.0 - 54.0	166.95 - 164.95	Mid-Depth Overburden	Historically sampled semi-annually; no detections since October 2007, so reduced sampling to annually
	SHL-8D*	220.79	68.0 - 70.0	150.95 - 148.95	Deep Overburden	Historically sampled semi-annually; no detections since October 2007, so reduced sampling to annually
	SHL-9	221.99	15.0 - 25.0	205.88 - 195.88	Shallow Overburden/WT	Historically sampled historically to evaluate ATP effectiveness and trends; relatively low detections (<50 ug/L since October 2002) so reduced sampling to annually.
	SHL-22	219.59	105.0 - 115.0	114.06 - 104.06	Deep Overburden	Historically sampled historically to evaluate ATP effectiveness and trends; relatively low detections (<100 ug/L since October 2008) so reduced sampling to annually.
	SHM-93-22C	220.7	124.3 - 134.3	94.72 - 84.72	Bedrock	Historically sampled historically to evaluate ATP effectiveness and trends; relatively low detections (<100 ug/L since installation in 1993) so reduced sampling to annually.
	SHM-96-5C	218.4	50.0 - 60.0	167.41 - 157.41	Mid-Depth Overburden	Historically sampled historically to evaluate ATP effectiveness and trends; relatively low detections (<70 ug/L since October 2001) so reduced sampling to annually.
	SHM-05-41A	222.45	42.0 - 44.0	180.78 - 178.78	Shallow Overburden	Historically sampled historically to evaluate ATP effectiveness and trends; relatively low detections (<50 ug/L since September 2006) so reduced sampling to annually.
	SHM-05-42A	216.84	40.0 - 42.0	173.66 - 171.66	Shallow Overburden	Historically sampled historically to evaluate ATP effectiveness and trends; relatively low detections (<5 ug/L since installation in 2005) so reduced sampling to annually.
	SHM-05-42B	216.82	70.0 - 72.0	143.66 - 141.66	Deep Overburden	Historically sampled historically to evaluate ATP effectiveness and trends; relatively low detections (<300 ug/L since April 2008) so reduced sampling to annually.
	SHM-10-06	232.91	69.5 - 79.5	160.49 - 150.49	Deep Overburden	Added to annual sampling to provide an additional monitoring point along the eastern edge of the landfill.
	SHM-10-06A	248.55	77.0 - 87.0	169.0 - 159.0	Deep Overburden	Added to annual sampling to replace SHL-21. SHM-10-06A has a deeper screen interval and higher As concentrations as compared to SHL-21.
	SHM-10-16	219.24	75.0 - 85.0	144.24 - 134.24	Deep Overburden	Added to annual sampling to provide an additional monitoring point northwest of the treatment plant.
	EPA-PZ-2012-1A/B	222.75 / 222.50	20.0 - 25.0 / 70.0 - 75.0	202.75 - 197.75 / 152.50 - 147.50	Shallow/Deep Overburden	Provides an additional shallow/deep sampling point in the nearfield area, east of the treatment plant.
	EPA-PZ-2012-2A/B	222.34 / 222.32	20.0 - 25.0 / 75.0 - 80.0	202.34 - 197.34 / 147.32 - 142.32	Shallow/Deep Overburden	Provides an additional shallow/deep sampling point in the nearfield area, northeast of the treatment plant.
	EPA-PZ-2012-3A/B	222.60 / 222.51	20.0 - 25.0 / 70.0 - 75.0	202.60 - 197.60 / 152.51 - 147.51	Shallow/Deep Overburden	Provides an additional shallow/deep sampling point in the nearfield area, north of the treatment plant.
	EPA-PZ-2012-4A/B	226.54 / 226.34	20.0 - 25.0 / 70.0 - 75.0	206.54 - 201.54 / 156.34 - 151.34	Shallow/Deep Overburden	Provides an additional shallow/deep sampling point in the nearfield area, north of the treatment plant.
	EPA-PZ-2012-5A/B	218.91 / 218.31	20.0 - 25.0 / 80.0 - 85.0	198.91 - 193.91 / 138.31 - 133.31	Shallow/Deep Overburden	Provides an additional shallow/deep sampling point in the nearfield area, west of the treatment plant.
	EPA-PZ-2012-6A/B	234.21 / 234.03	25.0 - 30.0 / 75.0 - 80.0	209.21 - 204.21 / 159.03 - 154.03	Shallow/Deep Overburden	Provides an additional shallow/deep sampling point in the nearfield area, west of the treatment plant.
	EPA-PZ-2012-7A/B	234.08 / 233.92	25.0 - 30.0 / 60.0 - 65.0	209.08 - 204.08 / 173.92 - 168.92	Shallow/Mid-Depth Overburden	Provides an additional shallow/deep sampling point in the nearfield area, west of the treatment plant.
Every 5 Years	SHL-23	241.26	23.0 - 33.0	216.36 - 206.36	Shallow Overburden/WT	Historically sampled bi-annually to monitor/evaluate possible western migration route downgradient of source area

TABLE 5-1
Shepley's Hill Landfill
Long Term Monitoring Network

Monitoring Interval	Well ID	TOC Elevation (ft msl)	Screen Interval (ft bgs)	Screen Elevation (ft msl)	Interval Description	DQO for Inclusion within the LTMMP
NORTH IMPACT AREA						
	SHM-13-03	211.7	42.0 - 52.0	167.83 - 157.83	Deep Overburden	Monitors the leading/northern edge of the As impacted groundwater
	SHM-13-04	227.01	20.0 - 30.0	207.01 - 197.01	Shallow Overburden	Monitors As concentrations within the core of the As impacted groundwater
	SHM-13-06	223.89	36.0 - 46.0	188.23 - 178.23	Deep Overburden/Till	Monitors As concentrations within the core of the As impacted groundwater
	SHM-13-07	225.61	27.0 - 37.0	198.61 - 188.61	Mid-Depth Overburden	Monitors As concentrations within the core of the As impacted groundwater
	SHM-13-08	227.9	55.0 - 65.0	173.17 - 163.17	Mid-Depth Overburden/Till	Monitors As concentrations within the core of the As impacted groundwater
	SHM-05-40X	223.34	32.0 - 34.0	191.55 - 189.99	Mid-Depth Overburden/Till	Sampled historically annually. Monitors As concentrations within the core of arsenic impacted groundwater.
	SHP-99-31C	214.72	68.0 - 78.0	141.97 - 131.97	Deep Overburden	Sampled historically annually. Monitors As concentrations within the core of As impacted groundwater at depth.
	SHM-13-05	225.11	75.0 - 85.0	150.57 - 140.57	Deep Overburden	Monitors eastern boundary of As impacted groundwater
	SHM-99-32X	221.37	72.0 - 82.0	147.07 - 137.07	Deep Overburden	Sampled historically annually. Monitors As concentrations within the core of As impacted groundwater.
	SHM-10-10	217.12	56.0 - 66.0	159.43 - 149.43	Deep Overburden/Till	Monitors the northern edge of the As impacted groundwater.
	SHM-13-02	218.7	60.0 - 70.0	156.88 - 146.88	Deep Overburden	Monitors the northern edge of the As impacted groundwater.
	SHM-07-03	227.86	25.0 - 35.0	203.01 - 193.01	Shallow Overburden	Added sample location to monitor/evaluate possible western migration route.
	SHM-10-05A	235.07	50.0 - 60.0	185.24 - 175.24	Mid-Depth Overburden	Added sample location to monitor/evaluate the eastern extent of the NIA.
	SHM-13-01	208.07	39.0 - 49.0	166.79 - 156.79	Deep Overburden	Added sample location to monitor/evaluate the western extent of the NIA.
	SHM-10-02	223.07	53.0 - 63.0	167.12 - 157.12	Mid-Depth Overburden	Added sample location to monitor/evaluate the western extent of the NIA.
	SHM-10-03	232.06	58.5 - 68.5	171.2 - 161.2	Mid-Depth Overburden	Added sample location to monitor/evaluate the northern extent of the NIA.
	SHM-10-04	212.63	55.0 - 65.0	154.73 - 144.73	Mid-Depth Overburden	Added sample location to monitor/evaluate the northern extent of the NIA.
	SHM-10-08	214.41	46.0 - 56.0	165.68 - 155.68	Deep Overburden/Till	Added sample location to monitor/evaluate the western extent of the NIA.

Semi-Annual Samping (Spring and Fall)
Annual Sampling (Fall)
Sampling Every 5 Years (Fall)

Notes:
ft bgs = feet below ground surface ft msl = feet mean sea level
* Includes estimated values derived from Supplemental Groundwater Investigation (Harding ESE, 2003).
Adapted from Final Revised Long Term Monitoring and Maintenance Plan (CH2MHill, 2007).

Table 5-2
Barrier Wall Hydraulic Monitoring Data
Shepley's Hill Landfill
Devens, Massachusetts

		6/03/2015			10/20/2015		
Well ID	**Top of**	**DTW**	**WT Elev.**	**Differenti**	**DTW**	**WT Elev.**	**Differenti**
PZ-12-01	237.55	20.52	217.03	-1.24	19.37	218.18	-1.02
PZ-12-02	237.81	22.02	215.79		20.65	217.16	
PZ-12-03	236.42	19.42	217.00	1.41	19.06	217.36	-5.74
PZ-12-04	238.22	19.81	218.41		26.60	211.62	
PZ-12-05	238.81	21.52	217.29	1.31	21.24	217.57	0.31
PZ-12-06	242.24	23.64	218.60		24.36	217.88	
PZ-12-07	244.63	27.05	217.58	1.79	27.30	217.33	1.15
PZ-12-08	244.88	25.51	219.37		26.40	218.48	
PZ-12-09	241.94	24.28	217.66	1.79	24.40	217.54	1.30
PZ-12-10	242.29	22.84	219.45		23.45	218.84	

Notes:
All measurements are in feet. DTW - Depth to Water
WT - Water Table
Even Numbered Piezometers - East of the Barrier Wall Odd Numbered Piezometers - West of the Barrier Wall

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
N-1, P-1	11/5/2012	14.24	215.77
3/4 inch, stickup	5/15/2013	14.39	215.62
230.01	6/11/2013	13.31	216.70
	10/21/2013	17.44	212.57
	4/22/2014	13.89	216.12
	10/6/2014	14.05	215.96
	6/2/2015	13.88	216.13
	10/20/2015	13.86	216.15
N-1, P-2	11/05/2012	13.89	216.14
3/4 inch, stickup	05/15/2013	14.34	215.69
230.03	06/11/2013	13.26	216.77
	10/21/2013	17.44	212.59
	04/22/2014	13.85	216.18
	10/06/2014	13.95	216.08
	6/2/2015	13.84	216.19
	10/20/2015	13.74	216.29
N-1, P-3	11/05/2012	13.48	216.70
3/4 inch, stickup	05/15/2013	13.81	216.37
230.18	06/11/2013	13.80	216.38
	10/21/2013	17.48	212.70
	04/22/2014	13.55	216.63
	10/06/2014	13.21	216.97
	6/2/2015	13.29	216.89
	10/20/2015	13.02	217.16
N-2, P-1	11/05/2012	5.30	216.86
3/4 inch, stickup	05/15/2013	5.59	216.57
222.16	06/11/2013	4.49	217.67
	10/21/2013	9.08	213.08
	04/22/2014	5.40	216.76
	10/06/2014	4.99	217.17
	6/2/2015	5.12	217.04
	10/20/2015	4.79	217.37
N-2, P-2	11/05/2012	5.15	216.85
3/4 inch, stickup	05/15/2013	5.35	216.65
222.0	06/11/2013	4.31	217.69
	10/21/2013	8.09	213.91
	04/22/2014	5.20	216.80
	10/06/2014	4.86	217.14
	6/2/2015	4.92	217.08
	10/20/2015	4.60	217.40
N-3, P-1	11/05/2012	3.93	216.93
3/4 inch, stickup	05/15/2013	4.20	216.66
220.86	06/11/2013	3.18	217.68
	10/21/2013	7.70	213.16
	04/22/2014	4.05	216.81
	10/06/2014	3.60	217.26
	6/2/2015	3.77	217.09
	10/20/2015	3.39	217.47
N-3, P-2	11/05/2012	3.96	216.90
3/4 inch, stickup	05/15/2013	4.22	216.64
220.86	06/11/2013	3.12	217.74
	10/21/2013	8.70	212.16
	04/22/2014	4.05	216.81
	10/06/2014	3.64	217.22
	6/2/2015	3.81	217.05
	10/20/2015	3.43	217.43

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
N-5, P-1	11/05/2012	24.36	218.26
3/4 inch, stickup	05/15/2013	23.54	219.08
242.62	06/11/2013	23.27	219.35
	10/21/2013	24.70	217.92
	04/22/2014	23.87	218.75
	10/06/2014	24.22	218.40
	6/3/2015	23.26	219.36
	10/20/2015	24.80	217.82
N-5, P-2	11/05/2012	24.88	217.79
3/4 inch, stickup	05/15/2013	23.70	218.97
242.67	06/11/2013	23.47	219.20
	10/21/2013	24.40	218.27
	04/22/2014	24.58	218.09
	10/06/2014	24.74	217.93
	6/3/2015	23.32	219.35
	10/20/2015	24.75	217.92
N-6, P-1	11/05/2012	37.95	220.51
3/4 inch, stickup	05/15/2013	37.04	221.42
258.46	06/11/2013	36.94	221.52
	10/21/2013	37.88	220.58
	04/22/2014	37.75	220.71
	10/06/2014	38.10	220.36
	6/3/2015	36.62	221.84
	10/20/2015	38.10	220.36
N-7, P-1	11/05/2012	31.70	223.90
3/4 inch, stickup	05/15/2013	31.29	224.31
255.6	06/11/2013	30.83	224.77
	10/21/2013	31.81	223.79
	04/22/2014	31.45	224.15
	10/06/2014	32.21	223.39
	6/3/2015	30.27	225.33
	10/20/2015	32.30	223.30
N-7, P-2	11/05/2012	31.85	224.22
3/4 inch, stickup	05/15/2013	31.49	224.58
256.07	06/11/2013	31.09	224.98
	10/21/2013	32.00	224.07
	04/22/2014	31.61	224.46
	10/06/2014	32.41	223.66
	6/3/2015	30.43	225.64
	10/21/2015	32.43	223.64
SHL-1	06/11/2013	Obstruction at 7.53'	--
2 inch, stickup	10/21/2013	Dry at 7.85'	--
271.66	04/22/2014	2.27	269.39
	10/06/2014	dry at 7.93'	--
SHL-3	11/05/2012	29.05	217.84
2 inch, stickup	05/15/2013	29.70	217.19
246.89	06/11/2013	28.71	218.18
	10/21/2013	32.00	214.89
	04/22/2014	29.20	217.69
	10/06/2014	29.56	217.33
	06/02/2015	30.33	216.56
	10/20/2015	29.20	217.69

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHL-4	11/05/2012	10.29	217.22
2 inch, stickup	05/15/2013	10.62	216.89
227.51	06/11/2013	9.89	217.62
	10/21/2013	13.75	213.76
	04/22/2014	10.49	217.02
	10/06/2014	10.40	217.11
	6/2/2015	10.38	217.13
	10/20/2015	10.13	217.38
SHL-5	11/05/2012	2.86	214.76
2 inch, stickup	05/15/2013	4.79	212.83
217.62	06/11/2013	1.50	216.12
	10/21/2013	6.60	211.02
	04/22/2014	2.55	215.07
	10/06/2014	6.45	211.17
	6/2/2015	2.77	214.85
	10/20/2015	6.56	211.06
SHL-8S	11/05/2012	7.54	213.45
2 inch, stickup	05/15/2013	8.21	212.78
220.99	06/11/2013	6.81	214.18
	10/21/2013	9.70	211.29
	04/22/2014	6.90	214.09
	10/06/2014	8.57	212.42
	6/2/2015	7.58	213.41
	10/20/2015	8.48	212.51
SHL-8D	11/05/2012	7.46	213.33
2 inch, stickup	05/15/2013	8.11	212.68
220.79	06/11/2013	6.80	213.99
	10/21/2013	9.55	211.24
	04/22/2014	6.80	213.99
	10/06/2014	8.56	212.23
	6/2/2015	7.52	213.27
	10/20/2015	8.48	212.31
SHL-9	11/05/2012	9.68	212.31
2 inch, stickup	05/15/2013	10.31	211.68
221.99	06/11/2013	16.09	205.90
	10/21/2013	11.10	210.89
	04/22/2014	8.67	213.32
	10/06/2014	11.36	210.63
	6/2/2015	9.56	212.43
	10/20/2015	11.46	210.53
SHL-10	11/05/2012	30.28	217.67
2 inch, stickup	05/15/2013	31.04	216.91
247.95	06/11/2013	30.01	217.94
	10/21/2013	33.70	214.25
	04/22/2014	30.56	217.39
	10/06/2014	31.09	216.86
	6/2/2015	33.94	214.01
	10/20/2015	30.78	217.17
SHL-11	11/05/2012	18.55	216.93
2 inch, stickup	05/15/2013	18.70	216.78
235.48	06/11/2013	17.81	217.67
	10/21/2013	21.70	213.78
	04/22/2014	18.50	216.98
	10/06/2014	18.49	216.99
	6/4/2015	18.42	217.06
	10/20/2015	19.70	215.78

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHL-12	04/22/2014	22.65	226.02
4 inch, stickup	10/06/2014	23.70	224.97
248.67	6/9/2015	21.61	227.06
SHL-13	11/05/2012	6.61	214.10
2 inch, stickup	05/15/2013	7.30	213.41
220.71	06/11/2013	5.58	215.13
	10/21/2013	9.23	211.48
	04/22/2014	6.02	214.69
	10/06/2014	6.95	213.76
	6/2/2015	6.36	214.35
	10/20/2015	6.83	213.88
SHL-15	11/05/2012	18.87	241.06
4 inch, stickup	05/15/2013	17.58	242.35
259.93	06/11/2013	17.44	242.49
	10/21/2013	20.32	239.61
	04/22/2014	16.11	243.82
	10/06/2014	20.23	239.70
	6/9/2015	17.81	242.12
SHL-17	04/22/2014	7.75	226.08
4 inch, stickup	10/06/2014	inaccessible due to deep ponding/flooding	
233.83	6/2/2015	6.87	226.96
SHL-18	11/05/2012	18.61	218.95
4 inch, stickup	05/15/2013	19.39	218.17
237.56	06/11/2013	18.30	219.26
	10/21/2013	21.55	216.01
	04/22/2014	18.71	218.85
	10/06/2014	19.60	217.96
	6/2/2015	18.97	218.59
	10/20/2015	19.38	218.18
SHL-19	11/05/2012	22.61	217.91
4 inch, stickup	05/15/2013	23.39	217.13
240.52	06/11/2013	22.14	218.38
	10/21/2013	26.25	214.27
	04/22/2014	22.98	217.54
	10/06/2014	23.55	216.97
	6/4/2015	23.47	217.05
	10/20/2015	23.20	217.32
SHL-20	11/05/2012	18.48	217.48
4 inch, stickup	05/15/2013	18.30	217.66
235.96	06/11/2013	17.84	218.12
	10/21/2013	20.30	215.66
	04/22/2014	18.40	217.56
	10/06/2014	18.79	217.17
	6/4/2015	18.07	217.89
	10/20/2015	18.58	217.38
SHL-21	11/05/2012	45.24	214.70
4 inch, stickup	05/15/2013	45.89	214.05
259.94	06/11/2013	44.94	215.00
	10/21/2013	47.85	212.09
	04/22/2014	44.70	215.24
	10/06/2014	46.71	213.23
	10/20/2015	46.41	213.53

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHL-22	11/05/2012	7.32	212.27
4 inch, stickup	05/15/2013	8.09	211.50
219.59	06/11/2013	6.67	212.92
	10/21/2013	8.70	210.89
	04/22/2014	6.46	213.13
	10/06/2014	8.86	210.73
	6/4/2019	7.50	212.09
	10/20/2015	9.07	210.52
SHL-23	11/05/2012	28.35	212.91
4 inch, stickup	05/15/2013	28.69	212.57
241.26	06/11/2013	27.70	213.56
	10/21/2013	29.70	211.56
	04/22/2014	26.30	214.96
	10/06/2014	30.35	210.91
	6/10/2015	28.58	212.68
	10/20/2015	30.71	210.55
SHL-24	11/05/2012	15.74	223.86
4 inch, stickup	05/15/2013	16.27	223.33
239.6	06/11/2013	14.93	224.67
	10/21/2013	16.98	222.62
	04/22/2014	15.75	223.85
	6/10/2015	15.24	224.36
	10/20/2015	16.89	222.71
SHL-25	04/22/2014	26.08	231.97
4 inch, stickup	10/06/2014	28.64	229.41
258.05			
SHM-05-39A	11/05/2012	11.41	210.13
2 inch w/roadbox	05/15/2013	11.92	209.62
221.54	06/11/2013	10.93	210.61
	10/21/2013	12.49	209.05
	04/22/2014	10.54	211.00
	10/06/2014	12.35	209.19
	6/2/2015	11.66	209.88
	10/20/2015	12.51	209.03
SHM-05-39B	11/05/2012	12.32	209.20
2 inch w/roadbox	05/15/2013	12.71	208.81
221.52	06/11/2013	11.77	209.75
	10/21/2013	13.08	208.44
	04/22/2014	11.29	210.23
	10/06/2014	13.00	208.52
	6/2/2015	12.42	209.10
	10/20/2015	13.15	208.37
SHM-05-40X	11/05/2012	14.21	209.13
2 inch w/roadbox	05/15/2013	14.65	208.69
223.34	06/11/2013	13.86	209.48
	10/21/2013	15.10	208.24
	04/22/2014	13.11	210.23
	10/06/2014	15.05	208.29
	6/2/2015	14.49	208.85
	10/20/2015	15.19	208.15

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHM-05-41A	11/05/2012	10.60	211.85
2 inch w/roadbox	05/15/2013	11.29	211.16
222.45	06/11/2013	9.95	212.50
	10/21/2013	11.90	210.55
	04/22/2014	9.66	212.79
	10/06/2014	12.11	210.34
	6/2/2015	10.84	211.61
	10/20/2015	12.35	210.10
SHM-05-41B	11/05/2012	10.40	211.90
2 inch w/roadbox	05/15/2013	11.09	211.21
222.3	06/11/2013	9.79	212.51
	10/21/2013	11.70	210.60
	04/22/2014	9.48	212.82
	10/06/2014	11.96	210.34
	6/2/2015	10.42	211.88
	10/20/2015	12.20	210.10
SHM-05-41C	11/05/2012	10.67	211.89
2 inch w/roadbox	05/15/2013	11.42	211.14
222.56	06/11/2013	10.09	212.47
	10/21/2013	11.95	210.61
	04/22/2014	9.78	212.78
	10/06/2014	12.41	210.15
	6/2/2015	10.91	211.65
	10/20/2015	12.41	210.15
SHM-05-42A	11/05/2012	4.71	212.13
3/4 inch, stickup	05/15/2013	5.45	211.39
216.84	06/11/2013	4.00	212.84
	10/21/2013	6.16	210.68
	04/22/2014	3.90	212.94
	10/06/2014	6.13	210.71
	6/2/2015	4.82	212.02
	10/20/2015	6.28	210.56
SHM-05-42B	11/05/2012	4.73	212.09
3/4 inch, stickup	05/15/2013	5.45	211.37
216.82	06/11/2013	4.04	212.78
	10/21/2013	6.14	210.68
	04/22/2014	3.90	212.92
	10/06/2014	6.20	210.62
	6/2/2015	4.93	211.89
	10/20/2015	6.35	210.47
SHM-93-10C	11/05/2012	28.93	218.68
4 inch, stickup	05/15/2013	29.45	218.16
247.61	06/11/2013	28.47	219.14
	10/21/2013	31.50	216.11
	04/22/2014	29.03	218.58
	10/06/2014	29.75	217.86
	10/20/2015	29.52	218.09
SHM-93-10D	11/05/2012	29.90	218.04
4 inch, stickup	05/15/2013	30.55	217.39
247.94	06/11/2013	29.84	218.10
	10/21/2013	32.80	215.14
	04/22/2014	30.11	217.83
	10/06/2014	30.75	217.19

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHM-93-18B	11/05/2012	18.35	218.97
4 inch, stickup	05/15/2013	19.12	218.20
237.32	06/11/2013	17.96	219.36
	10/21/2013	21.20	216.12
	04/22/2014	18.39	218.93
	10/06/2014	19.30	218.02
	10/20/2015	19.05	218.27
SHM-93-22B	11/05/2012	7.15	212.27
4 inch, stickup	05/15/2013	8.92	210.50
219.42	06/11/2013	6.53	212.89
	10/21/2013	8.50	210.92
	04/22/2014	9.30	210.12
	10/06/2014	8.74	210.68
	6/2/2015	8.37	211.05
	10/20/2015	9.00	210.42
SHM-93-22C	11/05/2012	8.33	212.37
4 inch, stickup	05/15/2013	9.10	210.32
220.7	06/11/2013	7.81	211.61
	10/21/2013	9.96	209.46
	04/22/2014	7.42	212.00
	10/06/2014	9.95	209.47
	10/20/2015	10.19	209.23
SHM-96-5B	11/05/2012	6.26	212.69
4 inch, stickup	05/15/2013	7.01	211.94
218.95	06/11/2013	6.56	212.39
	10/21/2013	7.80	211.15
	04/22/2014	5.50	213.45
	10/06/2014	7.77	211.18
	6/2/2015	6.43	212.52
	10/20/2015	7.82	211.13
SHM-96-5C	11/05/2012	5.69	212.71
4 inch, stickup	05/15/2013	6.46	211.94
218.4	06/11/2013	5.04	213.36
	10/21/2013	7.30	211.10
	04/22/2014	5.00	213.40
	10/06/2014	7.22	211.18
	6/3/2015	5.97	212.43
	10/20/2015	7.35	211.05
SHP-99-31A	11/05/2012	2.10	212.25
2 inch, stickup	05/15/2013	3.81	210.54
214.35	06/11/2013	3.90	210.45
	10/21/2013	4.42	209.93
	04/22/2014	3.30	211.05
	10/06/2014	4.42	209.93
	6/3/2015	4.04	210.31
	10/21/2015	4.77	209.58
SHP-99-31B	11/05/2012	3.86	210.54
2 inch, stickup	05/15/2013	4.43	209.97
214.4	06/11/2013	3.29	211.11
	10/21/2013	4.98	209.42
	04/22/2014	3.03	211.37
	10/06/2014	4.85	209.55
	6/3/2015	4.04	210.36
	10/20/2015	4.92	209.48

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHP-99-31C	11/05/2012	4.13	210.59
2 inch, stickup	05/15/2013	4.71	210.01
214.72	06/11/2013	3.58	211.14
	10/21/2013	5.31	209.41
	04/22/2014	1.90	212.82
	10/06/2014	5.10	209.62
	6/3/2015	4.34	210.38
	10/20/2015	5.21	209.51
SHM-99-32X	11/05/2012	9.70	211.67
2 inch, stickup	05/15/2013	10.32	211.05
221.37	06/11/2013	9.09	212.28
	10/21/2013	11.15	210.22
	04/22/2014	8.98	212.39
	10/06/2014	10.75	210.62
	10/20/2015	10.80	210.57
SHP-01-36X	11/05/2012	7.27	216.75
3/4 inch, stickup	05/15/2013	7.55	216.47
224.02	06/11/2013	6.43	217.59
	10/21/2013	11.15	212.87
	04/22/2014	7.39	216.63
	10/06/2014	6.89	217.13
	6/3/2015	7.07	216.95
	10/20/2015	6.42	217.60
SHP-01-37X	11/05/2012	5.98	216.86
3/4 inch, stickup	05/15/2013	6.21	216.63
222.84	06/11/2013	5.15	217.69
	10/21/2013	9.95	212.89
	04/22/2014	6.12	216.72
	10/06/2014	5.61	217.23
	6/3/2015	5.84	217.00
	10/20/2015	5.42	217.42
SHP-01-38A	11/05/2012	3.85	217.05
3/4 inch, stickup	05/15/2013	4.11	216.79
220.9	06/11/2013	3.06	217.84
	10/21/2013	7.30	213.60
	04/22/2014	3.97	216.93
	10/06/2014	3.69	217.21
	6/3/2015	3.67	217.23
	10/20/2015	3.45	217.45
SHP-01-38B	11/05/2012	4.00	217.06
3/4 inch, stickup	05/15/2013	4.23	216.83
221.06	06/11/2013	3.19	217.87
	10/21/2013	7.45	213.61
	04/22/2014	4.10	216.96
	10/06/2014	3.87	217.19
	6/3/2015	3.84	217.22
	10/20/2015	3.61	217.45
SHP-05-43	11/05/2012	44.68	215.98
3/4 inch, stickup	05/15/2013	45.15	215.51
260.66	06/11/2013	44.39	216.27
	10/21/2013	47.65	213.01
	04/22/2014	44.52	216.14
	10/06/2014	45.45	215.21
	6/2/2015	44.82	215.84
	10/20/2015	45.35	215.31

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHP-05-44	11/05/2012	41.68	216.40
3/4 inch, stickup	05/15/2013	42.04	216.04
258.08	06/11/2013	41.20	216.88
	10/21/2013	44.90	213.18
	04/22/2014	41.65	216.43
	10/06/2014	41.99	216.09
	6/2/2015	41.66	216.42
	10/20/2015	52.00	206.08
SHP-05-45A	11/05/2012	16.12	212.35
2 inch, stickup	05/15/2013	16.82	211.65
228.47	06/11/2013	15.57	212.90
	10/21/2013	17.07	211.40
	04/22/2014	15.24	213.23
	10/06/2014	17.89	210.58
	06/03/2015	15.94	212.53
	10/20/2015	18.23	210.24
SHP-05-45B	11/05/2012	16.85	212.25
2 inch, stickup	05/15/2013	17.53	211.57
229.1	06/11/2013	16.25	212.85
	10/21/2013	17.65	211.45
	04/22/2014	15.90	213.20
	10/06/2014	18.31	210.79
	6/3/2015	16.47	212.63
	10/20/2015	18.75	210.35
SHP-05-46A	11/05/2012	14.79	212.84
2 inch, stickup	05/15/2013	15.56	212.07
227.63	06/11/2013	14.26	213.37
	10/21/2013	16.00	211.63
	04/22/2014	14.05	213.58
	10/06/2014	17.43	210.20
	6/3/2015	14.71	212.92
	10/20/2015	16.74	210.89
SHP-05-46B	11/05/2012	15.48	212.74
2 inch, stickup	05/15/2013	16.23	211.99
228.22	06/11/2013	14.91	213.31
	10/21/2013	16.68	211.54
	04/22/2014	14.70	213.52
	10/06/2014	17.15	211.07
	6/3/2015	15.38	212.84
	10/20/2015	17.50	210.72
SHP-05-47A	11/05/2012	4.79	212.74
1 inch, no standpipe	05/15/2013	5.39	212.14
217.53	06/11/2013	Inaccessible (High Water Level)	--
	10/21/2013	Dry @ 5.75'	--
	04/22/2014	4.69	212.84
	6/3/2015	4.41	213.12
	10/20/2015	5.06	212.47
SHP-05-47B	11/05/2012	2.63	212.77
1 inch, no standpipe	05/15/2013	2.82	212.58
215.4	06/11/2013	Inaccessible (High Water Level)	
	10/21/2013	3.95	211.45
	04/22/2014	1.92	213.48
	6/3/2015	4.41	210.99
	10/20/2015	3.05	212.35

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHP-05-48A	11/05/2012	5.94	211.36
1 inch, no standpipe	05/15/2013	Dry	--
217.3	06/11/2013	Inaccessible (Under Water)	--
	10/21/2013	Dry @ 5.25'	--
	04/22/2014	4.71	212.59
	10/06/2014	Dry @ 5.5'	--
	6/3/2015	4.86	
	10/20/2015	Dry	
SHP-05-48B	11/05/2012	3.53	212.40
1 inch, no standpipe	05/15/2013	4.03	211.90
215.93	06/11/2013	Inaccessible (Under Water)	--
	10/21/2013	Dry @ 5.00'	--
	04/22/2014	3.47	212.46
	10/06/2014	dry @ 5.25'	--
	6/3/2015	3.53	212.40
	10/20/2015	Dry	
SHP-05-49A	11/05/2012	5.63	211.04
1 inch, no standpipe	05/15/2013	Dry	--
216.67	06/11/2013	Inaccessible (Under Water)	--
	10/21/2013	Dry @ 5.76'	--
	04/22/2014	5.63	211.04
	10/06/2014	dry @ 6.0'	--
	6/3/2015	3.81	212.86
	10/20/2015	Dry	
SHP-05-49B	11/05/2012	3.95	211.20
1 inch, no standpipe	05/15/2013	4.42	210.73
215.15	06/11/2013	Inaccessible (Under Water)	--
	10/21/2013	4.33	210.82
	04/22/2014	3.85	211.30
	10/06/2014	4.45	210.70
	6/3/2015	4.46	210.69
	10/20/2015	4.72	210.43
SHP-95-27X	11/05/2012	14.23	223.23
3/4 inch, stickup	05/15/2013	16.45	221.01
237.46	06/11/2013	13.88	223.58
	10/21/2013	17.88	219.58
	04/22/2014	14.83	222.63
	10/06/2014	17.23	220.23
	06/02/2015	CNR	
	10/20/2015	17.28	220.18
SHP-99-29X	11/05/2012	24.58	218.74
2 inch, stickup	05/15/2013	22.79	220.53
243.32	06/11/2013	22.73	220.59
	10/21/2013	24.50	218.82
	04/22/2014	23.34	219.98
	10/06/2014	24.85	218.47
	6/3/2015	22.61	220.71
	10/20/2015	24.90	218.42
SHP-99-34B	11/05/2012	13.26	211.32
1 inch, stickup	05/15/2013	13.29	211.29
224.58	06/11/2013	12.66	211.92
	10/21/2013	14.20	210.38
	10/06/2014	13.83	210.75
	6/3/2015	12.91	211.67
	10/20/2015	13.90	210.68

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHP-99-35X	11/05/2012	37.50	220.42
2 inch, stickup	05/15/2013	36.85	221.07
257.92	06/11/2013	36.87	221.05
	10/21/2013	36.90	221.02
	04/22/2014	37.05	220.87
	10/06/2014	34.90	223.02
	6/3/2015	36.32	221.60
	10/20/2015	35.55	222.37
EW-01	05/15/2013	27.86	198.94
8 inch extraction, vault	06/11/2013	14.17	212.63
226.80	10/21/2013	15.51	211.29
	04/22/2014	13.85	212.95
	10/06/2014	16.57	210.23
EW-04	05/15/2013	37.53	189.52
8 inch extraction, vault	06/11/2013	14.19	212.86
227.05	10/21/2013	15.85	211.20
	04/22/2014	13.88	213.17
	10/06/2014	16.61	210.44
PZ-12-01	11/05/2012	20.51	217.04
2 inch, stickup	05/15/2013	20.67	216.88
237.55	06/11/2013	19.90	217.65
	10/21/2013	23.50	214.05
	11/19/2013	21.55	216.00
	04/22/2014	20.55	217.00
	10/06/2014	20.61	216.94
	6/3/2015	20.52	217.03
	10/20/2015	19.37	218.18
PZ-12-02	11/05/2012	20.47	217.34
2 inch, stickup	05/15/2013	20.37	217.44
237.81	06/11/2013	19.88	217.93
	10/21/2013	22.50	215.31
	11/19/2013	21.51	216.30
	04/22/2014	20.40	217.41
	10/06/2014	20.80	217.01
	6/3/2015	22.02	215.79
	10/20/2015	20.65	217.16
PZ-12-03	11/05/2012	19.37	217.05
2 inch, stickup	05/15/2013	19.63	216.79
236.42	06/11/2013	19.55	216.87
	10/21/2013	22.80	213.62
	11/19/2013	20.34	216.08
	04/22/2014	19.48	216.94
	10/06/2014	19.29	217.13
	6/3/2015	19.42	
	10/20/2015	19.06	217.36
PZ-12-04	11/05/2012	20.42	217.80
2 inch, stickup	05/15/2013	20.10	218.12
238.22	06/11/2013	19.73	218.49
	10/21/2013	21.85	216.37
	11/19/2013	22.31	215.91
	04/22/2014	20.33	217.89
	10/06/2014	20.73	217.49
	6/3/2015	19.81	218.41
	10/20/2015	26.60	211.62
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Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
PZ-12-05	11/05/2012	21.49	217.32
2 inch, stickup	05/15/2013	21.73	217.08
238.81	06/11/2013	20.70	218.11
	10/21/2013	24.77	214.04
	11/19/2013	22.45	216.36
	04/22/2014	21.64	217.17
	10/06/2014	20.47	218.34
	6/3/2015	21.52	217.29
	10/20/2015	21.24	217.57
PZ-12-06	11/05/2012	24.24	218.00
2 inch, stickup	05/15/2013	23.91	218.33
242.24	06/11/2013	23.54	218.70
	10/21/2013	25.70	216.54
	11/19/2013	25.53	216.71
	04/22/2014	24.19	218.05
	10/06/2014	24.52	217.72
	6/3/2015	23.64	218.60
	10/20/2015	24.36	217.88
PZ-12-07	11/05/2012	26.89	217.74
2 inch, stickup	05/15/2013	27.49	217.14
244.63	06/11/2013	26.95	217.68
	10/21/2013	30.43	214.20
	11/19/2013	28.49	216.14
	04/22/2014	27.23	217.40
	10/06/2014	27.57	217.06
	06/03/2015	27.05	217.58
	10/20/2015	27.30	217.33
PZ-12-08	11/05/2012	26.26	218.62
2 inch, stickup	05/15/2013	26.02	218.86
244.88	06/11/2013	25.59	219.29
	10/21/2013	27.50	217.38
	11/19/2013	27.22	217.66
	04/22/2014	26.14	218.74
	10/06/2014	26.58	218.30
	6/3/2015	25.51	219.37
	10/20/2015	26.40	218.48
PZ-12-09	11/05/2012	23.03	218.91
2 inch, stickup	05/15/2013	24.32	217.62
241.94	06/11/2013	22.80	219.14
	10/21/2013	25.20	216.74
	11/19/2013	24.70	217.24
	04/22/2014	23.49	218.45
	10/06/2014	24.60	217.34
	06/03/2015	24.28	217.66
	10/20/2015	24.40	217.54
PZ-12-10	11/05/2012	22.35	219.94
2 inch, stickup	05/15/2013	22.89	219.40
242.29	06/11/2013	23.16	219.13
	10/21/2013	23.55	218.74
	11/19/2013	23.76	218.53
	04/22/2014	22.42	219.87
	10/06/2014	23.58	218.71
	6/3/2015	22.84	219.45
	10/20/2015	23.45	218.84

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHM-10-01	11/05/2012	4.15	205.37
1.5 inch, stickup	05/15/2013	3.52	206.00
209.52	06/11/2013	2.45	207.07
	10/21/2013	4.02	205.50
	04/22/2014	2.96	206.56
	10/06/2014	4.09	205.43
	6/1/2015	3.65	205.87
	10/20/2015	4.35	205.17
SHM-10-02	11/05/2012	17.25	205.82
1.5 inch, stickup	05/15/2013	18.64	204.43
223.07	06/11/2013	16.50	206.57
	10/21/2013	18.35	204.72
	04/22/2014	17.21	205.86
	10/06/2014	18.46	204.61
	6/9/2015	18.08	204.99
SHM-10-03	11/05/2012	26.16	205.90
1.5 inch, stickup	05/15/2013	26.38	205.68
232.06	06/11/2013	25.47	206.59
	10/21/2013	26.97	205.09
	04/22/2014	25.68	206.38
	10/06/2014	27.10	204.96
	6/10/2015	26.60	205.46
SHM-10-04	11/05/2012	6.25	206.38
1.5 inch, stickup	05/15/2013	6.11	206.52
212.63	06/11/2013	5.26	207.37
	10/21/2013	6.18	206.45
	04/22/2014	5.11	207.52
	10/06/2014	6.24	206.39
	6/9/2015	5.80	206.83
SHM-10-05A	11/05/2012	25.18	209.89
1.5 inch w/ roadbox	05/15/2013	25.56	209.51
235.07	06/11/2013	24.67	210.40
	10/21/2013	26.14	208.93
	04/22/2014	24.23	210.84
	10/06/2014	25.41	209.66
	6/10/2015	25.20	209.87
SHM-10-06	11/05/2012	18.84	214.07
1.5 inch, stickup	05/15/2013	19.46	213.45
232.91	06/11/2013	19.18	213.73
	10/21/2013	20.80	212.11
	04/22/2014	18.23	214.68
	10/06/2014	20.32	212.59
	06/02/2015	19.04	213.87
	10/20/2015	20.42	212.49
SHM-10-06A	11/05/2012	34.29	214.26
1.5 inch, stickup	05/15/2013	34.93	213.62
248.55	06/11/2013	33.64	214.91
	10/21/2013	36.50	212.05
	04/22/2014	33.77	214.78
	10/06/2014	35.67	212.88
	6/2/2015	34.53	214.02
	10/20/2015	35.76	212.79

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHM-10-07	11/05/2012	28.76	218.11
2 inch, stickup	05/15/2013	27.07	219.80
246.87	06/11/2013	26.95	219.92
	10/21/2013	28.20	218.67
	04/22/2014	27.74	219.13
	10/06/2014	28.02	218.85
	6/3/2015	26.78	220.09
	10/20/2015	28.00	218.87
SHM-10-08	11/05/2012	8.59	205.82
1.5 inch, stickup	05/15/2013	9.01	205.40
214.41	06/11/2013	7.78	206.63
	10/21/2013	9.81	204.60
	04/22/2014	8.75	205.66
	10/06/2014	9.90	204.51
	06/08/2015	9.55	204.86
SHM-10-10	11/05/2012	10.51	206.61
1.5 inch, stickup	05/15/2013	10.63	206.49
217.12	06/11/2013	9.74	207.38
	10/21/2013	10.76	206.36
	04/22/2014	9.90	207.22
	10/06/2014	10.82	206.30
	6/3/2015	10.22	206.90
	10/20/2015	10.93	206.19
SHM-10-11	11/05/2012	41.14	222.06
2 inch, stickup	05/15/2013	40.36	222.84
263.2	06/11/2013	33.62	229.58
	10/21/2013	41.00	222.20
	04/22/2014	40.99	222.21
	10/06/2014	41.46	221.74
	6/3/2015	39.32	223.88
	10/20/2015	41.40	221.80
SHM-10-12	11/05/2012	34.80	219.80
2 inch, stickup	05/15/2013	33.09	221.51
254.6	06/11/2013	40.22	214.38
	10/21/2013	34.61	219.99
	04/22/2014	34.55	220.05
	10/06/2014	34.93	219.67
	6/3/2015	33.35	221.25
	10/20/2015	34.88	219.72
SHM-10-13	11/05/2012	26.51	218.24
2 inch, stickup	05/15/2013	25.73	219.02
244.75	06/11/2013	25.47	219.28
	10/21/2013	26.86	217.89
	04/22/2014	26.09	218.66
	10/06/2014	26.92	217.83
	6/3/2015	25.47	219.28
	10/20/2015	26.85	217.90
SHM-10-14	11/05/2012	20.49	217.12
2 inch, stickup	05/15/2013	19.93	217.68
237.61	06/11/2013	19.46	218.15
	10/21/2013	21.20	216.41
	04/22/2014	19.68	217.93
	10/06/2014	21.22	216.39
	6/3/2015	19.65	217.96
	10/20/2015	21.25	216.36

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHM-10-15	11/05/2012	25.09	218.67
2 inch, stickup	05/15/2013	23.86	219.90
243.76	06/11/2013	24.74	219.02
	10/21/2013	25.15	218.61
	04/22/2014	24.43	219.33
	10/06/2014	25.41	218.35
	6/3/2015	23.58	220.18
	10/20/2015	25.36	218.40
SHM-10-16	11/05/2012	7.31	211.93
2 inch, stickup	05/15/2013	8.03	211.21
219.24	06/11/2013	7.70	211.54
	10/21/2013	8.64	210.60
	04/22/2014	6.40	212.84
	10/06/2014	8.80	210.44
	6/3/2015	7.57	211.67
	10/20/2015	9.02	210.22
SHM-11-02	11/05/2012	22.81	217.96
Bedrock, standpipe	05/15/2013	22.74	218.03
240.77	06/11/2013	22.10	218.67
	10/21/2013	24.79	215.98
	04/22/2014	22.83	217.94
	10/06/2014	23.11	217.66
	6/2/2015	22.53	218.24
	10/20/2015	22.92	217.85
SHM-11-06	11/05/2012	19.82	216.38
2 inch, stickup	05/15/2013	20.11	216.09
236.2	06/11/2013	19.39	216.81
	10/21/2013	22.30	213.90
	04/22/2014	19.60	216.60
	10/06/2014	20.71	215.49
	6/3/2015	19.90	216.30
	10/20/2015	20.55	215.65
SHM-11-07	11/05/2012	22.95	217.91
3/4 inch, stickup	05/15/2013	22.61	218.25
240.86	06/11/2013	22.19	218.67
	10/21/2013	24.28	216.58
	04/22/2014	22.89	217.97
	10/06/2014	23.26	217.60
	6/3/2015	22.33	218.53
	10/20/2015	20.55	220.31
SHM-13-01	06/11/2013	Inaccessible (High Water Level)	--
2 inch, stickup	10/21/2013	3.22	204.85
208.07	04/22/2014	2.06	206.01
	10/06/2014	3.36	204.71
	6/3/2015	2.89	205.18
	10/20/2015	3.46	204.61
SHM-13-02	05/15/2013	12.50	206.20
2 inch, stickup	06/11/2013	11.50	207.20
218.7	10/21/2013	12.91	205.79
	04/22/2014	11.92	206.78
	10/06/2014	12.97	205.73
	10/20/2015	13.05	205.65

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHM-13-03	05/15/2013	5.10	206.60
2 inch, stickup	06/11/2013	4.23	207.47
211.7	10/21/2013	5.08	206.62
	04/22/2014	4.33	207.37
	10/06/2014	5.12	206.58
	6/2/2015	5.14	206.56
	10/20/2015	5.75	205.95
SHM-13-04	05/15/2013	19.15	207.86
2 inch, stickup	06/11/2013	18.49	208.52
227.01	10/21/2013	19.45	207.56
	04/22/2014	17.79	209.22
	10/06/2014	19.55	207.46
	6/2/2015	19.00	208.01
	10/20/2015	19.60	207.41
SHM-13-05	05/15/2013	16.78	208.33
2 inch, stickup	06/11/2013	15.99	209.12
225.11	10/21/2013	17.06	208.05
	04/22/2014	15.50	209.61
	10/06/2014	17.95	207.16
	6/3/2015	16.41	208.70
	10/20/2015	17.00	208.11
SHM-13-06	06/11/2013	16.39	207.50
2 inch w/ roadbox	10/21/2013	17.50	206.39
223.89	04/22/2014	16.32	207.57
	10/06/2014	17.55	206.34
	6/2/2015	17.03	206.86
	12/22/2015	17.44	206.45
SHM-13-07	04/22/2014	17.79	207.82
2 inch w/ roadbox	10/06/2014	18.97	206.64
225.61	6/2/2015	18.35	207.26
	10/20/2015	19.08	206.53
SHM-13-08	06/11/2013	19.71	208.19
2 inch w/ roadbox	10/21/2013	20.05	207.85
227.9	04/22/2014	19.33	208.57
	10/06/2014	19.69	208.21
	6/2/2015	20.07	207.83
	10/20/2015	20.60	207.30
SHM-13-14S	04/23/2014	3.36	207.66
2 inch, stickup	10/06/2014	3.80	207.22
211.02			
SHM-13-14D	04/23/2014	2.91	207.79
2 inch, stickup	10/06/2014	3.60	207.10
210.7			
SHM-13-15	04/23/2014	3.11	207.44
2 inch, stickup	10/06/2014	3.81	206.74
210.55			
SHM-07-03	05/15/2013	19.85	208.01
2 inch w/ roadbox	06/11/2013	19.24	208.62
227.86	10/21/2013	20.50	207.36
	04/22/2014	18.23	209.63
	10/06/2014	20.52	207.34
	6/10/2015	19.72	208.14
SHP-07-03A	06/11/2013	11.13	206.72
1 inch steel piezometer	10/21/2013	13.21	204.64
217.85	04/22/2014	Dry @ 11.45	--
	10/06/2014	13.32	204.53

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
SHM-07-05	05/15/2013	14.57	208.84
2 inch w/ roadbox	06/11/2013	14.39	209.02
223.41	10/21/2013	14.85	208.56
	04/22/2014	13.22	210.19
	10/06/2014	14.85	208.56
	6/9/2015	14.52	208.89
SHP-99-01C	05/15/2013	11.00	262.56
2 inch, stickup	06/11/2013	9.25	264.31
273.56	10/21/2013	24.33	249.23
	04/22/2014	8.03	265.53
	10/06/2014	24.19	249.37
	6/2/2015	12.00	261.56
	10/20/2015	24.60	248.96
SHP-99-01B	05/15/2013	5.91	266.64
2 inch, stickup	06/11/2013	4.84	267.71
272.55	10/21/2013	Dry @ 9.80'	--
	04/22/2014	4.01	268.54
	10/06/2014	dry @ 9.81'	--
SHM-93-24A	05/15/2013	16.64	222.64
4 inch, stickup	06/11/2013	15.00	224.28
239.28	10/21/2013	17.41	221.87
	04/22/2014	16.07	223.21
PSP-01	11/05/2012	2.00	216.83
staff gauge	05/15/2013	1.75	216.58
214.83	06/11/2013	3.85	218.68
	07/20/2013	1.50	216.33
	10/21/2013	Dry due to pond construction	--
	04/22/2014	1.82	216.65
	6/2/2015	2.15	216.98
	10/20/2015	2.60	217.43
SHSG-13-01G	07/20/2013	3.50	205.13
staff gauge	10/21/2013	Unable to read - muddy staff	NA
201.63	04/23/2014	3.05	204.68
	10/07/2014	2.90	204.53
SHSG-13-02G	07/20/2013	2.12	207.13
staff gauge	10/21/2013	Unable to read - muddy staff	--
205.01	04/23/2014	2.55	207.56
	10/07/2014	2.90	207.91
SHSG-13-03G	07/20/2013	2.86	207.27
staff gauge	10/21/2013	Unable to read - muddy staff	--
204.41	04/23/2014	3.45	207.86
	10/07/2014	3.79	208.20
			204.41
SHP-13-03	04/22/2014	2.55	--
NSVD	10/07/2014	2.90	--
SHSG-14-01G	04/23/2014	2.00	212.75
staff gauge			
210.75			
EPA-PZ-2012-1A	05/15/2013	11.59	211.16
EPA pizometer	04/22/2014	10.10	212.65
222.75	10/06/2014	12.39	210.36
	6/4/2015	11.21	211.54
	10/20/2015	12.53	210.22

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
EPA-PZ-2012-1B	05/15/2013	11.34	211.16
EPA pizometer	04/22/2014	9.85	212.65
222.5	10/06/2014	12.09	210.41
	06/04/2015	10.81	211.69
	10/20/2015	12.21	210.29
EPA-PZ-2012-2A	05/15/2013	11.11	211.23
EPA pizometer	04/22/2014	9.60	212.74
222.34	10/06/2014	11.77	210.57
	06/04/2015	10.45	211.89
	10/20/2015	11.81	210.53
EPA-PZ-2012-2B	05/15/2013	11.10	211.22
EPA pizometer	04/22/2014	9.70	212.62
222.32	10/06/2014	11.71	210.61
	06/04/2015	10.53	211.79
	10/20/2015	11.77	210.55
EPA-PZ-2012-3A	05/15/2013	11.03	211.57
EPA pizometer	04/22/2014	9.40	213.20
222.6	10/06/2014	11.84	210.76
	06/04/2015	10.48	212.12
	10/20/2015	12.08	210.52
EPA-PZ-2012-3B	05/15/2013	10.95	211.56
EPA pizometer	04/22/2014	9.45	213.06
222.51	10/06/2014	11.15	211.36
	06/04/2015	10.45	212.06
	10/20/2015	12.02	210.49
EPA-PZ-2012-4A	05/15/2013	15.18	211.36
EPA pizometer	04/22/2014	13.56	212.98
226.54	10/06/2014	16.06	210.48
	06/04/2015	14.71	211.83
	10/20/2015	16.25	210.29
EPA-PZ-2012-4B	05/15/2013	15.09	211.25
EPA pizometer	04/22/2014	13.34	213.00
226.34	10/06/2014	16.15	210.19
	06/04/2015	14.73	211.61
	10/20/2015	16.30	210.04
EPA-PZ-2012-5A	04/22/2014	6.69	212.22
EPA pizometer	10/06/2014	9.07	209.84
218.91	10/20/2015	9.33	209.58
	06/04/2015	7.71	211.20
	10/20/2015	9.33	209.58
EPA-PZ-2012-5B	05/15/2013	7.68	210.63
EPA pizometer	04/22/2014	6.12	212.19
218.31	10/06/2014	8.38	209.93
	06/04/2015	7.11	211.20
	10/20/2015	8.52	209.79
EPA-PZ-2012-6A	05/15/2013	22.82	211.39
EPA pizometer	04/22/2014	21.28	212.93
234.21	10/06/2014	23.83	210.38
	06/04/2015	22.13	212.08
	10/20/2015	24.20	210.01

Table 5-3
Hydraulic Monitoring Results
Shepley's Hill Landfill, Devens, Massachusetts

Location ID (Well/Peizometer/Staff description) (Reference Elevation)	Gauge Date Date	Depth to Water (ft)	Groundwater / Surface Water Elevation (ft)
EPA-PZ-2012-6B	05/15/2013	22.78	211.25
EPA pizometer	04/22/2014	21.27	212.76
234.03	10/06/2014	23.67	210.36
	06/04/2015	22.27	211.76
	10/20/2015	24.10	209.93
EPA-PZ-2012-7A	04/22/2014	20.95	213.13
EPA pizometer	10/06/2014	23.71	210.37
234.08	06/04/2015	22.22	211.86
	10/20/2015	24.06	210.02
EPA-PZ-2012-7B	05/15/2013	22.72	211.20
EPA pizometer	04/22/2014	21.00	212.92
233.92	10/06/2014	23.59	210.33
	06/04/2015	22.18	211.74
	10/20/2015	23.94	209.98

Notes:
Reference elevations based on the survey preformed in June 2013 and/or February 2014
EPA Piezometer water level data was based off of the transducer reading at 12:00 PM on the day noted
Dry - Well dry at time of gauging event
NSVD - No survey data available for location
TOC - Top of casing

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
SHL-4	SHL-4-101607	10/16/07	7.5	NA	1800	NA	7000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-4-101410	10/14/10	3.1	NA	180	NA	4600	NA	110	25	7.2	NA	12.20	6.01	0.46	334	47	0.03	
	SHL-4-101111	10/07/11	1.4	NA	30 J	NA	2000	NA	32	1.6	2.3	NA	12.55	5.65	1.44	82	274	0	
	SHL-4-101612	10/16/12	3.8	NA	880	NA	2900	NA	55	13	0.65 J	NA	13.55	5.69	0.34	162	47	0.84 B	Clear
	SHL-4-052413	05/24/13	NA	2.6	NA	57.8 J	NA	4300 J	123	12.8	14.6	2.4	10.39	6.1	0.27	278	107.1	0.36	
	DUP-02-052413	05/24/13	NA	2.7	NA	59.6 J	NA	4300 J	129	13.3	15.1	2.5	NA	NA	NA	NA	NA	NA	
	SHL-4-111913	11/19/13	NA	6.2	NA	637	NA	3860 J	112	18	69.3	3.3	11.52	6.13	0.33	427	35.2	0.06	
	SHL-4-100814	10/08/14	NA	37	NA	8030 J	NA	3410 J	114	6.0	14.8	2.7	17.71	6.2	0.3	239	4.2	11.7	
	SHL-4_FA115	10/28/2015		37.4		3470		2320	71.1	15.0	15.9	3.0	12.96	6.15	0.82	189	6.2	3.7	
SHL-5	SHL-5-101807	10/18/2007	16.2	NA	6300	NA	1700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-5-042210	04/22/2010	3.4	NA	1200	NA	1200	NA	25	3.6	<1.0	NA	7.21	5.86	0.09	90	-254	0.56	
	SHL-5-101110	10/11/2010	4.8	NA	610	NA	2100	NA	20	2.9	2.1	NA	13.90	5.39	0.34	123	108	0.44	
	SHL-5-040511	04/05/2011	1	NA	170	NA	1000	NA	12	3.7	2.2	NA	4.28	5.78	0.34	60	85.2	0.2	
	SHL-5-101111	10/11/2011	5.5	NA	700	NA	1200	NA	33	0.6	1.1	NA	15.15	5.28	0.14	78	130	1	
	SHL-5041012	04/10/2012	3.7	NA	1500	NA	1100	NA	24	3.3	<1.7	NA	7.73	5.54	0.54	84	111.8	2100	
	SHL-5-101512	10/15/2012	4.5	NA	1000	NA	1600	NA	37	2.9	4.7	NA	13.98	5.42	0.49	99	82.4	4.1	Clear
	SHL-5-052113	05/21/2013	NA	3.7	NA	999	NA	1500 J	23.2	16.2	4.5 U	4.1	10.81	5.59	0.36	100	82.9	3.36	
	SHL-5-102213	10/22/2013	NA	15.1	NA	2380	NA	1650 J	43.8	4.3	0.87 J	NA	13.75	5.73	0.86	88	-89.4	0.90	
	SHL-5-042214	04/22/2014	NA	2.0 U	NA	282	NA	849 J	27.4	62.7	4.5 J	5.1	6.33	5.87	0.43	235	141.4	1.63	
	SHL-5-101314	10/13/2014	NA	13.3	NA	8390	NA	2500 U	41.4	35	5.6 J	10.3	13.05	5.98	0.18	205	4.7	1.27	
	SHL-5_FA115	10/22/2015		12.6		7000		293	38.1	31.0	2.4 J	10.7	12.73	6.24	0.93	170	38.7	0.44	
SHL-8S	SHL-8S-101807	10/18/2007	22.6	NA	80	NA	660	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-8S-0422210	04/22/2010	0.6	NA	<50	NA	960	NA	20	6.7	6.6	NA	9.85	6.28	2.39	101	-91	0.01	
	SHL-8S-101110	10/11/2010	<0.5	NA	<50	NA	1000	NA	20	7.5	5.0	NA	10.20	6.15	1.72	78	145	0.47	
	SHL-8S-040511	04/05/2011	<0.5	NA	50	NA	1100	NA	21	6.4	6.1	NA	10.24	6.15	4.37	77	138	0	
	SHL-8S-100611	10/06/2011	<0.5	NA	60	NA	1200	NA	21	7.1	5.4	NA	10.38	6.06	2.24	82	175	0	
	SHL-8S-041012	04/10/2012	0.6	NA	30 J	NA	970	NA	20	5200	<4.0	NA	9.98	6.21	6.9	97	139.8	<580	
	SHL-8S-101512	10/15/2012	<0.5	NA	30 J	NA	960	NA	19	7.4	4.3	NA	12.55	6.37	4.56	51	110.1	1.1 B	Clear
	SHL-8S-052813	05/28/2013	NA	0.93 J	NA	<100	NA	<5000	22.1	6.0	6.2	16.2	10.32	6.4	5.94	74	146.2	1.33	
	SHL-8S-102213	10/22/2013	NA	2.0 U	NA	30 U	NA	1180 J	17.5	6.8	6.4 J	NA	10.77	6.2	2.49	75	230	0.7	
	SHL-8S-042214	04/22/2014	NA	2.0 U	NA	79.4 J	NA	1200 J	26.3	6.3	6.0 J	0.55 J	10.07	6.54	5.53	77	160.8	0.62	
	SHL-8S-100914	10/09/2014	NA	2.0 U	NA	50 U	NA	2500 U	25.1	5.0	7.8 J	0.59 J	10.82	6.06	0.53	84	127.8	1.5	
	SHL-8S_FA115	10/28/2015		4.0 U		100 U		15 U	21.6	6.0	7.3	0.49 J	9.36	5.47	2.36	65	101.1	0.29	
SHL-8D	SHL-8D-101807	10/18/2007	11.8	NA	22 J	NA	2600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-8D-042210	04/22/2010	0.6	NA	17 J	NA	1800	NA	36	12	7.5	NA	10.25	6.28	1.50	167	-121	0.03	
	SHL-8D-101110	10/11/2010	<0.5	NA	<50	NA	1200	NA	23	9.6	8.0	NA	11.31	6.02	3.65	102	14.3	0.98	
	SHL-8D-040511	04/05/2011	<0.5	NA	<50	NA	1400	NA	20	19	7.0	NA	10.18	6.13	3.47	0.124	88	0	
	DUP-040511	04/05/2011	<0.5	NA	40 J	NA	1100	NA	21	6.3	5.7	NA	10.18	6.13	3.47	0.124	88	0	
	SHL-8D-100611	10/06/2011	<0.5	NA	60	NA	1100	NA	22	7.9	7.6	NA	10.55	6.13	5.39	91	43	0	
	SHL-8D-041112	04/11/2012	<0.5	NA	<50	NA	1700	NA	5	12	<5.8	NA	9.45	5.89	0.83	164	89.6	<130	
	SHL-8D-101512	10/15/2012	<0.5	NA	<50	NA	1600	NA	18	24	6.4	NA	12.99	6.17	2.19	92	60.5	1.2 B	Particulates
	SHL-8D-052113	05/21/2013	NA	0.72 J	NA	30 U	NA	1490 J	27.6	30.2	6.2	0.64 U	13.65	6.12	1.67	138	48.7	0.32	
	SHL-8D-102213	10/22/2013	NA	2.0 U	NA	30 U	NA	1260 J	13.1	11.8	7.5 J	NA	11.08	6.21	3.25	90	83.9	0.00	
	SHL-8D-042214	04/22/2014	NA	2.0 U	NA	30 U	NA	1590 J	11.0	28.2	6.3 J	0.73 J	10.88	5.92	2.08	147	146.6	0.15	
	SHL-8D-100914	10/09/2014	NA	2.0 U	NA	50 U	NA	2500 U	16.4	42.5	7.2 J	0.41 J	10.89	5.88	0.77	204	101.8	0.6	
	SHL-8D_FA115	10/28/2015		4.0 U		69.5 J		39.1	28.8	6.3	3.6 J	1.0	9.94	5.42	0.35	69	49.2	0.32	
SHL-9	DUP02-101607	10/16/2007	33.5	NA	11000	NA	1700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-9-042110	04/21/2010	25.2	NA	6300	NA	1600	NA	580	6.3	6.6	NA	8.38	6.58	0.12	204	-74	4.1	

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
	SHL-9-101210	10/12/2010	38.4	NA	11000	NA	1900	NA	770	7.3	4.3	NA	10.20	6.35	0.21	204	-70	0.89	
	SHL-9-040611	04/06/2011	25.7	NA	7500	NA	1600	NA	580	3.4	<6.8	NA	7.65	6.48	0.27	0.16	-38.7	24	
	SHL-9-100711	10/07/2011	39.8	NA	9500	NA	1900	NA	670	14	7.8	NA	11.78	6.26	0.27	223	-55.1	-55	
	SHL-9-041012	04/10/2012	29.5	NA	9500	NA	1900	NA	860	5.0	4.4	NA	8.47	6.2	0.34	268	-19.3	4600	
	SHL-9-101712	10/17/2012	36.4	NA	8300	NA	2100	NA	85	4.4	6.8	NA	9.12	6.94	0.36	210	-80.3	0.72 B	Clear
	SHL-9-052813	05/28/2013	NA	30.0	NA	9590 J	NA	1440 J	88.4	5.5	4.5 U	4.6	9.04	6.51	0.27	199	-54.1	1.71	
	SHL-9-102313	10/23/2013	NA	33.1	NA	8890	NA	2520 J	63.5	22.7	2.1 J	NA	10.87	6.52	0.22	160	-76.4	0.58	
	SHL-9-042314	04/23/2014	NA	22.2	NA	9530	NA	2360 J	62.4	24.2	6.7 J	4.8	7.41	6.28	0.71	211	5.3	20.0	
	SHL-9-100914	10/09/2014	NA	28.5	NA	9820	NA	2790 J	55.6	36.5	8.5 J	4.5	9.67	6.45	0.11	183	-42.1	7.51	
	SHL-9_FA115	10/29/2015		18.5		15900		451	82.4	13.5	1.6 J	11.1	9.41	5.96	0.28	299	-7.8	1.51	
SHL-10	SHL-10-101607	10/16/2007	0.59 J	NA	45 J	NA	790	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-10-101410	10/14/2010	0.9	NA	<50	NA	1500	NA	31	1.3	6.0	NA	12.8	6.51	9.16	89	136.9	1	
	SHL-10-101612	10/16/2012	0.7	NA	<50	NA	1100	NA	26	1.1	4.2	NA	9.75	6.89	0.87	73	59.1	0.36 B	Clear
	SHL-10-052213	05/22/2013	NA	1.2	NA	30.0 J	NA	877 J	24.3	5.8	4.6 J	1.6	11.46	6.62	10.05	55	149.8	1.22	
	SHL-10-100814	10/08/2014	NA	2.0 U	NA	50 U	NA	2500 U	33.8	2.8	9.8 J	0.57 J	10.9	6.54	8.68	76	173.6	8.11	
	SHL-10_FALL15	10/23/2015		4.0 U		100 U		15 U	36.1	3.0	10.1	1.0 U	11.28	6.59	7.74	84	86.6	1.53	
SHL-11	SHL-11-101607	10/16/2007	686.5	NA	48000	NA	5200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-11-101310	10/13/2010	694	NA	60000	NA	5300	NA	230	19	6.1	NA	12.66	6.38	0.24	580	-70	0.72	
	SHL-11-100611	10/06/2011	654.9	NA	50000	NA	5600	NA	240	15	1.6	NA	13.13	6.2	0.3	597	-41.2	4	
	SHL-11-101512	10/15/2012	647.0	NA	34000	NA	5500	NA	200	20	19	NA	14.82	6.71	0.35	365	-108.2	79	Clear
	SHL-11-052313	05/23/2013	NA	496	NA	19800	NA	6490	160	41.2	19.5	2.1	12.24	6.75	0.18	462	-96.0	8.5	
	SHL-11-102213	10/22/2013	NA	752	NA	27600	NA	5900	164	42.7	20.2	NA	12.75	6.54	0.42	530	-97.6	0.43	
	SHL-11-042314	04/23/2014	NA	587	NA	25100	NA	6810	157	47.7	20.0	1.9	10.27	6.45	0.26	390	-54.9	4.94	
	SHL-11-100814	10/08/2014	NA	793	NA	44700	NA	8720	242	42.5	69.5	2.8	12.39	6.61	0.44	623	-90.3	5.51	
	SHL-11-06052015	6/5/2015		925		53400		3310	187	64	0.95 J	1.6	11.64	7.01	0.31	676	-134.2	11.30	
	SHL-11_FA115	10/24/2015		642		45800		3560 J	173	41.2	52.7	3.0	11.52	6.32	1.12	630	-78.4	8.17	
SHL-13	SHL-13-101807	10/18/2007	1.6	NA	110	NA	1500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-13-101110	10/11/2010	<0.5	NA	<50	NA	2000	NA	19	82	6.5	NA	15.52	5.62	2.54	317	169	3.08	
	SHL-13-100611	10/06/2011	2.8	NA	520	NA	1900	NA	18	66	4.7	NA	14.61	5.72	0.25	0.273	42	0	
	SHL-13-101512	10/15/2012	1.0	NA	400	NA	1800	NA	23	61	5.5	NA	16.26	5.91	0.67	254	61.5	0.23 B	Clear
	SHL-13-102213	10/22/2013	NA	2.0 U	NA	43.3 J	NA	2290 J	23	61	8.0 J	NA	13.87	6.08	0.35	269	127	0.2	Clear
	SHL-13_FA115	10/23/2015		2.9		1210		549	22.7	89.7	5.3 J	2.0	17.82	5.32	0.41	338	28.8	0.26	
SHL-15	SHL-15-101607	10/16/2007	42	NA	3400	NA	2800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-15-101410	10/14/2010	25	NA	2800	NA	3400	NA	70	11	20	NA	11.49	5.73	0.21	241	-0.3	1	
	SHL-15-100611	10/06/2011	70.4	NA	8200	NA	2300	NA	140	22	14	NA	12.36	6.17	0.27	403	66.1	0.9	
	SHL-15-101612	10/16/2012	24.2	NA	3200	NA	3800	NA	84	26	14	NA	13.11	5.98	3.27	348	-18.7	1.3	Clear
	SHL-15-102213	10/22/2013	NA	34.9	NA	6610	NA	3340 J	90.9	16.7	10.1	NA	13.48	5.91	0.31	266	-23.6	2.08	Clear
	SHL-15-060815	6/9/2015		31.6		3570		198	74.9	120	13.8	8.5	10.22	5.82	0.24	392	-151.5	23.80	
SHL-19	SHL-19-101607	10/16/2007	8.851	NA	50000	NA	3800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-19-101410	10/14/2010	234.8	NA	23000	NA	3500	NA	80	2.2	22	NA	11.03	5.86	0.57	240	22	40	
	SHL-19-100711	10/07/2011	62.9	NA	7700	NA	1900	NA	38	1.2	13	NA	13.12	4.97	3.66	107	128	13	
	SHL-19-101612	10/16/2012	138.3	NA	10000	NA	3800	NA	66	2.3	22	NA	10.52	5.67	0.27	194	22	79	Iron-Rich
	DUP-101612	10/16/2012	133.0	NA	10000	NA	3800	NA	66	2.3	22	NA	NA	NA	NA	NA	NA	59	NA
	SHL-19-052413	05/24/2013	NA	3.8	NA	1460	NA	3150 J	55.3	1.0	12.6	1.8	10.83	5.86	1.01	137	98.9	17.0	
	SHL-19-102413	10/24/2013	NA	33.6	NA	8380	NA	3670 J	64.6	2.8	16.6	NA	11.54	6.76	0.5	110	-85.9	123	
	SHL-19-100814	10/08/2014	NA	3.1 J	NA	5640	NA	2770 J	62.1	2.5	18.4	2.4	12.78	6.09	0.52	180	29.6	30.7	
	SHL-19_FA115	10/28/2015		3.1 J		8850		2770	334	75.0	17.4	1.0	11.08	6.13	0.59	167	-50.2	50.7	

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
SHL-20	SHL-20-101607	10/16/2007	3.362	NA	7200	NA	9300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-20-101310	10/13/2010	4.4	NA	250	NA	5900	NA	140	20	8.8	NA	12.04	6.43	0.20	395	88	1.71	
	SHL-20-100611	10/06/2011	7.3	NA	350	NA	5700	NA	140	22	14	NA	12.36	6.17	0.27	403	66.1	1.6	
	SHL-20-101512	10/15/2012	139.2	NA	1800	NA	4900	NA	120	22	22	NA	12.74	6.36	2.43	277	50.1	16	Cloudy
	SHL-20-052213	05/22/2013	NA	621	NA	17700	NA	3890 J	111	35.7	30.5	1.4	12.18	6.75	0.19	414	-85.6	0.54	
	SHL-20-102213	10/22/2013	NA	632	NA	38500	NA	2530 J	81	49.7	23.0	NA	12.80	6.51	1.87	443	-93.6	4.10	
	DUP-102213	10/22/2013	NA	641	NA	38900	NA	2510 J	81	49.7	23.1	NA	NA	NA	NA	NA	NA	NA	
	SHL-20-042314	04/23/2014	NA	701	NA	40700 J	NA	4540 J	120	50.2	26.0	1.6	10.96	6.21	0.85	499	-58.7	6.31	
	SHL-20-100814	10/08/2014	NA	763	NA	52500	NA	7160	153	61	4.0 J	2.0	12.94	6.4	0.43	620	-87.8	2.43	
	Duplicate-100814	10/08/2014	NA	750	NA	52200	NA	7020	153	60	4.0 J	2.5	12.94	6.4	0.43	620	-87.8	2.43	
	SHL-20-06052015	6/6/2015		794		43800		1560	118	59	14.7	1.5	12.69	6.61	0.47	530	-86.4	9.24	
	SHL-20_FA115	10/24/2015		855		59300		2060	139	61.7	3.5 J	2.2	10.78	6.46	0.57	606	-119.0	7.31	
SHL-21	SHL-21-101607	10/16/2007	0.81 J	NA	40 J	NA	580	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-21-101310	10/13/2012	0.9	NA	<50	NA	500	NA	12	1.4	6.0	NA	11.85	5.59	9.01	46	178.3	1	
	SHL-21-101512	10/15/2012	1.1	NA	<50	NA	700	NA	18	1.3	5.1	NA	11.32	6.26	4.97	39	185.9	1.8	Clear
	SHL-21_FA115	10/22/2015		4.0 U		100 U		15 U	25.8	4.5	5.0 J	1.2	10.31	6.41	2.31	74	114.3	3.45	
SHL-22	SHL-22-101607	10/16/2007	55.1	NA	370	NA	13000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-22-042110	04/21/2010	69.6	NA	580	NA	12000	NA	340	21	5.9	NA	9.19	6.77	0.10	933	-40	0.05	
	SHL-22-101210	10/12/2010	46.5	NA	430	NA	13000	NA	380	23	5.9	NA	9.75	6.47	0.31	783	-14.1	0.03	
	DUP-01-101210	10/12/2010	49.0	NA	480	NA	13000	NA	370	22	5.8	NA	9.75	6.47	0.31	783	-14.1	0.03	
	SHL-22-040611	04/06/2011	57.9	NA	650	NA	13000	NA	370	22	<5.3	NA	8.16	6.67	0.22	0.75	-43.6	0	
	SHL-22-100711	10/07/2011	45.7	NA	580	NA	13000	NA	380	22	5.3	NA	11.06	6.54	0.27	776	15.3	0	
	SHL-22-041012	04/10/2012	41.9	NA	610	NA	12000	NA	380	22	<2.2	NA	8.8	6.42	2.13	981	-20.6	2000 J	
	DUP-01012	04/10/2012	43.6	NA	600	NA	12000	NA	380	20	<1.4	NA	8.8	6.42	2.13	981	-20.6	1300 J	
	SHL-22-101712	10/17/2012	16.5	NA	340	NA	12000	NA	360	21	6.0	NA	9.76	6.72	0.45	705	-20.2	0.85 B	Clear
	SHL-22-052813	05/28/2013	NA	34.1	NA	453	NA	14400	400	19.5	5.8	2.2	9.22	6.68	1.28	492	18.7	0.91	
	DUP-052813	05/28/2013	NA	33.3	NA	440	NA	14100	396	20.5	5.5	2.2	NA	NA	NA	NA	NA	NA	
	SHL-22-102313	10/23/2013	NA	53.1	NA	615	NA	13700	388	20.2	6.6 J	NA	10.6	6.7	0.39	511	-6.9	0.00	
	DUP02-102313	10/23/2013	NA	54.3	NA	610	NA	13500	389	19.7	6.6 J	NA	NA	NA	NA	NA	NA	NA	
	SHL-22-042414	04/24/2014	NA	49.2	NA	564	NA	13200	393	19.7	5.9 J	2.2	8.19	6.71	0.16	757	7.1	0.18	
	SHL-22-100914	10/09/2014	NA	44.5	NA	436	NA	12300	378	19.5	7.2 J	1.8	10.21	6.67	0.31	526	5.8	1.99	
	DUP-100914	10/09/2014	NA	39.6	NA	405	NA	12400	377	19	7.1 J	2.0	10.21	6.67	0.31	526	5.8	1.99	
	SHL-22_FA115	10/27/2015		15.9		123		10200	362	19.5	5.8	2.2	9.78	6.03	0.44	557	0.3	0.19	
SHL-23	SHL-22-101707	10/17/2007	0.73 J	NA	210	NA	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHL-23	08/12/2010	NA	0.14 J	NA	16.9 J	NA	163	4.3	1.3	4.9	<1.0	10.42	6.45	10.06	25	209.8	NA	NA
	SHL-23-101310	10/13/2010	<0.5	NA	28 J	NA	180	NA	4.3	1.9	5.5	NA	11.53	4.98	10.43	31	264.1	1	
	SHL-23-101512	10/15/2012	<0.5	NA	20 J	NA	190	NA	4.8	2.1	4.8	NA	11.31	5.32	11.55	24	290.1	1.1 B	Clear
	DUP-101512	10/15/2012	<0.5	NA	20 J	NA	190	NA	4.7	2.1	4.8	NA	NA	NA	NA	NA	NA	1.2 B	NA
	SHL-23-060915	6/10/2015		2.0 U		50 U		22.2	3.9 U	2.5	7.3 J	0.42 J	9.59	5.22	8.59	26.0	134.6	3.25	
	SHL-23_FA115	10/22/2015		4.0 U		100 U		9.3 J	4.1 J	3.0	5.4 J	1.6	10.56	4.78	10.09	24	165.1	1.06	
N5-P1	N-5,P-1-101210	10/12/2010	3488	NA	20000	NA	10000	NA	300	20	<11	NA	12.27	6.06	0.31	1353	-61.8	1	
	N-5,P-1-101011	10/10/2011	4942	NA	40000	NA	8100	NA	280	16	9.5	NA	12.71	6.6	0.18	548	-60	2	
	N-5,P-1-101812	10/18/2012	2286	NA	6500	NA	11000	NA	270	20	11	NA	11.67	6.79	0.55	386	-100	18	Clear
	N-5,P-1-101812	10/22/2013	NA	2500	NA	7520	NA	11600	313	17.7	11	NA	13.56	6.73	0.57	620	-69.5	0.46	Clear
	N5-P1-100814	10/08/2014	NA	327	NA	563	NA	7580	230	19.5	16.8	2.4	13.75	7.2	0.25	303	-108.3	0.61	
	N5-P1_FA115	10/24/2015		2170		3440		7250	250	15.8	13.5	2.7	11.50	6.25	0.51	560	-25.0	1.52	

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
N5-P2	N-5,P-2-101210	10/12/2010	24.5	NA	70000	NA	13000	NA	700	14	1.0	NA	12.08	6.43	0.35	519	-60.7	1	
	N-5,P-2-101011	10/10/2011	27.4	NA	72000	NA	13000	NA	690	14	1.0	NA	12.83	6.2	0.17	1080	-32	2	
	N-5,P-2-101712	10/17/2012	26.1	NA	66000	NA	12000	NA	640	13	<2.0	NA	14.87	6.25	1.21	850	-132.4	82	Clear
	N-5,P-2-102213	10/22/2013	NA	21.2	NA	75400	NA	14400	652	15.3	0.67 J	NA	14.15	6.34	0.72	1271	-71.6	3.36	Clear
	N5-P2_FA115	10/24/2015		25.7		68200		426	574	14.8	4.2 J	13.1	12.20	5.64	0.39	1340	-57.2	1.29	
SHM-93-10C	SHM-93-10C-101607	10/16/2007	9.8	NA	140	NA	4000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-93-10C-101410	10/14/2010	8.7	NA	26 J	NA	3600	NA	170	23	1.9	NA	12.1	7.31	0.3	469	-30.7	1	
	SHL-93-10C-101612	10/16/2012	8.1	NA	30 J	NA	3600	NA	180	23	18	NA	9.45	7.28	1.23	434	16.3	1.0 B	Clear
	SHM-93-10C_FA115	10/23/2015		11.6		100 U		15 U	162	23.2	19.9	1.0 U	12.21	7.69	2.38	342	43.3	0.48	
SHM-93-22B	SHM-93-22B-042110	04/21/2010	947.5	NA	48000	NA	11000	NA	380	22	4.4	NA	8.10	6.71	0.11	953	-125	5.2	
	DUP-042110	04/21/2010	980.3	NA	48000	NA	10000	NA	350	21	3.9	NA	8.10	6.71	0.11	953	-125	140	
	SHM-93-22B-101110	10/11/2010	827.6	NA	37000	NA	11000	NA	350	24	3.7	NA	9.52	6.52	0.29	745	-83.2	1.18	
	SHM-93-22B-040611	04/06/2011	1039	NA	45000	NA	11000	NA	330	26	<3.5	NA	6.96	6.57	0.23	749	-78.8	8.6	
	SHM-93-22B-101111	10/11/2011	1072	NA	38000	NA	11000	NA	330	23	3.6	NA	11.13	6.36	0.16	704	-63	5	
	SHM-93-22B-041012	04/10/2012	1271	NA	35000	NA	10000	NA	340 J	19	<1.9	NA	8.73	6.25	0.37	908	-59.8	95000	
	SHM-93-22B-101712	10/17/2012	879	NA	23000	NA	10000	NA	340	22	4.4	NA	10.83	6.54	0.55	415	-141.4	39	Clear
	SHM-93-22B-052813	05/28/2013	NA	1150	NA	30000	NA	12200	337	21.5	4.5 U	2.9	8.92	6.57	0.22	471	80.4	71.0	
	SHM-93-22B-102313	10/23/2013	NA	1150	NA	31300	NA	11300	334	20.7	4.4 J	NA	10.17	6.59	0.39	485	1.8	1.2	
	SHM-93-22B-042414	04/24/2014	NA	997	NA	28300 J	NA	10800	329	22.2	2.9 J	2.8	7.63	6.48	0.14	734	-66.3	0.5	
	SHM-93-22B-100814	10/08/2014	NA	690	NA	19300	NA	10700	338	20.5	4.9 J	2.7	10.27	6.51	0.29	503	-43.8	3.4	
	SHM-93-22B-60815	6/9/2015		1050		19500		12100	309	19	3.3 J	2.2	9.54	6.39	0.65	628	-49.3	9.60	
	SHM-93_22B_FA115	10/24/2015		670		12500		11500	283	17.5	5.2 J	4.0	9.13	5.27	0.41	475	2.7	10.60	
SHM-93-22C	SHM-93-22C-101607	10/16/2007	72.5	NA	1700	NA	15000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	DUP01-101607	10/16/2007	72	NA	1600	NA	14000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-93-22C-042110	04/21/2010	14.6	NA	280	NA	3400	NA	110	10	6.1	NA	11.33	8.23	1.10	321	-38	2.2	
	SHM-93-22C-101210	10/12/2010	15.8	NA	290	NA	3600	NA	110	12	5.8	NA	10.86	7.82	0.58	286	-103.1	1.05	
	SHM-93-22C-040611	04/06/2011	13.9	NA	350	NA	3500	NA	120	10	<6.0	NA	9.93	8.84	0.78	284	-1	0	
	SHM-99-22C-100511	10/05/2011	13.9	NA	380	NA	3100	NA	120	8.4	6.1	NA	12.07	7.5	0.14	282	-42	1	
	SHM-93-22C-041112	04/11/2012	25.4	NA	980	NA	3500	NA	120	9.9	<6.6	NA	8.17	7.46	1.26	361	-105.3	1600	
	SHM-93-22C-101712	10/17/2012	21.7	NA	590	NA	3400	NA	120	10	6.9	NA	8.4	8.04	0.41	140	-163.1	0.30 B	Clear
	SHM-99-22C-052813	05/28/2013	NA	19.7	NA	568	NA	<5000	133	10.0	7.5	3.6	10.73	7.83	0.45	196	-145.7	3.37	
	SHM-99-22C-102313	10/23/2013	NA	25.1	NA	555	NA	3920 J	137	11.3	7.0 J	NA	10.87	7.79	0.40	198	-164.8	0.31	
	SHM-99-22C-042414	04/24/2014	NA	31.9	NA	397	NA	4020 J	140	11.3	6.3 J	3.5	8.94	7.77	0.17	294	-89.5	0.82	
	SHM-03-22C-100814	10/08/2014	NA	45.6	NA	519	NA	12300	375	19.5	7.9 J	2.4	10.92	6.65	0.25	743	18.2	0.73	
	SHM-93_22C_FA115	10/24/2015		137		1410		271	201	24.5	3.9 J	3.5	10.57	6.78	0.30	384	-127.1	0.30	
SHM-96-5B	SHM-96-5B-101707	10/17/2007	750	NA	5000	NA	12000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-96-5B-010808	01/08/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-96-5B-042210	04/22/2010	1504 J	NA	21000 J	NA	11000	NA	330 J	19	4.4	NA	10.22	6.51	0.16	883	-278	0.18	
	SHM-96-5B-101110	10/11/2010	846.2	NA	9300	NA	11000	NA	320	21	4.5	NA	11.16	6.34	0.13	685	-35	0.24	
	SHM-96-5B-040511	04/05/2011	2030	NA	30000	NA	11000	NA	340	17	3.8	NA	10.15	6.54	0.19	681	-60	1	
	SHM-96-5B-100611	10/06/2011	1895	NA	17000	NA	12000	NA	310	20	4.1	NA	12.86	6.15	0.38	702	-19.8	4.4	
	SHM-96-5B-041012	04/10/2012	1681	NA	19000	NA	10000	NA	330	18	<1.6	NA	9.83	6.35	0.25	869	-43	42000	
	SHM-96-5B-101512	10/15/2012	1376	NA	13000	NA	10000	NA	320	18	5.4	NA	14.74	6.56	0.69	475	-71.6	52	Cloudy
	SHM-96-5B-052113	05/21/2013	NA	1400	NA	20000	NA	12700	315	18.7	5.4	2.7	10.75	6.42	0.36	652	-43.7	9.01	
	SHM-96-5B-102213	10/22/2013	NA	1660	NA	24700	NA	11600	315	17.7	5.0 J	NA	11.55	6.55	1.31	560	-69.0	0.58	
	SHM-96-5B-042214	04/22/2014	NA	1340	NA	17100	NA	11500	345	18.2	4.5 J	2.4	10.14	6.21	0.73	642	-29.4	4.61	
	DUP-042214	04/22/2014	NA	1390	NA	17600	NA	11900	333	18.2	4.5 J	2.2	NA	NA	NA	NA	NA	NA	
	SHM-96-5B-100914	10/09/2014	NA	991	NA	13100	NA	11100	318	17	5.7 J	2.7	12.11	6.53	0.12	484	-54.8	0.41	

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
	SHM-96-5B-6052015	6/6/2015		1210		16200		9810	296	28	6.9 J	2	14.27	6.54	1.36	618	-56.8	4.03	
	SHM-96-5B_FA115	10/22/2015		799		11000		11600	256	19.0	7.2 J	2.2	13.18	7.42	0.60	541	-18.3	0.17	
SHM-96-5C	SHM-96-5C-101707	10/17/2007	61.1	NA	60000	NA	11000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-96-5C-042210	04/22/2010	31.2	NA	15000	NA	9300	NA	30	34	<1.0	NA	9.84	6.31	0.14	1008	-267	0.19	
	SHM-96-5C-101110	10/11/2010	26.4	NA	15000	NA	8600	NA	310	31	2.0	NA	10.55	6.19	0.12	712	-51	0.49	
	SHM-96-5C-040511	04/05/2011	35	NA	22000	NA	9500	NA	340	28	1.6	NA	9.38	6.33	0.20	744	-32.2	15	
	SHM-96-5C-100611	10/06/2011	24.5	NA	13000	NA	9700	NA	310	28	1.7	NA	12.15	6.16	0.22	721	-3.1	4.6	
	SHM-96-5C-041012	04/10/2012	8.7	NA	4400	NA	9300	NA	310	27	<2.0	NA	9.48	6	0.11	885	32.7	6600	
	SHM-96-5C-101712	10/17/2012	7.7	NA	1100	NA	9800	NA	300	27	2.6	NA	11.96	6.3	0.84	396	-71.0	0.62 B	Clear
	SHM-96-5C-052813	05/28/2013	NA	10.4	NA	2200	NA	11800	318	24.0	4.5 U	3.8	9.98	6.29	0.18	482	-64.9	4.82	
	SHM-96-5C-102213	10/22/2013	NA	5.5	NA	609	NA	9910	315	19.2	3.4 J	NA	11.63	6.21	1.41	529	-20.1	0.10	
	SHM-96-5C-042214	04/22/2014	NA	10.9	NA	3980	NA	10200	326	20.2	2.6 J	3.8	9.79	6.18	0.16	618	7.8	3.66	
	SHM-96-5C-100914	10/09/2014	NA	17.7	NA	7300	NA	10200	302	18.0	3.5 J	2.8	11.75	6.39	0.07	466	-28.1	0.35	
	SHM-96-5C_FA115	10/22/2015		39.6		22200		7820	265	20.5	5.0 J	5.2	12.13	7.02	0.91	637	-33.7	18.0	
SHP-99-29X	SHP-99-29X-101807	10/18/2007	2953	NA	44000	NA	990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-99-29X-102907	10/29/2007	2800	NA	42000	41000	980	960	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-99-29X-101210	10/12/2010	3156	NA	44000	NA	1100	NA	130	2.5	4.9	NA	11.90	5.67	0.13	270	-8.8	1	
	SHP-99-29X-101112	10/11/2012	1457	NA	50000	NA	1300	NA	110	4.1	3.0 J	NA	12.07	5.54	0.27	287	-1	6	
	SHP-99-29X-101712	10/17/2012	2739	NA	32000	NA	760	NA	92	1.6	4.8	NA	11.32	5.82	0.29	191	-75.7	3.6	Clear
	SHP-99-29X-102213	10/22/2013	NA	2760	NA	43300	NA	889 J	101	2.3	5.6 J	NA	13.10	6.02	0.90	230	-48.3	4.29	Clear
	SHP-99-29X-100714	10/07/2014	NA	3000	NA	49100	NA	2500 U	120	3.0	7.8 J	1.5	11.60	5.92	0.13	180	-17.8	13.2	
	SHP-99-29X_FA115	10/23/2015		3810		48500		8340	108	2.8	6.2 J	1.5	12.31	5.73	0.35	243	27.3	3.35	
SHP-99-31A	SHP-99-31A-101707	10/17/2007	22.7	NA	12000	NA	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-99-31A-011008	01/10/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-99-31A-101310	10/13/2010	17.4	NA	13000	NA	1200	NA	32	46	5.6	NA	13.63	5.83	0.11	241	6.4	0.24	
	SHP-99-31A-100511	10/05/2011	18.4	NA	8100	NA	790	NA	38	3	6.6	NA	15.55	5.55	0.28	151	3.2	1.8	
	SHP-99-31A-101812	10/18/2012	17.7	NA	11000	NA	1500	NA	22	46	15	NA	13.71	5.78	0.42	169	-6.0	2.2	Clear
	SHP-99-31A-102313	10/23/2013	NA	14.2	NA	4210	NA	971 J	15.3	25.7	9.7 J	NA	12.48	5.83	1.02	145	41.9	3.79	Clear
	DUP01-102313	10/23/2013	NA	14.6	NA	4250	NA	960 J	15.3	25.7	9.7 J	NA	NA	NA	NA	NA	NA	NA	Clear
	SHP-99-31A	10/29/2015		18.7		7300		443	16.5	62.5	7.4	2.4	13.07	5.48	0.48	2.71	20.5	4.44	
SHP-99-31B	SHP-99-31B-101707	10/17/2007	85.5	NA	28000	NA	5100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-99-31B-011008	01/10/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-99-31B	08/12/2010	NA	28.8	NA	14600	NA	1930	86	4	3	6.5	10.74	6.03	0.19	186	33.9	NA	NA
	SHP-99-31B-101310	10/13/2010	39.2	NA	11000	NA	1800	NA	86	3.4	3.8	NA	10.58	6.27	0.15	211	-71	0.19	
	SHP-99-31B-100511	10/05/2011	59.3	NA	10000	NA	1700	NA	83	3.3	4.1	NA	11.8	6.22	0.22	201	-46	0.19	
	SHP-99-31B-101812	10/18/2012	60.1	NA	9400	NA	1800	NA	73	2.3	5.3	NA	10.42	6.31	0.31	175	-85.0	1.3	Clear
	SHP-99-31B-102313	10/23/2013	NA	61.6	NA	9460	NA	1880 J	63.5	4.3	7.6 J	NA	11.15	6.56	2.42	176	-57.7	1.02	Clear
	SHP-99-31B	10/29/2015		58.7		7430		340	56.7	5.0	6.2	3.5	11.04	5.81	0.28	156	-23.4	0.84	
SHP-99-31C	SHP-99-31C-101707	10/17/2007	292.1	NA	44000	NA	13000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-99-31C-011008	01/10/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-99-31C-101310	10/13/2010	239.4	NA	22000	NA	11000	NA	350	30	3.5	NA	10.61	6.46	0.16	811	-80	0.25	
	SHM-99-31C-100511	10/05/2011	244	NA	22000	NA	12000	NA	340	27	3.9	NA	11.61	6.5	0.27	809	-59.2	1.9	
	SHP-99-31C-101812	10/18/2012	206.4	NA	17000	NA	11000	NA	310	28	5.2	NA	13.81	6.75	0.64	641	-117.1	19	Clear
	SHP-99-31C-102313	10/23/2013	NA	205	NA	16400	NA	12800	348	32.2	5.7 J	NA	11.13	6.7	0.23	737	-95.7	3.71	Clear
	SHM-99-31C-101314	10/13/2014	NA	180	NA	15800	NA	11200	315	24.5	6.0 J	4.2	10.85	6.71	0.17	634	-78.4	4.22	
	SHP-99-31C	10/29/2015		194		14700		5200	313	22.5	5.0	3.6	13.39	6.62	1.31	663	-73.9	8.32	

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
SHM-99-32X	SHP-99-32X-101707	10/17/2007	206.2	NA	60000	NA	11000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-99-32X-011008	01/10/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-99-32X-101310	10/13/2010	173.4	NA	25000	NA	14000	NA	390	39	3.9	NA	10.49	6.51	0.16	879	-77	0.42	
	SHM-99-32X-100411	10/04/2011	172.8	NA	24000	NA	13000	NA	380	32	2.4	NA	11.54	6.42	0.33	825	-36	5	
	DUP01-100411	10/04/2011	174.6	NA	25000	NA	13000	NA	380	32	2.5	NA	11.54	6.42	0.33	825	-36	5	
	SHM-99-32X-101712	10/17/2012	130.6	NA	23000	NA	12000	NA	370	36	2.8	NA	10.52	6.54	0.63	469	-136.4	28	Clear
	DUP-101712	10/17/2012	134.4	NA	23000	NA	12000	NA	360	36	2.5	NA	NA	NA	NA	NA	NA	24	NA
	SHM-99-32X-102313	10/23/2013	NA	107	NA	18400	NA	11500	342	32.2	2.9 J	NA	11.17	6.45	0.17	704	-77.9	0.37	Clear
	SHM-99-32X-101314	10/13/2014	NA	93.5	NA	16800	NA	10000	280	32.5	4.9 J	2.1	11.19	6.64	1.89	462	-83	17.39	
	Dup-101314	10/13/2014	NA	94.9	NA	17000	NA	10200	287	32.5	4.8 J	2.1	11.19	6.64	1.89	462	-83	17.39	
SHP-01-36X	SHP-01-36X-101607	10/16/2007	16.7	NA	6900	NA	1700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-01-36X-101410	10/14/2010	14.2	NA	2300	NA	1600	NA	24	40	9.2	NA	15.80	6.5	0.12	218	-78	1	
	SHP-01-36X-101011	10/10/2011	30.8	NA	2700	NA	2000	NA	28	46	4.3	NA	19.76	5.82	0.18	208	-43	1	
	SHP-01-36X-101612	10/16/2012	17.8	NA	2600	NA	2600	NA	40	63	5.1	NA	15	6.52	0.36	379	-73.4	23	Clear
	SHP-01-36X-111913	11/19/2013	NA	4.8	NA	75.2 J	NA	2540 J	24.2	75.5	23.7	NA	6.79	6.42	7.07	351	118.8	0.63	Clear
	SHP-01-36X-100914	10/09/2014	NA	10.8	NA	535	NA	2800 J	26.2	110	8.1 J	3.1	17.35	6.27	0.32	329	39.2	2.99	
	SHP-01-36X_FA115	10/28/2015		9.0		686		111	23.7	105	7.7	2.7	11.81	6.12	1.40	329	27.2	0.91	
SHP-01-37X	SHP-01-37X-101607	10/16/2007	26.6	NA	8200	NA	1600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-01-37X-101410	10/14/2010	22.5	NA	6700	NA	1700	NA	44	60	<1.0	NA	16.68	6.21	0.42	300	-43	0.29	
	SHP-01-37X-101612	10/16/2012	10.2	NA	3900	NA	2200	NA	37	62	3.0	NA	14.67	6.4	0.38	287	-105.8	1.6	Clear
	SHP-01-37X-111913	11/19/2013	NA	4.7	NA	1430	NA	2840 J	4.4 J	75.5	78.1	2.0 U	6.85	5.64	3.12	433	123.3	0.43	Clear
	SHP-01-37X-100914	10/09/2014	NA	8.5	NA	3410	NA	2500 U	12	80	8.0 J	3.1	17.13	6.22	1.8	350	28	0.1	
	SHP-01-37X_FA115	10/28/2015		14.0		1090		136	25.8	95.0	6.3	3.8	11.71	6.30	3.02	325	0.7	0.88	
SHP-01-38A	SHP-01-38A-101607	10/16/2007	781.4	NA	37000	NA	5400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHP-01-38A-101410	10/14/2010	651.8	NA	28000	NA	3500	NA	140	28	18	NA	12.81	6.37	0.91	433	-70	1	
	SHP-01-38A-101211	10/12/2011	557.9	NA	31000	NA	4500	NA	200	24	11	NA	13.44	5.95	0.21	500	-39	3	
	SHP-01-38A-101512	10/15/2012	660.6	NA	3000	NA	4200	NA	180	44	18	NA	12.84	6.19	0.36	499	-73.1	30	Clear
	SHP-01-38A-052313	05/23/2013	NA	412	NA	10200	NA	1260 J	64.1	5.3	6.3	2.1	10.79	6.66	0.12	156	-70.1	4.3	
	SHP-01-38A-111913	11/19/2013	NA	247	NA	17900	NA	2450 J	79.2	7	115	2.2	12.33	6.14	1.25	435	-20.7	0.31	
	SHP-01-38A-100914	10/09/2014	NA	263	NA	23500	NA	2500 U	93.7	10.5	49.2	19.8	14.12	6.23	0.16	256	-47	0.37	
	SHP-01-38A_FA115	10/29/2015		314		38400		2950	112	10.5	20.5	1.8	12.66	6.28	0.36	388	-52.8	1.39	
SHP-01-38B	SHP-01-38B-052313	05/23/2013	NA	900	NA	47100	NA	8140	190	51.7	4.5 U	3.6	10.78	6.62	0.30	583	-109.1	0.0	Clear
	SHP-01-38B_FA115	10/29/2015		903		43600		2320	145	43.0	7.0	4.4	11.13	6.34	0.15	610	-100	0.34	
SHM-05-39A	SHM-05-39A-101707	10/17/2007	2.415	NA	52000	NA	38000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-39A-010908	01/09/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-39A	08/12/2010	NA	236	NA	24500	NA	1860	100	7.1	6	2.9	11.37	6.45	0.35	263	-52.9	NA	NA
	SHM-05-39A-101310	10/13/2012	246.3	NA	26000	NA	1900	NA	110	13	4.3	NA	11.29	6.63	0.2	297	-92	0.17	
	SHM-05-39A-100411	10/04/2011	227.1	NA	17000	NA	1600	NA	87	3.6	3.8	NA	12.05	6.62	0.16	213	-66	2	
	SHL-05-39A-101612	10/16/2012	76.3	NA	3900	NA	1400	NA	50	17	4.8	NA	14.29	6.28	0.37	149	69.6	40	Clear
	SHL-05-39A-102413	10/24/2013	NA	146	NA	14700	NA	1770 J	51.5	19.2	4.0 J	NA	11.9	6.7	0.23	133	-94.3	0.35	Clear
	SHM-05-39A	10/29/2015		4.0 U		100 U		417	56.7	17.5	5.4	1.8	13.39	6.47	3.35	175	16.5	5.62	
											j								
SHM-05-39B	SHM-05-39B-101707	10/17/2007	3.094	NA	10000	NA	14000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-39B-010908	01/09/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-39B-101310	10/13/2010	162	NA	3200	NA	12000	NA	300	130 J	4.0 J	NA	12.93	6.75	0.19	896	-68.1	3.54	
	DUP-02-101310	10/13/2010	174.7	NA	3300	NA	11000	NA	300	190	6.2	NA	12.93	6.75	0.19	896	-68.1	3.54	
	SHM-05-39B-100511	10/05/2011	308.1	NA	5000	NA	13000	NA	420	93 J	3.2	NA	13.12	6.85	0.11	919	-66	3	

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
	DUP02-100511	10/05/2011	311.4	NA	5100	NA	13000	NA	350	39	1.8	NA	13.12	6.85	0.11	919	-66	3	
	SHM-05-39B-101612	10/16/2012	364.4	NA	6100	NA	14000	NA	420	37	1.97 J	NA	15.3	6.91	1.67	1365	-126.7	55	Cloudy
	SHM-05-39B-102413	10/24/2013	NA	113	NA	9580	NA	1660 J	71.2	88.7	3.8 J	NA	10.76	6.93	0.40	278	-95.3	0.97	Cloudy
	SHM-05-39B	10/29/2015		293		37800		1500	62.8	535	10.4	3.0	13.75	6.82	2.81	1712	-160.8	5.44	
SHM-05-40X	SHM-05-40X-101807	10/18/2007	4445	NA	58000	NA	7500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-40X-103107	10/31/2007	4058	2620	57900	43500	7800	7300	220	13	1.7	NA	11.02	6.71	1.62	565	-134.1	7.89	NA
	SHM-05-40X-081210	08/12/2010	NA	3180	NA	22500	NA	2990	94	8.9	8.1	2	11.43	6.45	0.40	256	-21.5	NA	NA
	DUP-081210	08/12/2010	NA	3220	NA	22700	NA	2960	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-40X-100710	10/07/2010	3637	NA	35000	NA	4900	NA	160	12	5.8	NA	10.68	6.47	0.22	409	-106.1	0.34	
	SHM-05-40X100511	10/05/2011	3703	NA	30000	NA	3800	NA	159	11	4.2	NA	10.52	6.48	0.24	3.95	-77.3	4.1	
	SHM-05-40X-101712	10/17/2012	2974	NA	3000	NA	4800	NA	150	9.7	5.9	NA	10.62	6.71	0.19	374	-133.2	40	Clear
	SHM-05-40X-102413	10/24/2013	NA	3100	NA	28800	5610	NA	165	13.3	4.8 J	NA	10.62	6.87	0.32	253	-136.3	2.21	Clear
	SHM-05-40X-101314	10/13/2014	NA	3070	NA	40800	NA	6420	178	12	5.4 J	5.8	10.5	6.85	0.39	334	-130.2	8.65	
	SHM-05-40X	10/29/2015		3060		39800		955	174	13.0	4.5 J	4.3	11.72	6.71	4.13	445	-144.8	5.92	
SHM-05-41A	SHM-05-41A-101707	10/17/2007	24.9	NA	3400	NA	1700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-41A-010908	01/09/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-41A-042110	04/21/2010	26.9	NA	2900	NA	1400	NA	37	1.4	7.9	NA	9.53	6.6	0.09	121	-34	0.15	
	SHM-05-41A-100710	10/07/2010	66.7	NA	4900	NA	1600	NA	31	3.0	7.3	NA	10.18	6.09	0.26	95	1.3	0.67	
	SHM-05-41A-040411	04/04/2011	20.9	NA	2800	NA	1600	NA	37	2.5	6.7	NA	8.44	6.46	0.32	100	1.8	2.7	
	SHM-05-41A-100411	10/04/2011	18.4	NA	3200	NA	1900	NA	41	2.2	5.2	NA	10.99	5.76	0.48	107	44.9	3.9	
	SHM-05-41A-04112	04/11/2012	15.5	NA	2400	NA	1300	NA	30	3.0	<6.2	NA	9.56	6.2	0.52	111	18.4	1200	
	SHM-05-41A-101712	10/17/2012	10.3	NA	2300	NA	1500	NA	34	2.0	6.1	NA	12.98	6.25	0.35	90	-33.5	1.4	Clear
	SHM-05-41A-052213	05/22/2013	NA	12.3	NA	5530	NA	1440 J	33.2	3.3	7.9	1.2	10.43	6.27	0.76	101	17.6	3.79	
	SHM-05-41A-102313	10/23/2013	NA	12.5	NA	4560	NA	1390 J	40.5	2.8	5.8 J	NA	10.17	6.42	0.35	69	-18.0	0.66	
	SHM-05-41A-042314	04/23/2014	NA	9.7	NA	6240	NA	1410 J	35.0	21.2	4.9 J	1.9	9.27	6.22	0.72	172	45.3	6.28	
	SHM-05-41A-100914	10/09/2014	NA	14.2	NA	8040	NA	2500 U	38.2	3.5	6.8 J	1.5	10.94	6.39	0.08	81	-20.0	0.42	
	SHM-05-41A_FA115	10/27/2015		15.0		6330		308	31.9	5.5	5.4	1.5	10.13	5.79	2.16	88	54.2	0.28	
SHM-05-41B	SHM-05-41B-101707	10/17/2007	2591	NA	100000	NA	6000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-41A-010908	01/09/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	DUP-010908	01/09/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-041B	08/09/2010	1440	1130	35200	28000	2400	2080	NA	NA	NA	2.6	11.75	6.43	0.32	310	42.6	NA	NA
	SHM-05-41B-042110	04/21/2010	1372	NA	32000	NA	2000	NA	120	7.0	5	NA	9.6	6.74	0.08	392	-124	9.6	
	SHM-05-41B-100710	10/07/2010	1036	NA	27000	NA	1700	NA	100	2.9	5.3	NA	10.29	6.65	0.35	259	-86.8	1.64	
	SHM-05-41B-040411	04/04/2011	1045	NA	27000	NA	1800	NA	120	1.5	5.7	NA	8.44	6.73	0.16	266	-80.4	0.5	
	SHM-05-41B-100411	10/04/2011	1369	NA	26000	NA	1400	NA	83	1.5	3.5	NA	10.92	6.29	0.35	209	-61.2	5.8	
	SHM-05-41B-04112	04/11/2012	770.8	NA	13000	NA	1000	NA	66	3.0	<3.3	NA	10.02	6.44	0.14	199	-57.2	8400	
	SHM-05-41B-101712	10/17/2012	859.5	NA	26000	NA	2100	NA	100	3.1	4.1	NA	12.23	6.58	0.22	259	-150.1	41	Cloudy
	SHM-05-41B-52213	05/22/2013	NA	812	NA	32300	NA	3450 J	97.2	5.8	8.7	2.8	9.98	6.55	0.26	302	-94.0	3.03	
	SHM-05-41B-102313	10/23/2013	NA	716	NA	21400	NA	2430 J	81	4.3	4.7 J	NA	10.05	6.88	0.46	155	-120.4	4.49	
	SHM-05-41B-042314	04/23/2014	NA	678	NA	25900	NA	3200 J	87.6	3.8	5.2 J	2.3	9.33	6.6	0.47	245	-37.7	15.0	
	DUP-042314	04/23/2014	NA	704	NA	27100	NA	3330 J	86.5	4.3	5.2 J	2.2	9.33	6.6	0.47	245	-37.7	15.0	
	SHM-05-41B-100914	10/09/2014	NA	638	NA	24300	NA	2780 J	97	2.5	5.3 J	1.7	10.49	6.76	0.41	195	-93.0	10.7	
	SHM-05-41B-60815	6/9/2015		626		28500		947	92.6	18.5	3.8 J	1.6	13.29	6.67	0.09	315	-64.0	6.90	
	SHM-05-41B_FA115	10/27/2015		614		27300		890	34.0	17.5	5.8	1.7	11.26	5.32	0.27	269	-23.3	30.9	
SHM-05-41C	SHM-05-41C-101707	10/17/2007	684.5	NA	18000	NA	13000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-41C-010908	01/09/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-41C-042110	04/21/2010	896	NA	18000	NA	11000	NA	350	30	<1.0	NA	10.06	7.17	0.11	963	-167	0.8	
	SHM-05-41C-100710	10/07/2010	787	NA	19000	NA	12000	NA	350	29	<1.0	NA	10.71	7.01	0.29	753	-132	0.43	

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
	SHM-05-41C-040411	04/04/2011	749.8	NA	16000	NA	12000	NA	250	130	2.9	NA	8.67	7.03	0.28	1132	-99	19	
	SHM-05-41C-100411	10/04/2011	917	NA	19000	NA	11000	NA	340	28	.30 J	NA	11.14	6.28	0.36	775	-88.7	4.8	
	SHM-05-41C-041112	04/11/2012	764.8	NA	18000	NA	11000	NA	330	30	<2.1	NA	9.2	7	0.19	929	-116.8	150000	
	SHM-05-41C-101812	10/18/2012	782.2	NA	17000	NA	12000	NA	350	28	0.81 J	NA	9.02	6.93	0.7	714	-164.5	170	Clear
	SHM-05-41C-052113	05/21/2013	NA	709	NA	14700	NA	13400	375	153	4.5 U	3.9	11.50	6.98	0.26	1081	-98.5	2.7	
	SHM-05-41C-102313	10/23/2013	NA	890	NA	16200	NA	13000	364	28.7	1.4 J	NA	10.08	7.16	0.93	511	-165.9	0.44	
	SHM-05-41C-042314	04/23/2014	NA	1490	NA	17600	NA	11300	378	437	4.2 J	4.5	9.46	7.14	0.57	1905	-121.7	4.91	
	SHM-05-41C-100914	10/09/2014	NA	946	NA	16000	NA	12600	368	90	2.6 J	4.1	10.97	7.13	0.14	6.99	-152.2	0.42	
	SHM-05-41C-60815	6/9/2015		883		16700		2880	368	41	1.4 J	3.8	12.08	7.02	0.49	825	-131.7	4.59	
	SHM-05-41C_FA115	10/27/2015		851		15700		2740	370	33.5	2.1 J	6.4	10.32	6.29	0.54	654	-98.1	0.12	
SHM-05-42A	SHM-05-42A-101707	10/17/2007	1.01 J	NA	180	NA	1200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-42A	08/12/2010	NA	1.25	NA	388	NA	1160	18	1.6	5.6	<1.0	10.39	6.50	1.20	61	89.5	NA	NA
	SHM-05-42A-042210	04/22/2010	2.5	NA	1200	NA	980	NA	160	2.0	5.8	NA	9.63	6.08	5.11	0.071	-95	3.5	
	SHM-05-42A-101310	10/13/2010	1.2	NA	250	NA	1300	NA	230	2.2	5.9	NA	9.82	5.75	0.31	70	102.7	1	
	SHM-05-42A-040511	04/05/2011	1.1	NA	200	NA	1100	NA	210	2.3	6.4	NA	8.76	6.05	0.16	70	95.2	0	
	SHM-05-42A-100711	10/07/2011	0.8	NA	100	NA	1000	NA	190	1.8	4.5	NA	10.27	5.23	1.95	61	156.3	0.08	
	SHM-05-42A-041112	04/11/2012	2.3	NA	500	NA	880	NA	170	2.7	<3.8	NA	9	5.6	6.09	63	186.2	2700	
	SHM-05-42A-101812	10/18/2012	0.7	NA	45 J	NA	1400	NA	23	3.3	4.3	NA	9.87	6.04	0.54	66	125.5	0.73 B	Clear
	SHM-05-42A-052213	05/22/2013	NA	0.89 J	NA	224	NA	981 J	23.2	2.8	5.6	0.65 J	9.61	6.06	0.38	62	86.2	0.00	
	SHM-05-42A-102313	10/23/2013	NA	2.0 U	NA	111	NA	976 J	23	2.8	6.3 J	NA	7.97	6.09	2.53	61	73.2	0.28	
	SHM-05-42A-042314	04/23/2014	NA	2.0 U	NA	961	NA	1160 J	23.0	4.3	7.5 J	3.1	9.16	5.86	0.23	62	101.2	0.88	
	SHM-05-42A-100914	10/09/2014	NA	2.0 U	NA	130	NA	2500 U	34.9	5.5	7.6 J	0.87 J	10.57	5.81	0.09	73	123.7	2.20	
	SHM-05-42A_FA115	10/29/2015		4.0 U		122		199	31.9	4.5	8.3	0.98 J	9.41	5.33	0.91	76	103.7	0.2	
SHM-05-42B	SHM-05-42B-101707	10/17/2007	304.4	NA	94000	NA	12000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-42B-010908	01/09/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-05-42B-042210	04/22/2010	72.2	NA	37000	NA	7800	NA	290	23	5.2	NA	9.77	6.52	0.19	863	-272	6	
	SHM-05-42B-101310	10/13/2010	197.2	NA	47000	NA	7300	NA	300	25	3.9	NA	9.89	6.52	0.53	691	-64.6	1	
	SHM-05-42B	04/01/2011	188.9	NA	61000	NA	8500	NA	340	32	3.3	NA	8.79	6.44	0.25	759	-63	0	
	SHM-05-42B-100711	10/07/2011	230	NA	61000	NA	9000	NA	330	31	3.4	NA	10.42	6.36	0.26	755	-44.1	0.3	
	SHM-05-42B-041112	04/11/2012	238.7	NA	58000	NA	7200	NA	320	26	<2.4	NA	9.55	6.45	0.54	895	-59	37000	
	SHM-05-42B-101812	10/18/2012	240.6	NA	52000	NA	9000.0	NA	300	25	3.2	NA	10.17	6.53	0.69	643	-116.8	48	Cloudy
	SHM-05-42B-052213	05/22/2013	NA	238	NA	51100	NA	11300	318	27.7	4.5 U	3.4	9.92	6.58	0.37	655	-49.9	1.2	
	SHM-05-42B-102313	10/23/2013	NA	232	NA	43200	NA	9300	313	20.7	3.3 J	NA	10.79	6.48	0.16	654	-105.7	0.96	
	SHM-05-42B-042314	04/23/2014	NA	229	NA	38000	NA	10100	308	17.7	2.0 J	3.9	9.36	6.43	0.14	643	-36.9	3.08	
	SHM-05-42B-100914	10/09/2014	NA	215	NA	34300	NA	9150	293	17	1.5 J	2.9	10.69	6.6	0.1	498	-78.6	3.4	
	Duplicate-100914	10/09/2014	NA	213	NA	34200	NA	9120	293	17.5	2.8 J	2.5	10.69	6.6	0.1	498	-78.6	3.4	
	SHM-05-42B_FA115	10/29/2015		206		27500		6950	221	14.5	2.4 J	2.5	9.73	6,33	0.41	389	-11.2	0.21	
SHP-05-045A	SHP-05-045A	08/09/2010	36.4	33.7	21600	22100	NA	NA	NA	NA	NA	3.6	13.97	6.20	0.30	294	-32.2	NA	NA
	SHP-05-45A_FA115	10/29/2015		28.1		17500		325	109	7.5	5.0 U	6.3	12.82	6.35	1.01	247	-78.7	1.57	
SHP-05-046B	SHP-05-046B	08/09/2010	50.6	81.4	26800	34800	NA	NA	NA	NA	NA	14	12.93	5.71	0.81	662	3	NA	NA
	SHP-05-46B_FA115	10/29/2015		7.7		8020		361	93.7	26.5	5.0 U	12.3	12.26	7.11	6.39	493	9.6	7.24	
SHM-07-03	SHM-07-03	10/31/2007	44.4 J	<0.5	10700	73 J	2900	830	21.2	6.4	24	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-07-03	08/12/2010	NA	0.29 J	NA	53.8	NA	550	18	8.2	10	<1.0	12.25	5.81	6.61	81	133.9	NA	NA
	DUP2-081210	08/12/2010	NA	0.77	NA	58	NA	568	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-07-03-052813	05/28/2013	NA	1.0	NA	<100	NA	<5000	16.6	28.5	6.4	1.3	12.84	5.81	4.82	147	139.2	12.02	
	SHM-07-03-60915	6/10/2015		2.0 U		98.7 J		17.8	16.6	180	8.8 J	0.77 J	12.59	5.75	7.55	601	136.7	7.34	

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
SHM-07-05	SHM-07-05	10/31/2007	14.7	NA	391	NA	2900	NA	46	60	12	NA	11.1	7.61	1.85	429	19	5.01	NA
SHM-10-01	SHM-10-01-071310	07/13/2010	1.16 J	0.68 J	508	373	3700	3680	130	12	6.8	NA	12.38	6.19	0.18	297	63.5	3.34	Clear
	SHM-10-01	08/12/2010	NA	3.51 J	NA	886	NA	3530	130	14	7.0	1.5	11.86	6.61	0.49	291	42.2	NA	NA
	SHM-10-01-090810	09/08/2010	8.15	7.87	1740	1680	3680	3780	140	11	8.7	1.6	12.68	6.31	0.12	299	11.3	0.15	Clear
	SHM-10-01-102412	10/24/2012	NA	1.4	NA	210	NA	1900 J	88.6	8.5	6.2 U	NA	11.51	6.39	0.40	143	48.3	0.95	Clear
	SHM-10-01-052913	05/29/2013	NA	1.3	NA	124	NA	1690 J	72.9	4.0	6.5	5.3	10.58	6.53	0.16	160	51.2	0.00	
	SHM-10-01-60915	6/10/2015		2.0 U		92.7 J		14800	137	17.5	8.6 J	1.1	10.96	6.08	1.03	310	98.0	0.50	
SHM-10-02	SHM-10-02-071510	07/15/2010	0.74	0.43 J	1190	881	15700	16100	250	160	20	NA	12.24	6.42	0.45	836	80.8	3.47	Clear
	Dup-071510	07/15/2010	0.59	0.45 J	1170	890	15600	16100	250	160	21	NA	NA	NA	NA	NA	NA	NA	NA
	SHM010-02-090710	09/07/2010	1.11	1.07	973	843	16000	16000	260	120	19	2.5	12.45	5.94	0.87	881	-258.3	0.64	Clear
	SHM-10-02-102212	10/22/2012	NA	1.1	NA	100 UJ	NA	18200	448	61.5	7.4 U	NA	12.18	6.52	0.48	726	40.2	1.78	Clear
	Duplicate-102212	10/22/2012	NA	<1.0	NA	60.7 J	NA	18500	448	60.0	7.2	NA	12.18	6.52	0.48	726	40.2	1.78	Clear
	SHM-10-02-052913	05/29/2013	NA	1.5	NA	33.7 J	NA	20100	444	61.5	8.8	3.8	11.37	6.53	0.2	537	73.2	1.04	
	SHM-10-02-60815	6/9/2015		3.2 J		50 U		4700	291	215	11.6	2	11.28	6.47	0.69	1173	59.8	0.31	
SHM-10-03	SHM-10-03-071410	07/14/2010	2.36	0.78 J	1630	866	12900	12600	96	1000	38	NA	16.09	6.60	1.47	3331	75.7	31.7	Clear
	DUP-071410	07/14/2010	4.59	0.5 J	2440	843	13000	127000	95	1000	36	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-03-090710	09/07/2010	1.47 J	0.51 J	1420	1030	18200	18500	78	1100	39	< 1	11.93	6.31	1.72	3341	148.1	13.4	Clear
	DUP-090710	09/07/2010	1.51 J	0.71 J	1480	1040	17700	18000	75	1100	39	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-03-102312	10/23/2012	NA	1.0 U	NA	79 J	NA	15200	57.2	900	38.2	NA	13.75	6.51	1.45	2230	-3.6	21.9	Trace pm
	SHM-10-03-052413	05/24/2013	NA	1.5	NA	50.6 J	NA	17200	71.8	870	35.4	0.72 J	11.49	6.54	0.61	1981	61.5	3.68	
	DUP-01-052413	05/24/2013	NA	1.5	NA	131	NA	16100	66.3	870	39.7	0.64 U	NA	NA	NA	NA	NA	NA	
	SHM-10-03-60915	6/10/2015		4.2		50 U		38.4	73.8	1000	66.7	0.61 J	12.61	6.41	0.31	3485	140.0	2.54	
SHM-10-04	SHM-10-04-071410	07/14/2010	1.62	0.64	3800 J	5190	12300 J	11800	99	74	84	NA	10.82	6.37	0.23	630	9.9	17.7	Clear
	SHM-10-04-090710	09/07/2010	1.0 J	0.79 J	1880	1650	14500	14600	100	92	87	2.7	12.1	5.99	0.23	656	43.7	4.28	Clear
	SHM-10-04-102212	10/22/2012	NA	1.0 U	NA	100 U	NA	12600	81.4	82.5	70.9	NA	11.64	5.89	0.27	460	65	4.15	Clear
	SHM-10-04-052913	05/29/2013	NA	1.0	NA	<100	NA	13700	99.5	83.0	81.7	1.9	10.18	6.01	0.16	382	180.1	1.67	
	DUP-052913	05/29/2013	NA	0.95 J	NA	<100	NA	14000	93.9	82.0	82.3	1.7	NA	NA	NA	NA	NA	NA	
	SHM-10-04-60815	6/9/2015		2.0 U		50 U		597	58.2	140	65.1	1.3	10.89	6.14	0.24	710	96.9	0.17	
SHM-10-05A	SHM-10-05A-071510	07/15/2010	4.7	4.6	1970	1880	1660	1670	43	34	10	NA	19.06	6.29	1.42	186	31.7	5.12	Clear
	SHM-10-05A-090810	09/08/2010	5.68	5.21	790	677	1600	1600	36	29	11	< 1	20.2	5.27	3.2	200	-29	8.92	Clear
	SHM-10-05A-102312	10/23/2012	NA	3.0	NA	68 J	NA	1800 J	42.1	30.5	8	NA	14.43	6.04	4.84	208	164.8	4.3	Clear
	SHM-10-05 (EPA)	10/24/2012	<20	NA	5700	NA	2100	NA	48	4.0	3.3	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-05A-052213	05/22/2013	NA	3.1	NA	30 U	NA	1720 J	38.7	30.7	7.2	0.79 J	13.51	6.26	1.31	145	158.1	2.47	
	DUP-052213	05/22/2013	NA	3.1	NA	30 U	NA	1720 J	38.7	30.7	7.3	0.69 J	NA	NA	NA	NA	NA	NA	
	SHM-10-05A-60915	6/10/2015		3.0 J		50 U		10.3 J	29.1	35.5	9.5 J	0.70 J	13.99	6.10	1.86	207	208.2	1.26	
SHM-10-06	SHM-10-06-070810	07/08/2010	2210 J	1680 J	130000 J	117000	7360	7140	360	17	0.89	NA	21.74	6.62	0.55	754	-93.8	21.4	Cloudy
	DUP-070810	07/08/2010	2520	1520	149000	117000	8400	7200	370	17	0.84	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-06-090810	09/08/2010	2580	2710	144000	145000	8270	8800	300	15	0.49 J	5	11.59	6.16	2.83	783	-64.3	3.72	Clear
	SHM-10-06-102312	10/23/2012	NA	2300	NA	111000	NA	6300	184	16.5	5.0 U	NA	15.78	6.57	1.18	587	-122.1	3.38	Clear
	SHM-10-06 (EPA)	10/23/2012	1900	NA	110000	NA	6600	NA	117	14	0.99	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-06-052313	05/23/2013	NA	1980	NA	107000	NA	6500	227	16.2	4.5 U	3.7	13.22	6.60	0.86	473	-120.7	4.66	
	SHM-10-06-100814	10/08/2014	NA	1900	NA	92000	NA	7270	238	18	4.8 J	2.9	11.45	6.73	0.41	515	-119.3	3.49	
	SHM-10-06_FA115	10/23/2015		2150		88800		2090	183	17.7	3.7 J	5.4	10.98	6.65	0.41	535	-123.5	3.00	
SHM-10-06A	SHM-10-06A-070710	07/07/2010	64.8	61	20900 J	19900 J	2090	2030	100	3.4	2.5 B	NA	19.74	6.51	1.49	209	-22.6	5.38	Clear
	DUP-070710	07/07/2010	65.1	60.1	21200	20200	2080	2070	97	3.4	2.9 B	NA	NA	NA	NA	NA	NA	NA	NA

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
	SHM-1--06A-090910	09/09/2010	102	94.2	44600	42900	4940	4640	190	11	3.2	3.3	10.65	5.94	0.39	431	-157.3	40.6	Cloudy
	DUP-090910	09/09/2010	102	83	42700	32300	4810	3280	150	11	3.2	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-06A-102412	10/24/2012	NA	72	NA	19900	NA	2600 J	67	4.5	5.9 U	NA	10.98	5.9	0.63	190	-203	13.91	Clear
	SHM-10-06A (EPA)	10/24/2012	80	NA	20000	NA	2700	NA	46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-06A-052213	05/22/2013	NA	72.8	NA	11400	NA	1700 J	48.6	1.8	4.5 U	1.9	12.60	6.57	0.55	90	-12.3	3.67	
	SHM-10-06A-112013	11/20/2013	NA	22.9	NA	3410	NA	933 J	53.9	1.5	2.1 J	1.8	9.34	6.49	0.22	107	-61.6	0.44	
	SHM-10-06A-100714	10/07/2014	NA	95.6	NA	27800	NA	3030 J	119	10.0	2.7 J	5.4	11.77	6.19	0.41	199	-25.1	4.63	
	SHM-10-06A_FA115	10/22/2015		4.0 U		100 U		1170	26.8	1.5	5.1 J	2.2	11.47	6.78	0.59	65	53.1	6.39	
SHM-10-07	SHM-10-07-052710	05/27/2010	816 J	818 J	75800 J	70600 J	12200	9590	300	48	8.6	NA	13.43	6.97	0.15	751	-195	237	Cloudy
	DUP-052710	05/27/2010	827	825	75800	71800	12100	9660	280	48	9.3	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-07-090910	09/09/2010	979	918	62300	56800	6360	5610	240	41	2.3	3.5	12.39	6.54	0.43	635	-105.6	15.4	Clear
	SHM-10-07-102212	10/22/2012	NA	1100	NA	69000	NA	5300	191	46.5	5.0 U	NA	12.10	6.45	0.13	516	-86	21.3	NA
	SHM-10-07 (EPA)	10/22/2012	990	NA	66000	NA	5700	NA	143	58	0.14	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-07-052313	05/23/2013	NA	1210	NA	94900	NA	6700	243	61.7	5.6	3.5	12.03	6.5	1.23	561	-109.6	4.60	
	SHM-10-07-100714	10/07/2014	NA	861	NA	53330	NA	4820 J	162	55	1.9 J	2.8	12.23	6.8	0.27	634	-92.8	44.00	
	SHM-10-07_FA115	10/23/2015		926		43900		2410	127	55.5	4.0 J	2.8	12.29	6.61	0.48	453	-117.1	7.21	
SHM-10-08	SHM-10-08-071510	07/15/2010	2.72	0.73 J	2610	1310 J	21100	19900 J	480	71	15	NA	10.95	6.73	0.21	917	33.7	7.15	Clear
	SHM-10-08-090710	09/07/2010	1.4	1.55	1270	1260	23600	25000	500	79	15	3.8	12.1	6.19	3.61	1079	-233	1.37	Clear
	SHM-10-08-102212	10/22/2012	NA	1.9	NA	37 J	NA	16800	459	53.5	7.8 U	NA	11.59	6.63	0.40	713	45.1	0.0	Clear
	SHM-10-08-052113	05/21/2013	NA	1.9	NA	42.8 J	NA	19500	499	55.7	10.4	3.2	11.86	6.73	0.49	721	7.8	1.7	
	SHM-10-08-60815	6/9/2015		3.6 J		50 U		328	426	120	6.9 J	2.6	10.69	6.36	0.39	937	102.8	1.29	
SHM-10-10	SHM-10-10-071310	07/13/2010	2.0 J	1.25 J	1020	799	12100	11900	350	19	0.56 J	NA	12.10	6.61	0.85	658	28.7	4.52	Clear
	DUP-071310	07/13/2010	1.34 J	1.13 J	925	804	11800	12100	350	18	0.38 J	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-10	08/12/2010	NA	3.62 J	NA	1180	NA	10700	320	23	0.79 J	3.9	11.27	6.57	0.76	622	-9.1	NA	NA
	SHM-10-10-090810	09/08/2010	2.57 J	2.4 J	833	700	13200	12000	320	17	0.34 J	3.8	13.13	6.55	0.16	617	63.3	0.71	Clear
	DUP-090810	09/08/2010	2.58 J	6.66	825	929	11900	12600	330	17	0.26 J	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-10-102412	10/24/2012	NA	1.0	NA	180	NA	8100	295	21	5.0 U	NA	12.06	6.55	0.28	464	37.6	3.25	Clear
	Duplicate	10/24/2012	NA	1.1	NA	179	NA	8260	305	21	<5.0	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-10-052913	05/29/2013	NA	1.7	NA	82.5 J	NA	9460	343	18.5	4.5 U	2.9	11.22	6.62	3.07	579	48.8	0.46	
	SHM-10-10-112013	11/20/2013	NA	2.0 J	NA	48.7 J	NA	8500	256	61	2.9 J	15.8	11.98	6.53	0.36	557	75.2	0.39	
	SHM-10-10-101014	10/10/2014	NA	2.6 J	NA	50 U	NA	10800	327	44	4.0 J	3.5	12.08	6.57	0.26	484	78.8	0.98	
	SHM-10-10_FA115	10/24/2015		2.9 J		100 U		16000	271	50.7	6.6 J	3.9	11.73	6.53	4.59	561	17.2	0.89	
SHM-10-11	SHM-10-11	08/30/2010	356	342 J	60600	55700	2770	2530	160	24	19	3.3	13.19	6.12	1.68	419	-32	4.05	Clear
	SHM-10-11-101910	10/19/2010	470	463	60500	61000	2840	2900	140	23	19 J	3.4	11.57	6.28	0.41	4.14	-42.1	4.28	Cloudy
	SHM-10-11-102312	10/23/2012	NA	440	NA	56100	NA	2700 J	76.7	26	29.3	NA	11.18	6.27	1.78	304	-34	1.1	NA
	SHM-10-11(EPA)	10/23/2012	460	NA	56000	NA	3000	NA	67	25	28	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-11-052313	05/23/2013	NA	460	NA	65100	NA	3160 J	102	21.2	30.3	2.9	11.25	6.15	0.80	287	-46.1	2.01	
	DUP-052313	05/23/2013	NA	464	NA	64400	NA	2990 J	126	21.2	31.6	2.8	NA	NA	NA	NA	NA	NA	
	SHM-10-11-111913	11/19/2013	NA	432	NA	60400	NA	2630 J	121	30	34.7	2.7	10.63	6.41	0.33	421	-43.5	0.45	
	DUPLICATE-111913	11/19/2013	NA	444	NA	60500	NA	2690 J	130	29.5	35	2.7	NA	NA	NA	NA	NA	NA	
	SHM-10-11_FA115	10/22/2015		503		59700		2430	51.5	31.5	4.5 J	2.6	11.23	6.01	0.40	348	-19.9	1.54	
SHM-10-12	SHM-10-12	08/30/2010	2880	3560	78600	104000	1940	2500	240	3.7	1.7	4.1	14.41	6.04	3.55	460	-34.9	8.43	Clear
	DUP-083010	08/30/2010	3210	3410	89700	96000	2190	2360	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-12-102010	10/20/2010	2980	3120	88700	90000	2180	2200	240	4.4	1.4	4.3	10.92	5.93	0.32	432	-14.5	1.6	Clear
	DUP-102010	10/20/2010	3160	3000	90900	87400	2240	2120	230	4.4	1.3	4.5	NA	NA	NA	NA	NA	NA	NA
	SHM-10-12-102312	10/23/2012	NA	4100	NA	78600	NA	1800 J	131	2.5	<5.0	NA	11.49	5.74	0.29	322	8.4	0.2	clear
	SHM-10-12 (EPA)	10/23/2012	3100	NA	76000	NA	1900	NA	65	3.5	1.8	NA	NA	NA	NA	NA	NA	NA	NA

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
	SHM-10-12 D (EPA)	10/23/2012	3100	NA	77000	NA	1900	NA	65	3.5	1.8	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-12-052313	05/23/2013	NA	3580	NA	56300	NA	2720 J	171	7.3	7.9	23.9	11.84	6.09	0.26	302	-44.9	4.36	
	SHM-10-12-111913	11/19/2013	NA	3570	NA	89600	NA	2090 J	210	4	3.8 J	3.5	10.49	6.35	0.72	428	-19.3	0.16	
	SHM-10-12-100714	10/07/2014	NA	3510	NA	84100	NA	2500 U	191	3.5	4.0 J	3.9	13.99	6.02	0.31	368	-29.1	0.43	
	SHM-10-12_FA115	10/22/2015		3850		85600		7760	136	4.5	6.1 J	4.1	10.70	6.09	0.33	452	-27.1	0.38	
SHM-10-13	GP-10-13-090110	09/01/2010	619 J	575	88600	84100	10500	9900	380	18	< 0.12	5.6	13.57	6.32	2.76	782	-68.6	18.8	Clear
	SHM-10-13-101910	10/19/2010	700	672	95500	94600	9840	10100	360	21	< 0.12	8.7	12.48	6.27	0.12	743	-52.5	12	Clear
	DUP-101910	10/19/2010	648	674	87500	94700	8720	9920	360	20	0.25 J	6.8	NA	NA	NA	NA	NA	NA	NA
	SHM-10-13-102312	10/23/2012	NA	670	NA	68800	NA	9500	296	17	5.3 U	NA	12.49	6.42	0.11	597	-44.5	14.2	cloudy
	SHM-10-13 (EPA)	10/23/2012	630	NA	66000	NA	9800	NA	240	18.0	0.11 J	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-13-052313	05/23/2013	NA	565	NA	83400 J	NA	8960	292	19.7	4.5 U	5.1	12.59	6.35	0.22	571	-91.7	14.4	
	SHM-10-13-100714	10/07/2014	NA	532	NA	55700	NA	9530	266	24.5	22	4.7	11.83	6.56	0.20	527	-112.2	3.05	
	SHM-10-13_FA115	10/23/2015		4.5		354		327	162	35.7	102	2.8	13.09	6.47	0.29	629	62.7	3.50	
SHM-10-14	SHM-10-14-090210	09/02/2010	4280	4100	75200	73000	4310	4150	360	6.3	3.7	8.7	14.48	6.35	0.18	645	-87.4	34.7	Clear
	SHM-10-14-101910	10./19/10	5990 J	5860	98300	92700	3980	3720	320	4.8	0.67 J	62	11.99	6.35	0.36	693	-38.6	34.5	Little Cloudy
	SHM-10-14-102312	10/23/2012	NA	6200 J	NA	94400	NA	3300 J	194	5.0	5.0 U	NA	12.4	6.26	0.13	445	-41	4.88	NA
	SHM-10-14 (EPA)	10/23/2012	5900	NA	87000	NA	3300	NA	124	4.5	1.1	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-14-052313	05/23/2013	NA	5540	NA	83100	NA	3420 J	241	5.8	6.4	21.3	11.43	6.24	0.20	467	-67.0	10.08	
	SHM-10-14-100814	10/08/2014	NA	5380	NA	92100	NA	3620 J	283	5.5	1.8 J	23.2	13.73	6.30	0.19	482	-76.1	4.56	
	SHM-10-14_FA115	10/23/2015		2320		63500		3650	169	4.0	2.7 J	4.7	12.25	6.22	0.37	418	-30.2	3.68	
SHM-10-15	GP-10-15-090110	09/01/2010	7930	8110	62500	63300	7700	7880	210	5.7	3.8	4.2	16.02	6.21	0.25	503	-52.7	16.3	Clear
	SHM-10-15-090110	09/01/2010	7930	8110	62500	63300	7700	7880	240	11.0	8.4	3.2	16.02	6.21	0.25	503	-52.7	16.3	Clear
	DUP-090110	09/01/2010	7610	6460	58700	48900	7470	6050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-15-102010	10/20/2010	6090	6230	50400	52000	6440	6530	230	12.0	10	4	11.95	5.94	0.36	510	-10.9	59.5	Cloudy
	SHM-10-15-102312	10/23/2012	NA	7000	NA	46600	NA	5800	172	10.0	9.5 U	NA	11.98	6.43	0.2	376	-49	5.1	NA
	Duplicate-102312	10/23/2012	NA	7810	NA	44900	NA	5690	213	11.0	9.7	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-15 (EPA)	10/23/2012	5800	NA	45000	NA	6100	NA	147	9.5	10	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-15-052413	05/24/2013	NA	1090	NA	8290	NA	<5000	196	7.5	7.4	3.4	15.1	6.37	0.49	440	-73.9	11.97	
	SHM-10-15-112013	11/20/2013	NA	5740	NA	47400	NA	6030	210	9.5	10.9	2.8	10.41	6.51	0.38	48	-65.9	10.31	
	SHM-10-15-100714	10/07/2014	NA	5870 J	NA	46500 J	NA	6190	207	9.0	11.6	2.6	12.26	6.45	0.08	351	-90.8	29.7	
	SHM-10-15_FA115	10/24/2015		5450		41500		7600	197	9.0	11.3	2.9	11.06	6.25	0.76	492	-60.1	1.05	
SHM-10-16	SHM-10-16-090210	09/02/2010	487	495	50200	53100	13800	14100	330	31	2.9	5.3	11.4	6.98	0.17	784	-233.8	78.5	Little Cloudy
	DUP-090210	09/02/2010	542	489	55100	51100	15000	13500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-16-102010	10/20/2010	1180	1090	51800	46900	13100	12000	320	28	3.2	10	10.63	6.77	0.34	793	-129.2	34.6	Cloudy
	SHM-10-16-102312	10/23/2012	NA	1600	NA	41700	NA	11100	281	24.5	6.8 U	NA	10.15	6.64	0.26	533	-86.2	0.65	Clear
	SHM-10-16 (EPA)	10/24/2012	1500	NA	<40	NA	12000	NA	247	24	3	NA	NA	NA	NA	NA	NA	NA	NA
	SHM-10-16-052813	05/28/2013	NA	1350	NA	42700	NA	11600	309	21	4.7 J	3.8	9.39	6.71	0.15	632	-128.0	0.08	
	SHM-10-16-112013	11/20/2013	NA	1530	NA	44500	NA	11800	312	24	2.9 J	3.7	9.39	6.75	0.19	677	-115.6	0.84	
	SHM-10-16_FA115	10/29/2015		1760		44600		1410 J	290	29.0	4.6 J	4.0	10.11	7.02	2.63	354	-13.1	0.31	
SHM-11-02	SHM-11-02-102212	10/22/2012	NA	7.1	NA	2000	NA	5900	228	42	15.9	NA	14.43	7.32	0.21	468	-135	19.6	NA
	SHM-11-02-112013	11/20/2013	NA	3.2 J	NA	2470	NA	2960 J	92.4	35	9.9 J	37.9	10.82	8.38	0.3	241	-279.2	21.3	NA
	SHM-11-02-042414	04/24/2014	NA	2.0 U	NA	1270	NA	1810 J	51.5	34.7	5.3 J	42.0	10.77	7.23	0.79	196	-118.3	22.7	
	SHM-11-02-100714	10/08/2014	NA	2.0 U	NA	5030	NA	6030	109	40.5	1.2 J	20.8	15.44	7.91	0.06	351	-289	19	
	SHM-11-02-6052015	6/6/2015		2.0 U		1720		479	43.7	36.5	0.50 U	39.2	17.08	7.35	0.13	232	-195.4	8.50	
	SHM-11-02_FA115	10/28/2015		4.0 U		3340		278	50.5	36.0	5.0 J	27.7							
SHM-11-06	SHM-11-06-102212	10/22/2012	NA	920	NA	84100	NA	7200	287	20.5	5.0 U	NA	13.11	6.41	1.8	561	-83	4.24	NA

Table 5-4
Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
	SHM-11-06-052813	05/28/2013	NA	1020	NA	73200	NA	7250	262	20.0	6.8	3.1	12.08	6.54	0.34	495	-105.7	3.19	
	SHM-11-06-112013	11/20/2013	NA	1000	NA	74600	NA	6460	220	23.0	6.8 J	3.2	9.29	6.45	0.36	578	-104.4	2.23	
	SHM-11-06-100814	10/08/2014	NA	825	NA	63600	NA	6220	173	35.5	5.2 J	2.7	12.69	6.53	0.2	633	-88.3	2.18	
	SHM-11-06_FA115	10/28/2015		821		46800		687	118	40.5	13.7	2.2	11.35	6.62	0.65	492	-131.2	0.74	
PZ-12-01	PZ-12-01-052813	05/28/2013	NA	441	NA	27100	NA	7200	201	38.0	13.6	2.4	12.41	6.50	0.23	421	-86.3	4.19	Clear
PZ-12-02	PZ-12-02-052113	05/21/2013	NA	627	NA	58600	NA	5760	213	42.2	4.5 U	2.8	12.33	6.37	0.15	665	-87.0	4.58	Clear
PZ-12-03	PZ-12-03-052413	05/24/2013	NA	659	NA	40100	NA	8110	227	52.7	20.8	3.3	12.21	6.6	0.23	563	-105.4	1.94	Clear
PZ-12-04	PZ-12-04-052413	05/24/2013	NA	610	NA	56300	NA	5160	171	50.7	5.0	3.5	13.29	6.53	0.29	447	-86.9	4.29	Clear
PZ-12-05	PZ-13-05-052213	05/22/2013	NA	741	NA	67700	NA	5140	188	31.2	4.5 U	2.4	12.24	6.46	0.31	571	-99.6	0.87	Clear
PZ-12-06	PZ-12-06-052413	05/24/2013	NA	244	NA	54600	NA	8140	293	51.0	10.4	29.5	13.02	6.23	1.57	700	-71.6	2.9	Clear
PZ-12-07	PZ-12-07-052413	05/24/2013	NA	484	NA	29000	NA	2980 J	105	6.3	12.7	2.2	11.54	6.41	0.29	276	-390	18	Clear
PZ-12-08	PZ-12-08-052413	05/24/2013	NA	1.9	NA	174	NA	2570 J	46.4	5.8	7.4	6.9	10.63	5.90	2.68	125	131.7	9.2	Clear
PZ-12-09	PZ-12-09-052113	05/21/2013	NA	1.1	NA	30 U	NA	2550 J	55.3	4.3	27.0	1.1	13.24	6.34	3.83	187	112.6	3.46	Clear
PZ-12-10	PZ-12-10-052213	05/22/2013	NA	0.69 J	NA	30 U	NA	845 J	15.5	1.8	4.5 U	2.0	10.19	5.88	10.37	43	191.3	1.1	Clear
SHM-13-01	SHM-13-01-112113	11/21/2013	NA	2.2 J	NA	30 U	NA	415 J	25.3	32	11.9	0.82 J	10.15	6.46	6.48	163	165.1	0.31	
	DUPLICATE-112113	11/21/2013	NA	2.2 J	NA	30 U	NA	402 J	26.4	33	11.7	0.75 J	NA	NA	NA	NA	NA	NA	
	SHM-13-01_FA115	10/28/2015		2.1 J		100 U		15 U	14.4	48.0	7.6	0.47 J	10.93	6.13	7.92	198	99.9	0.61	
SHM-13-02	SHM-13-02-052913	05/29/2013	NA	2.5	NA	30 U	NA	3970 J	160	9.5	6.5	33.6	11.5	7.23	0.16	311	-107.7	0.22	Clear
	SHM-13-02-112113	11/21/2013	NA	2.7 J	NA	250	NA	3740 J	161	8	5.7 J	1.9	10.89	6.99	0.1	24	-17	1.84	
	SHM-13-02-101014	10/10/2014	NA	2.6 J	NA	261	NA	6340	220	31	5.0 J	1.6	12.04	6.72	0.22	430	-8.6	0.26	
	SHM-13-02_FA115	10/24/2015		2.6		100 U		13200	155	14.8	10.0	1.7	11.04	6.83	0.26	302	4.9	0.96	
SHM-13-03	SHM-13-03-052913	05/29/2013	NA	318	NA	13600	NA	15000	372	39	5.6	4.4	11.72	6..56	0.14	730	-99.2	1.20	Clear
	SHM-13-03-112013	11/20/2013	NA	137	NA	11200	NA	15300	391	38	5.0 J	4.3	10.26	6.5	0.4	563	-41.8	0.54	Clear
	SHM-13-03-042314	04/23/2014	NA	120	NA	6770	NA	9690	287	24.2	4.7 J	7.3	9.27	6.1	0.16	433	-12.5	0.22	
	SHM-13-03-101014	10/10/2014	NA	80.8	NA	7590	NA	13600	390	37.5	4.7 J	3.7	12.63	6.53	0.13	557	-57.7	0.69	
	Dup-101014	10/10/2014	NA	82.1	NA	7760	NA	13800	393	37.0	4.8 J	3.8	12.63	6.53	0.13	557	-57.7	0.69	
	SHM-13-03-60815	6/9/2015		75.5		7190		12600	380	36.5	6.6 J	6.6	13.15	6.48	0.25	677	-71.3	3.98	
	SHM-13-03_FA115	10/24/2015		68.7		6610		10800	273	37.2	5.4 J	3.9	12.60	6.43	0.29	473	-91.4	0.81	
SHM-13-04	SHM-13-04-052813	05/28/2013	NA	2060	NA	40900	NA	<5000	39.8	200	10	1.8	11.7	6.46	0.71	717	-73.6	3.63	Clear
	SHM-13-04-042414	04/24/2014	NA	61.1	NA	334	NA	1670 J	29.6	167	10.0	0.92 J	10.57	6.35	3.21	866	92.4	2.18	
	SHM-13-04-101314	10/13/2014	NA	693	NA	6410	NA	2500 U	41.4	110	12.5	1.6	11.94	6.48	2.04	464	-13.2	2.31	
	SHM-13-04-60915	6/10/2015		620		12500		843	33.3	175	14.3	1.1 J	11.55	5.89	2.01	680	41.1	2.68	
	SHM-13-04_FA115	10/29/2015		212		4620		429	38.1	175	11.8	0.94 J	11.93	6.43	1.81	595	-19.3	3.49	
SHM-13-05	SHM-13-05-052813	05/28/2013	NA	8.9	NA	597	NA	22800	423	37	12.3	4.7	11.14	6.88	0.27	629	-136.0	2.05	Clear
	SHM-13-05-112113	11/21/2013	NA	6.8	NA	1860	NA	19800	425	41.5	11.4	4.5	10.27	7.94	0.44	44	-154.6	2.11	
	SHM-13-05-101314	10/13/2014	NA	11	NA	4580	NA	19800	455	36.0	8.4 J	3.6	11.04	6.88	0.44	686	-159.0	1.11	
	SHM-13-05_FA115	10/29/2015		12.3		3470		3660	359	43.0	12.5	3.9	11.19	6.94	0.39	688	-94.1	0.74	

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Groundwater Monitoring Well Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
SHM-13-06	SHM-13-06-061313	06/13/2013	NA	3180 J	NA	19700 J	NA	1440 J	84	19	6.4	1.0	12.43	7.16	0.14	287	-154.4	4.07	Clear
	SHM-13-06-112113	11/21/2013	NA	2540	NA	39900 J	NA	1911 J	33	145	11.4	1.5	11.33	6.84	0.25	587	-119.4	1.24	
	SHM-13-06-042414	04/24/2014	NA	2850	NA	25000	NA	1260 J	61.3	69.7	8.9 J	1.5	11.71	6.94	0.28	446	-104.3	2.51	
	SHM-13-06-60815	6/9/2015		2460		35200		1840	39.5	240	10.1	0.91 J	11.75	7.00	0.18	924	-128.2	1.53	
	SHM-13-06_FAL15	12/23/2015		2160		32600		1640	56.7	192	9.1	1.0	11.18	7.7	0.49	510	-98.7	24.4	
SHM-13-07	SHM-13-07-112113	11/21/2013	NA	1340	NA	30000	NA	2720 J	45	225	12.1	1.6	12.5	6.8	0.14	773	-97.4	4.7	
	SHM-13-07-042414	04/24/2014	NA	1280	NA	39200	NA	4220 J	30.7	212	7.7 J	1.2	10.97	6.84	0.29	734	-106.1	26.8	
	SHM-13-07-101014	10/10/2014	NA	962	NA	25200	NA	2500 U	62.1	165	16	8.8	12.82	6.9	0.15	787	-126.3	4.9	
	SHM-13-07-60815	6/9/2015		946		18800		3460	57.2	120	10.4	3.2	12.73	6.82	0.19	565	-60.7	24.80	
	SHM-13-07_FA115	10/24/2015		531		11500		1390	90.6	68.0	11.6	1.7	12.36	6.88	0.17	366	-140.2	4.83	
SHM-13-08	SHM-13-08-061313	06/13/2013	NA	928	NA	35900	NA	3540 J	141	8.5	7.3	2.8	12.75	6.84	0.74	378	-122.4	2.92	Clear
	DUPLICATE-061313	06/13/2013	NA	972	NA	36600	NA	3580 J	140	8.5	7.4	2.8	NA	NA	NA	NA	NA	NA	
	SHM-13-08-112113	11/21/2013	NA	994	NA	35400	NA	4080 J	116	8	3.7 J	3.2	11.32	6.84	0.24	323	-131.1	0.98	
	SHM-13-08-042414	04/24/2014	NA	1040	NA	50600	NA	4940 J	173	14.8	4.9 J	3.8	11.26	6.89	0.38	439	-123.8	1.14	
	DUP-042414	04/24/2014	NA	1030	NA	51300	NA	4950 J	174	14.3	4.8 J	3.5	NA	NA	NA	NA	NA	NA	
	SHM-13-08-101314	10/13/2014	NA	978	NA	52200 J	NA	3780 U	140	130	6.5 J	3.6	11.81	6.9	0.16	733	-146.1	0.39	
	SHM-13-08-60815	6/9/2015		975		113000		2180	112 J	140 J	0.50 UJ	2.4 J	14.12	6.76	0.83	376	-88.1	6.10	
	SHM-13-08_FA115	10/29/2015		954		78000		1620	126	145	10.4	2.8	11.30	6.46	0.47	7.28	-148.0	3.21	
SHM-13-14S	SHM-13-14S	02/19/2014	NA	2.0 U	NA	241	NA	2720 J	58.0	91.0	9.6 J	1.2	6.53	5.88	0.59	440	96.3	1.97	
	SHM-13-14S-101014	10/10/2014	NA	2.0 U	NA	94. 1 J	NA	2900 J	75.2	100.0	8.1 J	1.9	12.82	5.87	0.45	320	139.4	0.88	
SHM-13-14D	SHM-13-14D	02/19/2014	NA	7.9	NA	11800	NA	1170 J	81.0	48.0	12.3	1.9	9.18	6.85	0.09	349	-82	26.0	
	SHM-13-14D-101014	10/10/2014	NA	9.6	NA	20900	NA	2960 J	43.6	320.0	7.2 J	1.3	12.4	6.75	0.19	1233	-79.6	1.2	
SHM-13-15	SHM-13-15	02/19/2014	NA	3.8 J	NA	623	NA	12700	273	46.0	7.7 J	2.9	9.16	6.59	0.44	642	-172.7	42.3	
	DUP	02/19/2014	NA	3.9 J	NA	633	NA	12700	278	46.5	5.2 J	2.9	NA	NA	NA	NA	NA	NA	
	SHM-13-15-101014	10/10/2014	NA	8.1	NA	1050	NA	11700	315	37.5	5.5 J	2.8	13.35	6.56	0.15	704	20.4	0.23	
SHP-13-03	SHP-13-03-042314	04/23/2014	NA	7.9	NA	115	NA	2690 J	51.5	113	6.4 J	4.0	13.13	8.79	5.6	434	-106.0	NA	
EPA-PZ-2012-1A	EPA-PZ2012-1A-101314	10/13/2014	NA	2.0 U	NA	121	NA	2500 U	40.3	21.5	5.1 J	2.2	10.09	5.93	0.38	145	109	0.36	
	Duplicate-101314	10/13/2014	NA	2.0 U	NA	119	NA	2500 U	40.3	21.5	4.8 J	1.4	10.09	5.93	0.38	145	109	0.36	
	EPA-PZ-2012-1A_FA115	10/23/2015		4.0 U		149		470	39.1	52.2	12.3	2.3	10.51	5.44	0.27	290	71.6	1.28	
EPA-PZ-2012-1B	EPA-PZ2012-1B-101314	10/13/2014	NA	160	NA	21500	NA	10400	304	16.5	3.8 J	2.4	10.92	6.54	0.14	587	-58.8	28.2	
	EPA-PZ-2012-1B_FA115	10/23/2015		288		19200		9450	266	18.5	6.7 J	2.2	11.01	5.91	0.60	635	-59.0	8.66	
EPA-PZ-2012-2A	EPA-PZ2012-2A-101414	10/14/2014	NA	2.0 U	NA	50 U	NA	2500 U	7.6	1.5	7.7 J	1.2	10.64	5.89	5.63	40	223.4	0.69	
	EPA-PZ-2012-2A_FA115	10/23/2015		4.0 U		100 U		15 U	9.3	1.8	7.5 J	0.42 J	13.12	4.85	5.18	47	130.1	0.85	
EPA-PZ-2012-2B	EPA-PZ2012-2B-101414	10/14/2014	NA	2.0 U	NA	51.7 J	NA	4750 J	152	11.5	3.5 J	2.2	11.5	6.37	0.56	298	112.9	0.55	
	EPA-PZ-2012-2B_FA115	10/23/2015		4.0 U		100 U		7080	159	17.0	7.5 J	1.8	13.34	5.40	0.51	380	79.1	0.67	
EPA-PZ-2012-3A	EPA-PZ2012-3A-100814	10/08/2014	NA	21.2	NA	19200	NA	3350 J	108	15.0	1.2 J	8.4	11.68	5.86	0.5	299	0.4	0	
	EPA-PZ-2012-3A_FA115	10/27/2015		16.4		16400		674	105	39.5	1.1 J	9.1	12.80	5.19	0.01	392	-11.5	1.14	
EPA-PZ-2012-3B	EPA-PZ20123B-100914	10/09/2014	NA	3830	NA	62100	NA	9120	265	15.5	48.6	2.5	11.18	6.7	0.21	658	-113.9	12.1	
	EPA-PZ-2012-3B_FA115	10/27/2015		4070		63400		6620	260	17.0	4.5 J	3.3	12.71	5.41	0.26	701	-109.4	4.61	

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Well ID	Sample ID	Date	Arsenic Total (ug/L)	Arsenic Dissolved (ug/L)	Iron Total (ug/L)	Iron Dissolved (ug/L)	Magnesium Total (ug/L)	Magnesium Dissolved (ug/L)	Alkalinity mg CaCO3/L	Chloride mg/l	Sulfate mg/l	DOC mg/l	Temp Celcius	pH	DO mg/L	Spec Cond uS/cm	ORP mV	Turbidity NTU	Color
EPA-PZ-2012-4A	EPA-PZ2012-4A-100814	10/08/2014	NA	4.8	NA	16500	NA	8300	45.8	145.0	10.4	6.3	13.04	6.03	0.03	690	-26.8	0.47	
	EPA-PZ-2012-4A_FA115	10/27/2015		5.6		14300		2000	48.4	210	6.1	7.6	12.94	6.43	0.35	769	-33.1	1.02	
EPA-PZ-2012-4B	EPA-PZ-2012-4B-100614	10/06/2014	NA	2680	NA	76800	NA	7020	208	15.5	4.9 J	2.6	12.92	6.6	0.35	578	-118.5	3.33	
	SHL-Duplicate-100614	10/06/2014	NA	2970	NA	79300	NA	7510	203	15.5	2.2 J	3.6	12.92	6.6	0.35	578	-118.5	3.33	
	EPA-PZ-2012-4B_FA115	10/27/2015		3520		85600		984	224	17.0	11.0	4	11.71	6.68	0.45	515	-119.2	14.1	
EPA-PZ-2012-5A	EPA-PZ2012-5A-101414	10/14/2014	NA	2.0 U	NA	6450	NA	2500 U	24	16.5	7.2 J	6	11.27	5.57	0.07	93	71.1	2.68	
	EPA-PZ-2012-5A_FA115	10/27/2015		4.0 U		6560		90.4	21.6	9.5	5.5	5.8	10.25	5.51	0.48	101	35.9	1.08	
EPA-PZ-2012-5B	EPA-PZ2012-5B-101414	10/14/2014	NA	3.2 J	NA	471	NA	10000	311	6.5	3.6 J	1.9	11.01	6.44	0.16	598	34.3	0.01	
	EPA-PZ-2012-5B_FA115	10/27/2015		3.7 J		181		12300	286	18.0	1.7 J	2.2	10.72	6.13	0.33	0.626	24.4	1.42	
EPA-PZ-2012-6A	EPA-PZ2012-6A-100914	10/09/2014	NA	2.0 U	NA	50 U	NA	2500 U	31.6	41.0	21.9	0.87 J	9.37	6.28	7.4	323	177.3	0.97	
	EPA-PZ-2012-6A_FA115	10/27/2015		4.0 U		100 U		15 U	25.8	67.0	12.8	1.6	8.76	6.64	8.5	289	37.2	5.19	
EPA-PZ-2012-6B	EPA-PZ2012-6B-100914	10/09/2014	NA	515	NA	18000	NA	2500 U	49.1	1.5	3.7 J	9.5	9.84	6.94	0.54	158	-123.2	0.73	
	EPA-PZ-2012-6B_FA115	10/27/2015		386		19600		667	46.4	5.0	3.5 J	1.4	8.63	6.31	0.74	102	10.3	2.81	
EPA-PZ-2012-7A	EPA-PZ2012-7A-101414	10/14/2014	NA	2.0 U	NA	50 U	NA	2500 U	60	150.0	9.3 J		13.19	6.6	1.8	604	97	1.04	
	EPA-PZ-2012-7A_FA115	10/28/2015		4.0 U		100 U		8.9 J	40.2	145	7.9	0.80 J	11.19	3.95	2.72	654	136.1	0.82	
EPA-PZ-2012-7B	EPA-PZ2012-7B-101414	10/14/2014	NA	1250	NA	34800	NA	2500 U	77.4	0.77 U	4.9 J	2.4	12.9	6.67	0.2	229	-92.9	3.18	
	EPA-PZ-2012-7B_FA115	10/28/2015		1330		36900		1380	77.3	3.0	12.2	3.6	11.69	5.59	0.95	275	-115.4	0.68	
RB	RB-112013	09/06/2010	NA	2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-112113	11/21/2013	NA	2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Rinse Blank	02/19/2014	NA	2.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-042214	04/22/2014	NA	2.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-042314	04/23/2014	NA	2.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-042414	04/24/2014	NA	2.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-100614	10/06/2014	NA	2.0 U	NA	50 U	NA	2500 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-100714	10/07/2014	NA	2.0 U	NA	50 U	NA	2500 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-100814	10/08/2014	NA	2.0 U	NA	50 U	NA	2500 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-100914	10/09/2014	NA	2.0 U	NA	50 U	NA	2500 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-101014	10/10/2014	NA	2.0 U	NA	50 U	NA	2500 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-101314	10/13/2014	NA	2.0 U	NA	50 U	NA	2500 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	RB-101414	10/14/2014	NA	2.0 U	NA	50 U	NA	2500 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
NA - Not Applicable
ug/L - micrograms per liter
mg/l - miligrams per liter
J - Estimated Results
U - Non-detect

Table 5-5
Summary of Historical Arsenic Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Total or Dissolved	IPC (T)	IPCFIL (D)	N-5, P-1 (T)	N-5, P-1 (D)	N-5, P-2 (T)	N-5, P-2 (D)	PSP-01 (T)	PSP-01 (D)	SHL-3 (T)	SHL-3 (D)	SHL-4 (T)	SHL-4 (D)	SHL-5 (T)	SHL-5 (D)	SHL-8S (T)	SHL-8S (D)	SHL-8D (T)	SHL-8D (D)	SHL-9 (T)	SHL-9 (D)	SHL-10 (T)	SHL-10 (D)	SHL-11 (T)	SHL-11 (D)	SHL-12 (D)	SHL-13 (T)	SHL-13 (D)	SHL-15 (T)	SHL-15 (D)	SHL-18 (D)	SHL-19 (T)	SHL-19 (D)	SHL-20 (T)
Sample Month-Year	**Units**																																	
August-91	ug/l									35		260		23						37		67		320								340		98
Dec-91	ug/l									120		140		38						67		120		320								710		89
Mar-93	ug/l									6.5		2.54		11.4						42.4		280		340								390		330
Jun-93	ug/l																																	
Nov-96	ug/l									NS		48.8		12						46.9		3.4 B		332								138		244
May-97	ug/l									10 U		73.6 J		10 U						16.1 J		10 U		252 J								10 U		10 U
Oct-97	ug/l									10 U		180		10 U						25.2		209		366								298		227
May-98	ug/l									5 U		37.4		5 U						15		5 U		346								77.5		238
Nov-98	ug/l									5.4 U		89.1		11.5						27.2		5.4 U		376								145		218
May-99	ug/l									2.7 B		78.2		5.0 B						71.3		2.7 B		431								156		216
Nov-99	ug/l			5800		30.1				1.9 U		61.3		6.5						28.5		1.9 U		492					215			176		215
May-00	ug/l									2.5 U		116		2.5 U						15		2.5 U		404								41.4		216
Nov-00	ug/l									17.4		91.5		13.8						31.4		4.2 U		523								154		172
May-01	ug/l									4.1 U		50.8		13.8						15.1		4.1 U		487								129		186
Oct-01	ug/l									1.5 U		66		14.8						28.1		1.5 U		573								183		165
Nov-01	ug/l			5800		43										5 U		5 U									5 U							
May-02	ug/l									2.8 B		47.8 B		11.9 B						144		4.0 B		469								66.9		154
Oct-02	ug/l									3.2 U		66.1		3.2 U						29		3.2 U		648								164		175
May-03	ug/l									4.7 U		26.6		7.3						13.4		4.7 U		498								36.1		197
Nov-03	ug/l									4.1 U		13.4		4.7 B						30.6		4.1 U		639								83.6		194
May-04	ug/l									2.6 U		27.2		7.4 B						19.8		2.6 U		502								75		136
Nov-04	ug/l									5.8 U		19.5		6.8 B						32.2		5.8 U		617								121		156
Jun-05	ug/l									4.5 U		10.1		7.0 B								4.5 U		524								26.3		159
Jan-06	ug/l											5 U		5 U						18		5 U		567								156		189
Apr-06	ug/l			4940		22		5 U								5 U		5 U		21							5 U		18					
Jun-06	ug/l			5970		46		6		5 U		5 U		6		5 U		5 U		21		5 U		700			5 U		16			1790		346
Sep-06	ug/l			4560		22		10								5 U		5 U		46							5 U		44					
Dec-06	ug/l			1930		30		5 U		5 U		5 U		8		5 U		5 U		51		5 U		668			5 U		93			142		361
Apr-07	ug/l															3 U		3 U		26														
May-07	ug/l													6.2																				
Oct-07	ug/l			4856		28.1						7.5		16.2		22.6		11.8		34.1		0.59 J		686.5			1.6		42			885.1		336.2
Apr-08	ug/l													4.1		0.5 U		0.5 U		14.6														
Oct-08	ug/l			1748		26.8						2.3		4.9		1 UJ		1 UJ		40.7		1 UJ		663.5			3.3		75			173.6	28	7.9
Jan-09	ug/l	188.9	1.4																															
Apr-09	ug/l													3.6		0.5 U		0.5 U		18.1														
Oct-09	ug/l			4429		30.5						15.1		12.3		0.5 U		0.5 U		37.6				709.1			0.5 U		26.7			136.9	38.8	23.8
Apr-10	ug/l													3.4		0.6		0.6		25.2														
Jul-10	ug/l																																	
Aug-10	ug/l																																	
Sep-10	ug/l																																	
Oct-10	ug/l			3488		24.5						3.1		4.8		0.5 U		0.5 U		38.4		0.9		694			0.5 U		25			234.8	56.1	4.4
Apr-11	ug/l													1		0.5 U		0.5 U		25.7														
Oct-11	ug/l			4942		27.4						1.4		5.5		0.5 U		0.5 U		39.8				654.9			2.8		70.4			62.9		7.3
Apr-12	ug/l													3.7		0.6		0.5 U		29.5														
Oct-12	ug/l			2286		26.1						3.8		4.5		0.5 U		0.5 U		36.4		0.7		647			1.0		24.2			138.3		139.3
May-13	ug/l												2.6		3.7		0.93 U		0.72 U		30.0		1.2		496								3.8	
Oct-13	ug/l				2,500		21.2								15.1		2.0 U		2.0 U		33.1		1.2		752			2.0 U		34.9			33.6	
Nov-13	ug/l												6.2																					
Feb-14	ug/l																																	
Apr-14	ug/l														2.0 U		2.0 U		2.0 U		22.2				587									
Oct-14	ug/l				327								37		13.3		2.0 U		2.0 U		28.5		2.0 U		793								3.1	
Jun-15	ug/l																								925	2.0 J				31.6				
Oct-15	ug/l				2170		25.7		2.1 J		4.0 U		37.4		12.6		4.0 U		4.0 U		18.5		4.0 U		642			2.9			2.5 J		3.1 J	

Table 5-5
Summary of Historical Arsenic Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Total or Dissolved	SHL-20 (D)	SHL-21 (T)	SHL-21 (D)	SHL-22 (T)	SHL-22 (D)	SHL-23 (T)	SHL-23 (D)	SHL-24 (D)	SHM-93-10C (T)	SHM-93-10D (T)	SHM-93-22B (T)	SHM-93-22B (D)	SHM-93-22C (T)	SHM-93-22C (D)	SHM-96-5B (T)	SHM-96-5B (D)	SHM-96-5C (T)	SHM-96-5C (D)	SHP-99-29X (T)	SHP-99-29X (D)	SHM-99-31A (T)	SHM-99-31A (D)	SHM-99-31B (T)	SHM-99-31B (D)	SHM-99-31C (T)	SHM-99-31C (D)	SHM-99-32X (T)	SHM-99-32X (D)
Sample Month-Year	**Units**																												
August-91	ug/l				27																								
Dec-91	ug/l				25																								
Mar-93	ug/l				32.9					21.3				68.9															
Jun-93	ug/l									18.1				49.8															
Nov-96	ug/l				24.8					12.4		324		44.6		1440		71											
May-97	ug/l				10 U					10 U		318 J		40.4		3,300 J		43.2											
Oct-97	ug/l				34.8					10.5		352		10 U		2040		43.1											
May-98	ug/l				10.6					7.5		365		31.6		4300		49.5											
Nov-98	ug/l				5.4 U					10.2		406		51.1		3080		46.8											
May-99	ug/l				12.2 B					10.8 B		707		42.8		3490		57											
Nov-99	ug/l				7.3					8.7		1440		33.2		2700		44.8		4380									
May-00	ug/l				14.6					5.9 J		1360		34.4		5110		52.2											
Nov-00	ug/l				45					8.8		1180		47.8		2500		40.3											
May-01	ug/l				47.6					6.9		1540		19.7		3800		80.5											
Oct-01	ug/l				44.2					10.1		1670		31.6		1850		41.1											
Nov-01	ug/l		5 U				5 U													3800									
May-02	ug/l				55.9 B					11.0 B		2040		30.5 B		3800		50.4 B											
Oct-02	ug/l				77.1					7.1		159		30.1		1970		41.3											
May-03	ug/l				101					9.8		2070		21		3920		55.1											
Nov-03	ug/l				76.4					5.2 U		2500		29.8		3380		48.3											
May-04	ug/l				88.1					7.2 B		1690		27.8		3950		47.1											
Nov-04	ug/l				65.4					10.6 B		2360		34.9		2110		49.5											
Jun-05	ug/l									8.1 B				15.8															
Jan-06	ug/l				154					11		3320		23		4130		43											
Apr-06	ug/l		5 U		171		5 U				14	3690				2110		47				9		56		270		168	
Jun-06	ug/l				167		5 U			12		3440		17		2760		51				12		53		273		186	
Sep-06	ug/l		5 U		109		5 U				14	3110				1570		37				23		74		305		202	
Dec-06	ug/l		5 U		115		5 U			10	12	3100		73		2980		24				16		72		301		176	
Apr-07	ug/l		3 U		98		3 U					2800		76		2030		47											
May-07	ug/l																												
Oct-07	ug/l		0.81 J		55.1		0.73 J			9.8	10.3	1978		72.5		750		61.1		2953		22.7		85.5		292.1		206.2	
Apr-08	ug/l		1.1		106.2		0.19 J					1721		29.4		1597		54.7											
Oct-08	ug/l		1 U		81		1 UJ			10.1	23.4	1374		17.7		747.8		51.8		2106		16.2		79.5		260.3		203.9	
Jan-09	ug/l																												
Apr-09	ug/l		1.2		98.7		0.5 U					1128		21.7		1401		44.2											
Oct-09	ug/l				48.3							832.3		74.7		776.3		27.5		1686		20.4		56.7		223.5		196.8	
Apr-10	ug/l				69.6							947.5		14.6		1504 J		31.2											
Jul-10	ug/l																												
Aug-10	ug/l																												
Sep-10	ug/l																												
Oct-10	ug/l		0.9		46.5		0.5 U			8.7		827.6		15.8		846.2		26.4		3156		17.4		39.2		239.4		173.4	
Apr-11	ug/l				57.9							1039		13.9		2030		35											
Oct-11	ug/l				45.7							1072		13.9		1895		24.5		1457		18.4		59.3		244		172.8	
Apr-12	ug/l				41.9							1271		25.4		1681		8.7											
Oct-12	ug/l		1.1		43.6		0.5 U			8.1		879		21.7		1376		7.7		2739		17.7		60.1		206.4		130.6	
May-13	ug/l	621				33.3							1150		19.7		1400		10.4										
Oct-13	ug/l	641				54.3							1150		25.1		1660		5.5		2760		14.6		61.6		205		107
Nov-13	ug/l																												
Feb-14	ug/l																												
Apr-14	ug/l	701				49.2							997		31.9		1340		10.9										
Oct-14	ug/l	763				44.5							690		45.6		991		17.7		3000						180		93.5
Jun-15	ug/l	794						2.0 U	4.9				1050				1210												
Oct-15	ug/l	855		4.0 U		15.9		4.0 U	6.5				670		137		799		39.6										

Table 5-5
Summary of Historical Arsenic Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Total or Dissolved	SHP-01-36X (T)	SHP-01-36X (D)	SHP-01-37X (T)	SHP-01-37X (D)	SHP-01-38A (T)	SHP-01-38A (D)	SHP-01-38B (D)	SHM-05-39A (T)	SHM-05-39A (D)	SHM-05-39B (T)	SHM-05-39B (D)	SHM-05-40X (T)	SHM-05-40X (D)	SHM-05-41A (T)	SHM-05-41A (D)	SHM-05-41B (T)	SHM-05-41B (D)	SHM-05-41C (T)	SHM-05-41C (D)	SHM-05-42A (T)	SHM-05-42A (D)	SHM-05-42B (T)	SHM-05-42B (D)	SHM-07-03 (D)
Sample Month-Year	**Units**																								
August-91	ug/l																								
Dec-91	ug/l																								
Mar-93	ug/l																								
Jun-93	ug/l																								
Nov-96	ug/l																								
May-97	ug/l																								
Oct-97	ug/l																								
May-98	ug/l																								
Nov-98	ug/l																								
May-99	ug/l																								
Nov-99	ug/l																								
May-00	ug/l																								
Nov-00	ug/l																								
May-01	ug/l																								
Oct-01	ug/l																								
Nov-01	ug/l																								
May-02	ug/l																								
Oct-02	ug/l																								
May-03	ug/l																								
Nov-03	ug/l																								
May-04	ug/l																								
Nov-04	ug/l																								
Jun-05	ug/l																								
Jan-06	ug/l																								
Apr-06	ug/l	**24**		**41**		**550**			**289**		**590**		**3610**		**54**		**2420**		**626**		5 U		**266**		
Jun-06	ug/l	**22**		**49**		**496**			**288**		**634**		**3420**		**52**		**2720**		**614**		5 U		**241**		
Sep-06	ug/l	**30**		**46**		**681**			**270**		**415**		**3510**		**41**		**2730**		**640**		5 U		**276**		
Dec-06	ug/l	**19**		**46**		**623**			**248**		**412**		**4070**		**36**		**2280**		**666**		5 U		**296**		
Apr-07	ug/l														**30**		**1990**		**627**		3 U		**249**		
May-07	ug/l																								
Oct-07	ug/l	**16.7**		**26.6**		**781.4**			**241.5**		**309.4**		**4445**		**24.9**		**2591**		**684.5**		1.01 J		**304.4**		<0.5
Apr-08	ug/l														**26.9**		**2349**		**662.2**		2.5		**266.2**		
Oct-08	ug/l	**27.9**		**38.1**		**602.4**			**275.6**		**241.2**		**4920**		**18.7**		**1910**		**789.3**		1 U		**256**		
Jan-09	ug/l																								
Apr-09	ug/l														**22.1**		**1497**		**895.3**		2		**255.7**		
Oct-09	ug/l	**18.7**		**35.1**		**663.7**			**259.5**		**338.8**		**3833**		**16.3**		**1464**		**828.7**		1 U		**211.4**		
Apr-10	ug/l														**26.9**		**1372**		**896**		2.5		**72.2**		
Jul-10	ug/l																								
Aug-10	ug/l													**3180**											0.29 J
Sep-10	ug/l																								
Oct-10	ug/l	**14.2**		**22.5**		**651.8**			**246.3**		**162**		**3637**		**66.7**		**1036**		**787**		1.2		**197.2**		
Apr-11	ug/l														**20.9**		**1045**		**749.8**		1.1		**188.9**		
Oct-11	ug/l	**30.8**		**20.2**		**557.9**			**227.1**		**308.1**		**3703**		**18.4**		**1369**		**917**		0.8		**230**		
Apr-12	ug/l														**15.5**		**770.8**		**764.8**		2.3		**238.7**		
Oct-12	ug/l	**17.8**		**10.2**		**660.5**			**76.3**		**364.4**		**2974**		**10.3**		**859.5**		**782.2**		0.7		**240.6**		
May-13	ug/l							**900**								**12.3**		**812**		**709**		0.89 U		**238**	1.0
Oct-13	ug/l									**146**		**113**		**3100**		**12.5**		**716**		**890**		2.0 U		**232**	
Nov-13	ug/l		4.8		4.7		**247**																		
Feb-14	ug/l																								
Apr-14	ug/l															9.7		**678**		**1490**		2.0 U		**229**	
Oct-14	ug/l		**10.8**		8.5		**263**							**3070**		**14.2**		**638**		**946**		2.0 U		**215**	
Jun-15	ug/l																	**626**		**883**					2.0 U
Oct-15	ug/l		9		**14**		**314**	**903**		4.0 U		**293**		**3060**		**15**		**614**		**851**		4.0 U		**206**	

Table 5-5
Summary of Historical Arsenic Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Total or Dissolved	SHM-07-05 (T)	SHM-07-05 (D)	SHM-10-01 (T)	SHM-10-01 (D)	SHM-10-02 (T)	SHM-10-02 (D)	SHM-10-03 (T)	SHM-10-03 (D)	SHM-10-04 (T)	SHM-10-04 (D)	SHM-10-05A (T)	SHM-10-05A (D)	SHM-10-06 (T)	SHM-10-06 (D)	SHM-10-06A (T)	SHM-10-06A (D)	SHM-10-07 (T)	SHM-10-07 (D)	SHM-10-08 (T)	SHM-10-08 (D)	SHM-10-10 (T)	SHM-10-10 (D)	SHM-10-11 (T)	SHM-10-11 (D)	SHM-10-12 (T)	SHM-10-12 (D)
Sample Month-Year	**Units**																										
August-91	ug/l																										
Dec-91	ug/l																										
Mar-93	ug/l																										
Jun-93	ug/l																										
Nov-96	ug/l																										
May-97	ug/l																										
Oct-97	ug/l																										
May-98	ug/l																										
Nov-98	ug/l																										
May-99	ug/l																										
Nov-99	ug/l																										
May-00	ug/l																										
Nov-00	ug/l																										
May-01	ug/l																										
Oct-01	ug/l																										
Nov-01	ug/l																										
May-02	ug/l																										
Oct-02	ug/l																										
May-03	ug/l																										
Nov-03	ug/l																										
May-04	ug/l																										
Nov-04	ug/l																										
Jun-05	ug/l																										
Jan-06	ug/l																										
Apr-06	ug/l																										
Jun-06	ug/l																										
Sep-06	ug/l																										
Dec-06	ug/l																										
Apr-07	ug/l																										
May-07	ug/l																										
Oct-07	ug/l	**14.7**																									
Apr-08	ug/l																										
Oct-08	ug/l																										
Jan-09	ug/l																										
Apr-09	ug/l																										
Oct-09	ug/l																										
Apr-10	ug/l																										
Jul-10	ug/l			1.16 J	0.68 J	0.74	0.43 J	2.36	0.78 J	1.62	0.64	4.7	4.6	**2210 J**	**1680 J**	**64.8**	**61**	**816 J**	**818 J**	2.72	0.73 J	2.0 J	1.25 J				
Aug-10	ug/l				3.51 J																		3.62 J	**356**	**342 J**	**2880**	**3560**
Sep-10	ug/l			8.15	7.87	1.11	1.07	1.47 J	0.51 J	1.0 J	0.79 J	5.68	5.21	**2580**	**2710**	**102**	**94.2**	**979**	**918**	1.4	1.55	2.57 J	2.4 J				
Oct-10	ug/l																							**470**	**463**	**2980**	**3120**
Apr-11	ug/l																										
Oct-11	ug/l																										
Apr-12	ug/l																										
Oct-12	ug/l				1.4		1.1		1.0 U		1.0 U		3.0		**2300**		**72**		**1100**		1.9		1.0		**440**		**4100**
May-13	ug/l				1.3		1.5		1.5		1.0		3.1		**1980**		**72.8**		**1210**		1.9		1.7		**460**		**3580**
Oct-13	ug/l																										
Nov-13	ug/l																**22.9**						2.0 J		**432**		**3570**
Feb-14	ug/l																										
Apr-14	ug/l																										
Oct-14	ug/l														**1900**		**95.6**		**861**				2.6 J				**3510**
Jun-15	ug/l		4.8		2.0 U		3.2 J		4.2		2.0 U		3.0 J								3.6 J						
Oct-15	ug/l														**2150**		**4.0 U**		**926**				2.9 J		**503**		**3850**

Table 5-5
Summary of Historical Arsenic Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Total or Dissolved	SHM-10-13 (T)	SHM-10-13 (D)	SHM-10-14 (T)	SHM-10-14 (D)	SHM-10-15 (T)	SHM-10-15 (D)	SHM-10-16 (T)	SHM-10-16 (D)	SHM-11-02 (D)	SHM-11-06 (D)	PZ-12-01 (D)	PZ-12-02 (D)	PZ-12-03 (D)	PZ-12-04 (D)	PZ-12-05 (D)	PZ-12-06 (D)	PZ-12-07 (D)	PZ-12-08 (D)	PZ-12-09 (D)	PZ-12-10 (D)	SHM-13-01 (D)	SHM-13-02 (D)	SHM-13-03 (D)	SHM-13-04 (D)	SHM-13-05 (D)	SHM-13-06 (D)	SHM-13-07 (D)	SHM-13-08 (D)
Sample Month-Year	**Units**																												
August-91	ug/l																												
Dec-91	ug/l																												
Mar-93	ug/l																												
Jun-93	ug/l																												
Nov-96	ug/l																												
May-97	ug/l																												
Oct-97	ug/l																												
May-98	ug/l																												
Nov-98	ug/l																												
May-99	ug/l																												
Nov-99	ug/l																												
May-00	ug/l																												
Nov-00	ug/l																												
May-01	ug/l																												
Oct-01	ug/l																												
Nov-01	ug/l																												
May-02	ug/l																												
Oct-02	ug/l																												
May-03	ug/l																												
Nov-03	ug/l																												
May-04	ug/l																												
Nov-04	ug/l																												
Jun-05	ug/l																												
Jan-06	ug/l																												
Apr-06	ug/l																												
Jun-06	ug/l																												
Sep-06	ug/l																												
Dec-06	ug/l																												
Apr-07	ug/l																												
May-07	ug/l																												
Oct-07	ug/l																												
Apr-08	ug/l																												
Oct-08	ug/l																												
Jan-09	ug/l																												
Apr-09	ug/l																												
Oct-09	ug/l																												
Apr-10	ug/l																												
Jul-10	ug/l																												
Aug-10	ug/l																												
Sep-10	ug/l	**619 J**	**575**	**4280**	**4100**	**7930**	**8110**	**487**	**495**																				
Oct-10	ug/l	**700**	**672**	**5990 J**	**5860**	**6090**	**6230**	**1180**	**1090**																				
Apr-11	ug/l																												
Oct-11	ug/l																												
Apr-12	ug/l																												
Oct-12	ug/l		**670**		**6200 J**		**7000**		**1600**	7.1	**920**																		
May-13	ug/l		**565**		**5540**		**1090**		**1350**		**1020**	**441**	**627**	**659**	**610**	**741**	**224**	**484**	1.9	1.1	0.69 J		2.5	**318**	**2060**	8.9	**3180 J**		**928**
Oct-13	ug/l																												
Nov-13	ug/l						**5740**		**1530**	3.2 J	**1000**											2.2 J	2.7 J	**137**		6.8	**2540**	**1340**	**994**
Feb-14	ug/l																												
Apr-14	ug/l									2.0 U														**120**	**61.1**		**2850**	**1280**	**1040**
Oct-14	ug/l		**532**		**5380**		**5870 J**			2.0 U	**825**												2.6 J	**80.8**	**693**	**11**	**2360**	**962**	**978**
Jun-15	ug/l									2.0 U														**75.5**	**620**		**2460**	**946**	**975**
Oct-15	ug/l		4.5		**2320**		**5450**		**1760**		**821**											2.1 J	2.6	**68.7**	**212**	**12.3**	**2160**	**531**	**954**

Table 5-5
Summary of Historical Arsenic Results
Shepley's Hill Landfill, Devens, Massachusetts

Well ID	Total or Dissolved	SHM-13-14S (D)	SHM-13-14D (D)	SHM-13-15 (D)	EPA-PZ-2012-1A (D)	EPA-PZ-2012-1B (D)	EPA-PZ-2012-2A (D)	EPA-PZ-2012-2B (D)	EPA-PZ-2012-3A (D)	EPA-PZ-2012-3B (D)	EPA-PZ-2012-4A (D)	EPA-PZ-2012-4B (D)	EPA-PZ-2012-5A (D)	EPA-PZ-2012-5B (D)	EPA-PZ-2012-6A (D)	EPA-PZ-2012-6B (D)	EPA-PZ-2012-7A (D)	EPA-PZ-2012-7B (D)
Sample Month-Year	**Units**																	
August-91	ug/l																	
Dec-91	ug/l																	
Mar-93	ug/l																	
Jun-93	ug/l																	
Nov-96	ug/l																	
May-97	ug/l																	
Oct-97	ug/l																	
May-98	ug/l																	
Nov-98	ug/l																	
May-99	ug/l																	
Nov-99	ug/l																	
May-00	ug/l																	
Nov-00	ug/l																	
May-01	ug/l																	
Oct-01	ug/l																	
Nov-01	ug/l																	
May-02	ug/l																	
Oct-02	ug/l																	
May-03	ug/l																	
Nov-03	ug/l																	
May-04	ug/l																	
Nov-04	ug/l																	
Jun-05	ug/l																	
Jan-06	ug/l																	
Apr-06	ug/l																	
Jun-06	ug/l																	
Sep-06	ug/l																	
Dec-06	ug/l																	
Apr-07	ug/l																	
May-07	ug/l																	
Oct-07	ug/l																	
Apr-08	ug/l																	
Oct-08	ug/l																	
Jan-09	ug/l																	
Apr-09	ug/l																	
Oct-09	ug/l																	
Apr-10	ug/l																	
Jul-10	ug/l																	
Aug-10	ug/l																	
Sep-10	ug/l																	
Oct-10	ug/l																	
Apr-11	ug/l																	
Oct-11	ug/l																	
Apr-12	ug/l																	
Oct-12	ug/l																	
May-13	ug/l																	
Oct-13	ug/l																	
Nov-13	ug/l																	
Feb-14	ug/l	2.0 U	7.9	3.8 J														
Apr-14	ug/l																	
Oct-14	ug/l	2.0 U	9.6	8.1	2.0 U	**160**	2.0 U	2.0 U	**21.2**	**3830**	4.8	**2680**	2.0 U	3.2 J	2.0 U	**515**	2.0 U	**1250**
Jun-15	ug/l																	
Oct-15	ug/l				4.0 U	**288**	4.0 U	4.0 U	**16.4**	**4070**	5.6	**3520**	4.0 U	3.7 J	4.0 U	**386**	4.0 U	**1330**

TABLE 6-1
Summary of Revised System Performance Assessment Metrics and Results
Shepley's Hill Landfill, Devens, Massachusetts

Performance Assessment Component	Method	Description	Data Utilized	Results	Interpretation	Conclusion
Hydraulic Capture Zone Analysis	Gradient Vector Analysis	Compute horizontal hydraulic gradient vectors between groups of wells (triplets) in hydraulic monitoring network under pumping conditions.	Water level data from April and October 2014 collected during sitewide gauging events during which time the ATP was pumping.	Average gradient vectors from complete dataset, map comparing April and October 2014 gradient vectors at each well triplet to historic results.	Horizontal flow patterns are influenced by pumping for nearfield wells, but also in wells further to the east. Capture is evident for neafield wells but inconclusive for wells further away.	operating as designed
	Comparison to Numerical Model Results	Compare results of Gradient Vector Analysis to particle tracking simulations using the revised (2013) numerical groundwater flow model.	Numerical simulation results for 50 gpm pumping rate with particles released at wells with elevated dissolved arsenic.	Map showing particle paths.	Particle paths and capture are consistent with gradient vector analysis. Capture zone effectively contains groundwater passing through the landfill footprint.	operating as designed
	Capture Zone Width Calculation	Compute theoretical capture zone width using basic flow budget and conservative assumptions regarding hydraulic conductivity and saturated thickness	Observed hydraulic gradients for 2007, aquifer properties as specified in existing model, saturated thickness from SGI cross-sections and extraction well boring logs.	Calculated capture zone width is 763 feet at the extraction wells, based on the saturated thickness of 50 feet.	Calculated capture zone width is adequate to contain the estimated 444 foot width of impacted water.	operating as designed
	Drawdown Assessment	Compare nearfield water levels under pumping and non-pumping conditions at next system shutdown to determine observed drawdown	Two synoptic rounds just prior to and after a system restart (Completed 3/3/08)	Comparison map with observed vs. predicted drawdowns based on the February 2008 shutdown	Distribution and magnitude of observed drawdown generally consistent with predicted.	operating as designed
Geochemical Monitoring	Advective Travel Time Analysis	Develop particle tracking-based travel times to predict the time required for unimpacted groundwater from plume flanks to flow through downgradient impacted wells.	Numerical model simulation results for extraction well operating conditions (50 gpm).	Map plotting predicted 2 year travel time markers.	Advective velocities in downgradient groundwater generally 1 ft/d, calculations suggest it will take over 50 years for arsenic concentrations to decline.	inconclusive
	Geochemical Assessment	Evaluate As concentrations and ORP data since Extraction System startup for changes relative to historical conditions.	Historic As, Fe, and ORP data from Spring 2006 through 2014.	Interpretation of spatial pattern of arsenic trends and ORP conditions.	Mixed arsenic trends, even in wells clustered together, and persistant downgradient negative redox potential indicate pumping has not changed geochemical conditions.	inconclusive

APPENDIX A

Landfill Inspection Report

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035

ANNUAL LANDFILL INSPECTION
Shepley's Hill Landfill
Devens, Massachusetts

Date of Inspection: 07 October 2015
Inspector/Company: Steven Passafaro, PE of Sovereign Consulting Inc.
Site Location: Shepley's Hill Landfill, Devens, Massachusetts

Weather Conditions:
Temperature: 50° F
Weather: Clear

Type of Inspection:
- ☒ Annual
- ☐ Post-Major Weather Event
- ☐ Re-Inspection of Deficiencies
- ☐ Other

Landfill Attribute & Observations	Comments and Recommendations	SAT	UNSAT
Cover Surface			
1. There are no new depressions on the cover surface	Continue monitoring for settlement that creates depressions.	☒	☐
2. No tree or shrub growth was observed on the landfill surface during the inspection. Small tree and shrub growth on the margins of the landfill were removed during annual mowing event.	Continue monitoring for tree and shrub growth on cover surface. Remove tree/shrub growth as necessary.	☒	☐
3. The utility berm that was constructed through the middle of the landfill in 2004 provides utility service to the pumping station at the northeastern corner of the landfill. The vegetation atop the utility berm was mowed during the October 2015 mowing event. The berm is intact and no adverse effects to the berm were observed.	Continue monitoring the utility berm for negative impacts on the drainage patterns.	☒	☐

Sovereign Consulting Inc.
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ANNUAL LANDFILL INSPECTION
Shepley's Hill Landfill
Devens, Massachusetts

Landfill Attribute & Observations	Comments and Recommendations	SAT	UNSAT
Vegetative Growth			
1. The vegetation growth was normal and appeared to have no major stressed areas. The annual landfill mowing event was conducted from 01 October to 02 October 2015.	Continue mowing on an annual basis.	☒	☐
Landfill Gas Vents & Monitoring Wells			
1. The landfill gas vents are in good condition. All pipes are in functional condition with screens installed on all vents.	Continue to monitor the condition of the landfill gas vents.	☒	☐
3. The landfill gas points are in good condition.	Continue to monitor the condition of the landfill gas points.	☒	☐
2. The monitoring wells located on the landfill are in good condition.	Continue to monitor the condition of the landfill monitoring wells.	☒	☐
Drainage Swales			
1. Most of the southern drainage swale exhibited vegetative growth. Large growth was removed during the October 2015 mowing activities. Small growth and wetland plant life were not disturbed, as they have become a natural retardant to erosive forces.	Continue to monitor and clear drainage swales of invasive vegetative growth.	☒	☐
2. The northern drainage swales in the vicinity of the ATP exhibited minor vegetative growth. Large growth was removed during the October 2015 mowing activities.	Continue to monitor and clear drainage swales of invasive vegetative growth.	☒	☐
3. Mowing is conducted to the edge of the swales.	Continue mowing annually.	☒	☐

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035

ANNUAL LANDFILL INSPECTION
Shepley's Hill Landfill
Devens, Massachusetts

Landfill Attribute & Observations	Comments and Recommendations	SAT	UNSAT
Settlement			
1. No new depressions were observed within the landfill.	Continue to monitor for new depressions or settlement and repair as necessary.	☒	☐
Erosion			
1. There was no erosion observed.	Continue to monitor for erosion annually.	☒	☐
Access Roads			
1. The landfill access road is in good condition. No erosion of the road was observed.	Continue to monitor condition of road.	☒	☐
Culverts and Catch Basins			
1. The culverts along the northern portion of the landfill were observed to be in good condition; some growth was removed from the culverts along the entrance road to the ATP during the October 2015 mowing event to ensure proper use.	Continue to monitor and remove growth as necessary.	☒	☐
Security/Fencing			
1. Perimeter fencing is non-existent along much of the western boundary of the landfill (wooded area along Shepley's Hill), and along the southeastern boundary near the railroad tracks. No roads have open access to the landfill, and existing fence gates across roads that access the landfill are secured with chains and padlocks.	Continue to maintain proper security measures including ensure lockage of all landfill fence gates.	☒	☐

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035

ANNUAL LANDFILL INSPECTION
Shepley's Hill Landfill
Devens, Massachusetts

Landfill Attribute & Observations	Comments and Recommendations	SAT	UNSAT
Wetland Encroachment			
1. Wetland encroachment was observed in the swales located in the southern portion of the landfill. Overall, the areas of encroachment are small and confined to the swales.	Continue to monitor wetland encroachment and continued mowing of the areas close to the existing growth will prevent the development of wide-spread wetland encroachment issues.	☒	☐
Other Observations			
1. No other outstanding issues were observed.		☒	☐

Shepley's Hill Landfill
Annual Inspection
October 2015

Description - Current Conditions of Northern Portion of Landfill

Description - Current Conditions of Western Portion of Landfill and Western Drainage Swale

Shepley's Hill Landfill
Annual Inspection
October 2015

Description - Current Conditions of Southern Portion of Landfill

Description - Current Conditions of Eastern Portion of Landfill

Shepley's Hill Landfill
Annual Inspection
October 2015

Description - Current Condition of the Northern Barrier Wall Area

Description - Current Condition of the Southern Barrier Wall Area

Shepley's Hill Landfill
Annual Inspection
October 2015

Description - Current Conditions of Red Cove Area

Description - Current Condtion of Southern Drainage Swale

Shepley's Hill Landfill
Annual Inspection
October 2015

Description - Current Condition of Eastern Drainage Swale

Description - Current Condition of the Landfill Access Road

APPENDIX B (ON CD)

Landfill Gas Monitoring Field Forms

Location Shepley's Hill LF Date 10/20/15

Project / Client AC001.M01.04

Landfill Gas Monitoring pg 1 of 2

MOB: 0600 Teague Baker

ARRIVE: 0800 Samantha Velluti

Equpt: JLV041 F150, JLV083 F150

SOVCON: QRae+ 4-gas # 150-509594

Ion Science Tiger # F106516

Rental from USEnvironmental:

Landtec GEM2000 # GM13795

Gilian GilAir Air pump

GEM 2000 calibrated by USENV, see calibration log.

* See HK SOVCON Cal logbooks for PID & 4 GAS

QRae 4 gas bump ✓ w/ span gas

H_2S: 25 CO: 50 O_2: 20.9 LEL: 50

Ion Sci Tiger bump ✓ w/ span gas 100ppm ISO

RF: 0.46 ✓: 44.6

0800 TSM held, HASP & JSAs reviewed

Location Shepley's Hill LF Date 10/20/15

Project / Client AC001.M01.04

LF Gas Monitoring pg 2 of 2

SOW: LF Gas monitoring.
See logsheet for data.

Finish all points @ 1650.

Updated SRP.

1700 Depart. Site secured.

O_2 % GEM / 4-GAS

Date: 10-20-15 Weather: Cloudy 60° Field Team: TAB + SJV

ID	Time	Initial Readings VOC (ppm)	O_2 (%)	H_2S (ppm)	LEL (%)	CO (ppm)	CO_2 (%)	CH_4 (%)	Purge Rate (lpm)	Purge Time (sec)	Post Purge Readings VOC (ppm)	O_2 (%)	H_2S (ppm)	LEL (%)	CO (ppm)	CO_2 (%)	CH_4 (%)	Bar. Pres. ("Hg)
GV-1	0921	BDL	20.8 / 20.9	Ø	Ø	Ø	0.1	Ø	4	167	BDL	20.9 / 20.9	Ø	Ø	Ø	Ø	Ø	29.98
GV-2	1050	0.1	19.4 / 19.3	Ø	27	Ø	1.2	0.8	4	167	0.1	16.4 / 16.5	Ø	83	1	4.2	2.5	29.90
GV-3	0850	BDL	20.5 / 20.9	Ø	Ø	Ø	Ø	Ø	4	167	BDL	20.5 / 20.5	Ø	Ø	Ø	0.1	0.1	29.90
GV-4	0900	0.1	10.0 / 10.5	Ø	71	Ø	8.7	2.1	4	167	0.2	10.1 / 8.4	Ø	100+	Ø	10.1	3.1	29.90
GV-5	0912	0.1	19.7 / 20.3	Ø	4	Ø	0.6	0.1	4	167	BDL	20.5 / 20.6	Ø	Ø	Ø	0.4	Ø	29.88
GV-6	1316	BDL	3.3 / 4.4	Ø	100+	Ø	13.7	7.6	4	167	BDL	1.7 / 2.0	Ø	100+	Ø	14.8	7.8	29.88
GV-7	1130	BDL	5.4 / 6.4	Ø	100+	Ø	11.6	8.2	4	167	BDL	1.1 / 2.2	Ø	100+	1	14.1	7.9	29.89
GV-8	1139	BDL	10.7 / 10.7	Ø	45	Ø	6.2	1.4	4	167	BDL	10.6 / 12.1	Ø	27	Ø	7.3	0.8	29.89
GV-9	1324	0.2	7.1 / 6.9	Ø	100+	Ø	11.2	5.9	4	167	0.4	0.7 / 1.7	Ø	100+	Ø	19.1	17.8	29.88
GV-10	1303	BDL	4.2 / 5.0	Ø	100+	Ø	11.6	4.2	4	167	BDL	2.0 / 4.0	Ø	100+	Ø	12.4	4.3	29.88
GV-11	1254	BDL	14.1 / 16.0	Ø	Ø	Ø	4.5	1.1	4	167	BDL	13.7 / 15.1	Ø	22	1	4.8	0.6	29.89
GV-12	1335	0.1	7.5 / 7.8	Ø	100+	Ø	10.2	8.3	4	167	BDL	2.8 / 1.7	Ø	100+	Ø	17.6	11.8	29.88
GV-13	1345	0.1	20.1 / 20.2	Ø	15	Ø	0.7	0.4	4	167	0.1	19.3 / 19.1	Ø	32	Ø	1.2	0.8	29.89
GV-14	1400	0.1	20.4 / 20.4	Ø	15	Ø	0.6	0.3	4	167	BDL	13.9 / 16.4	Ø	100+	Ø	7.0	11.9	29.88
GV-15	1615	0.1	20.6 / 20.5	Ø	23	Ø	0.7	0.6	4	375	0.1	3.1 / 3.6	Ø	100+	Ø	21.2	24.9	29.88
GV-16 *	1555	0.1	20.1 / 20.0	Ø	27	Ø	[illegible]	[illegible]	4	375	0.2	6.1 / 6.9	Ø	100+	Ø	16.7	11.0	29.88
GV-17	1608	0.2	2.2 / 2.1	Ø	100+	Ø	23.2	21.5	4	375	0.1	1.1 / 2.7	Ø	100+	Ø	24.3	22.8	29.88
GV-18	1625	0.1	5.6 / 7.3	Ø	100+	Ø	21.2	29.7	4	375	0.2	8.8 / 9.7	Ø	100+	Ø	17.1	24.1	29.88
LGP-01-01X	0945	BDL	20.6 / 20.5	Ø	Ø	Ø	0.7	Ø	2	83	BDL	20.5 / 20.5	Ø	Ø	Ø	0.7	Ø	29.90
LGP-09-01XA	0933	BDL	20.8 / 20.4	Ø	Ø	Ø	0.8	Ø	2	157	BDL	20.3 / 20.4	Ø	Ø	Ø	0.9	Ø	29.90
LGP-09-01XB	0940	BDL	20.3 / 20.4	Ø	Ø	Ø	0.9	Ø	2	259	BDL	20.2 / 20.4	Ø	Ø	Ø	0.9	Ø	29.90
LGP-01-02X	0958	BDL	20.3 / 20.2	Ø	Ø	Ø	1.1	Ø	2	83	BDL	20.3 / 20.1	Ø	Ø	Ø	1.3	Ø	29.90
LGP-09-02X	0952	BDL	20.1 / 20.2	Ø	Ø	Ø	1.4	Ø	2	224	BDL	20.0 / 20.0	Ø	Ø	Ø	0.3	Ø	29.90
LGP-01-03X	1010	BDL	20.3 / 20.2	Ø	Ø	Ø	1.1	Ø	2	83	BDL	20.3 / 20.3	Ø	Ø	Ø	1.1	Ø	29.90
LGP-09-03X	1019	BDL	20.1 / 20.0	Ø	Ø	Ø	1.2	Ø	2	167	BDL	20.3 / 20.0	Ø	Ø	Ø	1.3	Ø	29.90
LGP-01-04X	1111	BDL	20.1 / 20.4	Ø	Ø	Ø	0.7	Ø	2	83	BDL	20.3 / 20.5	Ø	Ø	Ø	0.8	Ø	29.89
LGP-09-04X	1118	BDL	20.8 / 20.9	Ø	Ø	Ø	0.8	Ø	2	120	BDL	20.3 / 20.4	Ø	Ø	Ø	0.9	Ø	29.89
* LGP-05-05X	1535	0.2	14.4 / 14.4	Ø	6	Ø	6.0	Ø	2	93	* 0.3	1.1 / 1.9	Ø	44	Ø	18.9	1.5	29.88 *
* LGP-09-05X	1540	0.6	9.3 / [illegible]	Ø	65	Ø	13.1	1.7	2	167	* 0.3	0.5 / 2.1	Ø	100+	Ø	24.7	9.1	29.88 *
LGP-05-06X	1523	BDL	17.0 / 17.1	Ø	Ø	Ø	3.7	Ø	2	93	BDL	17.3 / 17.1	Ø	Ø	Ø	3.5	Ø	29.88
LGP-09-06X	1530	0.2	14.1 / 13.7	Ø	Ø	Ø	5.6	Ø	2	120	BDL	14.1 / 13.8	Ø	Ø	Ø	5.8	Ø	29.88
LGP-05-07X	1517	0.1	10.8 / 11.7	Ø	Ø	Ø	7.3	Ø	2	65	BDL	8.1 / 7.9	Ø	Ø	Ø	12.7	Ø	29.88
LGP-05-08X	1505	BDL	16.9 / 16.2	Ø	Ø	Ø	7.2	Ø	2	93	BDL	4.7 / 9.1	Ø	Ø	Ø	14.8	Ø	29.88
LGP-09-08X	1510	0.1	10.5 / 9.9	Ø	5	Ø	13.9	Ø	2	185	0.1	0.7 / 9.0	Ø	9	Ø	20.3	0.3	29.88
LGP-05-09X	1455	BDL	16.0 / 16.5	Ø	Ø	Ø	5.1	Ø	2	93	BDL	14.0 / 15.1	Ø	Ø	Ø	6.6	Ø	29.88
LGP-09-09X	1500	0.1	11.3 / 12.8	Ø	Ø	Ø	9.7	Ø	2	185	BDL	3.7 / 8.3	Ø	Ø	Ø	16.7	Ø	29.88
LGP-05-10X	1440	BDL	14.8 / 15.5	Ø	Ø	Ø	5.3	Ø	2	93	BDL	6.7 / 7.9	Ø	Ø	Ø	10.2	Ø	29.88
LGP-09-10X	1445	0.1	10.4 / 10.8	Ø	Ø	Ø	9.7	Ø	2	148	BDL	2.9 / 3.3	Ø	5	Ø	16.5	Ø	29.88
LGP-05-11X	1425	0.1	15.5 / 15.8	Ø	Ø	Ø	5.5	Ø	2	83	BDL	8.5 / 9.3	Ø	Ø	Ø	11.6	Ø	29.88
LGP-09-11X	1430	0.3	7.7 / 8.5	Ø	29	Ø	14.1	0.5	2	139	0.1	2.9 / 4.1	Ø	2	Ø	17.2	Ø	29.88
LGP-05-13X	1420	0.1	14.8 / 15.1	Ø	Ø	Ø	4.4	Ø	2	56	0.1	9.5 / 9.6	Ø	Ø	Ø	8.2	Ø	29.88
LGP-05-14X	1410	0.2	13.7 / 17.1	Ø	13	Ø	4.7	0.4	2	93	0.1	9.9 / 11.1	Ø	6	Ø	9.6	0.1	29.88
LGP-09-15X	1350	0.1	16.3 / 16.4	Ø	Ø	Ø	4.6	Ø	2	111	BDL	15.3 / 15.8	Ø	Ø	Ø	6.1	Ø	29.88

* GV-16 | 23.7 | 17.3

~~LGP-05-09X~~

~~LGP-05-09X~~

US Environmental Rental Corporation

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1202 Tech Blvd., Suite 108, Tampa, FL 33619 (813) 628-4200

LANDTEC

Company: Sovereign
Contact: Teague Baker

Order No.: RS09508
Date: 10/16/2015
Technician: JP

Packing List

Item	Serial Number	Included	QC
GEM 2000	**GM13795**	✓	
Manual		✓	
Charger		✓	
External Filters		✓	
Sample Line		✓	
Pressure Line			
Temperature Probe		✓	
Quick Connects		✓	
Regulator			
Tedlar Bag			
Calibration Gas			
Software			
Comm. Cable			

Calibration Report

Item	Information	
GEM 2000		
Calibration Gas:	**35% CO2 / 50% CH4**	
Lot Number:	***45194-80***	
H2S Concentration		
Lot Number:		
CO_2 Calibrated Reading	***35.0***	*%*
CO_2 Post-Cal Bump	***35.0***	*%*
CH_4 Calibrated Reading	***50.0***	*%*
CH_4 Post-Cal Bump	***49.8***	*%*
O_2 Calibrated Reading	***20.9***	*%*
O_2 Post-Cal Bump	***20.6***	*%*
H_2S Calibrated Reading	***10.0***	*%*
H_2S Post-Cal Bump	***10.1***	*%*

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Missing, damaged, and/or malfunctioning equipment and accessories will result in additional fees.

APPENDIX C (ON CD)

Laboratory Analytical Reports

SPRING 2015 ANALYTICAL REPORTS

New England ACCUTEST LABORATORIES

06/26/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC39148

Sampling Dates: 06/04/15 - 06/05/15

Report to:

H&S Environmental
160 East Main Street
Westborough, MA 01581
eanderson@hsenv.com

ATTN: Elizabeth Anderson

Total number of pages in report: **81**

Reza Tand
Lab Director

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Accutest Laboratories

Sample Summary

H&S Environmental

Job No: MC39148

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC39148-1	06/05/15	11:45	KA	06/05/15	AQ	Ground Water	SHM-96-5B-06052015
MC39148-1F	06/05/15	11:45	KA	06/05/15	AQ	Ground Water	SHM-96-5B-06052015
MC39148-2	06/05/15	09:45	KA	06/05/15	AQ	Ground Water	SHM-11-02-06052015
MC39148-2F	06/05/15	09:45	KA	06/05/15	AQ	Ground Water	SHM-11-02-06052015
MC39148-3	06/05/15	09:45	KA	06/05/15	AQ	Ground Water	SHL-20-06052015
MC39148-3F	06/05/15	09:45	KA	06/05/15	AQ	Ground Water	SHL-20-06052015
MC39148-4	06/04/15	15:55	KA	06/05/15	AQ	Ground Water	SHL-11-06052015
MC39148-4F	06/04/15	15:55	KA	06/05/15	AQ	Ground Water	SHL-11-06052015
MC39148-5	06/05/15	00:00	KA	06/05/15	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC39148
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	6/26/2015 9:18:57 AM

4 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on between 06/04/2015 and 06/05/2015 and were received at Accutest on 06/05/2015 properly preserved, at 3.1 Deg. C and intact. These Samples received an Accutest job number of MC39148. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix: AQ **Batch ID:** MSU1233

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC39175-10MS, MC39175-10MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MSU1233-BS Recovery(s) for 1,1,2-Trichloroethane, 1,2-Dichloropropane, trans-1,3-Dichloropropene are outside control limits. Refer to Blank Spike Duplicate.
- MC39175-10MS/MSD for Dichlorodifluoromethane: Outside control limits. Associated samples are non-detect for this compound.
- RPD(s) for MSU1233-BSD for trans-1,3-Dichloropropene, 1,1,2-Trichloroethane: Outside control limits.Refer to Blank Spike Duplicate.
- MSU1233-BSD for Dichlorodifluoromethane: Outside control limits. Associated samples are non-detect for this compound.
- MSU1233-BS for Acetone: Outside control limits. Associated samples are non-detect for this compound.
- RPD(s) for MSU1233-BSD for Acetone, Dichlorodifluoromethane: Outside control limits. Associated samples are non-detect for this compound.
- MSU1233-BS for Bromodichloromethane, 1,1-Dichloroethane, 4-Methyl-2-pentanone (MIBK), Toluene, 1,1,1-Trichloroethane are outside DoD control limits, but within in-house control limits.
- MC39175-10MS for trans-1,3-Dichloropropene: Outside control limits.Refer to Blank Spike Duplicate.
- MSU1233-MB, MC39148-5 for 4-Bromofluorobenzene are outside DoD control limits, but within in-house control limits.
- RPD(s) for MSU1233-BSD for Vinyl chloride, Trichlorofluoromethane, 1,1,1-Trichloroethane, Toluene, cis-1,3-Dichloropropene, 2,2-Dichloropropane, Chloromethane, Chloroethane, Carbon tetrachloride, Carbon disulfide, Bromomethane: Outside control limits. Individual spike recoveries within acceptance limits.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP24709

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1FMS, MC39176-1FMSD, MC39176-1FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Aluminum, Copper, Silver, Zinc are outside control limits for sample MP24709-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP24709-S2 for Iron: Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- MP24709-S1 for Manganese, Iron: Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Metals By Method SW846 6020A

Matrix: AQ	**Batch ID:** MP24709A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1FMS, MC39176-1FMSD, MC39176-1FSDL were used as the QC samples for metals.

Metals By Method SW846 7470A

Matrix: AQ	**Batch ID:** MP24711

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1FMS, MC39176-1FMSD were used as the QC samples for metals.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ	**Batch ID:** N:GP89785

- MC39148-1, 2, 3, 4 for Sulfate: Analysis performed at Accutest Laboratories, Dayton, NJ.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ	**Batch ID:** GN50932

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1DUP, MC39176-1MS were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ	**Batch ID:** GN50921

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1DUP, MC39176-1MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SM21 5310 B

Matrix: AQ	**Batch ID:** GN50890

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39199-4FMS, MC39199-4FDUP were used as the QC samples for Dissolved Organic Carbon.
- RPD(s) for Duplicate for Dissolved Organic Carbon are outside control limits for sample GN50890-D1. RPD acceptable due to low duplicate and sample concentrations.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC39148).

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Accutest Labs of New England, Inc.	**Job No**	MC39148
Site:	HSMAW: Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	6/15/2015 4:11:55 PM

On 06/10/2015, 4 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 2.3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of MC39148 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** GP89785

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB96228-15DUP, JB96228-15MS were used as the QC samples for Sulfate.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC39148-1	**SHM-96-5B-06052015**					
Alkalinity, Total as CaCO3		296	5.0	3.9	mg/l	SM21 2320B
Chloride		28.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		6.9 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39148-1F	**SHM-96-5B-06052015**					
Arsenic		1210	50	25	ug/l	SW846 6020A
Barium		33.2 J	50	25	ug/l	SW846 6010C
Calcium		76200	25000	13000	ug/l	SW846 6010C
Iron		16200	100	50	ug/l	SW846 6010C
Magnesium		11100	5000	2500	ug/l	SW846 6010C
Manganese		9810	15	7.5	ug/l	SW846 6010C
Potassium		7310	5000	2500	ug/l	SW846 6010C
Sodium		25500	10000	5000	ug/l	SW846 6010C
Zinc		12.7 J	20	10	ug/l	SW846 6010C
Dissolved Organic Carbon		2.0	1.0	0.36	mg/l	SM21 5310 B
MC39148-2	**SHM-11-02-06052015**					
Alkalinity, Total as CaCO3		43.7	5.0	3.9	mg/l	SM21 2320B
Chloride		36.5	1.0	0.76	mg/l	SM 4500 CL C-11
MC39148-2F	**SHM-11-02-06052015**					
Calcium		15500	5000	2500	ug/l	SW846 6010C
Iron		1720	100	50	ug/l	SW846 6010C
Manganese		479	15	7.5	ug/l	SW846 6010C
Potassium		9270	5000	2500	ug/l	SW846 6010C
Sodium		22700	10000	5000	ug/l	SW846 6010C
Dissolved Organic Carbon		39.2	2.0	0.72	mg/l	SM21 5310 B
MC39148-3	**SHL-20-06052015**					
Alkalinity, Total as CaCO3		118	5.0	3.9	mg/l	SM21 2320B
Chloride		59.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		14.7	10	0.50	mg/l	EPA 300/SW846 9056A
MC39148-3F	**SHL-20-06052015**					
Arsenic		794	40	20	ug/l	SW846 6020A
Barium		82.1	50	25	ug/l	SW846 6010C
Calcium		40300	15000	7500	ug/l	SW846 6010C
Iron		43800	300	150	ug/l	SW846 6010C

Summary of Hits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Magnesium		6410	5000	2500	ug/l	SW846 6010C
Manganese		1560	15	7.5	ug/l	SW846 6010C
Potassium		7330	5000	2500	ug/l	SW846 6010C
Sodium		29500	15000	7500	ug/l	SW846 6010C
Dissolved Organic Carbon		1.5	1.0	0.36	mg/l	SM21 5310 B
MC39148-4	**SHL-11-06052015**					
Alkalinity, Total as CaCO3		187	5.0	3.9	mg/l	SM21 2320B
Chloride		64.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		0.95 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39148-4F	**SHL-11-06052015**					
Arsenic		925	40	20	ug/l	SW846 6020A
Barium		162	50	25	ug/l	SW846 6010C
Calcium		59800	15000	7500	ug/l	SW846 6010C
Iron		53400	300	150	ug/l	SW846 6010C
Magnesium		7330	5000	2500	ug/l	SW846 6010C
Manganese		3310	15	7.5	ug/l	SW846 6010C
Potassium		9180	5000	2500	ug/l	SW846 6010C
Sodium		28300	15000	7500	ug/l	SW846 6010C
Zinc		10.5 J	20	10	ug/l	SW846 6010C
Dissolved Organic Carbon		1.6	1.0	0.36	mg/l	SM21 5310 B
MC39148-5	**TRIP BLANK**					

No hits reported in this sample.

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SHM-96-5B-06052015		
Lab Sample ID:	MC39148-1	**Date Sampled:**	06/05/15
Matrix:	AQ - Ground Water	**Date Received:**	06/05/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	296	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	28.0	1.0	0.76	mg/l	1	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	6.9 J	10	0.50	mg/l	1	06/13/15 08:37	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHM-96-5B-06052015
Lab Sample ID: MC39148-1F
Matrix: AQ - Ground Water
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/05/15
Date Received: 06/05/15
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	1210	50	25	ug/l	25	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	33.2 J	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	76200	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	16200	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	11100	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	9810	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	7310	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	25500	10000	5000	ug/l	2	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	12.7 J	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-96-5B-06052015		
Lab Sample ID:	MC39148-1F	**Date Sampled:**	06/05/15
Matrix:	AQ - Ground Water	**Date Received:**	06/05/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.0	1.0	0.36	mg/l	1	06/12/15 14:33	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-11-02-06052015		
Lab Sample ID:	MC39148-2	**Date Sampled:**	06/05/15
Matrix:	AQ - Ground Water	**Date Received:**	06/05/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	43.7	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	36.5	1.0	0.76	mg/l	1	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	0.50 U	10	0.50	mg/l	1	06/13/15 09:01	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHM-11-02-06052015
Lab Sample ID: MC39148-2F
Matrix: AQ - Ground Water
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/05/15
Date Received: 06/05/15
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	2.0 U	4.0	2.0	ug/l	2	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	15500	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	1720	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	2500 U	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	479	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	9270	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	22700	10000	5000	ug/l	2	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-11-02-06052015		
Lab Sample ID:	MC39148-2F	**Date Sampled:**	06/05/15
Matrix:	AQ - Ground Water	**Date Received:**	06/05/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	39.2	2.0	0.72	mg/l	2	06/12/15 18:36	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-20-06052015		
Lab Sample ID:	MC39148-3	**Date Sampled:**	06/05/15
Matrix:	AQ - Ground Water	**Date Received:**	06/05/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	118	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	59.0	1.0	0.76	mg/l	1	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	14.7	10	0.50	mg/l	1	06/13/15 09:25	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHL-20-06052015
Lab Sample ID: MC39148-3F
Matrix: AQ - Ground Water
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/05/15
Date Received: 06/05/15
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	794	40	20	ug/l	20	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	82.1	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	40300	15000	7500	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	43800	300	150	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	6410	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	1560	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	7330	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	29500	15000	7500	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-20-06052015		
Lab Sample ID:	MC39148-3F	**Date Sampled:**	06/05/15
Matrix:	AQ - Ground Water	**Date Received:**	06/05/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.5	1.0	0.36	mg/l	1	06/12/15 14:54	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-11-06052015		
Lab Sample ID:	MC39148-4	**Date Sampled:**	06/04/15
Matrix:	AQ - Ground Water	**Date Received:**	06/05/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	187	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	64.0	1.0	0.76	mg/l	1	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	0.95 J	10	0.50	mg/l	1	06/13/15 09:49	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHL-11-06052015
Lab Sample ID: MC39148-4F
Matrix: AQ - Ground Water
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/04/15
Date Received: 06/05/15
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	925	40	20	ug/l	20	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	162	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	59800	15000	7500	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	53400	300	150	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	7330	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	3310	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	9180	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	28300	15000	7500	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10.5 J	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Accutest Laboratories

Report of Analysis

Client Sample ID:	SHL-11-06052015		
Lab Sample ID:	MC39148-4F	**Date Sampled:**	06/04/15
Matrix:	AQ - Ground Water	**Date Received:**	06/05/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.6	1.0	0.36	mg/l	1	06/12/15 15:06	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC39148-5	**Date Sampled:**	06/05/15
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/05/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U29671.D	1	06/19/15	MC	n/a	n/a	MSU1233
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	LOQ	LOD	Units	Q
67-64-1	Acetone	5.0 U	10	5.0	ug/l	
71-43-2	Benzene	0.50 U	0.50	0.50	ug/l	
108-86-1	Bromobenzene	1.0 U	5.0	1.0	ug/l	
74-97-5	Bromochloromethane	0.50 U	5.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.50 U	1.0	0.50	ug/l	
75-25-2	Bromoform	0.50 U	1.0	0.50	ug/l	
74-83-9	Bromomethane	1.0 U	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	5.0 U	5.0	5.0	ug/l	
104-51-8	n-Butylbenzene	1.0 U	5.0	1.0	ug/l	
135-98-8	sec-Butylbenzene	1.0 U	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	1.0 U	5.0	1.0	ug/l	
75-15-0	Carbon disulfide	0.50 U	5.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	0.50 U	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	0.50 U	1.0	0.50	ug/l	
75-00-3	Chloroethane	0.50 U	2.0	0.50	ug/l	
67-66-3	Chloroform	0.50 U	1.0	0.50	ug/l	
74-87-3	Chloromethane	1.0 U	2.0	1.0	ug/l	
95-49-8	o-Chlorotoluene	1.0 U	5.0	1.0	ug/l	
106-43-4	p-Chlorotoluene	1.0 U	5.0	1.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
124-48-1	Dibromochloromethane	0.50 U	1.0	0.50	ug/l	
106-93-4	1,2-Dibromoethane	1.0 U	1.0	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	0.50 U	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	0.50 U	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	0.50 U	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	1.0 U	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	0.50 U	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.50 U	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethene	0.50 U	1.0	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethene	0.50 U	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	0.50 U	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	0.50 U	2.0	0.50	ug/l	

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC39148-5	**Date Sampled:**	06/05/15
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/05/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

VOA 8260 List

CAS No.	Compound	Result	LOQ	LOD	Units	Q
142-28-9	1,3-Dichloropropane	1.0 U	5.0	1.0	ug/l	
594-20-7	2,2-Dichloropropane	2.0 U	5.0	2.0	ug/l	
563-58-6	1,1-Dichloropropene	0.50 U	5.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.50 U	0.50	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.50 U	0.50	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
87-68-3	Hexachlorobutadiene	1.0 U	5.0	1.0	ug/l	
591-78-6	2-Hexanone	5.0 U	5.0	5.0	ug/l	
74-88-4	Iodomethane	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	1.0 U	5.0	1.0	ug/l	
99-87-6	p-Isopropyltoluene	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.50 U	1.0	0.50	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.0 U	5.0	2.0	ug/l	
74-95-3	Methylene bromide	1.0 U	5.0	1.0	ug/l	
75-09-2	Methylene chloride	1.0 U	2.0	1.0	ug/l	
91-20-3	Naphthalene	2.0 U	5.0	2.0	ug/l	
103-65-1	n-Propylbenzene	1.0 U	5.0	1.0	ug/l	
100-42-5	Styrene	0.50 U	5.0	0.50	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	0.50 U	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.50 U	0.50	0.50	ug/l	
127-18-4	Tetrachloroethene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
87-61-6	1,2,3-Trichlorobenzene	2.0 U	5.0	2.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	1.0 U	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	0.50 U	1.0	0.50	ug/l	
79-00-5	1,1,2-Trichloroethane	0.50 U	1.0	0.50	ug/l	
79-01-6	Trichloroethene	0.50 U	1.0	0.50	ug/l	
75-69-4	Trichlorofluoromethane	1.0 U	1.0	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	1.0 U	5.0	1.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.50 U	5.0	0.50	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.50 U	5.0	0.50	ug/l	
108-05-4	Vinyl Acetate	2.0 U	5.0	2.0	ug/l	
75-01-4	Vinyl chloride	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	1.0 U	1.0	1.0	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	0.50 U	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-133%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC39148-5	**Date Sampled:**	06/05/15
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/05/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	100%		85-114%
460-00-4	4-Bromofluorobenzene	80%		70-134%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking #:
Bottle Order Control #:
Accutest Quote #:
Accutest Job #: MC39148

Client / Reporting Information

Company Name: H+S Environmental
Street Address: 160 E MAIN ST
City State Zip: WESTBORO MA
Project Contact / E-mail: ELIZ ANDERSON
Phone # / Fax #: 5083067442
Sampler(s) Name(s) / Phone #: KEVIN ANDERSON

Project Information

Project Name: FORT DEVENS - SHEPLEY'S HILL
Street:
City: DEVENS, MA
Project #:
Client PO #:
Project Manager: Elizabeth Anderson

Billing Information (If different from Report to)

Company Name:
Street Address:
City State Zip:
Attention: PO#:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB- Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	Dissolved Metals (Full list)	Dissolved Arsenic	Alkalinity	Chloride	Sulfate	Dissolved Organic Carbon	VOC's via 8260	LAB USE ONLY
-1F	SHM-96-58-06052015		06/05/15	1145	KA	W	5			X		X					✓	✓	✓	✓	✓	✓		
-2F	SHM-11-02-06052015		↓	945	↓	↓	5			X		X					↓	↓	↓	↓	↓	↓		
-3F	SHL-20-06052015		↓	945	↓	↓	5			X		X					↓	↓	↓	↓	↓	↓		
-4F	SHL-11-06042015		06/04/15	1555	↓	↓	5			X		X					↓	↓	↓	↓	↓	↓		
-5F	Trip Blank						2	X															X	

5F, 2F
3M4

Turnaround Time (Business days)

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [x] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [x] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

per QAPP submitted to USACE
Samples field filtered

Sample Custody must be documented below each time samples change possession, including courier delivery. 16:55

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	6/5/14	1	2	6/5/15	2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ]

On Ice [x] Cooler Temp. 3.1

MC39148: Chain of Custody
Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC39148 **Client:** H&S ENVIR. **Project:** FORT DEVENS

Date / Time Received: 6/5/2015 4:55:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (3.1/3.1);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	G1;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC39148: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1233	SW846 8260C						
MSU1233-BS	67-64-1	Acetone	BSP	REC	179 [a]	%	39-160
MSU1233-BS	71-43-2	Benzene	BSP	REC	82	%	79-120
MSU1233-BS	108-86-1	Bromobenzene	BSP	REC	91	%	80-120
MSU1233-BS	74-97-5	Bromochloromethane	BSP	REC	83	%	78-123
MSU1233-BS	75-27-4	Bromodichloromethane	BSP	REC	74	%	79-125
MSU1233-BS	75-25-2	Bromoform	BSP	REC	91	%	66-130
MSU1233-BS	74-83-9	Bromomethane	BSP	REC	85	%	53-141
MSU1233-BS	78-93-3	2-Butanone (MEK)	BSP	REC	101	%	56-143
MSU1233-BS	104-51-8	n-Butylbenzene	BSP	REC	90	%	75-128
MSU1233-BS	135-98-8	sec-Butylbenzene	BSP	REC	94	%	77-126
MSU1233-BS	98-06-6	tert-Butylbenzene	BSP	REC	83	%	78-124
MSU1233-BS	75-15-0	Carbon disulfide	BSP	REC	90	%	64-133
MSU1233-BS	56-23-5	Carbon tetrachloride	BSP	REC	88	%	72-136
MSU1233-BS	108-90-7	Chlorobenzene	BSP	REC	98	%	82-118
MSU1233-BS	75-00-3	Chloroethane	BSP	REC	84	%	60-138
MSU1233-BS	67-66-3	Chloroform	BSP	REC	81	%	79-124
MSU1233-BS	74-87-3	Chloromethane	BSP	REC	85	%	50-139
MSU1233-BS	95-49-8	o-Chlorotoluene	BSP	REC	85	%	79-122
MSU1233-BS	106-43-4	p-Chlorotoluene	BSP	REC	83	%	78-122
MSU1233-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	90	%	62-128
MSU1233-BS	124-48-1	Dibromochloromethane	BSP	REC	92	%	74-126
MSU1233-BS	106-93-4	1,2-Dibromoethane	BSP	REC	91	%	77-121
MSU1233-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	93	%	80-119
MSU1233-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	91	%	80-119
MSU1233-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	92	%	79-118
MSU1233-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	130	%	32-152
MSU1233-BS	75-34-3	1,1-Dichloroethane	BSP	REC	75	%	77-125
MSU1233-BS	107-06-2	1,2-Dichloroethane	BSP	REC	74	%	73-128
MSU1233-BS	75-35-4	1,1-Dichloroethene	BSP	REC	91	%	71-131
MSU1233-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	91	%	78-123
MSU1233-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	77	%	75-124
MSU1233-BS	78-87-5	1,2-Dichloropropane	BSP	REC	73 [b]	%	78-122
MSU1233-BS	142-28-9	1,3-Dichloropropane	BSP	REC	97	%	80-119
MSU1233-BS	594-20-7	2,2-Dichloropropane	BSP	REC	67	%	60-139
MSU1233-BS	563-58-6	1,1-Dichloropropene	BSP	REC	79	%	79-125
MSU1233-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	79	%	75-124
MSU1233-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	60 [b]	%	73-127
MSU1233-BS	100-41-4	Ethylbenzene	BSP	REC	94	%	79-121
MSU1233-BS	87-68-3	Hexachlorobutadiene	BSP	REC	100	%	66-134
MSU1233-BS	591-78-6	2-Hexanone	BSP	REC	96	%	57-139
MSU1233-BS	74-88-4	Iodomethane	BSP	REC	97	%	69-131
MSU1233-BS	98-82-8	Isopropylbenzene	BSP	REC	93	%	72-131

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1233-BS	99-87-6	p-Isopropyltoluene	BSP	REC	94	%	77-127
MSU1233-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	76	%	71-124
MSU1233-BS	108-10-1	4-Methyl-2-pentanone (MIBK)	BSP	REC	64	%	67-130
MSU1233-BS	74-95-3	Methylene bromide	BSP	REC	81	%	79-123
MSU1233-BS	75-09-2	Methylene chloride	BSP	REC	76	%	74-124
MSU1233-BS	91-20-3	Naphthalene	BSP	REC	98	%	61-128
MSU1233-BS	103-65-1	n-Propylbenzene	BSP	REC	87	%	76-126
MSU1233-BS	100-42-5	Styrene	BSP	REC	87	%	78-123
MSU1233-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	116	%	78-124
MSU1233-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	77	%	71-121
MSU1233-BS	127-18-4	Tetrachloroethene	BSP	REC	113	%	74-129
MSU1233-BS	108-88-3	Toluene	BSP	REC	79	%	80-121
MSU1233-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	105	%	69-129
MSU1233-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	111	%	69-130
MSU1233-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	71	%	74-131
MSU1233-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	66 [b]	%	80-119
MSU1233-BS	79-01-6	Trichloroethene	BSP	REC	81	%	79-123
MSU1233-BS	75-69-4	Trichlorofluoromethane	BSP	REC	77	%	65-141
MSU1233-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	74	%	73-122
MSU1233-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	89	%	76-124
MSU1233-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	93	%	75-124
MSU1233-BS	108-05-4	Vinyl Acetate	BSP	REC	81	%	54-146
MSU1233-BS	75-01-4	Vinyl chloride	BSP	REC	85	%	58-137
MSU1233-BS		m,p-Xylene	BSP	REC	97	%	80-121
MSU1233-BS	95-47-6	o-Xylene	BSP	REC	97	%	78-122
MSU1233-BS	1330-20-7	Xylene (total)	BSP	REC	97	%	79-121
MSU1233-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	92	%	80-119
MSU1233-BS	2037-26-5	Toluene-D8	BSP	SURR	89	%	89-112
MSU1233-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	88	%	85-114
MSU1233-BSD	67-64-1	Acetone	BSD	REC	137	%	39-160
MSU1233-BSD	71-43-2	Benzene	BSD	REC	96	%	79-120
MSU1233-BSD	108-86-1	Bromobenzene	BSD	REC	108	%	80-120
MSU1233-BSD	74-97-5	Bromochloromethane	BSD	REC	96	%	78-123
MSU1233-BSD	75-27-4	Bromodichloromethane	BSD	REC	91	%	79-125
MSU1233-BSD	75-25-2	Bromoform	BSD	REC	102	%	66-130
MSU1233-BSD	74-83-9	Bromomethane	BSD	REC	124	%	53-141
MSU1233-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	120	%	56-143
MSU1233-BSD	104-51-8	n-Butylbenzene	BSD	REC	105	%	75-128
MSU1233-BSD	135-98-8	sec-Butylbenzene	BSD	REC	110	%	77-126
MSU1233-BSD	98-06-6	tert-Butylbenzene	BSD	REC	89	%	78-124
MSU1233-BSD	75-15-0	Carbon disulfide	BSD	REC	120	%	64-133
MSU1233-BSD	56-23-5	Carbon tetrachloride	BSD	REC	118	%	72-136
MSU1233-BSD	108-90-7	Chlorobenzene	BSD	REC	116	%	82-118
MSU1233-BSD	75-00-3	Chloroethane	BSD	REC	121	%	60-138
MSU1233-BSD	67-66-3	Chloroform	BSD	REC	93	%	79-124

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1233-BSD	74-87-3	Chloromethane	BSD	REC	124	%	50-139
MSU1233-BSD	95-49-8	o-Chlorotoluene	BSD	REC	99	%	79-122
MSU1233-BSD	106-43-4	p-Chlorotoluene	BSD	REC	101	%	78-122
MSU1233-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	76	%	62-128
MSU1233-BSD	124-48-1	Dibromochloromethane	BSD	REC	102	%	74-126
MSU1233-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	108	%	77-121
MSU1233-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	106	%	80-119
MSU1233-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	107	%	80-119
MSU1233-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	108	%	79-118
MSU1233-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	198 [a]	%	32-152
MSU1233-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	85	%	77-125
MSU1233-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	91	%	73-128
MSU1233-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	110	%	71-131
MSU1233-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	106	%	78-123
MSU1233-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	89	%	75-124
MSU1233-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	94	%	78-122
MSU1233-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	114	%	80-119
MSU1233-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	94	%	60-139
MSU1233-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	87	%	79-125
MSU1233-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	112	%	75-124
MSU1233-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	95	%	73-127
MSU1233-BSD	100-41-4	Ethylbenzene	BSD	REC	108	%	79-121
MSU1233-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	117	%	66-134
MSU1233-BSD	591-78-6	2-Hexanone	BSD	REC	113	%	57-139
MSU1233-BSD	74-88-4	Iodomethane	BSD	REC	125	%	69-131
MSU1233-BSD	98-82-8	Isopropylbenzene	BSD	REC	103	%	72-131
MSU1233-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	111	%	77-127
MSU1233-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	92	%	71-124
MSU1233-BSD	108-10-1	4-Methyl-2-pentanone (MIBK)	BSD	REC	74	%	67-130
MSU1233-BSD	74-95-3	Methylene bromide	BSD	REC	93	%	79-123
MSU1233-BSD	75-09-2	Methylene chloride	BSD	REC	93	%	74-124
MSU1233-BSD	91-20-3	Naphthalene	BSD	REC	89	%	61-128
MSU1233-BSD	103-65-1	n-Propylbenzene	BSD	REC	102	%	76-126
MSU1233-BSD	100-42-5	Styrene	BSD	REC	111	%	78-123
MSU1233-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	118	%	78-124
MSU1233-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	82	%	71-121
MSU1233-BSD	127-18-4	Tetrachloroethene	BSD	REC	122	%	74-129
MSU1233-BSD	108-88-3	Toluene	BSD	REC	112	%	80-121
MSU1233-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	105	%	69-129
MSU1233-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	115	%	69-130
MSU1233-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	96	%	74-131
MSU1233-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	97	%	80-119
MSU1233-BSD	79-01-6	Trichloroethene	BSD	REC	96	%	79-123
MSU1233-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	106	%	65-141
MSU1233-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	78	%	73-122

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1233-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	104	%	76-124
MSU1233-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	108	%	75-124
MSU1233-BSD	108-05-4	Vinyl Acetate	BSD	REC	80	%	54-146
MSU1233-BSD	75-01-4	Vinyl chloride	BSD	REC	125	%	58-137
MSU1233-BSD		m,p-Xylene	BSD	REC	113	%	80-121
MSU1233-BSD	95-47-6	o-Xylene	BSD	REC	108	%	78-122
MSU1233-BSD	1330-20-7	Xylene (total)	BSD	REC	111	%	79-121
MSU1233-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	88	%	80-119
MSU1233-BSD	2037-26-5	Toluene-D8	BSD	SURR	107	%	89-112
MSU1233-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	89	%	85-114
MC39175-10MS*	67-64-1	Acetone	MS	REC	109	%	39-160
MC39175-10MS*	71-43-2	Benzene	MS	REC	93	%	79-120
MC39175-10MS*	108-86-1	Bromobenzene	MS	REC	93	%	80-120
MC39175-10MS*	74-97-5	Bromochloromethane	MS	REC	99	%	78-123
MC39175-10MS*	75-27-4	Bromodichloromethane	MS	REC	84	%	79-125
MC39175-10MS*	75-25-2	Bromoform	MS	REC	89	%	66-130
MC39175-10MS*	74-83-9	Bromomethane	MS	REC	118	%	53-141
MC39175-10MS*	78-93-3	2-Butanone (MEK)	MS	REC	99	%	56-143
MC39175-10MS*	104-51-8	n-Butylbenzene	MS	REC	86	%	75-128
MC39175-10MS*	135-98-8	sec-Butylbenzene	MS	REC	93	%	77-126
MC39175-10MS*	98-06-6	tert-Butylbenzene	MS	REC	79	%	78-124
MC39175-10MS*	75-15-0	Carbon disulfide	MS	REC	109	%	64-133
MC39175-10MS*	56-23-5	Carbon tetrachloride	MS	REC	112	%	72-136
MC39175-10MS*	108-90-7	Chlorobenzene	MS	REC	97	%	82-118
MC39175-10MS*	75-00-3	Chloroethane	MS	REC	118	%	60-138
MC39175-10MS*	67-66-3	Chloroform	MS	REC	94	%	79-124
MC39175-10MS*	74-87-3	Chloromethane	MS	REC	124	%	50-139
MC39175-10MS*	95-49-8	o-Chlorotoluene	MS	REC	86	%	79-122
MC39175-10MS*	106-43-4	p-Chlorotoluene	MS	REC	84	%	78-122
MC39175-10MS*	96-12-8	1,2-Dibromo-3-chloropropane	MS	REC	70	%	62-128
MC39175-10MS*	124-48-1	Dibromochloromethane	MS	REC	88	%	74-126
MC39175-10MS*	106-93-4	1,2-Dibromoethane	MS	REC	94	%	77-121
MC39175-10MS*	95-50-1	1,2-Dichlorobenzene	MS	REC	93	%	80-119
MC39175-10MS*	541-73-1	1,3-Dichlorobenzene	MS	REC	91	%	80-119
MC39175-10MS*	106-46-7	1,4-Dichlorobenzene	MS	REC	94	%	79-118
MC39175-10MS*	75-71-8	Dichlorodifluoromethane	MS	REC	183 [a]	%	32-152
MC39175-10MS*	75-34-3	1,1-Dichloroethane	MS	REC	86	%	77-125
MC39175-10MS*	107-06-2	1,2-Dichloroethane	MS	REC	93	%	73-128
MC39175-10MS*	75-35-4	1,1-Dichloroethene	MS	REC	108	%	71-131
MC39175-10MS*	156-59-2	cis-1,2-Dichloroethene	MS	REC	105	%	78-123
MC39175-10MS*	156-60-5	trans-1,2-Dichloroethene	MS	REC	89	%	75-124
MC39175-10MS*	78-87-5	1,2-Dichloropropane	MS	REC	87	%	78-122
MC39175-10MS*	142-28-9	1,3-Dichloropropane	MS	REC	99	%	80-119
MC39175-10MS*	594-20-7	2,2-Dichloropropane	MS	REC	74	%	60-139
MC39175-10MS*	563-58-6	1,1-Dichloropropene	MS	REC	82	%	79-125

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MC39175-10MS*	10061-01-5	cis-1,3-Dichloropropene	MS	REC	90	%	75-124
MC39175-10MS*	10061-02-6	trans-1,3-Dichloropropene	MS	REC	75 [b]	%	73-127
MC39175-10MS*	100-41-4	Ethylbenzene	MS	REC	92	%	79-121
MC39175-10MS*	87-68-3	Hexachlorobutadiene	MS	REC	93	%	66-134
MC39175-10MS*	591-78-6	2-Hexanone	MS	REC	77	%	57-139
MC39175-10MS*	74-88-4	Iodomethane	MS	REC	123	%	69-131
MC39175-10MS*	98-82-8	Isopropylbenzene	MS	REC	90	%	72-131
MC39175-10MS*	99-87-6	p-Isopropyltoluene	MS	REC	93	%	77-127
MC39175-10MS*	1634-04-4	Methyl Tert Butyl Ether	MS	REC	95	%	71-124
MC39175-10MS*	108-10-1	4-Methyl-2-pentanone (MIBK)	MS	REC	75	%	67-130
MC39175-10MS*	74-95-3	Methylene bromide	MS	REC	94	%	79-123
MC39175-10MS*	75-09-2	Methylene chloride	MS	REC	96	%	74-124
MC39175-10MS*	91-20-3	Naphthalene	MS	REC	72	%	61-128
MC39175-10MS*	103-65-1	n-Propylbenzene	MS	REC	85	%	76-126
MC39175-10MS*	100-42-5	Styrene	MS	REC	86	%	78-123
MC39175-10MS*	630-20-6	1,1,1,2-Tetrachloroethane	MS	REC	112	%	78-124
MC39175-10MS*	79-34-5	1,1,2,2-Tetrachloroethane	MS	REC	81	%	71-121
MC39175-10MS*	127-18-4	Tetrachloroethene	MS	REC	101	%	74-129
MC39175-10MS*	108-88-3	Toluene	MS	REC	95	%	80-121
MC39175-10MS*	87-61-6	1,2,3-Trichlorobenzene	MS	REC	83	%	69-129
MC39175-10MS*	120-82-1	1,2,4-Trichlorobenzene	MS	REC	97	%	69-130
MC39175-10MS*	71-55-6	1,1,1-Trichloroethane	MS	REC	92	%	74-131
MC39175-10MS*	79-00-5	1,1,2-Trichloroethane	MS	REC	87	%	80-119
MC39175-10MS*	79-01-6	Trichloroethene	MS	REC	84	%	79-123
MC39175-10MS*	75-69-4	Trichlorofluoromethane	MS	REC	98	%	65-141
MC39175-10MS*	96-18-4	1,2,3-Trichloropropane	MS	REC	75	%	73-122
MC39175-10MS*	95-63-6	1,2,4-Trimethylbenzene	MS	REC	87	%	76-124
MC39175-10MS*	108-67-8	1,3,5-Trimethylbenzene	MS	REC	92	%	75-124
MC39175-10MS*	108-05-4	Vinyl Acetate	MS	REC	77	%	54-146
MC39175-10MS*	75-01-4	Vinyl chloride	MS	REC	118	%	58-137
MC39175-10MS*		m,p-Xylene	MS	REC	96	%	80-121
MC39175-10MS*	95-47-6	o-Xylene	MS	REC	96	%	78-122
MC39175-10MS*	1330-20-7	Xylene (total)	MS	REC	96	%	79-121
MC39175-10MS*	1868-53-7	Dibromofluoromethane	MS	SURR	100	%	80-119
MC39175-10MS*	2037-26-5	Toluene-D8	MS	SURR	101	%	89-112
MC39175-10MS*	460-00-4	4-Bromofluorobenzene	MS	SURR	86	%	85-114
MC39175-10MSD*	67-64-1	Acetone	MSD	REC	113	%	39-160
MC39175-10MSD*	67-64-1	Acetone	MSD	RPD	4	%	20
MC39175-10MSD*	71-43-2	Benzene	MSD	REC	91	%	79-120
MC39175-10MSD*	71-43-2	Benzene	MSD	RPD	2	%	20
MC39175-10MSD*	108-86-1	Bromobenzene	MSD	REC	102	%	80-120
MC39175-10MSD*	108-86-1	Bromobenzene	MSD	RPD	9	%	20
MC39175-10MSD*	74-97-5	Bromochloromethane	MSD	REC	99	%	78-123
MC39175-10MSD*	74-97-5	Bromochloromethane	MSD	RPD	0	%	20
MC39175-10MSD*	75-27-4	Bromodichloromethane	MSD	REC	87	%	79-125

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MC39175-10MSD*	75-27-4	Bromodichloromethane	MSD	RPD	4	%	20
MC39175-10MSD*	75-25-2	Bromoform	MSD	REC	95	%	66-130
MC39175-10MSD*	75-25-2	Bromoform	MSD	RPD	7	%	20
MC39175-10MSD*	74-83-9	Bromomethane	MSD	REC	119	%	53-141
MC39175-10MSD*	74-83-9	Bromomethane	MSD	RPD	0	%	20
MC39175-10MSD*	78-93-3	2-Butanone (MEK)	MSD	REC	101	%	56-143
MC39175-10MSD*	78-93-3	2-Butanone (MEK)	MSD	RPD	3	%	20
MC39175-10MSD*	104-51-8	n-Butylbenzene	MSD	REC	91	%	75-128
MC39175-10MSD*	104-51-8	n-Butylbenzene	MSD	RPD	5	%	20
MC39175-10MSD*	135-98-8	sec-Butylbenzene	MSD	REC	97	%	77-126
MC39175-10MSD*	135-98-8	sec-Butylbenzene	MSD	RPD	4	%	20
MC39175-10MSD*	98-06-6	tert-Butylbenzene	MSD	REC	80	%	78-124
MC39175-10MSD*	98-06-6	tert-Butylbenzene	MSD	RPD	2	%	20
MC39175-10MSD*	75-15-0	Carbon disulfide	MSD	REC	111	%	64-133
MC39175-10MSD*	75-15-0	Carbon disulfide	MSD	RPD	2	%	20
MC39175-10MSD*	56-23-5	Carbon tetrachloride	MSD	REC	108	%	72-136
MC39175-10MSD*	56-23-5	Carbon tetrachloride	MSD	RPD	4	%	20
MC39175-10MSD*	108-90-7	Chlorobenzene	MSD	REC	101	%	82-118
MC39175-10MSD*	108-90-7	Chlorobenzene	MSD	RPD	4	%	20
MC39175-10MSD*	75-00-3	Chloroethane	MSD	REC	120	%	60-138
MC39175-10MSD*	75-00-3	Chloroethane	MSD	RPD	1	%	20
MC39175-10MSD*	67-66-3	Chloroform	MSD	REC	93	%	79-124
MC39175-10MSD*	67-66-3	Chloroform	MSD	RPD	1	%	20
MC39175-10MSD*	74-87-3	Chloromethane	MSD	REC	125	%	50-139
MC39175-10MSD*	74-87-3	Chloromethane	MSD	RPD	1	%	20
MC39175-10MSD*	95-49-8	o-Chlorotoluene	MSD	REC	91	%	79-122
MC39175-10MSD*	95-49-8	o-Chlorotoluene	MSD	RPD	6	%	20
MC39175-10MSD*	106-43-4	p-Chlorotoluene	MSD	REC	92	%	78-122
MC39175-10MSD*	106-43-4	p-Chlorotoluene	MSD	RPD	10	%	20
MC39175-10MSD*	96-12-8	1,2-Dibromo-3-chloropropane	MSD	REC	78	%	62-128
MC39175-10MSD*	96-12-8	1,2-Dibromo-3-chloropropane	MSD	RPD	11	%	20
MC39175-10MSD*	124-48-1	Dibromochloromethane	MSD	REC	93	%	74-126
MC39175-10MSD*	124-48-1	Dibromochloromethane	MSD	RPD	5	%	20
MC39175-10MSD*	106-93-4	1,2-Dibromoethane	MSD	REC	106	%	77-121
MC39175-10MSD*	106-93-4	1,2-Dibromoethane	MSD	RPD	12	%	20
MC39175-10MSD*	95-50-1	1,2-Dichlorobenzene	MSD	REC	95	%	80-119
MC39175-10MSD*	95-50-1	1,2-Dichlorobenzene	MSD	RPD	2	%	20
MC39175-10MSD*	541-73-1	1,3-Dichlorobenzene	MSD	REC	96	%	80-119
MC39175-10MSD*	541-73-1	1,3-Dichlorobenzene	MSD	RPD	5	%	20
MC39175-10MSD*	106-46-7	1,4-Dichlorobenzene	MSD	REC	97	%	79-118
MC39175-10MSD*	106-46-7	1,4-Dichlorobenzene	MSD	RPD	4	%	20
MC39175-10MSD*	75-71-8	Dichlorodifluoromethane	MSD	REC	188 [a]	%	32-152
MC39175-10MSD*	75-71-8	Dichlorodifluoromethane	MSD	RPD	3	%	20
MC39175-10MSD*	75-34-3	1,1-Dichloroethane	MSD	REC	83	%	77-125
MC39175-10MSD*	75-34-3	1,1-Dichloroethane	MSD	RPD	3	%	20

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MC39175-10MSD*	107-06-2	1,2-Dichloroethane	MSD	REC	78	%	73-128
MC39175-10MSD*	107-06-2	1,2-Dichloroethane	MSD	RPD	18	%	20
MC39175-10MSD*	75-35-4	1,1-Dichloroethene	MSD	REC	108	%	71-131
MC39175-10MSD*	75-35-4	1,1-Dichloroethene	MSD	RPD	0	%	20
MC39175-10MSD*	156-59-2	cis-1,2-Dichloroethene	MSD	REC	104	%	78-123
MC39175-10MSD*	156-59-2	cis-1,2-Dichloroethene	MSD	RPD	1	%	20
MC39175-10MSD*	156-60-5	trans-1,2-Dichloroethene	MSD	REC	89	%	75-124
MC39175-10MSD*	156-60-5	trans-1,2-Dichloroethene	MSD	RPD	0	%	20
MC39175-10MSD*	78-87-5	1,2-Dichloropropane	MSD	REC	90	%	78-122
MC39175-10MSD*	78-87-5	1,2-Dichloropropane	MSD	RPD	4	%	20
MC39175-10MSD*	142-28-9	1,3-Dichloropropane	MSD	REC	108	%	80-119
MC39175-10MSD*	142-28-9	1,3-Dichloropropane	MSD	RPD	9	%	20
MC39175-10MSD*	594-20-7	2,2-Dichloropropane	MSD	REC	73	%	60-139
MC39175-10MSD*	594-20-7	2,2-Dichloropropane	MSD	RPD	2	%	20
MC39175-10MSD*	563-58-6	1,1-Dichloropropene	MSD	REC	80	%	79-125
MC39175-10MSD*	563-58-6	1,1-Dichloropropene	MSD	RPD	3	%	20
MC39175-10MSD*	10061-01-5	cis-1,3-Dichloropropene	MSD	REC	102	%	75-124
MC39175-10MSD*	10061-01-5	cis-1,3-Dichloropropene	MSD	RPD	12	%	20
MC39175-10MSD*	10061-02-6	trans-1,3-Dichloropropene	MSD	REC	91	%	73-127
MC39175-10MSD*	10061-02-6	trans-1,3-Dichloropropene	MSD	RPD	20	%	20
MC39175-10MSD*	100-41-4	Ethylbenzene	MSD	REC	93	%	79-121
MC39175-10MSD*	100-41-4	Ethylbenzene	MSD	RPD	2	%	20
MC39175-10MSD*	87-68-3	Hexachlorobutadiene	MSD	REC	96	%	66-134
MC39175-10MSD*	87-68-3	Hexachlorobutadiene	MSD	RPD	4	%	20
MC39175-10MSD*	591-78-6	2-Hexanone	MSD	REC	87	%	57-139
MC39175-10MSD*	591-78-6	2-Hexanone	MSD	RPD	11	%	20
MC39175-10MSD*	74-88-4	Iodomethane	MSD	REC	124	%	69-131
MC39175-10MSD*	74-88-4	Iodomethane	MSD	RPD	1	%	20
MC39175-10MSD*	98-82-8	Isopropylbenzene	MSD	REC	93	%	72-131
MC39175-10MSD*	98-82-8	Isopropylbenzene	MSD	RPD	4	%	20
MC39175-10MSD*	99-87-6	p-Isopropyltoluene	MSD	REC	98	%	77-127
MC39175-10MSD*	99-87-6	p-Isopropyltoluene	MSD	RPD	6	%	20
MC39175-10MSD*	1634-04-4	Methyl Tert Butyl Ether	MSD	REC	97	%	71-124
MC39175-10MSD*	1634-04-4	Methyl Tert Butyl Ether	MSD	RPD	2	%	20
MC39175-10MSD*	108-10-1	4-Methyl-2-pentanone (MIBK)	MSD	REC	88	%	67-130
MC39175-10MSD*	108-10-1	4-Methyl-2-pentanone (MIBK)	MSD	RPD	16	%	20
MC39175-10MSD*	74-95-3	Methylene bromide	MSD	REC	106	%	79-123
MC39175-10MSD*	74-95-3	Methylene bromide	MSD	RPD	12	%	20
MC39175-10MSD*	75-09-2	Methylene chloride	MSD	REC	94	%	74-124
MC39175-10MSD*	75-09-2	Methylene chloride	MSD	RPD	2	%	20
MC39175-10MSD*	91-20-3	Naphthalene	MSD	REC	80	%	61-128
MC39175-10MSD*	91-20-3	Naphthalene	MSD	RPD	11	%	20
MC39175-10MSD*	103-65-1	n-Propylbenzene	MSD	REC	92	%	76-126
MC39175-10MSD*	103-65-1	n-Propylbenzene	MSD	RPD	7	%	20
MC39175-10MSD*	100-42-5	Styrene	MSD	REC	92	%	78-123

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MC39175-10MSD*	100-42-5	Styrene	MSD	RPD	7	%	20
MC39175-10MSD*	630-20-6	1,1,1,2-Tetrachloroethane	MSD	REC	105	%	78-124
MC39175-10MSD*	630-20-6	1,1,1,2-Tetrachloroethane	MSD	RPD	7	%	20
MC39175-10MSD*	79-34-5	1,1,2,2-Tetrachloroethane	MSD	REC	81	%	71-121
MC39175-10MSD*	79-34-5	1,1,2,2-Tetrachloroethane	MSD	RPD	0	%	20
MC39175-10MSD*	127-18-4	Tetrachloroethene	MSD	REC	101	%	74-129
MC39175-10MSD*	127-18-4	Tetrachloroethene	MSD	RPD	0	%	20
MC39175-10MSD*	108-88-3	Toluene	MSD	REC	105	%	80-121
MC39175-10MSD*	108-88-3	Toluene	MSD	RPD	10	%	20
MC39175-10MSD*	87-61-6	1,2,3-Trichlorobenzene	MSD	REC	90	%	69-129
MC39175-10MSD*	87-61-6	1,2,3-Trichlorobenzene	MSD	RPD	7	%	20
MC39175-10MSD*	120-82-1	1,2,4-Trichlorobenzene	MSD	REC	98	%	69-130
MC39175-10MSD*	120-82-1	1,2,4-Trichlorobenzene	MSD	RPD	1	%	20
MC39175-10MSD*	71-55-6	1,1,1-Trichloroethane	MSD	REC	94	%	74-131
MC39175-10MSD*	71-55-6	1,1,1-Trichloroethane	MSD	RPD	2	%	20
MC39175-10MSD*	79-00-5	1,1,2-Trichloroethane	MSD	REC	100	%	80-119
MC39175-10MSD*	79-00-5	1,1,2-Trichloroethane	MSD	RPD	14	%	20
MC39175-10MSD*	79-01-6	Trichloroethene	MSD	REC	92	%	79-123
MC39175-10MSD*	79-01-6	Trichloroethene	MSD	RPD	9	%	20
MC39175-10MSD*	75-69-4	Trichlorofluoromethane	MSD	REC	104	%	65-141
MC39175-10MSD*	75-69-4	Trichlorofluoromethane	MSD	RPD	6	%	20
MC39175-10MSD*	96-18-4	1,2,3-Trichloropropane	MSD	REC	84	%	73-122
MC39175-10MSD*	96-18-4	1,2,3-Trichloropropane	MSD	RPD	12	%	20
MC39175-10MSD*	95-63-6	1,2,4-Trimethylbenzene	MSD	REC	92	%	76-124
MC39175-10MSD*	95-63-6	1,2,4-Trimethylbenzene	MSD	RPD	6	%	20
MC39175-10MSD*	108-67-8	1,3,5-Trimethylbenzene	MSD	REC	96	%	75-124
MC39175-10MSD*	108-67-8	1,3,5-Trimethylbenzene	MSD	RPD	5	%	20
MC39175-10MSD*	108-05-4	Vinyl Acetate	MSD	REC	73	%	54-146
MC39175-10MSD*	108-05-4	Vinyl Acetate	MSD	RPD	5	%	20
MC39175-10MSD*	75-01-4	Vinyl chloride	MSD	REC	123	%	58-137
MC39175-10MSD*	75-01-4	Vinyl chloride	MSD	RPD	4	%	20
MC39175-10MSD*		m,p-Xylene	MSD	REC	97	%	80-121
MC39175-10MSD*		m,p-Xylene	MSD	RPD	2	%	20
MC39175-10MSD*	95-47-6	o-Xylene	MSD	REC	94	%	78-122
MC39175-10MSD*	95-47-6	o-Xylene	MSD	RPD	2	%	20
MC39175-10MSD*	1330-20-7	Xylene (total)	MSD	REC	96	%	79-121
MC39175-10MSD*	1330-20-7	Xylene (total)	MSD	RPD	0	%	20
MC39175-10MSD*	1868-53-7	Dibromofluoromethane	MSD	SURR	94	%	80-119
MC39175-10MSD*	2037-26-5	Toluene-D8	MSD	SURR	107	%	89-112
MC39175-10MSD*	460-00-4	4-Bromofluorobenzene	MSD	SURR	92	%	85-114
MSU1233-MB	1868-53-7	Dibromofluoromethane	MB	SURR	97	%	80-119
MSU1233-MB	2037-26-5	Toluene-D8	MB	SURR	101	%	89-112
MSU1233-MB	460-00-4	4-Bromofluorobenzene	MB	SURR	82	%	85-114
MC39148-5	1868-53-7	Dibromofluoromethane	SAMP	SURR	99	%	80-119
MC39148-5	2037-26-5	Toluene-D8	SAMP	SURR	100	%	89-112

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MC39148-5	460-00-4	4-Bromofluorobenzene	SAMP	SURR	80	%	85-114
MP24709	SW846 6010C						
MP24709-B1	7429-90-5	Aluminum	BSP	REC	99.9	%	86-115
MP24709-B1	7440-36-0	Antimony	BSP	REC	103.8	%	88-113
MP24709-B1	7440-39-3	Barium	BSP	REC	101	%	88-113
MP24709-B1	7440-41-7	Beryllium	BSP	REC	99.8	%	89-112
MP24709-B1	7440-43-9	Cadmium	BSP	REC	104.8	%	88-113
MP24709-B1	7440-70-2	Calcium	BSP	REC	107.2	%	87-113
MP24709-B1	7440-47-3	Chromium	BSP	REC	103	%	90-113
MP24709-B1	7440-48-4	Cobalt	BSP	REC	102.4	%	89-114
MP24709-B1	7440-50-8	Copper	BSP	REC	100	%	86-114
MP24709-B1	7439-89-6	Iron	BSP	REC	102	%	87-115
MP24709-B1	7439-92-1	Lead	BSP	REC	102	%	86-113
MP24709-B1	7439-95-4	Magnesium	BSP	REC	107.6	%	85-113
MP24709-B1	7439-96-5	Manganese	BSP	REC	105.4	%	90-114
MP24709-B1	7440-02-0	Nickel	BSP	REC	104.8	%	88-113
MP24709-B1	7440-09-7	Potassium	BSP	REC	104.8	%	86-114
MP24709-B1	7782-49-2	Selenium	BSP	REC	104.2	%	83-114
MP24709-B1	7440-22-4	Silver	BSP	REC	96.5	%	84-115
MP24709-B1	7440-23-5	Sodium	BSP	REC	110	%	87-115
MP24709-B1	7440-28-0	Thallium	BSP	REC	105.2	%	85-114
MP24709-B1	7440-62-2	Vanadium	BSP	REC	100.6	%	90-111
MP24709-B1	7440-66-6	Zinc	BSP	REC	102.8	%	87-115
MP24709-S1*	7429-90-5	Aluminum	MS	REC	100.9	%	86-115
MP24709-S1*	7440-36-0	Antimony	MS	REC	103.6	%	88-113
MP24709-S1*	7440-39-3	Barium	MS	REC	101.5	%	88-113
MP24709-S1*	7440-41-7	Beryllium	MS	REC	100.2	%	89-112
MP24709-S1*	7440-43-9	Cadmium	MS	REC	104.2	%	88-113
MP24709-S1*	7440-70-2	Calcium	MS	REC	105.2	%	87-113
MP24709-S1*	7440-47-3	Chromium	MS	REC	101.4	%	90-113
MP24709-S1*	7440-48-4	Cobalt	MS	REC	100.9	%	89-114
MP24709-S1*	7440-50-8	Copper	MS	REC	99.1	%	86-114
MP24709-S1*	7439-89-6	Iron	MS	REC	120 [c]	%	87-115
MP24709-S1*	7439-92-1	Lead	MS	REC	99.3	%	86-113
MP24709-S1*	7439-95-4	Magnesium	MS	REC	108.8	%	85-113
MP24709-S1*	7439-96-5	Manganese	MS	REC	80 [c]	%	90-114
MP24709-S1*	7440-02-0	Nickel	MS	REC	102.9	%	88-113
MP24709-S1*	7440-09-7	Potassium	MS	REC	106.4	%	86-114
MP24709-S1*	7782-49-2	Selenium	MS	REC	104	%	83-114
MP24709-S1*	7440-22-4	Silver	MS	REC	96.2	%	84-115
MP24709-S1*	7440-23-5	Sodium	MS	REC	106.8	%	87-115
MP24709-S1*	7440-28-0	Thallium	MS	REC	100.4	%	85-114
MP24709-S1*	7440-62-2	Vanadium	MS	REC	100.4	%	90-111

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP24709-S1*	7440-66-6	Zinc	MS	REC	101.3	%	87-115
MP24709-S2*	7429-90-5	Aluminum	MSD	REC	101.9	%	86-115
MP24709-S2*	7429-90-5	Aluminum	MSD	RPD	1	%	20
MP24709-S2*	7440-36-0	Antimony	MSD	REC	104.2	%	88-113
MP24709-S2*	7440-36-0	Antimony	MSD	RPD	.6	%	20
MP24709-S2*	7440-39-3	Barium	MSD	REC	102.5	%	88-113
MP24709-S2*	7440-39-3	Barium	MSD	RPD	1	%	20
MP24709-S2*	7440-41-7	Beryllium	MSD	REC	101.2	%	89-112
MP24709-S2*	7440-41-7	Beryllium	MSD	RPD	1	%	20
MP24709-S2*	7440-43-9	Cadmium	MSD	REC	104.8	%	88-113
MP24709-S2*	7440-43-9	Cadmium	MSD	RPD	.6	%	20
MP24709-S2*	7440-70-2	Calcium	MSD	REC	109.2	%	87-113
MP24709-S2*	7440-70-2	Calcium	MSD	RPD	1.2	%	20
MP24709-S2*	7440-47-3	Chromium	MSD	REC	102.2	%	90-113
MP24709-S2*	7440-47-3	Chromium	MSD	RPD	.8	%	20
MP24709-S2*	7440-48-4	Cobalt	MSD	REC	102.1	%	89-114
MP24709-S2*	7440-48-4	Cobalt	MSD	RPD	1.1	%	20
MP24709-S2*	7440-50-8	Copper	MSD	REC	99.7	%	86-114
MP24709-S2*	7440-50-8	Copper	MSD	RPD	.6	%	20
MP24709-S2*	7439-89-6	Iron	MSD	REC	130 [d]	%	87-115
MP24709-S2*	7439-89-6	Iron	MSD	RPD	.8	%	20
MP24709-S2*	7439-92-1	Lead	MSD	REC	100	%	86-113
MP24709-S2*	7439-92-1	Lead	MSD	RPD	.7	%	20
MP24709-S2*	7439-95-4	Magnesium	MSD	REC	110	%	85-113
MP24709-S2*	7439-95-4	Magnesium	MSD	RPD	.8	%	20
MP24709-S2*	7439-96-5	Manganese	MSD	REC	90	%	90-114
MP24709-S2*	7439-96-5	Manganese	MSD	RPD	1.9	%	20
MP24709-S2*	7440-02-0	Nickel	MSD	REC	103.7	%	88-113
MP24709-S2*	7440-02-0	Nickel	MSD	RPD	.7	%	20
MP24709-S2*	7440-09-7	Potassium	MSD	REC	109.6	%	86-114
MP24709-S2*	7440-09-7	Potassium	MSD	RPD	2	%	20
MP24709-S2*	7782-49-2	Selenium	MSD	REC	104.6	%	83-114
MP24709-S2*	7782-49-2	Selenium	MSD	RPD	.6	%	20
MP24709-S2*	7440-22-4	Silver	MSD	REC	96.2	%	84-115
MP24709-S2*	7440-22-4	Silver	MSD	RPD	0	%	20
MP24709-S2*	7440-23-5	Sodium	MSD	REC	110.4	%	87-115
MP24709-S2*	7440-23-5	Sodium	MSD	RPD	1.3	%	20
MP24709-S2*	7440-28-0	Thallium	MSD	REC	101.4	%	85-114
MP24709-S2*	7440-28-0	Thallium	MSD	RPD	1	%	20
MP24709-S2*	7440-62-2	Vanadium	MSD	REC	100.8	%	90-111
MP24709-S2*	7440-62-2	Vanadium	MSD	RPD	.4	%	20
MP24709-S2*	7440-66-6	Zinc	MSD	REC	101.9	%	87-115
MP24709-S2*	7440-66-6	Zinc	MSD	RPD	.6	%	20

* Sample used for QC is not from job MC39148

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP24709A	SW846 6020A						
MP24709A-B1	7440-38-2	Arsenic	BSP	REC	109	%	84-116
MP24709A-S1*	7440-38-2	Arsenic	MS	REC	113	%	84-116
MP24709A-S2*	7440-38-2	Arsenic	MSD	REC	115	%	84-116
MP24709A-S2*	7440-38-2	Arsenic	MSD	RPD	.6	%	20
MP24711	SW846 7470A						
MP24711-B1	7439-97-6	Mercury	BSP	REC	100	%	82-119
MP24711-S1*	7439-97-6	Mercury	MS	REC	110	%	82-119
MP24711-S2*	7439-97-6	Mercury	MSD	REC	110	%	82-119
MP24711-S2*	7439-97-6	Mercury	MSD	RPD	0	%	20

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Refer to Blank Spike Duplicate.
(c) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
(d) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

* Sample used for QC is not from job MC39148

New England ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1233-MB	U29670.D	1	06/19/15	MC	n/a	n/a	MSU1233

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39148-5

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.0	ug/l	
71-43-2	Benzene	ND	0.50	0.27	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.26	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.18	ug/l	
75-25-2	Bromoform	ND	1.0	0.39	ug/l	
74-83-9	Bromomethane	ND	2.0	0.79	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	3.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.50	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.50	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.57	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.19	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	2.0	0.49	ug/l	
67-66-3	Chloroform	ND	1.0	0.40	ug/l	
74-87-3	Chloromethane	ND	2.0	0.49	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.60	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.46	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	0.83	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.22	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.33	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.24	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.24	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.37	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.53	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.28	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.28	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.48	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.21	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.29	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.7	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.23	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.27	ug/l	

Method Blank Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1233-MB	U29670.D	1	06/19/15	MC	n/a	n/a	MSU1233

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39148-5

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.24	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	0.45	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.7	ug/l	
74-88-4	Iodomethane	ND	5.0	0.50	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.27	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.77	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.27	ug/l	
91-20-3	Naphthalene	ND	5.0	0.61	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.29	ug/l	
100-42-5	Styrene	ND	5.0	0.28	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.25	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.29	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.29	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.78	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.74	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.42	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.32	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.25	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.47	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.39	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.29	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.20	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.4	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.45	ug/l	
	m,p-Xylene	ND	1.0	0.47	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

Method Blank Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1233-MB	U29670.D	1	06/19/15	MC	n/a	n/a	MSU1233

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39148-5

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	72-133%
2037-26-5	Toluene-D8	101%	85-114%
460-00-4	4-Bromofluorobenzene	82%	70-134%

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1233-BS	U29667.D	1	06/18/15	MC	n/a	n/a	MSU1233
MSU1233-BSD	U29668.D	1	06/18/15	MC	n/a	n/a	MSU1233

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39148-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	89.3	179* [a]	68.6	137	26* [a]	14-172/25
71-43-2	Benzene	50	40.8	82	48.1	96	16	68-127/25
108-86-1	Bromobenzene	50	45.4	91	53.9	108	17	74-124/25
74-97-5	Bromochloromethane	50	41.4	83	48.1	96	15	68-135/25
75-27-4	Bromodichloromethane	50	37.1	74	45.3	91	20	72-144/25
75-25-2	Bromoform	50	45.6	91	51.0	102	11	59-147/25
74-83-9	Bromomethane	50	42.7	85	62.2	124	37* [b]	34-175/25
78-93-3	2-Butanone (MEK)	50	50.3	101	59.8	120	17	43-147/25
104-51-8	n-Butylbenzene	50	45.0	90	52.5	105	15	77-136/25
135-98-8	sec-Butylbenzene	50	47.2	94	54.9	110	15	75-134/25
98-06-6	tert-Butylbenzene	50	41.7	83	44.5	89	6	74-132/25
75-15-0	Carbon disulfide	50	45.0	90	60.1	120	29* [b]	34-171/25
56-23-5	Carbon tetrachloride	50	44.1	88	58.8	118	29* [b]	55-153/25
108-90-7	Chlorobenzene	50	49.2	98	58.1	116	17	71-123/25
75-00-3	Chloroethane	50	41.8	84	60.5	121	37* [b]	58-175/25
67-66-3	Chloroform	50	40.7	81	46.7	93	14	67-136/25
74-87-3	Chloromethane	50	42.5	85	61.9	124	37* [b]	25-182/25
95-49-8	o-Chlorotoluene	50	42.7	85	49.7	99	15	72-130/25
106-43-4	p-Chlorotoluene	50	41.4	83	50.3	101	19	73-127/25
96-12-8	1,2-Dibromo-3-chloropropane	50	44.9	90	38.2	76	16	50-159/25
124-48-1	Dibromochloromethane	50	46.0	92	51.2	102	11	73-139/25
106-93-4	1,2-Dibromoethane	50	45.6	91	54.1	108	17	69-132/25
95-50-1	1,2-Dichlorobenzene	50	46.6	93	52.8	106	12	77-125/25
541-73-1	1,3-Dichlorobenzene	50	45.4	91	53.6	107	17	77-124/25
106-46-7	1,4-Dichlorobenzene	50	45.9	92	53.8	108	16	73-128/25
75-71-8	Dichlorodifluoromethane	50	65.2	130	98.8	198* [a]	41* [a]	23-157/25
75-34-3	1,1-Dichloroethane	50	37.3	75	42.6	85	13	63-145/25
107-06-2	1,2-Dichloroethane	50	36.8	74	45.6	91	21	58-145/25
75-35-4	1,1-Dichloroethene	50	45.4	91	54.9	110	19	56-158/25
156-59-2	cis-1,2-Dichloroethene	50	45.7	91	52.9	106	15	67-133/25
156-60-5	trans-1,2-Dichloroethene	50	38.7	77	44.4	89	14	66-136/25
78-87-5	1,2-Dichloropropane	50	36.7	73* [c]	46.9	94	24	75-133/25
142-28-9	1,3-Dichloropropane	50	48.3	97	56.9	114	16	70-127/25
594-20-7	2,2-Dichloropropane	50	33.5	67	46.8	94	33* [b]	52-163/25
563-58-6	1,1-Dichloropropene	50	39.4	79	43.6	87	10	77-140/25
10061-01-5	cis-1,3-Dichloropropene	50	39.4	79	56.0	112	35* [b]	74-141/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1233-BS	U29667.D	1	06/18/15	MC	n/a	n/a	MSU1233
MSU1233-BSD	U29668.D	1	06/18/15	MC	n/a	n/a	MSU1233

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39148-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	50	30.2	60* c	47.6	95	45* c	77-143/25
100-41-4	Ethylbenzene	50	47.1	94	54.0	108	14	71-129/25
87-68-3	Hexachlorobutadiene	50	50.1	100	58.3	117	15	64-146/25
591-78-6	2-Hexanone	50	47.9	96	56.3	113	16	22-163/25
74-88-4	Iodomethane	50	48.4	97	62.3	125	25	30-166/25
98-82-8	Isopropylbenzene	50	46.4	93	51.4	103	10	72-133/25
99-87-6	p-Isopropyltoluene	50	47.0	94	55.7	111	17	77-134/25
1634-04-4	Methyl Tert Butyl Ether	50	38.2	76	46.1	92	19	46-151/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	32.1	64	36.8	74	14	47-145/25
74-95-3	Methylene bromide	50	40.6	81	46.3	93	13	70-132/25
75-09-2	Methylene chloride	50	37.8	76	46.5	93	21	55-146/25
91-20-3	Naphthalene	50	48.9	98	44.3	89	10	39-176/25
103-65-1	n-Propylbenzene	50	43.5	87	50.9	102	16	74-134/25
100-42-5	Styrene	50	43.6	87	55.6	111	24	71-134/25
630-20-6	1,1,1,2-Tetrachloroethane	50	58.1	116	59.1	118	2	70-137/25
79-34-5	1,1,2,2-Tetrachloroethane	50	38.7	77	41.0	82	6	58-145/25
127-18-4	Tetrachloroethene	50	56.3	113	60.9	122	8	63-137/25
108-88-3	Toluene	50	39.6	79	55.8	112	34* b	75-126/25
87-61-6	1,2,3-Trichlorobenzene	50	52.5	105	52.3	105	0	27-181/25
120-82-1	1,2,4-Trichlorobenzene	50	55.6	111	57.6	115	4	40-176/25
71-55-6	1,1,1-Trichloroethane	50	35.7	71	48.1	96	30* b	68-144/25
79-00-5	1,1,2-Trichloroethane	50	33.2	66* c	48.5	97	37* c	72-133/25
79-01-6	Trichloroethene	50	40.5	81	48.1	96	17	73-126/25
75-69-4	Trichlorofluoromethane	50	38.7	77	53.1	106	31* b	43-152/25
96-18-4	1,2,3-Trichloropropane	50	36.8	74	39.1	78	6	58-141/25
95-63-6	1,2,4-Trimethylbenzene	50	44.3	89	52.2	104	16	76-129/25
108-67-8	1,3,5-Trimethylbenzene	50	46.7	93	54.2	108	15	71-127/25
108-05-4	Vinyl Acetate	50	40.5	81	39.9	80	1	10-170/25
75-01-4	Vinyl chloride	50	42.3	85	62.7	125	39* b	36-167/25
	m,p-Xylene	100	97.4	97	113	113	15	68-130/25
95-47-6	o-Xylene	50	48.6	97	54.1	108	11	69-126/25
1330-20-7	Xylene (total)	150	146	97	167	111	13	67-129/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1233-BS	U29667.D	1	06/18/15	MC	n/a	n/a	MSU1233
MSU1233-BSD	U29668.D	1	06/18/15	MC	n/a	n/a	MSU1233

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39148-5

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	92%	88%	72-133%
2037-26-5	Toluene-D8	89%	107%	85-114%
460-00-4	4-Bromofluorobenzene	88%	89%	70-134%

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Individual spike recoveries within acceptance limits.
(c) Outside control limits. Refer to Blank Spike Duplicate.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC39175-10MS	U29685.D	1	06/19/15	MC	n/a	n/a	MSU1233
MC39175-10MSD	U29686.D	1	06/19/15	MC	n/a	n/a	MSU1233
MC39175-10	U29681.D	1	06/19/15	MC	n/a	n/a	MSU1233

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39148-5

CAS No.	Compound	MC39175-10 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	10 U		50	54.4	109	50	56.5	113	4	10-135/30
71-43-2	Benzene	0.50 U		50	46.3	93	50	45.4	91	2	61-138/30
108-86-1	Bromobenzene	5.0 U		50	46.4	93	50	51.0	102	9	71-126/30
74-97-5	Bromochloromethane	5.0 U		50	49.5	99	50	49.6	99	0	70-136/30
75-27-4	Bromodichloromethane	1.0 U		50	42.0	84	50	43.5	87	4	73-146/30
75-25-2	Bromoform	1.0 U		50	44.3	89	50	47.7	95	7	54-147/30
74-83-9	Bromomethane	2.0 U		50	59.2	118	50	59.4	119	0	20-171/30
78-93-3	2-Butanone (MEK)	5.0 U		50	49.3	99	50	50.6	101	3	33-127/30
104-51-8	n-Butylbenzene	5.0 U		50	43.2	86	50	45.4	91	5	69-138/30
135-98-8	sec-Butylbenzene	5.0 U		50	46.7	93	50	48.7	97	4	71-137/30
98-06-6	tert-Butylbenzene	5.0 U		50	39.6	79	50	40.2	80	2	68-137/30
75-15-0	Carbon disulfide	5.0 U		50	54.3	109	50	55.4	111	2	29-178/30
56-23-5	Carbon tetrachloride	1.0 U		50	56.1	112	50	54.1	108	4	57-155/30
108-90-7	Chlorobenzene	1.0 U		50	48.5	97	50	50.7	101	4	69-126/30
75-00-3	Chloroethane	2.0 U		50	59.2	118	50	60.0	120	1	57-182/30
67-66-3	Chloroform	1.0 U		50	46.8	94	50	46.5	93	1	66-142/30
74-87-3	Chloromethane	2.0 U		50	61.9	124	50	62.6	125	1	18-182/30
95-49-8	o-Chlorotoluene	5.0 U		50	42.8	86	50	45.4	91	6	60-145/30
106-43-4	p-Chlorotoluene	5.0 U		50	41.9	84	50	46.1	92	10	64-138/30
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U		50	35.1	70	50	39.1	78	11	46-160/30
124-48-1	Dibromochloromethane	1.0 U		50	44.2	88	50	46.5	93	5	71-138/30
106-93-4	1,2-Dibromoethane	1.0 U		50	47.2	94	50	53.2	106	12	71-129/30
95-50-1	1,2-Dichlorobenzene	1.0 U		50	46.6	93	50	47.6	95	2	75-125/30
541-73-1	1,3-Dichlorobenzene	1.0 U		50	45.6	91	50	48.1	96	5	74-125/30
106-46-7	1,4-Dichlorobenzene	1.0 U		50	46.8	94	50	48.7	97	4	72-128/30
75-71-8	Dichlorodifluoromethane	2.0 U		50	91.3	183* [a]	50	94.0	188* [a]	3	23-159/30
75-34-3	1,1-Dichloroethane	1.0 U		50	42.8	86	50	41.7	83	3	63-150/30
107-06-2	1,2-Dichloroethane	1.0 U		50	46.3	93	50	38.8	78	18	57-150/30
75-35-4	1,1-Dichloroethene	1.0 U		50	54.2	108	50	54.2	108	0	53-165/30
156-59-2	cis-1,2-Dichloroethene	1.0 U		50	52.6	105	50	52.2	104	1	66-138/30
156-60-5	trans-1,2-Dichloroethene	1.0 U		50	44.5	89	50	44.5	89	0	65-141/30
78-87-5	1,2-Dichloropropane	2.0 U		50	43.5	87	50	45.1	90	4	76-136/30
142-28-9	1,3-Dichloropropane	5.0 U		50	49.4	99	50	54.2	108	9	71-127/30
594-20-7	2,2-Dichloropropane	5.0 U		50	37.2	74	50	36.6	73	2	33-175/30
563-58-6	1,1-Dichloropropene	5.0 U		50	41.2	82	50	40.0	80	3	76-145/30
10061-01-5	cis-1,3-Dichloropropene	0.50 U		50	45.1	90	50	51.1	102	12	75-137/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC39175-10MS	U29685.D	1	06/19/15	MC	n/a	n/a	MSU1233
MC39175-10MSD	U29686.D	1	06/19/15	MC	n/a	n/a	MSU1233
MC39175-10	U29681.D	1	06/19/15	MC	n/a	n/a	MSU1233

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39148-5

CAS No.	Compound	MC39175-10 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	0.50 U		50	37.4	75* b	50	45.5	91	20	77-139/30
100-41-4	Ethylbenzene	1.0 U		50	45.8	92	50	46.5	93	2	61-137/30
87-68-3	Hexachlorobutadiene	5.0 U		50	46.5	93	50	48.2	96	4	59-141/30
591-78-6	2-Hexanone	5.0 U		50	38.6	77	50	43.3	87	11	12-141/30
74-88-4	Iodomethane	5.0 U		50	61.4	123	50	61.8	124	1	21-171/30
98-82-8	Isopropylbenzene	5.0 U		50	45.0	90	50	46.7	93	4	64-141/30
99-87-6	p-Isopropyltoluene	5.0 U		50	46.3	93	50	49.2	98	6	73-135/30
1634-04-4	Methyl Tert Butyl Ether	1.0 U		50	47.5	95	50	48.6	97	2	34-160/30
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0 U		50	37.5	75	50	43.9	88	16	47-143/30
74-95-3	Methylene bromide	5.0 U		50	47.1	94	50	53.2	106	12	73-132/30
75-09-2	Methylene chloride	2.0 U		50	47.8	96	50	46.9	94	2	52-154/30
91-20-3	Naphthalene	5.0 U		50	36.0	72	50	40.0	80	11	21-185/30
103-65-1	n-Propylbenzene	5.0 U		50	42.6	85	50	45.9	92	7	66-141/30
100-42-5	Styrene	5.0 U		50	42.8	86	50	45.8	92	7	60-142/30
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U		50	56.2	112	50	52.3	105	7	69-138/30
79-34-5	1,1,2,2-Tetrachloroethane	0.50 U		50	40.7	81	50	40.7	81	0	58-147/30
127-18-4	Tetrachloroethene	0.50 U		50	50.3	101	50	50.3	101	0	60-140/30
108-88-3	Toluene	1.0 U		50	47.6	95	50	52.7	105	10	74-131/30
87-61-6	1,2,3-Trichlorobenzene	5.0 U		50	41.7	83	50	44.8	90	7	12-184/30
120-82-1	1,2,4-Trichlorobenzene	5.0 U		50	48.3	97	50	49.0	98	1	30-175/30
71-55-6	1,1,1-Trichloroethane	1.0 U		50	46.1	92	50	47.0	94	2	67-151/30
79-00-5	1,1,2-Trichloroethane	1.0 U		50	43.7	87	50	50.1	100	14	73-134/30
79-01-6	Trichloroethene	0.50 U		50	41.9	84	50	46.0	92	9	68-133/30
75-69-4	Trichlorofluoromethane	1.0 U		50	49.2	98	50	52.2	104	6	40-159/30
96-18-4	1,2,3-Trichloropropane	5.0 U		50	37.3	75	50	42.2	84	12	54-141/30
95-63-6	1,2,4-Trimethylbenzene	5.0 U		50	43.5	87	50	46.0	92	6	62-142/30
108-67-8	1,3,5-Trimethylbenzene	5.0 U		50	45.8	92	50	48.2	96	5	62-133/30
108-05-4	Vinyl Acetate	5.0 U		50	38.4	77	50	36.6	73	5	10-169/30
75-01-4	Vinyl chloride	1.0 U		50	59.0	118	50	61.7	123	4	29-176/30
	m,p-Xylene	1.0 U		100	95.6	96	100	97.1	97	2	58-139/30
95-47-6	o-Xylene	1.0 U		50	48.2	96	50	47.1	94	2	61-135/30
1330-20-7	Xylene (total)	1.0 U		150	144	96	150	144	96	0	60-136/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC39175-10MS	U29685.D	1	06/19/15	MC	n/a	n/a	MSU1233
MC39175-10MSD	U29686.D	1	06/19/15	MC	n/a	n/a	MSU1233
MC39175-10	U29681.D	1	06/19/15	MC	n/a	n/a	MSU1233

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39148-5

CAS No.	Surrogate Recoveries	MS	MSD	MC39175-10	Limits
1868-53-7	Dibromofluoromethane	100%	94%	100%	72-133%
2037-26-5	Toluene-D8	101%	107%	101%	85-114%
460-00-4	4-Bromofluorobenzene	86%	92%	84%	70-134%

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Refer to Blank Spike Duplicate.

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: MC39148
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Method: SW846 8260C **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC39148-5	U29671.D	99	100	80
MC39175-10MS	U29685.D	100	101	86
MC39175-10MSD	U29686.D	94	107	92
MSU1233-BS	U29667.D	92	89	88
MSU1233-BSD	U29668.D	88	107	89
MSU1233-MB	U29670.D	97	101	82

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	72-133%
S2 = Toluene-D8	85-114%
S3 = 4-Bromofluorobenzene	70-134%

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	14	28	8.7	<200
Antimony	6.0	1.1	2	-0.70	<6.0
Arsenic	4.0	1.6	1.7		
Barium	50	.35	1	0.20	<50
Beryllium	4.0	.15	.25	0.0	<4.0
Bismuth	50	1.3	2.1		
Boron	100	.9	1.1		
Cadmium	4.0	.16	.43	0.0	<4.0
Calcium	5000	6.9	15	10.2	<5000
Chromium	10	.36	.48	0.0	<10
Cobalt	50	.15	.28	-0.10	<50
Copper	25	.59	2.4	0.70	<25
Gold	50	1.1	1.5		
Iron	100	3.3	17	6.6	<100
Lead	5.0	.78	1.7	0.40	<5.0
Lithium	500	2.3	2.5		
Magnesium	5000	23	54	11.9	<5000
Manganese	15	.056	1.4	0.30	<15
Molybdenum	100	1.7	3.6		
Nickel	40	.21	.5	-0.20	<40
Palladium	50	.92	2.6		
Platinum	50	4.6	5.4		
Potassium	5000	41	49	-59	<5000
Selenium	10	1.5	2	-0.20	<10
Silicon	100	1.1	30		
Silver	5.0	.56	1	-0.10	<5.0
Sodium	5000	17	77	-190	<5000
Sulfur	50	2.3	4.6		
Strontium	10	.2	.22		
Thallium	5.0	.54	1.7	-0.80	<5.0
Tin	100	.39	.81		
Titanium	50	.34	.51		
Tungsten	100	3.1	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.61	.51	0.0	<10
Zinc	20	.53	1	0.80	<20
Zirconium	50	.19	1.2		

Associated samples MP24709: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum	14.7	10100	10000	100.9	75-125
Antimony	0.0	518	500	103.6	75-125
Arsenic					
Barium	61.0	2090	2000	101.5	75-125
Beryllium	0.0	501	500	100.2	75-125
Bismuth					
Boron					
Cadmium	0.0	521	500	104.2	75-125
Calcium	56500	82800	25000	105.2	75-125
Chromium	0.0	507	500	101.4	75-125
Cobalt	35.7	540	500	100.9	75-125
Copper	1.3	497	500	99.1	75-125
Gold					
Iron	113000	125000	10000	120.0(a)	75-125
Lead	0.0	993	1000	99.3	75-125
Lithium					
Magnesium	9490	36700	25000	108.8	75-125
Manganese	2180	2580	500	80.0 (a)	75-125
Molybdenum					
Nickel	20.3	535	500	102.9	75-125
Palladium					
Platinum					
Potassium	13700	40300	25000	106.4	75-125
Selenium	0.0	520	500	104.0	75-125
Silicon					
Silver	0.60	193	200	96.2	75-125
Sodium	44100	70800	25000	106.8	75-125
Sulfur					
Strontium					
Thallium	0.0	502	500	100.4	75-125
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium	0.0	502	500	100.4	75-125
Zinc	7.6	514	500	101.3	75-125
Zirconium					

Associated samples MP24709: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum	14.7	10200	10000	101.9	1.0	20
Antimony	0.0	521	500	104.2	0.6	20
Arsenic						
Barium	61.0	2110	2000	102.5	1.0	20
Beryllium	0.0	506	500	101.2	1.0	20
Bismuth						
Boron						
Cadmium	0.0	524	500	104.8	0.6	20
Calcium	56500	83800	25000	109.2	1.2	20
Chromium	0.0	511	500	102.2	0.8	20
Cobalt	35.7	546	500	102.1	1.1	20
Copper	1.3	500	500	99.7	0.6	20
Gold						
Iron	113000	126000	10000	130.0(a)	0.8	20
Lead	0.0	1000	1000	100.0	0.7	20
Lithium						
Magnesium	9490	37000	25000	110.0	0.8	20
Manganese	2180	2630	500	90.0	1.9	20
Molybdenum						
Nickel	20.3	539	500	103.7	0.7	20
Palladium						
Platinum						
Potassium	13700	41100	25000	109.6	2.0	20
Selenium	0.0	523	500	104.6	0.6	20
Silicon						
Silver	0.60	193	200	96.2	0.0	20
Sodium	44100	71700	25000	110.4	1.3	20
Sulfur						
Strontium						
Thallium	0.0	507	500	101.4	1.0	20
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium	0.0	504	500	100.8	0.4	20
Zinc	7.6	517	500	101.9	0.6	20
Zirconium						

Associated samples MP24709: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum	9990	10000	99.9	80-120
Antimony	519	500	103.8	80-120
Arsenic				
Barium	2020	2000	101.0	80-120
Beryllium	499	500	99.8	80-120
Bismuth				
Boron				
Cadmium	524	500	104.8	80-120
Calcium	26800	25000	107.2	80-120
Chromium	515	500	103.0	80-120
Cobalt	512	500	102.4	80-120
Copper	500	500	100.0	80-120
Gold				
Iron	10200	10000	102.0	80-120
Lead	1020	1000	102.0	80-120
Lithium				
Magnesium	26900	25000	107.6	80-120
Manganese	527	500	105.4	80-120
Molybdenum				
Nickel	524	500	104.8	80-120
Palladium				
Platinum				
Potassium	26200	25000	104.8	80-120
Selenium	521	500	104.2	80-120
Silicon				
Silver	193	200	96.5	80-120
Sodium	27500	25000	110.0	80-120
Sulfur				
Strontium				
Thallium	526	500	105.2	80-120
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium	503	500	100.6	80-120
Zinc	514	500	102.8	80-120
Zirconium				

Associated samples MP24709: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	SDL 1:5	%DIF	QC Limits
Aluminum	14.7	0.00	100.0(a)	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic				
Barium	61.0	62.5	2.5	0-10
Beryllium	0.00	0.00	NC	0-10
Bismuth				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium	56500	57900	2.6	0-10
Chromium	0.00	0.00	NC	0-10
Cobalt	35.7	35.6	0.3	0-10
Copper	1.30	0.00	100.0(a)	0-10
Gold				
Iron	113000	117000	2.8	0-10
Lead	0.00	0.00	NC	0-10
Lithium				
Magnesium	9490	9840	3.7	0-10
Manganese	2180	2200	0.9	0-10
Molybdenum				
Nickel	20.3	20.0	1.5	0-10
Palladium				
Platinum				
Potassium	13700	13600	0.5	0-10
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.600	0.00	100.0(a)	0-10
Sodium	44100	45100	2.3	0-10
Sulfur				
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	SDL 1:5	%DIF	QC Limits
Vanadium	0.00	0.00	NC	0-10
Zinc	7.60	9.70	27.6 (a)	0-10
Zirconium				

Associated samples MP24709: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.3	4.4		
Antimony	4.0	.022	.058		
Arsenic	4.0	.046	.42	0.20	<4.0
Barium	2.0	.016	.076		
Beryllium	1.0	.015	.042		
Boron	10	.24	.34		
Cadmium	2.0	.012	.026		
Calcium	500	4.2	30		
Chromium	8.0	.032	.42		
Cobalt	1.0	.0064	.028		
Copper	8.0	.017	1		
Iron	50	.72	3.4		
Lead	2.0	.013	.036		
Magnesium	500	1.4	2		
Manganese	4.0	.0096	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.015	.14		
Potassium	500	3.4	5.2		
Selenium	2.0	.15	.3		
Silver	2.0	.0088	.022		
Sodium	500	2	8.8		
Strontium	20	.01	.026		
Thallium	2.0	.042	.068		
Tin	10	.015	.048		
Titanium	2.0	.2	.26		
Vanadium	20	.2	1.4		
Zinc	10	.066	2		

Associated samples MP24709A: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	975	1540	500	113.0	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP24709A: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	975	1550	500	115.0	0.6	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP24709A: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	545	500	109.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP24709A: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	SDL 20:100%DIF		QC Limits
Aluminum				
Antimony				
Arsenic	975	930	4.6	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP24709A: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24711
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/10/15

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.20	.038	.096	-0.021	<0.20

Associated samples MP24711: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

7.3.1

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MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24711
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MS	Spikelot HGRWS1	% Rec	QC Limits
Mercury	0.0	3.3	3	110.0	75-125

Associated samples MP24711: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24711
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MSD	Spikelot HGRWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	3.3	3	110.0	0.0	20

Associated samples MP24711: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24711
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/10/15

Metal	BSP Result	Spikelot HGRWS1	% Rec	QC Limits
Mercury	3.0	3	100.0	80-120

Associated samples MP24711: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN50921	5.0	0.0	mg/l	250	250	100.0	80-120%
Chloride	GN50932	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Dissolved Organic Carbon	GN50890	1.0	0.30	mg/l	10	9.76	97.6	80-120%

Associated Samples:
Batch GN50890: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F
Batch GN50921: MC39148-1, MC39148-2, MC39148-3, MC39148-4
Batch GN50932: MC39148-1, MC39148-2, MC39148-3, MC39148-4
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN50921	MC39176-1	mg/l	112	111	0.9	0-20%
Chloride	GN50932	MC39176-1	mg/l	140	140	0.0	0-20%
Dissolved Organic Carbon	GN50890	MC39199-4F	mg/l	1.1	0.71	43.1(a)	0-20%

Associated Samples:
Batch GN50890: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F
Batch GN50921: MC39148-1, MC39148-2, MC39148-3, MC39148-4
Batch GN50932: MC39148-1, MC39148-2, MC39148-3, MC39148-4
(*) Outside of QC limits
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39148
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN50921	MC39176-1	mg/l	112	250	353	96.4	75-125%
Chloride	GN50932	MC39176-1	mg/l	140	100	240	100.0	75-125%
Dissolved Organic Carbon	GN50890	MC39199-4F	mg/l	1.1	10	11.2	101.0	75-125%

Associated Samples:
Batch GN50890: MC39148-1F, MC39148-2F, MC39148-3F, MC39148-4F
Batch GN50921: MC39148-1, MC39148-2, MC39148-3, MC39148-4
Batch GN50932: MC39148-1, MC39148-2, MC39148-3, MC39148-4
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST

CHAIN OF CUSTODY

495 Tech Center West, Bldg 1, Marlboro, MA 01752
TEL: (508)481-6200 FAX: (508)-481-7753

Accutest Job #:	MC39148
Accutest Quote #:	Page 1 of 1
AMS P.O. #:	
Project No.:	

Client Information		Subcontract Laboratory Information	
Name	Accutest New England	Name	Accutest of New Jersey
Address	50 D'Angelo Drive	Address	2235 Route 130
City / State / Zip	Marlborough / MA / 01752	City / State / Zip	Dayton / NJ / 08810
Send Report to:	FrankD@Accutest.com	Contact:	Sample Management
Any questions contact:	Frank D'Agostino		
Phone/Fax #:	(508)481-6200 / (508)481-7753	Phone:	(732) 329-0200

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles	HCL	NaOH	HNO3	H3PO4	None	SO4 by 300	Comments
MC39148-1	6/5/15	11:45 AM	GW	1					x	X	
MC39148-2	6/5/15	9:45 AM	GW	1					x	X	
MC39148-3	6/5/15	9:45 AM	GW	1					x	X	MA
MC39148-4	6/4/15	3:55 PM	GW	1					x	X	

X STD 6/19/15

Other _____ (Days)

INITIAL ASESSMENT Am 3B

LABEL VERIFICATION HL

10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.

Data Deliverable Information

- [ ] Commercial "A"
- [ ] Commercial "B"
- [x] Commercial "BN"
- [ ] Reduced Tier 1
- [ ] Full Tier 1
- [ ] PDF
- [ ] Compact Disk Deliverable
- [ ] Electronic Delivery:
- [ ] State Forms
- [ ] Other (Specify)

Comments / Remarks

**Please notify Accutest if surcharges applied. All DW samples are subject to MCL compliance reporting

FEDEX # 6406 1312 2677

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date & Time:	Received By:	Date & Time:
1 [signature]	6/9/15	1 FEDEX	1
2 FEDEX	6-10-15 945	2 [signature]	2
3		3	3

Seal #:

Headspace: Yes No ☐ NA ☐

Preserved where applicable: ☐

Temperature °C 2.6°C On Ice ☒

9.1

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MC39148: Chain of Custody
Page 1 of 2
Accutest New Jersey

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC39148 **Client:** **Project:**

Date / Time Received: 6/10/2015 9:45:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.6);

Cooler Temps (Corrected) °C: Cooler 1: (2.3);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☐	☑	☐
2. Trip Blank listed on COC:	☐	☑	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☑	☐

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

MC39148: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5 Limits

Job Number: MC39148
Account: Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/04/15 thru 06/05/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No Exceptions found.

* Sample used for QC is not from job MC39148

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39148
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Sulfate	GP89785/GN27081	10	0.0	mg/l	80	83.5	104.4	90-110%

Associated Samples:
Batch GP89785: MC39148-1, MC39148-2, MC39148-3, MC39148-4
(*) Outside of QC limits

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DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39148
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Sulfate	GP89785/GN27125	JB96228-15	mg/l	480	480	3.3	0-20%

Associated Samples:
Batch GP89785: MC39148-1, MC39148-2, MC39148-3, MC39148-4
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39148
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Sulfate	GP89785/GN27125	JB96228-15	mg/l	480	240	1600	115.0	80-120%

Associated Samples:
Batch GP89785: MC39148-1, MC39148-2, MC39148-3, MC39148-4
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

06/26/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

15-481

Accutest Job Number: MC39176

Sampling Date: 06/08/15

Report to:

H&S Environmental
160 East Main Street
Westborough, MA 01581
eanderson@hsenv.com

ATTN: Elizabeth Anderson

Total number of pages in report: **115**

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Accutest Laboratories

Sample Summary

H&S Environmental

Job No: MC39176

Fort Devens, Shepley's Hill, Devens, MA
Project No: 15-481

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC39176-1	06/08/15	12:25	SL	06/08/15	AQ	Ground Water	SHM-13-08-060815
MC39176-1D	06/08/15	12:25	SL	06/08/15	AQ	Water Dup/MSD	SHM-13-08-060815
MC39176-1F	06/08/15	12:25	SL	06/08/15	AQ	Groundwater Filtered	SHM-13-08-060815
MC39176-1FD	06/08/15	12:25	SL	06/08/15	AQ	Water Dup/MSD	SHM-13-08-060815
MC39176-1FS	06/08/15	12:25	SL	06/08/15	AQ	Water Matrix Spike	SHM-13-08-060815
MC39176-1S	06/08/15	12:25	SL	06/08/15	AQ	Water Matrix Spike	SHM-13-08-060815
MC39176-2	06/08/15	00:00	SL	06/08/15	AQ	Ground Water	DUP-060815
MC39176-2F	06/08/15	00:00	SL	06/08/15	AQ	Groundwater Filtered	DUP-060815
MC39176-3	06/08/15	11:10	SL	06/08/15	AQ	Ground Water	SHL-12-060815
MC39176-3F	06/08/15	11:10	SL	06/08/15	AQ	Groundwater Filtered	SHL-12-060815
MC39176-4	06/08/15	11:50	MM	06/08/15	AQ	Ground Water	SHM-10-08-060815
MC39176-4F	06/08/15	11:50	MM	06/08/15	AQ	Groundwater Filtered	SHM-10-08-060815
MC39176-5	06/08/15	12:50	MM	06/08/15	AQ	Ground Water	SHM-10-02-060815

Accutest Laboratories

Sample Summary
(continued)

H&S Environmental

Job No: MC39176

Fort Devens, Shepley's Hill, Devens, MA
Project No: 15-481

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC39176-5F	06/08/15	12:50	MM	06/08/15	AQ	Groundwater Filtered	SHM-10-02-060815
MC39176-6	06/08/15	00:00	SLMM06	06/08/15	AQ	Trip Blank Water	TRIP BLANK
MC39176-7	06/08/15	13:57	MM	06/08/15	AQ	Ground Water	SHM-13-03-060815
MC39176-7F	06/08/15	13:57	MM	06/08/15	AQ	Groundwater Filtered	SHM-13-03-060815
MC39176-8	06/08/15	15:11	EF	06/08/15	AQ	Ground Water	SHM-13-07-060815
MC39176-8F	06/08/15	15:11	EF	06/08/15	AQ	Groundwater Filtered	SHM-13-07-060815
MC39176-9	06/08/15	14:35	MM	06/08/15	AQ	Ground Water	SHM-13-06-060815
MC39176-9F	06/08/15	14:35	MM	06/08/15	AQ	Groundwater Filtered	SHM-13-06-060815
MC39176-10	06/08/15	11:30	EF	06/08/15	AQ	Ground Water	SHM-10-04-060815
MC39176-10F	06/08/15	11:30	EF	06/08/15	AQ	Groundwater Filtered	SHM-10-04-060815
MC39176-11	06/08/15	11:55	KA	06/08/15	AQ	Ground Water	SHM-93-22B-060815
MC39176-11F	06/08/15	11:55	KA	06/08/15	AQ	Groundwater Filtered	SHM-93-22B-060815
MC39176-12	06/08/15	15:00	KA	06/08/15	AQ	Ground Water	SHM-05-41B-060815

Accutest Laboratories

Sample Summary
(continued)

H&S Environmental

Job No: MC39176

Fort Devens, Shepley's Hill, Devens, MA
Project No: 15-481

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC39176-12F	06/08/15	15:00	KA	06/08/15	AQ	Groundwater Filtered	SHM-05-41B-060815
MC39176-13	06/08/15	13:35	KA	06/08/15	AQ	Ground Water	SHM-05-41C-060815
MC39176-13F	06/08/15	13:35	KA	06/08/15	AQ	Groundwater Filtered	SHM-05-41C-060815
MC39176-14	06/08/15	15:35	SL	06/08/15	AQ	Ground Water	SHM-07-05X-060815
MC39176-14F	06/08/15	15:35	SL	06/08/15	AQ	Groundwater Filtered	SHM-07-05X-060815
MC39176-15	06/08/15	13:30	SL	06/08/15	AQ	Ground Water	SHL-15-060815
MC39176-15F	06/08/15	13:30	SL	06/08/15	AQ	Groundwater Filtered	SHL-15-060815
MC39176-16	06/08/15	16:00	SL	06/08/15	AQ	Equipment Blank	RB-060815
MC39176-16F	06/08/15	16:00	SL	06/08/15	AQ	Equip Blank Filtered	RB-060815

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC39176
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	6/26/2015 9:11:22 AM

16 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 06/08/2015 and were received at Accutest on 06/08/2015 properly preserved, at 1 Deg. C and intact. These Samples received an Accutest job number of MC39176. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix: AQ **Batch ID:** MSU1234

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- RPD(s) for MSU1234-BSD for Bromomethane, Chloroethane, Chloromethane, Dichlorodifluoromethane: Outside control limits. Individual spike recoveries within acceptance limits.
- MSU1234-BSD for tert-Butylbenzene, 1,2-Dichloroethane, 1,1-Dichloropropene are outside DoD control limits, but within in-house control limits.
- MSU1234-MB1 for 4-Bromofluorobenzene is outside DoD control limits, but within in-house control limits.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP24709

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1FMS, MC39176-1FMSD, MC39176-1FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Aluminum, Copper, Silver, Zinc are outside control limits for sample MP24709-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MC39176-1F for Iron: Matrix spike and matrix spike duplicate recoveries outside of the control limits. J-flay applied.
- MP24709-S2 for Iron: Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- MC39176-1F for Manganese: Matrix spike recovery outside of DOD-QSM5 the control limit. J-flag applied.
- MP24709-S1 for Iron, Manganese: Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP24709A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1FMS, MC39176-1FMSD, MC39176-1FSDL were used as the QC samples for metals.

Metals By Method SW846 7470A

Matrix: AQ	**Batch ID:** MP24711

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1FMS, MC39176-1FMSD were used as the QC samples for metals.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ	**Batch ID:** N:GP89805

- MC39176-1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 for Sulfate: Analysis performed at Accutest Laboratories, Dayton, NJ.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ	**Batch ID:** GN50932

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1DUP, MC39176-1MS were used as the QC samples for Chloride.

Matrix: AQ	**Batch ID:** GN50958

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39199-4DUP, MC39199-4MS were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ	**Batch ID:** GN50921

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1DUP, MC39176-1MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ	**Batch ID:** GN50946

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-8DUP, MC39176-8MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SM21 5310 B

Matrix: AQ	**Batch ID:** GN50901

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1FMS, MC39176-1FDUP were used as the QC samples for Dissolved Organic Carbon.
- RPD(s) for Duplicate for Dissolved Organic Carbon are outside control limits for sample GN50901-D1. High recovery/RPD due to possible nonhomogeneity between sample bottles.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC39176).

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Accutest Labs of New England, Inc.	**Job No**	MC39176
Site:	HSMAW: Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	6/15/2015 10:44:36 A

On 06/10/2015, 15 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 2.3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of MC39176 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** GP89805

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39176-1DUP, MC39176-1MS were used as the QC samples for Sulfate.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC39176-1	**SHM-13-08-060815**					
Alkalinity, Total as CaCO3		112	5.0	3.9	mg/l	SM21 2320B
Chloride		140	10	7.6	mg/l	SM 4500 CL C-11
MC39176-1F	**SHM-13-08-060815**					
Arsenic		975	40	20	ug/l	SW846 6020A
Barium		61.0	50	25	ug/l	SW846 6010C
Calcium		56500	25000	13000	ug/l	SW846 6010C
Cobalt		35.7 J	50	25	ug/l	SW846 6010C
Iron [a]		113000 J	1000	500	ug/l	SW846 6010C
Magnesium		9490	5000	2500	ug/l	SW846 6010C
Manganese [b]		2180 J	15	7.5	ug/l	SW846 6010C
Nickel		20.3 J	40	20	ug/l	SW846 6010C
Potassium		13700	5000	2500	ug/l	SW846 6010C
Sodium		44100	25000	13000	ug/l	SW846 6010C
Dissolved Organic Carbon		2.4	1.0	0.36	mg/l	SM21 5310 B
MC39176-2	**DUP-060815**					
Alkalinity, Total as CaCO3		71.8	5.0	3.9	mg/l	SM21 2320B
Chloride		220	10	7.6	mg/l	SM 4500 CL C-11
Sulfate [c]		3.5 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-2F	**DUP-060815**					
Arsenic		964	40	20	ug/l	SW846 6020A
Barium		60.1	50	25	ug/l	SW846 6010C
Calcium		55500	15000	7500	ug/l	SW846 6010C
Cobalt		35.1 J	50	25	ug/l	SW846 6010C
Iron		113000	1000	500	ug/l	SW846 6010C
Magnesium		9350	5000	2500	ug/l	SW846 6010C
Manganese		2150	15	7.5	ug/l	SW846 6010C
Potassium		13600	5000	2500	ug/l	SW846 6010C
Sodium		44000	15000	7500	ug/l	SW846 6010C
Dissolved Organic Carbon		2.3	1.0	0.36	mg/l	SM21 5310 B
MC39176-3	**SHL-12-060815**					
Alkalinity, Total as CaCO3		63.4	5.0	3.9	mg/l	SM21 2320B
Chloride		24.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [c]		92.1	10	0.50	mg/l	EPA 300/SW846 9056A

Summary of Hits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC39176-3F	**SHL-12-060815**					
Arsenic		2.0 J	4.0	2.0	ug/l	SW846 6020A
Barium		27.1 J	50	25	ug/l	SW846 6010C
Calcium		57800	25000	13000	ug/l	SW846 6010C
Lead		5.7	5.0	2.5	ug/l	SW846 6010C
Magnesium		5070	5000	2500	ug/l	SW846 6010C
Manganese		14.7 J	15	7.5	ug/l	SW846 6010C
Sodium		18500	5000	2500	ug/l	SW846 6010C
Dissolved Organic Carbon		1.8	1.0	0.36	mg/l	SM21 5310 B
MC39176-4	**SHM-10-08-060815**					
Alkalinity, Total as CaCO3		426	5.0	3.9	mg/l	SM21 2320B
Chloride		120	10	7.6	mg/l	SM 4500 CL C-11
Sulfate [c]		6.9 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-4F	**SHM-10-08-060815**					
Arsenic		3.6 J	4.0	2.0	ug/l	SW846 6020A
Calcium		149000	50000	25000	ug/l	SW846 6010C
Magnesium		17300	5000	2500	ug/l	SW846 6010C
Manganese		328	15	7.5	ug/l	SW846 6010C
Potassium		4400 J	5000	2500	ug/l	SW846 6010C
Sodium		42200	25000	13000	ug/l	SW846 6010C
Dissolved Organic Carbon		2.6	1.0	0.36	mg/l	SM21 5310 B
MC39176-5	**SHM-10-02-060815**					
Alkalinity, Total as CaCO3		291	5.0	3.9	mg/l	SM21 2320B
Chloride		215	10	7.6	mg/l	SM 4500 CL C-11
Sulfate [c]		11.6	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-5F	**SHM-10-02-060815**					
Arsenic		3.2 J	4.0	2.0	ug/l	SW846 6020A
Barium		76.3	50	25	ug/l	SW846 6010C
Calcium		157000	50000	25000	ug/l	SW846 6010C
Magnesium		21400	15000	7500	ug/l	SW846 6010C
Manganese		4700	45	23	ug/l	SW846 6010C
Potassium		4980 J	5000	2500	ug/l	SW846 6010C
Sodium		51300	15000	7500	ug/l	SW846 6010C
Dissolved Organic Carbon		2.0	1.0	0.36	mg/l	SM21 5310 B

Summary of Hits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC39176-6	**TRIP BLANK**					
No hits reported in this sample.						
MC39176-7	**SHM-13-03-060815**					
Alkalinity, Total as CaCO3		380	5.0	3.9	mg/l	SM21 2320B
Chloride		36.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [c]		6.6 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-7F	**SHM-13-03-060815**					
Arsenic		75.5	4.0	2.0	ug/l	SW846 6020A
Barium		65.0	50	25	ug/l	SW846 6010C
Calcium		102000	50000	25000	ug/l	SW846 6010C
Iron		7190	100	50	ug/l	SW846 6010C
Magnesium		12300	5000	2500	ug/l	SW846 6010C
Manganese		12600	75	38	ug/l	SW846 6010C
Nickel		29.0 J	40	20	ug/l	SW846 6010C
Potassium		5940	5000	2500	ug/l	SW846 6010C
Sodium		38300	25000	13000	ug/l	SW846 6010C
Dissolved Organic Carbon		6.6	1.0	0.36	mg/l	SM21 5310 B
MC39176-8	**SHM-13-07-060815**					
Alkalinity, Total as CaCO3		57.2	5.0	3.9	mg/l	SM21 2320B
Chloride		120	10	7.6	mg/l	SM 4500 CL C-11
Sulfate [c]		10.4	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-8F	**SHM-13-07-060815**					
Arsenic		946	40	20	ug/l	SW846 6020A
Barium		27.7 J	50	25	ug/l	SW846 6010C
Calcium		19800	5000	2500	ug/l	SW846 6010C
Iron		18800	100	50	ug/l	SW846 6010C
Manganese		3460	15	7.5	ug/l	SW846 6010C
Potassium		4230 J	5000	2500	ug/l	SW846 6010C
Sodium		73300	25000	13000	ug/l	SW846 6010C
Dissolved Organic Carbon		3.2	1.0	0.36	mg/l	SM21 5310 B
MC39176-9	**SHM-13-06-060815**					
Alkalinity, Total as CaCO3		39.5	5.0	3.9	mg/l	SM21 2320B
Chloride		240	10	7.6	mg/l	SM 4500 CL C-11
Sulfate [c]		10.1	10	0.50	mg/l	EPA 300/SW846 9056A

Summary of Hits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC39176-9F	**SHM-13-06-060815**					
Arsenic		2460	100	50	ug/l	SW846 6020A
Calcium		23700	10000	5000	ug/l	SW846 6010C
Iron		35200	200	100	ug/l	SW846 6010C
Lead		3.5 J	5.0	2.5	ug/l	SW846 6010C
Magnesium		2770 J	5000	2500	ug/l	SW846 6010C
Manganese		1840	15	7.5	ug/l	SW846 6010C
Potassium		4050 J	5000	2500	ug/l	SW846 6010C
Sodium		133000	50000	25000	ug/l	SW846 6010C
Dissolved Organic Carbon		0.91 J	1.0	0.36	mg/l	SM21 5310 B
MC39176-10	**SHM-10-04-060815**					
Alkalinity, Total as CaCO3		58.2	5.0	3.9	mg/l	SM21 2320B
Chloride		140	10	7.6	mg/l	SM 4500 CL C-11
Sulfate [c]		65.1	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-10F	**SHM-10-04-060815**					
Calcium		72500	25000	13000	ug/l	SW846 6010C
Lead		3.5 J	5.0	2.5	ug/l	SW846 6010C
Magnesium		10400	5000	2500	ug/l	SW846 6010C
Manganese		597	15	7.5	ug/l	SW846 6010C
Potassium		3130 J	5000	2500	ug/l	SW846 6010C
Sodium		53900	25000	13000	ug/l	SW846 6010C
Zinc		13.8 J	20	10	ug/l	SW846 6010C
Dissolved Organic Carbon		1.3	1.0	0.36	mg/l	SM21 5310 B
MC39176-11	**SHM-93-22B-060815**					
Alkalinity, Total as CaCO3		309	5.0	3.9	mg/l	SM21 2320B
Chloride		19.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [c]		3.3 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-11F	**SHM-93-22B-060815**					
Arsenic		1050	40	20	ug/l	SW846 6020A
Barium		36.2 J	50	25	ug/l	SW846 6010C
Calcium		78100	25000	13000	ug/l	SW846 6010C
Iron		19500	100	50	ug/l	SW846 6010C
Magnesium		10900	5000	2500	ug/l	SW846 6010C
Manganese		12100	75	38	ug/l	SW846 6010C
Potassium		8600	5000	2500	ug/l	SW846 6010C

Summary of Hits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Sodium		31000	10000	5000	ug/l	SW846 6010C
Dissolved Organic Carbon		2.2	1.0	0.36	mg/l	SM21 5310 B
MC39176-12	**SHM-05-41B-060815**					
Alkalinity, Total as CaCO3		92.6	5.0	3.9	mg/l	SM21 2320B
Chloride		18.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [c]		3.8 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-12F	**SHM-05-41B-060815**					
Arsenic		626	40	20	ug/l	SW846 6020A
Calcium		22200	10000	5000	ug/l	SW846 6010C
Iron		28500	200	100	ug/l	SW846 6010C
Magnesium		3370 J	5000	2500	ug/l	SW846 6010C
Manganese		947	15	7.5	ug/l	SW846 6010C
Potassium		7660	5000	2500	ug/l	SW846 6010C
Sodium		10200	5000	2500	ug/l	SW846 6010C
Dissolved Organic Carbon		1.6	1.0	0.36	mg/l	SM21 5310 B
MC39176-13	**SHM-05-41C-060815**					
Alkalinity, Total as CaCO3		368	5.0	3.9	mg/l	SM21 2320B
Chloride		41.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [c]		1.4 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-13F	**SHM-05-41C-060815**					
Arsenic		883	40	20	ug/l	SW846 6020A
Calcium		109000	50000	25000	ug/l	SW846 6010C
Iron		16700	100	50	ug/l	SW846 6010C
Magnesium		13800	5000	2500	ug/l	SW846 6010C
Manganese		2880	15	7.5	ug/l	SW846 6010C
Potassium		3630 J	5000	2500	ug/l	SW846 6010C
Sodium		47000	25000	13000	ug/l	SW846 6010C
Dissolved Organic Carbon		3.8	1.0	0.36	mg/l	SM21 5310 B
MC39176-14	**SHM-07-05X-060815**					
Alkalinity, Total as CaCO3		157	5.0	3.9	mg/l	SM21 2320B
Chloride		77.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [c]		28.0	10	0.50	mg/l	EPA 300/SW846 9056A

Summary of Hits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC39176-14F	**SHM-07-05X-060815**					
Arsenic		4.8	4.0	2.0	ug/l	SW846 6020A
Calcium		45500	25000	13000	ug/l	SW846 6010C
Magnesium		2810 J	5000	2500	ug/l	SW846 6010C
Potassium		9350	5000	2500	ug/l	SW846 6010C
Sodium		82700	25000	13000	ug/l	SW846 6010C
Dissolved Organic Carbon		4.2	1.0	0.36	mg/l	SM21 5310 B
MC39176-15	**SHL-15-060815**					
Alkalinity, Total as CaCO3		74.9	5.0	3.9	mg/l	SM21 2320B
Chloride		120	10	7.6	mg/l	SM 4500 CL C-11
Sulfate [c]		13.8	10	0.50	mg/l	EPA 300/SW846 9056A
MC39176-15F	**SHL-15-060815**					
Arsenic		31.6	4.0	2.0	ug/l	SW846 6020A
Barium		89.5	50	25	ug/l	SW846 6010C
Calcium		47700	25000	13000	ug/l	SW846 6010C
Iron		3570	100	50	ug/l	SW846 6010C
Lead		14.2	5.0	2.5	ug/l	SW846 6010C
Magnesium		6120	5000	2500	ug/l	SW846 6010C
Manganese		198	15	7.5	ug/l	SW846 6010C
Potassium		11000	5000	2500	ug/l	SW846 6010C
Sodium		50300	25000	13000	ug/l	SW846 6010C
Zinc		10.5 J	20	10	ug/l	SW846 6010C
Dissolved Organic Carbon		8.5	1.0	0.36	mg/l	SM21 5310 B

MC39176-16 **RB-060815**

No hits reported in this sample.

MC39176-16F **RB-060815**

No hits reported in this sample.

(a) Matrix spike and matrix spike duplicate recoveries outside of the control limits. J-flay applied.
(b) Matrix spike recovery outside of DOD-QSM5 the control limit. J-flag applied.
(c) Analysis performed at Accutest Laboratories, Dayton, NJ.

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SHM-13-08-060815		
Lab Sample ID:	MC39176-1	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	112	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	140	10	7.6	mg/l	10	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	0.50 U	10	0.50	mg/l	1	06/13/15 17:40	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-08-060815		
Lab Sample ID:	MC39176-1F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	975	40	20	ug/l	20	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	61.0	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	56500	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	35.7 J	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron [a]	113000 J	1000	500	ug/l	10	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	9490	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese [b]	2180 J	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20.3 J	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	13700	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	44100	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

(a) Matrix spike and matrix spike duplicate recoveries outside of the control limits. J-flay applied.
(b) Matrix spike recovery outside of DOD-QSM5 the control limit. J-flag applied.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-08-060815		
Lab Sample ID:	MC39176-1F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.4	1.0	0.36	mg/l	1	06/15/15 14:22	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-060815		
Lab Sample ID:	MC39176-2	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	71.8	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	220	10	7.6	mg/l	10	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	3.5 J	10	0.50	mg/l	1	06/13/15 18:04	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: DUP-060815
Lab Sample ID: MC39176-2F
Matrix: AQ - Groundwater Filtered
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/08/15
Date Received: 06/08/15
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	964	40	20	ug/l	20	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	60.1	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	55500	15000	7500	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	35.1 J	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	113000	1000	500	ug/l	10	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	9350	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	2150	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	13600	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	44000	15000	7500	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-060815		
Lab Sample ID:	MC39176-2F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.3	1.0	0.36	mg/l	1	06/15/15 14:35	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-12-060815		
Lab Sample ID:	MC39176-3	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	63.4	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	24.0	1.0	0.76	mg/l	1	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	92.1	10	0.50	mg/l	1	06/13/15 18:28	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHL-12-060815
Lab Sample ID: MC39176-3F
Matrix: AQ - Groundwater Filtered
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/08/15
Date Received: 06/08/15
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	2.0 J	4.0	2.0	ug/l	2	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	27.1 J	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	57800	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	5.7	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	5070	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	14.7 J	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	2500 U	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	18500	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-12-060815		
Lab Sample ID:	MC39176-3F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.8	1.0	0.36	mg/l	1	06/15/15 14:48	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-08-060815		
Lab Sample ID:	MC39176-4	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	426	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	120	10	7.6	mg/l	10	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	6.9 J	10	0.50	mg/l	1	06/13/15 18:52	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHM-10-08-060815
Lab Sample ID: MC39176-4F
Matrix: AQ - Groundwater Filtered
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/08/15
Date Received: 06/08/15
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	3.6 J	4.0	2.0	ug/l	2	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	149000	50000	25000	ug/l	10	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	17300	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	328	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	4400 J	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	42200	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-08-060815		
Lab Sample ID:	MC39176-4F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.6	1.0	0.36	mg/l	1	06/15/15 14:58	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-02-060815		
Lab Sample ID:	MC39176-5	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	291	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	215	10	7.6	mg/l	10	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	11.6	10	0.50	mg/l	1	06/13/15 19:16	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHM-10-02-060815
Lab Sample ID: MC39176-5F
Matrix: AQ - Groundwater Filtered
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/08/15
Date Received: 06/08/15
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	3.2 J	4.0	2.0	ug/l	2	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	76.3	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	157000	50000	25000	ug/l	10	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	21400	15000	7500	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Manganese	4700	45	23	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	4980 J	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	51300	15000	7500	ug/l	3	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-02-060815		
Lab Sample ID:	MC39176-5F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.0	1.0	0.36	mg/l	1	06/15/15 15:10	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC39176-6	**Date Sampled:**	06/08/15
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/08/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U29695.D	1	06/19/15	MC	n/a	n/a	MSU1234
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	LOQ	LOD	Units	Q
67-64-1	Acetone	5.0 U	10	5.0	ug/l	
71-43-2	Benzene	0.50 U	0.50	0.50	ug/l	
108-86-1	Bromobenzene	1.0 U	5.0	1.0	ug/l	
74-97-5	Bromochloromethane	0.50 U	5.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.50 U	1.0	0.50	ug/l	
75-25-2	Bromoform	0.50 U	1.0	0.50	ug/l	
74-83-9	Bromomethane	1.0 U	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	5.0 U	5.0	5.0	ug/l	
104-51-8	n-Butylbenzene	1.0 U	5.0	1.0	ug/l	
135-98-8	sec-Butylbenzene	1.0 U	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	1.0 U	5.0	1.0	ug/l	
75-15-0	Carbon disulfide	0.50 U	5.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	0.50 U	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	0.50 U	1.0	0.50	ug/l	
75-00-3	Chloroethane	0.50 U	2.0	0.50	ug/l	
67-66-3	Chloroform	0.50 U	1.0	0.50	ug/l	
74-87-3	Chloromethane	1.0 U	2.0	1.0	ug/l	
95-49-8	o-Chlorotoluene	1.0 U	5.0	1.0	ug/l	
106-43-4	p-Chlorotoluene	1.0 U	5.0	1.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
124-48-1	Dibromochloromethane	0.50 U	1.0	0.50	ug/l	
106-93-4	1,2-Dibromoethane	1.0 U	1.0	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	0.50 U	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	0.50 U	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	0.50 U	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	1.0 U	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	0.50 U	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.50 U	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethene	0.50 U	1.0	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethene	0.50 U	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	0.50 U	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	0.50 U	2.0	0.50	ug/l	

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC39176-6	**Date Sampled:**	06/08/15
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/08/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

VOA 8260 List

CAS No.	Compound	Result	LOQ	LOD	Units	Q
142-28-9	1,3-Dichloropropane	1.0 U	5.0	1.0	ug/l	
594-20-7	2,2-Dichloropropane	2.0 U	5.0	2.0	ug/l	
563-58-6	1,1-Dichloropropene	0.50 U	5.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.50 U	0.50	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.50 U	0.50	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
87-68-3	Hexachlorobutadiene	1.0 U	5.0	1.0	ug/l	
591-78-6	2-Hexanone	5.0 U	5.0	5.0	ug/l	
74-88-4	Iodomethane	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	1.0 U	5.0	1.0	ug/l	
99-87-6	p-Isopropyltoluene	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.50 U	1.0	0.50	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.0 U	5.0	2.0	ug/l	
74-95-3	Methylene bromide	1.0 U	5.0	1.0	ug/l	
75-09-2	Methylene chloride	1.0 U	2.0	1.0	ug/l	
91-20-3	Naphthalene	2.0 U	5.0	2.0	ug/l	
103-65-1	n-Propylbenzene	1.0 U	5.0	1.0	ug/l	
100-42-5	Styrene	0.50 U	5.0	0.50	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	0.50 U	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.50 U	0.50	0.50	ug/l	
127-18-4	Tetrachloroethene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
87-61-6	1,2,3-Trichlorobenzene	2.0 U	5.0	2.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	1.0 U	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	0.50 U	1.0	0.50	ug/l	
79-00-5	1,1,2-Trichloroethane	0.50 U	1.0	0.50	ug/l	
79-01-6	Trichloroethene	0.50 U	1.0	0.50	ug/l	
75-69-4	Trichlorofluoromethane	1.0 U	1.0	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	1.0 U	5.0	1.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.50 U	5.0	0.50	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.50 U	5.0	0.50	ug/l	
108-05-4	Vinyl Acetate	2.0 U	5.0	2.0	ug/l	
75-01-4	Vinyl chloride	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	1.0 U	1.0	1.0	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	0.50 U	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-133%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC39176-6	**Date Sampled:**	06/08/15
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/08/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	89%		85-114%
460-00-4	4-Bromofluorobenzene	85%		70-134%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SHM-13-03-060815		
Lab Sample ID:	MC39176-7	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	380	5.0	3.9	mg/l	1	06/17/15	BF	SM21 2320B
Chloride	36.5	1.0	0.76	mg/l	1	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	6.6 J	10	0.50	mg/l	1	06/13/15 19:40	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-03-060815		
Lab Sample ID:	MC39176-7F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	75.5	4.0	2.0	ug/l	2	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	65.0	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	102000	50000	25000	ug/l	10	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	7190	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	12300	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	12600	75	38	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	29.0 J	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	5940	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	38300	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-03-060815		
Lab Sample ID:	MC39176-7F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	6.6	1.0	0.36	mg/l	1	06/15/15 15:46	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-07-060815		
Lab Sample ID:	MC39176-8	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	57.2	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	120	10	7.6	mg/l	10	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	10.4	10	0.50	mg/l	1	06/13/15 20:04	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHM-13-07-060815
Lab Sample ID: MC39176-8F
Matrix: AQ - Groundwater Filtered
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/08/15
Date Received: 06/08/15
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	946	40	20	ug/l	20	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	27.7 J	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	19800	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	18800	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	2500 U	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	3460	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	4230 J	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	73300	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-07-060815		
Lab Sample ID:	MC39176-8F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.2	1.0	0.36	mg/l	1	06/15/15 15:59	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-06-060815		
Lab Sample ID:	MC39176-9	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	39.5	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	240	10	7.6	mg/l	10	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	10.1	10	0.50	mg/l	1	06/13/15 20:28	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-06-060815		
Lab Sample ID:	MC39176-9F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	2460	100	50	ug/l	50	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	23700	10000	5000	ug/l	2	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	35200	200	100	ug/l	2	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Lead	3.5 J	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	2770 J	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	1840	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	4050 J	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	133000	50000	25000	ug/l	10	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-06-060815		
Lab Sample ID:	MC39176-9F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.91 J	1.0	0.36	mg/l	1	06/15/15 16:09	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-04-060815		
Lab Sample ID:	MC39176-10	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	58.2	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	140	10	7.6	mg/l	10	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	65.1	10	0.50	mg/l	1	06/13/15 20:51	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-04-060815		
Lab Sample ID:	MC39176-10F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	2.0 U	4.0	2.0	ug/l	2	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	72500	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	3.5 J	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	10400	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	597	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	3130 J	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	53900	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	13.8 J	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-04-060815		
Lab Sample ID:	MC39176-10F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.3	1.0	0.36	mg/l	1	06/15/15 16:21	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93-22B-060815		
Lab Sample ID:	MC39176-11	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	309	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	19.0	1.0	0.76	mg/l	1	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	3.3 J	10	0.50	mg/l	1	06/13/15 22:03	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHM-93-22B-060815
Lab Sample ID: MC39176-11F
Matrix: AQ - Groundwater Filtered
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/08/15
Date Received: 06/08/15
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	1050	40	20	ug/l	20	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	36.2 J	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	78100	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	19500	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	10900	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	12100	75	38	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	8600	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	31000	10000	5000	ug/l	2	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93-22B-060815		
Lab Sample ID:	MC39176-11F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	0.36	mg/l	1	06/15/15 16:32	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41B-060815		
Lab Sample ID:	MC39176-12	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	92.6	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	18.5	1.0	0.76	mg/l	1	06/17/15	CF	SM 4500 CL C-11
Sulfate [a]	3.8 J	10	0.50	mg/l	1	06/13/15 22:27	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41B-060815		
Lab Sample ID:	MC39176-12F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	626	40	20	ug/l	20	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	22200	10000	5000	ug/l	2	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	28500	200	100	ug/l	2	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	3370 J	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	947	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	7660	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	10200	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41B-060815		
Lab Sample ID:	MC39176-12F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.6	1.0	0.36	mg/l	1	06/15/15 16:47	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41C-060815		
Lab Sample ID:	MC39176-13	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	368	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	41.0	1.0	0.76	mg/l	1	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	1.4 J	10	0.50	mg/l	1	06/13/15 22:51	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41C-060815		
Lab Sample ID:	MC39176-13F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	883	40	20	ug/l	20	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	109000	50000	25000	ug/l	10	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	16700	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	13800	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	2880	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	3630 J	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	47000	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41C-060815		
Lab Sample ID:	MC39176-13F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.8	1.0	0.36	mg/l	1	06/15/15 16:58	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-07-05X-060815		
Lab Sample ID:	MC39176-14	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	157	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	77.0	1.0	0.76	mg/l	1	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	28.0	10	0.50	mg/l	1	06/13/15 23:15	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHM-07-05X-060815
Lab Sample ID: MC39176-14F
Matrix: AQ - Groundwater Filtered
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/08/15
Date Received: 06/08/15
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	4.8	4.0	2.0	ug/l	2	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	45500	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	2810 J	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	7.5 U	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	9350	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	82700	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-07-05X-060815		
Lab Sample ID:	MC39176-14F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.2	1.0	0.36	mg/l	1	06/15/15 17:10	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-15-060815		
Lab Sample ID:	MC39176-15	**Date Sampled:**	06/08/15
Matrix:	AQ - Ground Water	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	74.9	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	120	10	7.6	mg/l	10	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	13.8	10	0.50	mg/l	1	06/13/15 23:39	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-15-060815		
Lab Sample ID:	MC39176-15F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	31.6	4.0	2.0	ug/l	2	06/10/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	89.5	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	47700	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	3570	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	14.2	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	6120	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	198	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	11000	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	50300	25000	13000	ug/l	5	06/10/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	10.5 J	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24709
(6) Prep QC Batch: MP24709A
(7) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-15-060815		
Lab Sample ID:	MC39176-15F	**Date Sampled:**	06/08/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	8.5	1.0	0.36	mg/l	1	06/15/15 17:21	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	RB-060815		
Lab Sample ID:	MC39176-16	**Date Sampled:**	06/08/15
Matrix:	AQ - Equipment Blank	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	3.9 U	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	0.76 U	1.0	0.76	mg/l	1	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	0.50 U	10	0.50	mg/l	1	06/14/15 00:03	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	RB-060815		
Lab Sample ID:	MC39176-16F	**Date Sampled:**	06/08/15
Matrix:	AQ - Equip Blank Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Arsenic	2.0 U	4.0	2.0	ug/l	2	06/10/15	06/24/15	VY	SW846 6020A [3]	SW846 3010A [5]
Barium	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Calcium	2500 U	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Chromium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Cobalt	25 U	50	25	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Copper	13 U	25	13	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Lead	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Magnesium	2500 U	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	7.5 U	15	7.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/10/15	06/11/15	VY	SW846 7470A [1]	SW846 7470A [6]
Nickel	20 U	40	20	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Potassium	2500 U	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Selenium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Silver	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Sodium	2500 U	5000	2500	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Vanadium	5.0 U	10	5.0	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Zinc	10 U	20	10	ug/l	1	06/10/15	06/15/15	EAL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18197
(2) Instrument QC Batch: MA18207
(3) Instrument QC Batch: MA18239
(4) Prep QC Batch: MP24709
(5) Prep QC Batch: MP24709A
(6) Prep QC Batch: MP24711

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	RB-060815		
Lab Sample ID:	MC39176-16F	**Date Sampled:**	06/08/15
Matrix:	AQ - Equip Blank Filtered	**Date Received:**	06/08/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.36 U	1.0	0.36	mg/l	1	06/15/15 17:33	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX: 508-481-7753
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: FD10-2014-229 | Accutest Job #: MC39176

Client / Reporting Information

Company Name: H&S Environmental
Street Address: 160 East Main Street, 2F
City / State / Zip: Westborough MA 01581
Project Contact / E-mail: E. Anderson
Phone # / Fax #: 508 277 8721
Sampler(s) Name(s) / Phone #:

Project Information

Project Name: Ft. Devens - Shepley's Hill Landfill
Street:
City: Devens MA
Project#:
Client PO#: 15-481
Project Manager:

Billing Information (If different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention: PO#:

Requested Analysis (see TEST CODE sheet): Dissolved Arsenic 6020; Dissolved Metals 6010; Alkalinity, Chloride, Sulfate; Dissolved Organic Carbon; VOC

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB- Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Time	Sampled by	Matrix	# of bottles	HCl	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	Dissolved Arsenic 6020	Dissolved Metals 6010	Alkalinity, Chloride, Sulfate	Dissolved Organic Carbon	VOC	LAB USE ONLY
-1 5F	SHM-13-08-060815		6/8/15	1225	SL	GW	15	9	3		3					X	X	X	X		
-2F	DUP-060815		6/8/15	0000	SL	GW	5	3	1		1					X	X	X	X		
-3F	SHL-12-060815		6/8/15	1110	SL	GW	5	3	1		1					X	X	X	X		
-4F	SHM-10-08-060815		6/8/15	1150	MM	GW	5	3	1		1					X	X	X	X		
-5F	SHM-10-02-060815		6/8/15	1250	MM	GW	5	3	1		1					X	X	X	X		
-6	Trip blank		6/8/15			TB	2	2												X	
-7F	SHM-13-03-060815		6/8/15	1357	MM	GW	5	3	1		1					X	X	X	X		
-8F	SHM-13-07-060815		6/8/15	1511	EF		5	3	1		1					X	X	X	X		
-9F	SHM-13-06-060815		6/8/15	1435	MM		5	3	1		1					X	X	X	X		
-10F	SHM-10-04-060815		6/8/15	1130	EF		5	3	1		1					X	X	X	X		
-11F	SHM-93-22B-060815		6/8/15	1155	KA		5	3	1		1					X	X	X	X		
-12F	SHM-05-41B-060815		6/8/15	1500	KA	GW	5	3	1		1					X	X	X	X		

Turnaround Time (Business days) — Approved By (Accutest PM): / Date:

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

3B, 6A, 3N4

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Stacey Lee	6/8/15 1700	1 [signature]	2		2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ]

On Ice: ✓ Cooler Temp.: 0.8-1.0 °C

MC39176: Chain of Custody
Page 1 of 3

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX: 508-481-7753
www.accutest.com

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # MC39176

Client / Reporting Information

Company Name: HES
Street Address: 160 East Main St
City: Westborough State: MA Zip:
Project Contact: E. Anderson E-mail:
Phone #: 508 277 8721 Fax #:
Sampler(s) Name(s): Phone #:

Project Information

Project Name: Ft. Devens - SHL
Street:
City:
Project#:
Client PO#:
Project Manager:

Billing Information (If different from Report to)

Company Name:
Street Address:
City State Zip:
Attention: PO#

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB- Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	Dissolved Arsenic 6020	Dissolved Metals 6010	Alk, Chloride, sulfate	Dissolved organic carbon	LAB USE ONLY
-13F	SHM-05-41C-060815		6/8/15	1335	KA	GW	5		3	1	1					X	X	X	X	
-14F	SHM-07-05X-060815		6/8/15	1535	SL	GW	5		3	1	1					X	X	X	X	
-15F	SHL-15-060815		6/8/15	1330	SL	GW	5		3	1	1					X	X	X	X	
-16F	RB-060815		6/8/15	1600	SL	GW	5		3	1	1					X	X	X	X	

Turnaround Time (Business days)

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Stacy Lee	6/8/15 1700	1	2		2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ]

On Ice: [x] Cooler Temp. 0.8 - 1.0 °C

MC39176: Chain of Custody
Page 2 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC39176 **Client:** H&S ENVIRON. **Project:** DEVENS

Date / Time Received: 6/8/2015 5:00:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (0.8/0.8); #2: (1/1);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	G1;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	2		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC39176: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5 Limits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1234	SW846 8260C						
MSU1234-BS	67-64-1	Acetone	BSP	REC	127	%	39-160
MSU1234-BS	71-43-2	Benzene	BSP	REC	86	%	79-120
MSU1234-BS	108-86-1	Bromobenzene	BSP	REC	105	%	80-120
MSU1234-BS	74-97-5	Bromochloromethane	BSP	REC	86	%	78-123
MSU1234-BS	75-27-4	Bromodichloromethane	BSP	REC	81	%	79-125
MSU1234-BS	75-25-2	Bromoform	BSP	REC	87	%	66-130
MSU1234-BS	74-83-9	Bromomethane	BSP	REC	96	%	53-141
MSU1234-BS	78-93-3	2-Butanone (MEK)	BSP	REC	111	%	56-143
MSU1234-BS	104-51-8	n-Butylbenzene	BSP	REC	95	%	75-128
MSU1234-BS	135-98-8	sec-Butylbenzene	BSP	REC	99	%	77-126
MSU1234-BS	98-06-6	tert-Butylbenzene	BSP	REC	83	%	78-124
MSU1234-BS	75-15-0	Carbon disulfide	BSP	REC	105	%	64-133
MSU1234-BS	56-23-5	Carbon tetrachloride	BSP	REC	97	%	72-136
MSU1234-BS	108-90-7	Chlorobenzene	BSP	REC	101	%	82-118
MSU1234-BS	75-00-3	Chloroethane	BSP	REC	94	%	60-138
MSU1234-BS	67-66-3	Chloroform	BSP	REC	85	%	79-124
MSU1234-BS	74-87-3	Chloromethane	BSP	REC	91	%	50-139
MSU1234-BS	95-49-8	o-Chlorotoluene	BSP	REC	91	%	79-122
MSU1234-BS	106-43-4	p-Chlorotoluene	BSP	REC	95	%	78-122
MSU1234-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	72	%	62-128
MSU1234-BS	124-48-1	Dibromochloromethane	BSP	REC	92	%	74-126
MSU1234-BS	106-93-4	1,2-Dibromoethane	BSP	REC	102	%	77-121
MSU1234-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	94	%	80-119
MSU1234-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	97	%	80-119
MSU1234-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	98	%	79-118
MSU1234-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	103	%	32-152
MSU1234-BS	75-34-3	1,1-Dichloroethane	BSP	REC	79	%	77-125
MSU1234-BS	107-06-2	1,2-Dichloroethane	BSP	REC	84	%	73-128
MSU1234-BS	75-35-4	1,1-Dichloroethene	BSP	REC	101	%	71-131
MSU1234-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	95	%	78-123
MSU1234-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	83	%	75-124
MSU1234-BS	78-87-5	1,2-Dichloropropane	BSP	REC	83	%	78-122
MSU1234-BS	142-28-9	1,3-Dichloropropane	BSP	REC	108	%	80-119
MSU1234-BS	594-20-7	2,2-Dichloropropane	BSP	REC	84	%	60-139
MSU1234-BS	563-58-6	1,1-Dichloropropene	BSP	REC	82	%	79-125
MSU1234-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	107	%	75-124
MSU1234-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	93	%	73-127
MSU1234-BS	100-41-4	Ethylbenzene	BSP	REC	90	%	79-121
MSU1234-BS	87-68-3	Hexachlorobutadiene	BSP	REC	109	%	66-134
MSU1234-BS	591-78-6	2-Hexanone	BSP	REC	97	%	57-139
MSU1234-BS	74-88-4	Iodomethane	BSP	REC	108	%	69-131
MSU1234-BS	98-82-8	Isopropylbenzene	BSP	REC	95	%	72-131

* Sample used for QC is not from job MC39176

QC Evaluation: DOD QSM5 Limits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1234-BS	99-87-6	p-Isopropyltoluene	BSP	REC	100	%	77-127
MSU1234-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	80	%	71-124
MSU1234-BS	108-10-1	4-Methyl-2-pentanone (MIBK)	BSP	REC	67	%	67-130
MSU1234-BS	74-95-3	Methylene bromide	BSP	REC	88	%	79-123
MSU1234-BS	75-09-2	Methylene chloride	BSP	REC	83	%	74-124
MSU1234-BS	91-20-3	Naphthalene	BSP	REC	81	%	61-128
MSU1234-BS	103-65-1	n-Propylbenzene	BSP	REC	94	%	76-126
MSU1234-BS	100-42-5	Styrene	BSP	REC	89	%	78-123
MSU1234-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	96	%	78-124
MSU1234-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	84	%	71-121
MSU1234-BS	127-18-4	Tetrachloroethene	BSP	REC	105	%	74-129
MSU1234-BS	108-88-3	Toluene	BSP	REC	97	%	80-121
MSU1234-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	93	%	69-129
MSU1234-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	104	%	69-130
MSU1234-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	80	%	74-131
MSU1234-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	91	%	80-119
MSU1234-BS	79-01-6	Trichloroethene	BSP	REC	85	%	79-123
MSU1234-BS	75-69-4	Trichlorofluoromethane	BSP	REC	89	%	65-141
MSU1234-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	82	%	73-122
MSU1234-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	92	%	76-124
MSU1234-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	97	%	75-124
MSU1234-BS	108-05-4	Vinyl Acetate	BSP	REC	107	%	54-146
MSU1234-BS	75-01-4	Vinyl chloride	BSP	REC	92	%	58-137
MSU1234-BS		m,p-Xylene	BSP	REC	93	%	80-121
MSU1234-BS	95-47-6	o-Xylene	BSP	REC	86	%	78-122
MSU1234-BS	1330-20-7	Xylene (total)	BSP	REC	91	%	79-121
MSU1234-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	89	%	80-119
MSU1234-BS	2037-26-5	Toluene-D8	BSP	SURR	100	%	89-112
MSU1234-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	97	%	85-114
MSU1234-BSD	67-64-1	Acetone	BSD	REC	129	%	39-160
MSU1234-BSD	71-43-2	Benzene	BSD	REC	87	%	79-120
MSU1234-BSD	108-86-1	Bromobenzene	BSD	REC	96	%	80-120
MSU1234-BSD	74-97-5	Bromochloromethane	BSD	REC	92	%	78-123
MSU1234-BSD	75-27-4	Bromodichloromethane	BSD	REC	84	%	79-125
MSU1234-BSD	75-25-2	Bromoform	BSD	REC	99	%	66-130
MSU1234-BSD	74-83-9	Bromomethane	BSD	REC	125	%	53-141
MSU1234-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	132	%	56-143
MSU1234-BSD	104-51-8	n-Butylbenzene	BSD	REC	95	%	75-128
MSU1234-BSD	135-98-8	sec-Butylbenzene	BSD	REC	96	%	77-126
MSU1234-BSD	98-06-6	tert-Butylbenzene	BSD	REC	77	%	78-124
MSU1234-BSD	75-15-0	Carbon disulfide	BSD	REC	116	%	64-133
MSU1234-BSD	56-23-5	Carbon tetrachloride	BSD	REC	110	%	72-136
MSU1234-BSD	108-90-7	Chlorobenzene	BSD	REC	101	%	82-118
MSU1234-BSD	75-00-3	Chloroethane	BSD	REC	123	%	60-138
MSU1234-BSD	67-66-3	Chloroform	BSD	REC	88	%	79-124

* Sample used for QC is not from job MC39176

QC Evaluation: DOD QSM5 Limits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1234-BSD	74-87-3	Chloromethane	BSD	REC	120	%	50-139
MSU1234-BSD	95-49-8	o-Chlorotoluene	BSD	REC	88	%	79-122
MSU1234-BSD	106-43-4	p-Chlorotoluene	BSD	REC	90	%	78-122
MSU1234-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	76	%	62-128
MSU1234-BSD	124-48-1	Dibromochloromethane	BSD	REC	94	%	74-126
MSU1234-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	101	%	77-121
MSU1234-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	95	%	80-119
MSU1234-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	94	%	80-119
MSU1234-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	96	%	79-118
MSU1234-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	136	%	32-152
MSU1234-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	79	%	77-125
MSU1234-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	70	%	73-128
MSU1234-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	101	%	71-131
MSU1234-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	100	%	78-123
MSU1234-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	81	%	75-124
MSU1234-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	87	%	78-122
MSU1234-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	104	%	80-119
MSU1234-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	105	%	60-139
MSU1234-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	77	%	79-125
MSU1234-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	104	%	75-124
MSU1234-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	92	%	73-127
MSU1234-BSD	100-41-4	Ethylbenzene	BSD	REC	94	%	79-121
MSU1234-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	103	%	66-134
MSU1234-BSD	591-78-6	2-Hexanone	BSD	REC	112	%	57-139
MSU1234-BSD	74-88-4	Iodomethane	BSD	REC	121	%	69-131
MSU1234-BSD	98-82-8	Isopropylbenzene	BSD	REC	89	%	72-131
MSU1234-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	98	%	77-127
MSU1234-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	97	%	71-124
MSU1234-BSD	108-10-1	4-Methyl-2-pentanone (MIBK)	BSD	REC	85	%	67-130
MSU1234-BSD	74-95-3	Methylene bromide	BSD	REC	99	%	79-123
MSU1234-BSD	75-09-2	Methylene chloride	BSD	REC	90	%	74-124
MSU1234-BSD	91-20-3	Naphthalene	BSD	REC	81	%	61-128
MSU1234-BSD	103-65-1	n-Propylbenzene	BSD	REC	89	%	76-126
MSU1234-BSD	100-42-5	Styrene	BSD	REC	96	%	78-123
MSU1234-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	107	%	78-124
MSU1234-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	84	%	71-121
MSU1234-BSD	127-18-4	Tetrachloroethene	BSD	REC	101	%	74-129
MSU1234-BSD	108-88-3	Toluene	BSD	REC	102	%	80-121
MSU1234-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	92	%	69-129
MSU1234-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	102	%	69-130
MSU1234-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	94	%	74-131
MSU1234-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	96	%	80-119
MSU1234-BSD	79-01-6	Trichloroethene	BSD	REC	85	%	79-123
MSU1234-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	102	%	65-141
MSU1234-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	81	%	73-122

* Sample used for QC is not from job MC39176

QC Evaluation: DOD QSM5 Limits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1234-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	92	%	76-124
MSU1234-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	95	%	75-124
MSU1234-BSD	108-05-4	Vinyl Acetate	BSD	REC	108	%	54-146
MSU1234-BSD	75-01-4	Vinyl chloride	BSD	REC	118	%	58-137
MSU1234-BSD		m,p-Xylene	BSD	REC	99	%	80-121
MSU1234-BSD	95-47-6	o-Xylene	BSD	REC	96	%	78-122
MSU1234-BSD	1330-20-7	Xylene (total)	BSD	REC	98	%	79-121
MSU1234-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	96	%	80-119
MSU1234-BSD	2037-26-5	Toluene-D8	BSD	SURR	109	%	89-112
MSU1234-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	91	%	85-114
MSU1234-MB1	1868-53-7	Dibromofluoromethane	MB	SURR	94	%	80-119
MSU1234-MB1	2037-26-5	Toluene-D8	MB	SURR	100	%	89-112
MSU1234-MB1	460-00-4	4-Bromofluorobenzene	MB	SURR	83	%	85-114
MC39176-6	1868-53-7	Dibromofluoromethane	SAMP	SURR	96	%	80-119
MC39176-6	2037-26-5	Toluene-D8	SAMP	SURR	89	%	89-112
MC39176-6	460-00-4	4-Bromofluorobenzene	SAMP	SURR	85	%	85-114
MP24709	SW846 6010C						
MP24709-B1	7429-90-5	Aluminum	BSP	REC	99.9	%	86-115
MP24709-B1	7440-36-0	Antimony	BSP	REC	103.8	%	88-113
MP24709-B1	7440-39-3	Barium	BSP	REC	101	%	88-113
MP24709-B1	7440-41-7	Beryllium	BSP	REC	99.8	%	89-112
MP24709-B1	7440-43-9	Cadmium	BSP	REC	104.8	%	88-113
MP24709-B1	7440-70-2	Calcium	BSP	REC	107.2	%	87-113
MP24709-B1	7440-47-3	Chromium	BSP	REC	103	%	90-113
MP24709-B1	7440-48-4	Cobalt	BSP	REC	102.4	%	89-114
MP24709-B1	7440-50-8	Copper	BSP	REC	100	%	86-114
MP24709-B1	7439-89-6	Iron	BSP	REC	102	%	87-115
MP24709-B1	7439-92-1	Lead	BSP	REC	102	%	86-113
MP24709-B1	7439-95-4	Magnesium	BSP	REC	107.6	%	85-113
MP24709-B1	7439-96-5	Manganese	BSP	REC	105.4	%	90-114
MP24709-B1	7440-02-0	Nickel	BSP	REC	104.8	%	88-113
MP24709-B1	7440-09-7	Potassium	BSP	REC	104.8	%	86-114
MP24709-B1	7782-49-2	Selenium	BSP	REC	104.2	%	83-114
MP24709-B1	7440-22-4	Silver	BSP	REC	96.5	%	84-115
MP24709-B1	7440-23-5	Sodium	BSP	REC	110	%	87-115
MP24709-B1	7440-28-0	Thallium	BSP	REC	105.2	%	85-114
MP24709-B1	7440-62-2	Vanadium	BSP	REC	100.6	%	90-111
MP24709-B1	7440-66-6	Zinc	BSP	REC	102.8	%	87-115
MP24709-S1	7429-90-5	Aluminum	MS	REC	100.9	%	86-115
MP24709-S1	7440-36-0	Antimony	MS	REC	103.6	%	88-113
MP24709-S1	7440-39-3	Barium	MS	REC	101.5	%	88-113
MP24709-S1	7440-41-7	Beryllium	MS	REC	100.2	%	89-112
MP24709-S1	7440-43-9	Cadmium	MS	REC	104.2	%	88-113

* Sample used for QC is not from job MC39176

QC Evaluation: DOD QSM5 Limits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP24709-S1	7440-70-2	Calcium	MS	REC	105.2	%	87-113
MP24709-S1	7440-47-3	Chromium	MS	REC	101.4	%	90-113
MP24709-S1	7440-48-4	Cobalt	MS	REC	100.9	%	89-114
MP24709-S1	7440-50-8	Copper	MS	REC	99.1	%	86-114
MP24709-S1	7439-89-6	Iron	MS	REC	120 [a]	%	87-115
MP24709-S1	7439-92-1	Lead	MS	REC	99.3	%	86-113
MP24709-S1	7439-95-4	Magnesium	MS	REC	108.8	%	85-113
MP24709-S1	7439-96-5	Manganese	MS	REC	80 [a]	%	90-114
MP24709-S1	7440-02-0	Nickel	MS	REC	102.9	%	88-113
MP24709-S1	7440-09-7	Potassium	MS	REC	106.4	%	86-114
MP24709-S1	7782-49-2	Selenium	MS	REC	104	%	83-114
MP24709-S1	7440-22-4	Silver	MS	REC	96.2	%	84-115
MP24709-S1	7440-23-5	Sodium	MS	REC	106.8	%	87-115
MP24709-S1	7440-28-0	Thallium	MS	REC	100.4	%	85-114
MP24709-S1	7440-62-2	Vanadium	MS	REC	100.4	%	90-111
MP24709-S1	7440-66-6	Zinc	MS	REC	101.3	%	87-115
MP24709-S2	7429-90-5	Aluminum	MSD	REC	101.9	%	86-115
MP24709-S2	7429-90-5	Aluminum	MSD	RPD	1	%	20
MP24709-S2	7440-36-0	Antimony	MSD	REC	104.2	%	88-113
MP24709-S2	7440-36-0	Antimony	MSD	RPD	.6	%	20
MP24709-S2	7440-39-3	Barium	MSD	REC	102.5	%	88-113
MP24709-S2	7440-39-3	Barium	MSD	RPD	1	%	20
MP24709-S2	7440-41-7	Beryllium	MSD	REC	101.2	%	89-112
MP24709-S2	7440-41-7	Beryllium	MSD	RPD	1	%	20
MP24709-S2	7440-43-9	Cadmium	MSD	REC	104.8	%	88-113
MP24709-S2	7440-43-9	Cadmium	MSD	RPD	.6	%	20
MP24709-S2	7440-70-2	Calcium	MSD	REC	109.2	%	87-113
MP24709-S2	7440-70-2	Calcium	MSD	RPD	1.2	%	20
MP24709-S2	7440-47-3	Chromium	MSD	REC	102.2	%	90-113
MP24709-S2	7440-47-3	Chromium	MSD	RPD	.8	%	20
MP24709-S2	7440-48-4	Cobalt	MSD	REC	102.1	%	89-114
MP24709-S2	7440-48-4	Cobalt	MSD	RPD	1.1	%	20
MP24709-S2	7440-50-8	Copper	MSD	REC	99.7	%	86-114
MP24709-S2	7440-50-8	Copper	MSD	RPD	.6	%	20
MP24709-S2	7439-89-6	Iron	MSD	REC	130 [b]	%	87-115
MP24709-S2	7439-89-6	Iron	MSD	RPD	.8	%	20
MP24709-S2	7439-92-1	Lead	MSD	REC	100	%	86-113
MP24709-S2	7439-92-1	Lead	MSD	RPD	.7	%	20
MP24709-S2	7439-95-4	Magnesium	MSD	REC	110	%	85-113
MP24709-S2	7439-95-4	Magnesium	MSD	RPD	.8	%	20
MP24709-S2	7439-96-5	Manganese	MSD	REC	90	%	90-114
MP24709-S2	7439-96-5	Manganese	MSD	RPD	1.9	%	20
MP24709-S2	7440-02-0	Nickel	MSD	REC	103.7	%	88-113
MP24709-S2	7440-02-0	Nickel	MSD	RPD	.7	%	20
MP24709-S2	7440-09-7	Potassium	MSD	REC	109.6	%	86-114

* Sample used for QC is not from job MC39176

QC Evaluation: DOD QSM5 Limits

Job Number: MC39176
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP24709-S2	7440-09-7	Potassium	MSD	RPD	2	%	20
MP24709-S2	7782-49-2	Selenium	MSD	REC	104.6	%	83-114
MP24709-S2	7782-49-2	Selenium	MSD	RPD	.6	%	20
MP24709-S2	7440-22-4	Silver	MSD	REC	96.2	%	84-115
MP24709-S2	7440-22-4	Silver	MSD	RPD	0	%	20
MP24709-S2	7440-23-5	Sodium	MSD	REC	110.4	%	87-115
MP24709-S2	7440-23-5	Sodium	MSD	RPD	1.3	%	20
MP24709-S2	7440-28-0	Thallium	MSD	REC	101.4	%	85-114
MP24709-S2	7440-28-0	Thallium	MSD	RPD	1	%	20
MP24709-S2	7440-62-2	Vanadium	MSD	REC	100.8	%	90-111
MP24709-S2	7440-62-2	Vanadium	MSD	RPD	.4	%	20
MP24709-S2	7440-66-6	Zinc	MSD	REC	101.9	%	87-115
MP24709-S2	7440-66-6	Zinc	MSD	RPD	.6	%	20
MP24709A	SW846 6020A						
MP24709A-B1	7440-38-2	Arsenic	BSP	REC	109	%	84-116
MP24709A-S1	7440-38-2	Arsenic	MS	REC	113	%	84-116
MP24709A-S2	7440-38-2	Arsenic	MSD	REC	115	%	84-116
MP24709A-S2	7440-38-2	Arsenic	MSD	RPD	.6	%	20
MP24711	SW846 7470A						
MP24711-B1	7439-97-6	Mercury	BSP	REC	100	%	82-119
MP24711-S1	7439-97-6	Mercury	MS	REC	110	%	82-119
MP24711-S2	7439-97-6	Mercury	MSD	REC	110	%	82-119
MP24711-S2	7439-97-6	Mercury	MSD	RPD	0	%	20

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
(b) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

* Sample used for QC is not from job MC39176

New England ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: MC39176
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1234-MB1	U29694.D	1	06/19/15	MC	n/a	n/a	MSU1234

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39176-6

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.0	ug/l	
71-43-2	Benzene	ND	0.50	0.27	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.26	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.18	ug/l	
75-25-2	Bromoform	ND	1.0	0.39	ug/l	
74-83-9	Bromomethane	ND	2.0	0.79	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	3.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.50	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.50	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.57	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.19	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	2.0	0.49	ug/l	
67-66-3	Chloroform	ND	1.0	0.40	ug/l	
74-87-3	Chloromethane	ND	2.0	0.49	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.60	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.46	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	0.83	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.22	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.33	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.24	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.24	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.37	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.53	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.28	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.28	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.48	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.21	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.29	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.7	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.23	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.27	ug/l	

Method Blank Summary

Job Number: MC39176
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1234-MB1	U29694.D	1	06/19/15	MC	n/a	n/a	MSU1234

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39176-6

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.24	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	0.45	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.7	ug/l	
74-88-4	Iodomethane	ND	5.0	0.50	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.27	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.77	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.27	ug/l	
91-20-3	Naphthalene	ND	5.0	0.61	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.29	ug/l	
100-42-5	Styrene	ND	5.0	0.28	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.25	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.29	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.29	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.78	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.74	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.42	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.32	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.25	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.47	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.39	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.29	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.20	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.4	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.45	ug/l	
	m,p-Xylene	ND	1.0	0.47	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

Method Blank Summary

Job Number: MC39176
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1234-MB1	U29694.D	1	06/19/15	MC	n/a	n/a	MSU1234

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39176-6

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	94%	72-133%
2037-26-5	Toluene-D8	100%	85-114%
460-00-4	4-Bromofluorobenzene	83%	70-134%

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC39176
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1234-BS	U29691.D	1	06/19/15	MC	n/a	n/a	MSU1234
MSU1234-BSD	U29692.D	1	06/19/15	MC	n/a	n/a	MSU1234

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39176-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	63.5	127	64.4	129	1	14-172/25
71-43-2	Benzene	50	42.8	86	43.6	87	2	68-127/25
108-86-1	Bromobenzene	50	52.5	105	48.1	96	9	74-124/25
74-97-5	Bromochloromethane	50	43.0	86	46.2	92	7	68-135/25
75-27-4	Bromodichloromethane	50	40.5	81	42.0	84	4	72-144/25
75-25-2	Bromoform	50	43.7	87	49.5	99	12	59-147/25
74-83-9	Bromomethane	50	48.1	96	62.4	125	26* [a]	34-175/25
78-93-3	2-Butanone (MEK)	50	55.5	111	65.8	132	17	43-147/25
104-51-8	n-Butylbenzene	50	47.4	95	47.5	95	0	77-136/25
135-98-8	sec-Butylbenzene	50	49.7	99	48.2	96	3	75-134/25
98-06-6	tert-Butylbenzene	50	41.7	83	38.5	77	8	74-132/25
75-15-0	Carbon disulfide	50	52.4	105	57.8	116	10	34-171/25
56-23-5	Carbon tetrachloride	50	48.5	97	54.8	110	12	55-153/25
108-90-7	Chlorobenzene	50	50.4	101	50.4	101	0	71-123/25
75-00-3	Chloroethane	50	46.8	94	61.7	123	27* [a]	58-175/25
67-66-3	Chloroform	50	42.3	85	44.0	88	4	67-136/25
74-87-3	Chloromethane	50	45.7	91	60.1	120	27* [a]	25-182/25
95-49-8	o-Chlorotoluene	50	45.5	91	43.9	88	4	72-130/25
106-43-4	p-Chlorotoluene	50	47.3	95	44.8	90	5	73-127/25
96-12-8	1,2-Dibromo-3-chloropropane	50	36.1	72	37.8	76	5	50-159/25
124-48-1	Dibromochloromethane	50	46.1	92	46.8	94	2	73-139/25
106-93-4	1,2-Dibromoethane	50	50.8	102	50.4	101	1	69-132/25
95-50-1	1,2-Dichlorobenzene	50	46.8	94	47.3	95	1	77-125/25
541-73-1	1,3-Dichlorobenzene	50	48.3	97	47.1	94	3	77-124/25
106-46-7	1,4-Dichlorobenzene	50	49.1	98	47.9	96	2	73-128/25
75-71-8	Dichlorodifluoromethane	50	51.4	103	68.0	136	28* [a]	23-157/25
75-34-3	1,1-Dichloroethane	50	39.3	79	39.5	79	1	63-145/25
107-06-2	1,2-Dichloroethane	50	41.9	84	34.8	70	19	58-145/25
75-35-4	1,1-Dichloroethene	50	50.3	101	50.6	101	1	56-158/25
156-59-2	cis-1,2-Dichloroethene	50	47.4	95	50.1	100	6	67-133/25
156-60-5	trans-1,2-Dichloroethene	50	41.5	83	40.5	81	2	66-136/25
78-87-5	1,2-Dichloropropane	50	41.5	83	43.7	87	5	75-133/25
142-28-9	1,3-Dichloropropane	50	53.9	108	51.8	104	4	70-127/25
594-20-7	2,2-Dichloropropane	50	42.2	84	52.5	105	22	52-163/25
563-58-6	1,1-Dichloropropene	50	41.1	82	38.4	77	7	77-140/25
10061-01-5	cis-1,3-Dichloropropene	50	53.7	107	52.0	104	3	74-141/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC39176
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1234-BS	U29691.D	1	06/19/15	MC	n/a	n/a	MSU1234
MSU1234-BSD	U29692.D	1	06/19/15	MC	n/a	n/a	MSU1234

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39176-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	50	46.7	93	46.1	92	1	77-143/25
100-41-4	Ethylbenzene	50	44.8	90	47.1	94	5	71-129/25
87-68-3	Hexachlorobutadiene	50	54.3	109	51.7	103	5	64-146/25
591-78-6	2-Hexanone	50	48.6	97	56.2	112	15	22-163/25
74-88-4	Iodomethane	50	54.0	108	60.3	121	11	30-166/25
98-82-8	Isopropylbenzene	50	47.6	95	44.6	89	7	72-133/25
99-87-6	p-Isopropyltoluene	50	49.9	100	49.0	98	2	77-134/25
1634-04-4	Methyl Tert Butyl Ether	50	40.0	80	48.6	97	19	46-151/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	33.6	67	42.6	85	24	47-145/25
74-95-3	Methylene bromide	50	43.8	88	49.6	99	12	70-132/25
75-09-2	Methylene chloride	50	41.5	83	44.9	90	8	55-146/25
91-20-3	Naphthalene	50	40.5	81	40.4	81	0	39-176/25
103-65-1	n-Propylbenzene	50	47.0	94	44.3	89	6	74-134/25
100-42-5	Styrene	50	44.3	89	47.8	96	8	71-134/25
630-20-6	1,1,1,2-Tetrachloroethane	50	47.8	96	53.5	107	11	70-137/25
79-34-5	1,1,2,2-Tetrachloroethane	50	42.2	84	42.0	84	0	58-145/25
127-18-4	Tetrachloroethene	50	52.7	105	50.5	101	4	63-137/25
108-88-3	Toluene	50	48.7	97	51.1	102	5	75-126/25
87-61-6	1,2,3-Trichlorobenzene	50	46.4	93	46.0	92	1	27-181/25
120-82-1	1,2,4-Trichlorobenzene	50	51.9	104	51.2	102	1	40-176/25
71-55-6	1,1,1-Trichloroethane	50	39.8	80	47.1	94	17	68-144/25
79-00-5	1,1,2-Trichloroethane	50	45.4	91	48.2	96	6	72-133/25
79-01-6	Trichloroethene	50	42.5	85	42.5	85	0	73-126/25
75-69-4	Trichlorofluoromethane	50	44.5	89	50.8	102	13	43-152/25
96-18-4	1,2,3-Trichloropropane	50	41.1	82	40.4	81	2	58-141/25
95-63-6	1,2,4-Trimethylbenzene	50	46.2	92	45.9	92	1	76-129/25
108-67-8	1,3,5-Trimethylbenzene	50	48.5	97	47.4	95	2	71-127/25
108-05-4	Vinyl Acetate	50	53.7	107	54.0	108	1	10-170/25
75-01-4	Vinyl chloride	50	46.2	92	59.2	118	25	36-167/25
	m,p-Xylene	100	93.0	93	99.1	99	6	68-130/25
95-47-6	o-Xylene	50	43.1	86	48.2	96	11	69-126/25
1330-20-7	Xylene (total)	150	136	91	147	98	8	67-129/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC39176
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1234-BS	U29691.D	1	06/19/15	MC	n/a	n/a	MSU1234
MSU1234-BSD	U29692.D	1	06/19/15	MC	n/a	n/a	MSU1234

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39176-6

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	89%	96%	72-133%
2037-26-5	Toluene-D8	100%	109%	85-114%
460-00-4	4-Bromofluorobenzene	97%	91%	70-134%

(a) Outside control limits. Individual spike recoveries within acceptance limits.

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: MC39176
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Method: SW846 8260C **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC39176-6	U29695.D	96	89	85
MSU1234-BS	U29691.D	89	100	97
MSU1234-BSD	U29692.D	96	109	91
MSU1234-MB1	U29694.D	94	100	83

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	72-133%
S2 = Toluene-D8	85-114%
S3 = 4-Bromofluorobenzene	70-134%

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	14	28	8.7	<200
Antimony	6.0	1.1	2	-0.70	<6.0
Arsenic	4.0	1.6	1.7		
Barium	50	.35	1	0.20	<50
Beryllium	4.0	.15	.25	0.0	<4.0
Bismuth	50	1.3	2.1		
Boron	100	.9	1.1		
Cadmium	4.0	.16	.43	0.0	<4.0
Calcium	5000	6.9	15	10.2	<5000
Chromium	10	.36	.48	0.0	<10
Cobalt	50	.15	.28	-0.10	<50
Copper	25	.59	2.4	0.70	<25
Gold	50	1.1	1.5		
Iron	100	3.3	17	6.6	<100
Lead	5.0	.78	1.7	0.40	<5.0
Lithium	500	2.3	2.5		
Magnesium	5000	23	54	11.9	<5000
Manganese	15	.056	1.4	0.30	<15
Molybdenum	100	1.7	3.6		
Nickel	40	.21	.5	-0.20	<40
Palladium	50	.92	2.6		
Platinum	50	4.6	5.4		
Potassium	5000	41	49	-59	<5000
Selenium	10	1.5	2	-0.20	<10
Silicon	100	1.1	30		
Silver	5.0	.56	1	-0.10	<5.0
Sodium	5000	17	77	-190	<5000
Sulfur	50	2.3	4.6		
Strontium	10	.2	.22		
Thallium	5.0	.54	1.7	-0.80	<5.0
Tin	100	.39	.81		
Titanium	50	.34	.51		
Tungsten	100	3.1	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.61	.51	0.0	<10
Zinc	20	.53	1	0.80	<20
Zirconium	50	.19	1.2		

Associated samples MP24709: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum	14.7	10100	10000	100.9	75-125
Antimony	0.0	518	500	103.6	75-125
Arsenic					
Barium	61.0	2090	2000	101.5	75-125
Beryllium	0.0	501	500	100.2	75-125
Bismuth					
Boron					
Cadmium	0.0	521	500	104.2	75-125
Calcium	56500	82800	25000	105.2	75-125
Chromium	0.0	507	500	101.4	75-125
Cobalt	35.7	540	500	100.9	75-125
Copper	1.3	497	500	99.1	75-125
Gold					
Iron	113000	125000	10000	120.0(a)	75-125
Lead	0.0	993	1000	99.3	75-125
Lithium					
Magnesium	9490	36700	25000	108.8	75-125
Manganese	2180	2580	500	80.0 (a)	75-125
Molybdenum					
Nickel	20.3	535	500	102.9	75-125
Palladium					
Platinum					
Potassium	13700	40300	25000	106.4	75-125
Selenium	0.0	520	500	104.0	75-125
Silicon					
Silver	0.60	193	200	96.2	75-125
Sodium	44100	70800	25000	106.8	75-125
Sulfur					
Strontium					
Thallium	0.0	502	500	100.4	75-125
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium	0.0	502	500	100.4	75-125
Zinc	7.6	514	500	101.3	75-125
Zirconium					

Associated samples MP24709: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum	14.7	10200	10000	101.9	1.0	20
Antimony	0.0	521	500	104.2	0.6	20
Arsenic						
Barium	61.0	2110	2000	102.5	1.0	20
Beryllium	0.0	506	500	101.2	1.0	20
Bismuth						
Boron						
Cadmium	0.0	524	500	104.8	0.6	20
Calcium	56500	83800	25000	109.2	1.2	20
Chromium	0.0	511	500	102.2	0.8	20
Cobalt	35.7	546	500	102.1	1.1	20
Copper	1.3	500	500	99.7	0.6	20
Gold						
Iron	113000	126000	10000	130.0(a)	0.8	20
Lead	0.0	1000	1000	100.0	0.7	20
Lithium						
Magnesium	9490	37000	25000	110.0	0.8	20
Manganese	2180	2630	500	90.0	1.9	20
Molybdenum						
Nickel	20.3	539	500	103.7	0.7	20
Palladium						
Platinum						
Potassium	13700	41100	25000	109.6	2.0	20
Selenium	0.0	523	500	104.6	0.6	20
Silicon						
Silver	0.60	193	200	96.2	0.0	20
Sodium	44100	71700	25000	110.4	1.3	20
Sulfur						
Strontium						
Thallium	0.0	507	500	101.4	1.0	20
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium	0.0	504	500	100.8	0.4	20
Zinc	7.6	517	500	101.9	0.6	20
Zirconium						

Associated samples MP24709: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum	9990	10000	99.9	80-120
Antimony	519	500	103.8	80-120
Arsenic				
Barium	2020	2000	101.0	80-120
Beryllium	499	500	99.8	80-120
Bismuth				
Boron				
Cadmium	524	500	104.8	80-120
Calcium	26800	25000	107.2	80-120
Chromium	515	500	103.0	80-120
Cobalt	512	500	102.4	80-120
Copper	500	500	100.0	80-120
Gold				
Iron	10200	10000	102.0	80-120
Lead	1020	1000	102.0	80-120
Lithium				
Magnesium	26900	25000	107.6	80-120
Manganese	527	500	105.4	80-120
Molybdenum				
Nickel	524	500	104.8	80-120
Palladium				
Platinum				
Potassium	26200	25000	104.8	80-120
Selenium	521	500	104.2	80-120
Silicon				
Silver	193	200	96.5	80-120
Sodium	27500	25000	110.0	80-120
Sulfur				
Strontium				
Thallium	526	500	105.2	80-120
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium	503	500	100.6	80-120
Zinc	514	500	102.8	80-120
Zirconium				

Associated samples MP24709: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	SDL 1:5	%DIF	QC Limits
Aluminum	14.7	0.00	100.0(a)	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic				
Barium	61.0	62.5	2.5	0-10
Beryllium	0.00	0.00	NC	0-10
Bismuth				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium	56500	57900	2.6	0-10
Chromium	0.00	0.00	NC	0-10
Cobalt	35.7	35.6	0.3	0-10
Copper	1.30	0.00	100.0(a)	0-10
Gold				
Iron	113000	117000	2.8	0-10
Lead	0.00	0.00	NC	0-10
Lithium				
Magnesium	9490	9840	3.7	0-10
Manganese	2180	2200	0.9	0-10
Molybdenum				
Nickel	20.3	20.0	1.5	0-10
Palladium				
Platinum				
Potassium	13700	13600	0.5	0-10
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.600	0.00	100.0(a)	0-10
Sodium	44100	45100	2.3	0-10
Sulfur				
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	SDL 1:5	%DIF	QC Limits
Vanadium	0.00	0.00	NC	0-10
Zinc	7.60	9.70	27.6 (a)	0-10
Zirconium				

Associated samples MP24709: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.3	4.4		
Antimony	4.0	.022	.058		
Arsenic	4.0	.046	.42	0.20	<4.0
Barium	2.0	.016	.076		
Beryllium	1.0	.015	.042		
Boron	10	.24	.34		
Cadmium	2.0	.012	.026		
Calcium	500	4.2	30		
Chromium	8.0	.032	.42		
Cobalt	1.0	.0064	.028		
Copper	8.0	.017	1		
Iron	50	.72	3.4		
Lead	2.0	.013	.036		
Magnesium	500	1.4	2		
Manganese	4.0	.0096	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.015	.14		
Potassium	500	3.4	5.2		
Selenium	2.0	.15	.3		
Silver	2.0	.0088	.022		
Sodium	500	2	8.8		
Strontium	20	.01	.026		
Thallium	2.0	.042	.068		
Tin	10	.015	.048		
Titanium	2.0	.2	.26		
Vanadium	20	.2	1.4		
Zinc	10	.066	2		

Associated samples MP24709A: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	975	1540	500	113.0	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP24709A: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	975	1550	500	115.0	0.6	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP24709A: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	545	500	109.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP24709A: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24709A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	SDL 20:100%DIF		QC Limits
Aluminum				
Antimony				
Arsenic	975	930	4.6	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP24709A: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24711
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/10/15

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.20	.038	.096	-0.021	<0.20

Associated samples MP24711: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24711
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MS	Spikelot HGRWS1	% Rec	QC Limits
Mercury	0.0	3.3	3	110.0	75-125

Associated samples MP24711: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24711
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/10/15

Metal	MC39176-1F Original	MSD	Spikelot HGRWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	3.3	3	110.0	0.0	20

Associated samples MP24711: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24711
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/10/15

Metal	BSP Result	Spikelot HGRWS1	% Rec	QC Limits
Mercury	3.0	3	100.0	80-120

Associated samples MP24711: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

7.3.3

7

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN50921	5.0	0.0	mg/l	250	250	100.0	80-120%
Alkalinity, Total as CaCO3	GN50946	5.0	0.0	mg/l	250	251	100.4	80-120%
Chloride	GN50932	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Chloride	GN50958	1.0	0.0	mg/l	10	10.5	105.0	80-120%
Dissolved Organic Carbon	GN50901	1.0	0.0	mg/l	10	9.75	97.5	80-120%

Associated Samples:
Batch GN50901: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F
Batch GN50921: MC39176-1, MC39176-2, MC39176-3, MC39176-4, MC39176-5, MC39176-7
Batch GN50932: MC39176-1, MC39176-2, MC39176-3, MC39176-4, MC39176-5, MC39176-7, MC39176-8, MC39176-9, MC39176-10, MC39176-11, MC39176-12
Batch GN50946: MC39176-8, MC39176-9, MC39176-10, MC39176-11, MC39176-12, MC39176-13, MC39176-14, MC39176-15, MC39176-16
Batch GN50958: MC39176-13, MC39176-14, MC39176-15, MC39176-16
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN50921	MC39176-1	mg/l	112	111	0.9	0-20%
Alkalinity, Total as CaCO3	GN50946	MC39176-8	mg/l	57.2	58.2	1.7	0-20%
Chloride	GN50932	MC39176-1	mg/l	140	140	0.0	0-20%
Chloride	GN50958	MC39199-4	mg/l	175	175	0.0	0-20%
Dissolved Organic Carbon	GN50901	MC39176-1F	mg/l	2.4	3.6	40.0(a)	0-20%

Associated Samples:
Batch GN50901: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F
Batch GN50921: MC39176-1, MC39176-2, MC39176-3, MC39176-4, MC39176-5, MC39176-7
Batch GN50932: MC39176-1, MC39176-2, MC39176-3, MC39176-4, MC39176-5, MC39176-7, MC39176-8, MC39176-9, MC39176-10, MC39176-11, MC39176-12
Batch GN50946: MC39176-8, MC39176-9, MC39176-10, MC39176-11, MC39176-12, MC39176-13, MC39176-14, MC39176-15, MC39176-16
Batch GN50958: MC39176-13, MC39176-14, MC39176-15, MC39176-16
(*) Outside of QC limits
(a) High recovery/RPD due to possible nonhomogeneity between sample bottles.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39176
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN50921	MC39176-1	mg/l	112	250	353	96.4	75-125%
Alkalinity, Total as CaCO3	GN50946	MC39176-8	mg/l	57.2	250	308	100.3	75-125%
Chloride	GN50932	MC39176-1	mg/l	140	100	240	100.0	75-125%
Chloride	GN50958	MC39199-4	mg/l	175	100	275	100.0	75-125%
Dissolved Organic Carbon	GN50901	MC39176-1F	mg/l	2.4	10	12.9	105.0	75-125%

Associated Samples:
Batch GN50901: MC39176-1F, MC39176-2F, MC39176-3F, MC39176-4F, MC39176-5F, MC39176-7F, MC39176-8F, MC39176-9F, MC39176-10F, MC39176-11F, MC39176-12F, MC39176-13F, MC39176-14F, MC39176-15F, MC39176-16F
Batch GN50921: MC39176-1, MC39176-2, MC39176-3, MC39176-4, MC39176-5, MC39176-7
Batch GN50932: MC39176-1, MC39176-2, MC39176-3, MC39176-4, MC39176-5, MC39176-7, MC39176-8, MC39176-9, MC39176-10, MC39176-11, MC39176-12
Batch GN50946: MC39176-8, MC39176-9, MC39176-10, MC39176-11, MC39176-12, MC39176-13, MC39176-14, MC39176-15, MC39176-16
Batch GN50958: MC39176-13, MC39176-14, MC39176-15, MC39176-16
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST

CW

CHAIN OF CUSTODY

495 Tech Center West, Bldg 1, Marlboro, MA 01752
TEL: (508)481-6200 FAX: (508)-481-7753

Accutest Job #:	MC39176
Accutest Quote #:	Page 1 of 2
AMS P.O. #:	
Project No.:	

Client Information			Subcontract Laboratory Information		
Name: Accutest New England			Name: Accutest of New Jersey		
Address: 50 D'Angelo Drive			Address: 2235 Route 130		
City: Marlborough	State: MA	Zip: 01752	City: Dayton	State: NJ	Zip: 08810
Send Report to: FrankD@Accutest.com			Contact: Sample Management		
Any questions contact: Frank D'Agostino					
Phone/Fax #: (508)481-6200 / (508)481-7753			Phone: (732) 329-0200		

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time		Matrix	# of bottles	Preservation HCL	NaOH	HNO3	H3PO4	None	SO4 by 300	**MS/MSD				Comments
MC39176-1	6/8/15	12:25 PM		GW	3					x	X	X				
MC39176-2	6/8/15	9:45 AM		GW	1					x	X					MA
MC39176-3	6/8/15	11:10 AM		GW	1					x	X					
MC39176-4	6/8/15	11:50 AM		GW	1					x	X					
MC39176-5	6/8/15	12:50 PM		GW	1					x	X					
MC39176-7	6/8/15	1:57 PM		GW	1					x	X					
MC39176-8	6/8/15	3:11 PM		GW	1					x	X					
MC39176-9	6/8/15	2:35 PM		GW	1					x	X					
MC39176-10	6/8/15	11:30 AM		GW	1					x	X					
MC39176-11	6/8/15	11:55 AM		GW	1					x	X					

X STD 6/22/15

Other (Days)

INITIAL ASESSMENT Am 3B

LABEL VERIFICATION HV

10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.

Data Deliverable Information

- [ ] Commercial "A"
- [ ] Commercial "B"
- [x] Commercial "BN"
- [ ] Reduced Tier 1
- [ ] Full Tier 1
- [ ] PDF
- [ ] Compact Disk Deliverable
- [ ] Electronic Delivery:
- [ ] State Forms
- [ ] Other (Specify)

Comments / Remarks

*Please notify Accutest if surcharges applied. All DW samples are subject to MCL compliance reporting
**MS/MSD

FEDEX # 6406 1312 2677

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date & Time:	Received By:	Date & Time:
1 [signature]	6/9/15	1 FEDEX	1
2 FEDEX	6-10-15 945	2 [signature]	2
3		3	3

Seal #:

Headspace: Yes No ☐ NA ☐

Preserved where applicable: ☐

Temperature °C 2-6°C On Ice ☒

9.1

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MC39176: Chain of Custody
Page 1 of 3
Accutest New Jersey

ACCUTEST

CHAIN OF CUSTODY

495 Tech Center West, Bldg 1, Marlboro, MA 01752
TEL: (508)481-6200 FAX: (508)-481-7753

Accutest Job #: MC39176
Accutest Quote #: Page 2 of 2
AMS P.O. #:
Project No.:

Client Information

Name: Accutest New England
Address: 50 D'Angelo Drive
City: Marlborough State: MA Zip: 01752
Send Report to: FrankD@Accutest.com
Any questions contact: Frank D'Agostino
Phone/Fax #: (508)481-6200 / (508)481-7753

Subcontract Laboratory Information

Name: Accutest of New Jersey
Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Contact: Sample Management
Phone: (732) 329-0200

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles	Preservation HCL	NaOH	HNO3	H3PO4	None	SO4 by 300					Comments
MC39176-12	6/8/15	3:00 PM	GW	1					x	X					
MC39176-13	6/8/15	1:35 PM	GW	1					x	X					
MC39176-14	6/8/15	3:35 PM	GW	1					x	X					
MC39176-15	6/8/15	1:30 PM	GW	1					x	X					
MC39176-16	6/8/15	4:00 PM	GW	1					x	X					

[X] STD 6/22/15
[ ] Other _____ (Days)

10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.

Data Deliverable Information

[ ] Commercial "A"
[ ] Commercial "B"
[X] Commercial "BN"
[ ] Reduced Tier 1
[ ] Full Tier 1
[ ] PDF
[ ] Compact Disk Deliverable
[ ] Electronic Delivery:
[ ] State Forms
[ ] Other (Specify)

Comments / Remarks

*Please notify Accutest if surcharges applied. All DW samples are subject to MCL compliance reporting

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date & Time:	Received By:	Date & Time:
1 [signature]	6/9/15	1 Fed Ex	1
2 FEDEX	6-10-15 945	2 [signature]	2
3		3	3

Seal #:
Headspace: Yes [ ] No [ ] NA [ ]
Preserved where applicable: [ ]
Temperature °C _____ On Ice [ ]

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9

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC39176 **Client:** **Project:**

Date / Time Received: 6/10/2015 9:45:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.6);

Cooler Temps (Corrected) °C: Cooler 1: (2.3);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☐	☑	☐
2. Trip Blank listed on COC:	☐	☑	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☑	☐

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

MC39176: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5 Limits

Job Number: MC39176
Account: Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/08/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No Exceptions found.

* Sample used for QC is not from job MC39176

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39176
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Sulfate	GP89805/GN27125	10	0.0	mg/l	80	83.6	104.5	90-110%

Associated Samples:
Batch GP89805: MC39176-1, MC39176-2, MC39176-3, MC39176-4, MC39176-5, MC39176-7, MC39176-8, MC39176-9, MC39176-10, MC39176-11, MC39176-12, MC39176-13, MC39176-14, MC39176-15, MC39176-16
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39176
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Sulfate	GP89805/GN27125	MC39176-1	mg/l	0.22 U	0.0	0.0	0-20%

Associated Samples:
Batch GP89805: MC39176-1, MC39176-2, MC39176-3, MC39176-4, MC39176-5, MC39176-7, MC39176-8, MC39176-9, MC39176-10, MC39176-11, MC39176-12, MC39176-13, MC39176-14, MC39176-15, MC39176-16
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39176
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Sulfate	GP89805/GN27125	MC39176-1	mg/l	0.22 U	80	83.0	103.8	80-120%

Associated Samples:
Batch GP89805: MC39176-1, MC39176-2, MC39176-3, MC39176-4, MC39176-5, MC39176-7, MC39176-8, MC39176-9, MC39176-10, MC39176-11, MC39176-12, MC39176-13, MC39176-14, MC39176-15, MC39176-16
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

06/26/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC39199

Sampling Date: 06/09/15

Report to:

H&S Environmental
160 East Main Street
Westborough, MA 01581
eanderson@hsenv.com

ATTN: Elizabeth Anderson

Total number of pages in report: **92**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Accutest Laboratories

Sample Summary

H&S Environmental

Job No: MC39199

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC39199-1	06/09/15	10:35	SL	06/09/15	AQ	Ground Water	SHL-24-060915
MC39199-1F	06/09/15	10:35	SL	06/09/15	AQ	Groundwater Filtered	SHL-24-060915
MC39199-2	06/09/15	10:00	SL	06/09/15	AQ	Ground Water	DUP-060915
MC39199-2F	06/09/15	10:00	SL	06/09/15	AQ	Groundwater Filtered	DUP-060915
MC39199-3	06/09/15	12:40	SL	06/09/15	AQ	Ground Water	SHL-23-060915
MC39199-3F	06/09/15	12:40	SL	06/09/15	AQ	Groundwater Filtered	SHL-23-060915
MC39199-4	06/09/15	10:40	EF	06/09/15	AQ	Ground Water	SHM-13-04-060915
MC39199-4D	06/09/15	10:40	EF	06/09/15	AQ	Water Dup/MSD	SHM-13-04-060915
MC39199-4F	06/09/15	10:40	EF	06/09/15	AQ	Groundwater Filtered	SHM-13-04-060915
MC39199-4FD	06/09/15	10:40	EF	06/09/15	AQ	Water Dup/MSD	SHM-13-04-060915
MC39199-4FS	06/09/15	10:40	EF	06/09/15	AQ	Water Matrix Spike	SHM-13-04-060915
MC39199-4S	06/09/15	10:40	EF	06/09/15	AQ	Water Matrix Spike	SHM-13-04-060915
MC39199-5	06/09/15	12:49	SL	06/09/15	AQ	Ground Water	SHM-07-03-060915

Accutest Laboratories

Sample Summary
(continued)

H&S Environmental

Job No: MC39199

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC39199-5F	06/09/15	12:49	SL	06/09/15	AQ	Groundwater Filtered	SHM-07-03-060915
MC39199-6	06/09/15	11:05	SL	06/09/15	AQ	Ground Water	SHM-10-05A-060915
MC39199-6F	06/09/15	11:05	SL	06/09/15	AQ	Groundwater Filtered	SHM-10-05A-060915
MC39199-7	06/09/15	11:25	MM	06/09/15	AQ	Ground Water	SHM-10-03-060915
MC39199-7F	06/09/15	11:25	MM	06/09/15	AQ	Groundwater Filtered	SHM-10-03-060915
MC39199-8	06/09/15	13:30	MM	06/09/15	AQ	Ground Water	SHM-10-01-060915
MC39199-8F	06/09/15	13:30	MM	06/09/15	AQ	Groundwater Filtered	SHM-10-01-060915
MC39199-9	06/09/15	00:00	MM	06/09/15	AQ	Ground Water	DUP-1-060915
MC39199-9F	06/09/15	00:00	MM	06/09/15	AQ	Groundwater Filtered	DUP-1-060915
MC39199-10	06/09/15	00:00	SLEF	06/09/15	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC39199
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	6/26/2015 9:40:10 AM

9 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 06/09/2015 and were received at Accutest on 06/09/2015 properly preserved, at 1.5 Deg. C and intact. These Samples received an Accutest job number of MC39199. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix: AQ **Batch ID:** MSU1240

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- MSU1240-BS Recovery(s) for trans-1,3-Dichloropropene are outside control limits. Refer to Blank Spike Duplicate.
- RPD for MSU1240-BSD for Acetone: Outside control limits. Individual spike recoveries within acceptance limits.
- MSU1240-MB, MC39199-10 for 4-Bromofluorobenzene are outside DoD control limits, but within in-house control limits.
- MSU1240-BSD for Bromodichloromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloropropene, 4-Methyl-2-pentanone (MIBK), Methylene bromide are outside DoD control limits, but within in-house control limits.
- MSU1240-BS for Acetone, Bromodichloromethane, 1,1-Dichloroethane, 1,2-Dichloropropane, 1,1,2-Trichloroethane are outside DoD control limits, but within in-house control limits.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP24716

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39199-4FMS, MC39199-4FMSD, MC39199-4FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Zinc are outside control limits for sample MP24716-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP24716-S1 for Iron: Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- MC39199-4F for Iron: Matrix spike and matrix spike duplicate recoveries outside of the control limits. J-flag applied.
- MP24716-S2 for Iron: Spike duplicate recovery indicates possible matrix interference and/or sample nonhomogeneity.

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP24716A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39199-4FMS, MC39199-4FMSD, MC39199-4FSDL were used as the QC samples for metals.

Metals By Method SW846 7470A

Matrix: AQ	**Batch ID:** MP24730

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39199-4FMS, MC39199-4FMSD were used as the QC samples for metals.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ	**Batch ID:** N:GP89807

- MC39199-1, 2, 3, 4, 5, 6, 7, 8, 9 for Sulfate: Analysis performed at Accutest Laboratories, Dayton, NJ.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ	**Batch ID:** GN50958

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39199-4DUP, MC39199-4MS were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ	**Batch ID:** GN50947

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39199-4DUP, MC39199-4MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SM21 5310 B

Matrix: AQ	**Batch ID:** GN50890

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39199-4FMS, MC39199-4FDUP were used as the QC samples for Dissolved Organic Carbon.
- RPD(s) for Duplicate for Dissolved Organic Carbon are outside control limits for sample GN50890-D1. RPD acceptable due to low duplicate and sample concentrations.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC39199).

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Accutest Labs of New England, Inc.	**Job No**	MC39199
Site:	HSMAW: Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	6/15/2015 3:41:51 PM

On 06/11/2015, 9 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 2.9 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of MC39199 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** GP89807

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC39199-4DUP, MC39199-4MS were used as the QC samples for Sulfate.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC39199-1	**SHL-24-060915**					
Alkalinity, Total as CaCO3		45.8	5.0	3.9	mg/l	SM21 2320B
Chloride		33.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		26.3	10	0.50	mg/l	EPA 300/SW846 9056A
MC39199-1F	**SHL-24-060915**					
Arsenic		4.9	4.0	2.0	ug/l	SW846 6020A
Calcium		32100	10000	5000	ug/l	SW846 6010C
Magnesium		6000	5000	2500	ug/l	SW846 6010C
Potassium		3160 J	5000	2500	ug/l	SW846 6010C
Sodium		6580	5000	2500	ug/l	SW846 6010C
MC39199-2	**DUP-060915**					
Alkalinity, Total as CaCO3		44.7	5.0	3.9	mg/l	SM21 2320B
Chloride		33.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		26.9	10	0.50	mg/l	EPA 300/SW846 9056A
MC39199-2F	**DUP-060915**					
Arsenic		5.2	4.0	2.0	ug/l	SW846 6020A
Calcium		32300	10000	5000	ug/l	SW846 6010C
Magnesium		6020	5000	2500	ug/l	SW846 6010C
Potassium		3190 J	5000	2500	ug/l	SW846 6010C
Sodium		6610	5000	2500	ug/l	SW846 6010C
Dissolved Organic Carbon		0.52 J	1.0	0.36	mg/l	SM21 5310 B
MC39199-3	**SHL-23-060915**					
Chloride		2.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		7.3 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39199-3F	**SHL-23-060915**					
Manganese		22.2	15	7.5	ug/l	SW846 6010C
Zinc		60.6	20	10	ug/l	SW846 6010C
Dissolved Organic Carbon		0.42 J	1.0	0.36	mg/l	SM21 5310 B
MC39199-4	**SHM-13-04-060915**					
Alkalinity, Total as CaCO3		33.3	5.0	3.9	mg/l	SM21 2320B
Chloride		175	10	7.6	mg/l	SM 4500 CL C-11
Sulfate [a]		14.3	10	0.50	mg/l	EPA 300/SW846 9056A

Summary of Hits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC39199-4F	**SHM-13-04-060915**					
Arsenic		620	20	10	ug/l	SW846 6020A
Barium		41.7 J	50	25	ug/l	SW846 6010C
Calcium		24100	10000	5000	ug/l	SW846 6010C
Iron [b]		12500 J	100	50	ug/l	SW846 6010C
Magnesium		2770 J	5000	2500	ug/l	SW846 6010C
Manganese		843	15	7.5	ug/l	SW846 6010C
Potassium		3730 J	5000	2500	ug/l	SW846 6010C
Sodium		91400	50000	25000	ug/l	SW846 6010C
Dissolved Organic Carbon		1.1	1.0	0.36	mg/l	SM21 5310 B
MC39199-5	**SHM-07-03-060915**					
Alkalinity, Total as CaCO3		16.6	5.0	3.9	mg/l	SM21 2320B
Chloride		180	10	7.6	mg/l	SM 4500 CL C-11
Sulfate [a]		8.8 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39199-5F	**SHM-07-03-060915**					
Barium		28.7 J	50	25	ug/l	SW846 6010C
Calcium		35900	25000	13000	ug/l	SW846 6010C
Iron		98.7 J	100	50	ug/l	SW846 6010C
Magnesium		3110 J	5000	2500	ug/l	SW846 6010C
Manganese		17.8	15	7.5	ug/l	SW846 6010C
Sodium		79800	25000	13000	ug/l	SW846 6010C
Zinc		18.8 J	20	10	ug/l	SW846 6010C
Dissolved Organic Carbon		0.77 J	1.0	0.36	mg/l	SM21 5310 B
MC39199-6	**SHM-10-05A-060915**					
Alkalinity, Total as CaCO3		29.1	5.0	3.9	mg/l	SM21 2320B
Chloride		35.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		9.5 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39199-6F	**SHM-10-05A-060915**					
Arsenic		3.0 J	4.0	2.0	ug/l	SW846 6020A
Calcium		15300	5000	2500	ug/l	SW846 6010C
Manganese		10.3 J	15	7.5	ug/l	SW846 6010C
Sodium		22200	10000	5000	ug/l	SW846 6010C
Dissolved Organic Carbon		0.70 J	1.0	0.36	mg/l	SM21 5310 B

Summary of Hits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC39199-7	**SHM-10-03-060915**					
Alkalinity, Total as CaCO3		73.8	5.0	3.9	mg/l	SM21 2320B
Chloride		1000	50	38	mg/l	SM 4500 CL C-11
Sulfate [a]		66.7	10	0.50	mg/l	EPA 300/SW846 9056A
MC39199-7F	**SHM-10-03-060915**					
Arsenic		4.2	4.0	2.0	ug/l	SW846 6020A
Barium		200	50	25	ug/l	SW846 6010C
Calcium		172000	50000	25000	ug/l	SW846 6010C
Magnesium		19400	5000	2500	ug/l	SW846 6010C
Manganese		38.4	15	7.5	ug/l	SW846 6010C
Potassium		6990	5000	2500	ug/l	SW846 6010C
Sodium		575000	250000	130000	ug/l	SW846 6010C
Dissolved Organic Carbon		0.61 J	1.0	0.36	mg/l	SM21 5310 B
MC39199-8	**SHM-10-01-060915**					
Alkalinity, Total as CaCO3		137	5.0	3.9	mg/l	SM21 2320B
Chloride		17.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		8.6 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39199-8F	**SHM-10-01-060915**					
Calcium		42100	25000	13000	ug/l	SW846 6010C
Iron		92.7 J	100	50	ug/l	SW846 6010C
Magnesium		3640 J	5000	2500	ug/l	SW846 6010C
Manganese		14800	75	38	ug/l	SW846 6010C
Potassium		2530 J	5000	2500	ug/l	SW846 6010C
Sodium		10600	5000	2500	ug/l	SW846 6010C
Dissolved Organic Carbon		1.1	1.0	0.36	mg/l	SM21 5310 B
MC39199-9	**DUP-1-060915**					
Alkalinity, Total as CaCO3		138	5.0	3.9	mg/l	SM21 2320B
Chloride		17.7	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		8.9 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC39199-9F	**DUP-1-060915**					
Calcium		41900	25000	13000	ug/l	SW846 6010C
Iron		87.2 J	100	50	ug/l	SW846 6010C
Magnesium		3650 J	5000	2500	ug/l	SW846 6010C
Manganese		14700	75	38	ug/l	SW846 6010C

Summary of Hits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Sodium		10400	5000	2500	ug/l	SW846 6010C
Dissolved Organic Carbon		0.99 J	1.0	0.36	mg/l	SM21 5310 B

MC39199-10 TRIP BLANK

No hits reported in this sample.

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.
(b) Matrix spike and matrix spike duplicate recoveries outside of the control limits. J-flag applied.

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SHL-24-060915		
Lab Sample ID:	MC39199-1	**Date Sampled:**	06/09/15
Matrix:	AQ - Ground Water	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	45.8	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	33.0	1.0	0.76	mg/l	1	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	26.3	10	0.50	mg/l	1	06/13/15 21:31	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-24-060915		
Lab Sample ID:	MC39199-1F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Arsenic	4.9	4.0	2.0	ug/l	2	06/11/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Calcium	32100	10000	5000	ug/l	2	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Magnesium	6000	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Manganese	7.5 U	15	7.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/15/15	06/16/15	VY	SW846 7470A [2]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Potassium	3160 J	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Sodium	6580	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]

(1) Instrument QC Batch: MA18207
(2) Instrument QC Batch: MA18211
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24716
(6) Prep QC Batch: MP24716A
(7) Prep QC Batch: MP24730

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-24-060915		
Lab Sample ID:	MC39199-1F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.36 U	1.0	0.36	mg/l	1	06/12/15 16:16	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-060915		
Lab Sample ID:	MC39199-2	**Date Sampled:**	06/09/15
Matrix:	AQ - Ground Water	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	44.7	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	33.0	1.0	0.76	mg/l	1	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	26.9	10	0.50	mg/l	1	06/13/15 21:55	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: DUP-060915
Lab Sample ID: MC39199-2F
Matrix: AQ - Groundwater Filtered
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/09/15
Date Received: 06/09/15
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Arsenic	5.2	4.0	2.0	ug/l	2	06/11/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Calcium	32300	10000	5000	ug/l	2	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Magnesium	6020	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Manganese	7.5 U	15	7.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/15/15	06/16/15	VY	SW846 7470A [2]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Potassium	3190 J	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Sodium	6610	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]

(1) Instrument QC Batch: MA18207
(2) Instrument QC Batch: MA18211
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24716
(6) Prep QC Batch: MP24716A
(7) Prep QC Batch: MP24730

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-060915		
Lab Sample ID:	MC39199-2F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.52 J	1.0	0.36	mg/l	1	06/12/15 16:28	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-23-060915		
Lab Sample ID:	MC39199-3	**Date Sampled:**	06/09/15
Matrix:	AQ - Ground Water	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	3.9 U	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	2.5	1.0	0.76	mg/l	1	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	7.3 J	10	0.50	mg/l	1	06/13/15 22:19	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID: SHL-23-060915
Lab Sample ID: MC39199-3F
Matrix: AQ - Groundwater Filtered
Project: Fort Devens, Shepley's Hill, Devens, MA

Date Sampled: 06/09/15
Date Received: 06/09/15
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Arsenic	2.0 U	4.0	2.0	ug/l	2	06/11/15	06/24/15	VY	SW846 6020A [3]	SW846 3010A [5]
Barium	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Calcium	2500 U	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Chromium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Cobalt	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Copper	13 U	25	13	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Lead	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Magnesium	2500 U	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Manganese	22.2	15	7.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/15/15	06/16/15	VY	SW846 7470A [2]	SW846 7470A [6]
Nickel	20 U	40	20	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Potassium	2500 U	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Selenium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Silver	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Sodium	2500 U	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Vanadium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Zinc	60.6	20	10	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18207
(2) Instrument QC Batch: MA18211
(3) Instrument QC Batch: MA18239
(4) Prep QC Batch: MP24716
(5) Prep QC Batch: MP24716A
(6) Prep QC Batch: MP24730

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-23-060915		
Lab Sample ID:	MC39199-3F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.42 J	1.0	0.36	mg/l	1	06/12/15 16:46	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-04-060915		
Lab Sample ID:	MC39199-4	**Date Sampled:**	06/09/15
Matrix:	AQ - Ground Water	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	33.3	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	175	10	7.6	mg/l	10	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	14.3	10	0.50	mg/l	1	06/13/15 23:31	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-04-060915		
Lab Sample ID:	MC39199-4F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Arsenic	620	20	10	ug/l	10	06/11/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	41.7 J	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Calcium	24100	10000	5000	ug/l	2	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Iron [a]	12500 J	100	50	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Magnesium	2770 J	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Manganese	843	15	7.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/15/15	06/16/15	VY	SW846 7470A [2]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Potassium	3730 J	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Sodium	91400	50000	25000	ug/l	10	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]

(1) Instrument QC Batch: MA18207
(2) Instrument QC Batch: MA18211
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24716
(6) Prep QC Batch: MP24716A
(7) Prep QC Batch: MP24730

(a) Matrix spike and matrix spike duplicate recoveries outside of the control limits. J-flag applied.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-04-060915		
Lab Sample ID:	MC39199-4F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.1	1.0	0.36	mg/l	1	06/12/15 16:05	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-07-03-060915		
Lab Sample ID:	MC39199-5	**Date Sampled:**	06/09/15
Matrix:	AQ - Ground Water	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	16.6	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	180	10	7.6	mg/l	10	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	8.8 J	10	0.50	mg/l	1	06/13/15 23:54	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-07-03-060915		
Lab Sample ID:	MC39199-5F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Arsenic	2.0 U	4.0	2.0	ug/l	2	06/11/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	28.7 J	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Calcium	35900	25000	13000	ug/l	5	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Iron	98.7 J	100	50	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Magnesium	3110 J	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Manganese	17.8	15	7.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/15/15	06/16/15	VY	SW846 7470A [2]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Potassium	2500 U	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Sodium	79800	25000	13000	ug/l	5	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Zinc	18.8 J	20	10	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]

(1) Instrument QC Batch: MA18207
(2) Instrument QC Batch: MA18211
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24716
(6) Prep QC Batch: MP24716A
(7) Prep QC Batch: MP24730

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-07-03-060915		
Lab Sample ID:	MC39199-5F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.77 J	1.0	0.36	mg/l	1	06/12/15 17:12	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-05A-060915		
Lab Sample ID:	MC39199-6	**Date Sampled:**	06/09/15
Matrix:	AQ - Ground Water	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	29.1	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	35.5	1.0	0.76	mg/l	1	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	9.5 J	10	0.50	mg/l	1	06/14/15 01:06	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-05A-060915		
Lab Sample ID:	MC39199-6F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Arsenic	3.0 J	4.0	2.0	ug/l	2	06/11/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Calcium	15300	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Magnesium	2500 U	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Manganese	10.3 J	15	7.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/15/15	06/16/15	VY	SW846 7470A [2]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Potassium	2500 U	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Sodium	22200	10000	5000	ug/l	2	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]

(1) Instrument QC Batch: MA18207
(2) Instrument QC Batch: MA18211
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24716
(6) Prep QC Batch: MP24716A
(7) Prep QC Batch: MP24730

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-05A-060915		
Lab Sample ID:	MC39199-6F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.70 J	1.0	0.36	mg/l	1	06/12/15 17:23	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-03-060915		
Lab Sample ID:	MC39199-7	**Date Sampled:**	06/09/15
Matrix:	AQ - Ground Water	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	73.8	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	1000	50	38	mg/l	50	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	66.7	10	0.50	mg/l	1	06/14/15 01:30	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-03-060915		
Lab Sample ID:	MC39199-7F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Arsenic	4.2	4.0	2.0	ug/l	2	06/11/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	200	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Calcium	172000	50000	25000	ug/l	10	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Magnesium	19400	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Manganese	38.4	15	7.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/15/15	06/16/15	VY	SW846 7470A [2]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Potassium	6990	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Sodium	575000	250000	130000	ug/l	50	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]

(1) Instrument QC Batch: MA18207
(2) Instrument QC Batch: MA18211
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24716
(6) Prep QC Batch: MP24716A
(7) Prep QC Batch: MP24730

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-03-060915		
Lab Sample ID:	MC39199-7F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.61 J	1.0	0.36	mg/l	1	06/12/15 17:33	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-01-060915		
Lab Sample ID:	MC39199-8	**Date Sampled:**	06/09/15
Matrix:	AQ - Ground Water	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	137	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	17.5	1.0	0.76	mg/l	1	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	8.6 J	10	0.50	mg/l	1	06/14/15 01:54	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-01-060915		
Lab Sample ID:	MC39199-8F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Arsenic	2.0 U	4.0	2.0	ug/l	2	06/11/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Calcium	42100	25000	13000	ug/l	5	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Iron	92.7 J	100	50	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Magnesium	3640 J	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Manganese	14800	75	38	ug/l	5	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/15/15	06/16/15	VY	SW846 7470A [2]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Potassium	2530 J	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Sodium	10600	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]

(1) Instrument QC Batch: MA18207
(2) Instrument QC Batch: MA18211
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24716
(6) Prep QC Batch: MP24716A
(7) Prep QC Batch: MP24730

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-01-060915		
Lab Sample ID:	MC39199-8F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.1	1.0	0.36	mg/l	1	06/12/15 17:44	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-1-060915		
Lab Sample ID:	MC39199-9	**Date Sampled:**	06/09/15
Matrix:	AQ - Ground Water	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	138	5.0	3.9	mg/l	1	06/18/15	CF	SM21 2320B
Chloride	17.7	1.0	0.76	mg/l	1	06/19/15	CF	SM 4500 CL C-11
Sulfate [a]	8.9 J	10	0.50	mg/l	1	06/14/15 02:18	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-1-060915		
Lab Sample ID:	MC39199-9F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	100 U	200	100	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Antimony	3.0 U	6.0	3.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Arsenic	2.0 U	4.0	2.0	ug/l	2	06/11/15	06/24/15	VY	SW846 6020A [4]	SW846 3010A [6]
Barium	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Beryllium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cadmium	2.0 U	4.0	2.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Calcium	41900	25000	13000	ug/l	5	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Chromium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Cobalt	25 U	50	25	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Copper	13 U	25	13	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Iron	87.2 J	100	50	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Lead	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Magnesium	3650 J	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Manganese	14700	75	38	ug/l	5	06/11/15	06/18/15	EAL	SW846 6010C [3]	SW846 3010A [5]
Mercury	0.15 U	0.20	0.15	ug/l	1	06/15/15	06/16/15	VY	SW846 7470A [2]	SW846 7470A [7]
Nickel	20 U	40	20	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Potassium	2500 U	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Selenium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Silver	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Sodium	10400	5000	2500	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Thallium	2.5 U	5.0	2.5	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Vanadium	5.0 U	10	5.0	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]
Zinc	10 U	20	10	ug/l	1	06/11/15	06/15/15	EAL	SW846 6010C [1]	SW846 3010A [5]

(1) Instrument QC Batch: MA18207
(2) Instrument QC Batch: MA18211
(3) Instrument QC Batch: MA18219
(4) Instrument QC Batch: MA18239
(5) Prep QC Batch: MP24716
(6) Prep QC Batch: MP24716A
(7) Prep QC Batch: MP24730

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-1-060915		
Lab Sample ID:	MC39199-9F	**Date Sampled:**	06/09/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	06/09/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.99 J	1.0	0.36	mg/l	1	06/12/15 17:56	MA	SM21 5310 B

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC39199-10	**Date Sampled:**	06/09/15
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/09/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U29831.D	1	06/23/15	MC	n/a	n/a	MSU1240
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	LOQ	LOD	Units	Q
67-64-1	Acetone	5.0 U	10	5.0	ug/l	
71-43-2	Benzene	0.50 U	0.50	0.50	ug/l	
108-86-1	Bromobenzene	1.0 U	5.0	1.0	ug/l	
74-97-5	Bromochloromethane	0.50 U	5.0	0.50	ug/l	
75-27-4	Bromodichloromethane	0.50 U	1.0	0.50	ug/l	
75-25-2	Bromoform	0.50 U	1.0	0.50	ug/l	
74-83-9	Bromomethane	1.0 U	2.0	1.0	ug/l	
78-93-3	2-Butanone (MEK)	5.0 U	5.0	5.0	ug/l	
104-51-8	n-Butylbenzene	1.0 U	5.0	1.0	ug/l	
135-98-8	sec-Butylbenzene	1.0 U	5.0	1.0	ug/l	
98-06-6	tert-Butylbenzene	1.0 U	5.0	1.0	ug/l	
75-15-0	Carbon disulfide	0.50 U	5.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	0.50 U	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	0.50 U	1.0	0.50	ug/l	
75-00-3	Chloroethane	0.50 U	2.0	0.50	ug/l	
67-66-3	Chloroform	0.50 U	1.0	0.50	ug/l	
74-87-3	Chloromethane	1.0 U	2.0	1.0	ug/l	
95-49-8	o-Chlorotoluene	1.0 U	5.0	1.0	ug/l	
106-43-4	p-Chlorotoluene	1.0 U	5.0	1.0	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
124-48-1	Dibromochloromethane	0.50 U	1.0	0.50	ug/l	
106-93-4	1,2-Dibromoethane	1.0 U	1.0	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	0.50 U	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	0.50 U	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	0.50 U	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	1.0 U	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	0.50 U	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	0.50 U	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethene	0.50 U	1.0	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethene	0.50 U	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	0.50 U	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	0.50 U	2.0	0.50	ug/l	

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC39199-10	**Date Sampled:**	06/09/15
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/09/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

VOA 8260 List

CAS No.	Compound	Result	LOQ	LOD	Units	Q
142-28-9	1,3-Dichloropropane	1.0 U	5.0	1.0	ug/l	
594-20-7	2,2-Dichloropropane	2.0 U	5.0	2.0	ug/l	
563-58-6	1,1-Dichloropropene	0.50 U	5.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.50 U	0.50	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.50 U	0.50	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
87-68-3	Hexachlorobutadiene	1.0 U	5.0	1.0	ug/l	
591-78-6	2-Hexanone	5.0 U	5.0	5.0	ug/l	
74-88-4	Iodomethane	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	1.0 U	5.0	1.0	ug/l	
99-87-6	p-Isopropyltoluene	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.50 U	1.0	0.50	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.0 U	5.0	2.0	ug/l	
74-95-3	Methylene bromide	1.0 U	5.0	1.0	ug/l	
75-09-2	Methylene chloride	1.0 U	2.0	1.0	ug/l	
91-20-3	Naphthalene	2.0 U	5.0	2.0	ug/l	
103-65-1	n-Propylbenzene	1.0 U	5.0	1.0	ug/l	
100-42-5	Styrene	0.50 U	5.0	0.50	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	0.50 U	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.50 U	0.50	0.50	ug/l	
127-18-4	Tetrachloroethene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
87-61-6	1,2,3-Trichlorobenzene	2.0 U	5.0	2.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	1.0 U	5.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	0.50 U	1.0	0.50	ug/l	
79-00-5	1,1,2-Trichloroethane	0.50 U	1.0	0.50	ug/l	
79-01-6	Trichloroethene	0.50 U	1.0	0.50	ug/l	
75-69-4	Trichlorofluoromethane	1.0 U	1.0	1.0	ug/l	
96-18-4	1,2,3-Trichloropropane	1.0 U	5.0	1.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.50 U	5.0	0.50	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.50 U	5.0	0.50	ug/l	
108-05-4	Vinyl Acetate	2.0 U	5.0	2.0	ug/l	
75-01-4	Vinyl chloride	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	1.0 U	1.0	1.0	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	0.50 U	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		72-133%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC39199-10	**Date Sampled:**	06/09/15
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/09/15
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	91%		85-114%
460-00-4	4-Bromofluorobenzene	84%		70-134%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking #:
Bottle Order Control #:
Accutest Quote #: FD18-2014-229
Accutest Job #: MC39199

Client / Reporting Information

Company Name: H&S Environmental
Street Address: 160 East Main Street
City State Zip: Westborough MA
Project Contact: E. Anderson
E-mail: eanderson@hseinc.com
Phone #: 508 277 8721
Fax #:
Sampler(s) Name(s):
Phone #:

Project Information

Project Name: Ft. Devens - LTM - Shepley's Hill Landfill
Street:
City: Devens MA
Project #:
Client PO#:
Project Manager:

Billing Information (If different from Report to)

Company Name:
Street Address:
City State Zip:
Attention:
PO#:

Requested Analysis (see TEST CODE sheet)

phosphoric acid

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB- Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfite	Dissolved Arsenic 6020	Dissolved Metals 6010	Alkalinity Chloride Sulfate	Dissolved organic Carbon	VOC	LAB USE ONLY
1	SHL-24-060915		6/9/15	1035	SL	GW	5		3		1	1				X	X	X	X		
2	DUP-060915		6/9/15	1000	SL	GW	5		3		1	1				X	X	X	X		
3	SHL-23-060915		6/9/15	1240	SL	GW	5		3		1	1				X	X	X	X		
4 SD	SHM-13-04-060915	1040	6/9/15		EF	GW	15		9		3	3				X	X	X	X		
5	SHM-07-03-060915		6/9/15	1249	SL	GW	5		3		1	1				X	X	X	X		3C
6	SHM-10-05A-060915		6/9/15	1105	SL	GW	5		3		1	1				X	X	X	X		6A
7	SHM-10-03-060915		6/9/15	1125	MM	GW	5		3		1	1				X	X	X	X		4A2
8	SHM-10-01-060915		6/9/15	1330	MM	GW	5		3		1	1				X	X	X	X		
9	DUP-1-060915		6/9/15	0000	MM	GW	5		3		1	1				X	X	X	X		
10	TRIP BLANK		6/9/15			TB	2	2												X	

Turnaround Time (Business days)

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Stacey Lee	6/9/15 1530	1 [signature]	2		2
3		3	4		4
5		5			

Custody Seal #: [ ] Intact [ ] Not intact
Preserved where applicable: [ ]
On Ice: [ ] Cooler Temp. 1.5-1.3°C

5.1 5

MC39199: Chain of Custody
Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC39199 **Client:** H&S **Project:** DEVENS

Date / Time Received: 6/9/2015 3:30:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.5/1.5); #2: (1.3/1.3);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	G1;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	2		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC39199: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5 Limits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1240	SW846 8260C						
MSU1240-BS	67-64-1	Acetone	BSP	REC	164	%	39-160
MSU1240-BS	71-43-2	Benzene	BSP	REC	83	%	79-120
MSU1240-BS	108-86-1	Bromobenzene	BSP	REC	94	%	80-120
MSU1240-BS	74-97-5	Bromochloromethane	BSP	REC	86	%	78-123
MSU1240-BS	75-27-4	Bromodichloromethane	BSP	REC	76	%	79-125
MSU1240-BS	75-25-2	Bromoform	BSP	REC	97	%	66-130
MSU1240-BS	74-83-9	Bromomethane	BSP	REC	97	%	53-141
MSU1240-BS	78-93-3	2-Butanone (MEK)	BSP	REC	124	%	56-143
MSU1240-BS	104-51-8	n-Butylbenzene	BSP	REC	92	%	75-128
MSU1240-BS	135-98-8	sec-Butylbenzene	BSP	REC	95	%	77-126
MSU1240-BS	98-06-6	tert-Butylbenzene	BSP	REC	78	%	78-124
MSU1240-BS	75-15-0	Carbon disulfide	BSP	REC	90	%	64-133
MSU1240-BS	56-23-5	Carbon tetrachloride	BSP	REC	105	%	72-136
MSU1240-BS	108-90-7	Chlorobenzene	BSP	REC	96	%	82-118
MSU1240-BS	75-00-3	Chloroethane	BSP	REC	94	%	60-138
MSU1240-BS	67-66-3	Chloroform	BSP	REC	82	%	79-124
MSU1240-BS	74-87-3	Chloromethane	BSP	REC	86	%	50-139
MSU1240-BS	95-49-8	o-Chlorotoluene	BSP	REC	84	%	79-122
MSU1240-BS	106-43-4	p-Chlorotoluene	BSP	REC	85	%	78-122
MSU1240-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	89	%	62-128
MSU1240-BS	124-48-1	Dibromochloromethane	BSP	REC	89	%	74-126
MSU1240-BS	106-93-4	1,2-Dibromoethane	BSP	REC	90	%	77-121
MSU1240-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	94	%	80-119
MSU1240-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	93	%	80-119
MSU1240-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	95	%	79-118
MSU1240-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	85	%	32-152
MSU1240-BS	75-34-3	1,1-Dichloroethane	BSP	REC	74	%	77-125
MSU1240-BS	107-06-2	1,2-Dichloroethane	BSP	REC	80	%	73-128
MSU1240-BS	75-35-4	1,1-Dichloroethene	BSP	REC	94	%	71-131
MSU1240-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	93	%	78-123
MSU1240-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	78	%	75-124
MSU1240-BS	78-87-5	1,2-Dichloropropane	BSP	REC	77	%	78-122
MSU1240-BS	142-28-9	1,3-Dichloropropane	BSP	REC	91	%	80-119
MSU1240-BS	594-20-7	2,2-Dichloropropane	BSP	REC	86	%	60-139
MSU1240-BS	563-58-6	1,1-Dichloropropene	BSP	REC	79	%	79-125
MSU1240-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	87	%	75-124
MSU1240-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	73 [a]	%	73-127
MSU1240-BS	100-41-4	Ethylbenzene	BSP	REC	91	%	79-121
MSU1240-BS	87-68-3	Hexachlorobutadiene	BSP	REC	106	%	66-134
MSU1240-BS	591-78-6	2-Hexanone	BSP	REC	97	%	57-139
MSU1240-BS	74-88-4	Iodomethane	BSP	REC	103	%	69-131
MSU1240-BS	98-82-8	Isopropylbenzene	BSP	REC	90	%	72-131

* Sample used for QC is not from job MC39199

QC Evaluation: DOD QSM5 Limits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1240-BS	99-87-6	p-Isopropyltoluene	BSP	REC	96	%	77-127
MSU1240-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	82	%	71-124
MSU1240-BS	108-10-1	4-Methyl-2-pentanone (MIBK)	BSP	REC	75	%	67-130
MSU1240-BS	74-95-3	Methylene bromide	BSP	REC	83	%	79-123
MSU1240-BS	75-09-2	Methylene chloride	BSP	REC	79	%	74-124
MSU1240-BS	91-20-3	Naphthalene	BSP	REC	93	%	61-128
MSU1240-BS	103-65-1	n-Propylbenzene	BSP	REC	87	%	76-126
MSU1240-BS	100-42-5	Styrene	BSP	REC	89	%	78-123
MSU1240-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	110	%	78-124
MSU1240-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	76	%	71-121
MSU1240-BS	127-18-4	Tetrachloroethene	BSP	REC	103	%	74-129
MSU1240-BS	108-88-3	Toluene	BSP	REC	89	%	80-121
MSU1240-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	101	%	69-129
MSU1240-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	110	%	69-130
MSU1240-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	81	%	74-131
MSU1240-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	79	%	80-119
MSU1240-BS	79-01-6	Trichloroethene	BSP	REC	83	%	79-123
MSU1240-BS	75-69-4	Trichlorofluoromethane	BSP	REC	85	%	65-141
MSU1240-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	80	%	73-122
MSU1240-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	89	%	76-124
MSU1240-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	93	%	75-124
MSU1240-BS	108-05-4	Vinyl Acetate	BSP	REC	91	%	54-146
MSU1240-BS	75-01-4	Vinyl chloride	BSP	REC	88	%	58-137
MSU1240-BS		m,p-Xylene	BSP	REC	95	%	80-121
MSU1240-BS	95-47-6	o-Xylene	BSP	REC	93	%	78-122
MSU1240-BS	1330-20-7	Xylene (total)	BSP	REC	95	%	79-121
MSU1240-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	91	%	80-119
MSU1240-BS	2037-26-5	Toluene-D8	BSP	SURR	98	%	89-112
MSU1240-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	87	%	85-114
MSU1240-BSD	67-64-1	Acetone	BSD	REC	68	%	39-160
MSU1240-BSD	71-43-2	Benzene	BSD	REC	83	%	79-120
MSU1240-BSD	108-86-1	Bromobenzene	BSD	REC	93	%	80-120
MSU1240-BSD	74-97-5	Bromochloromethane	BSD	REC	88	%	78-123
MSU1240-BSD	75-27-4	Bromodichloromethane	BSD	REC	77	%	79-125
MSU1240-BSD	75-25-2	Bromoform	BSD	REC	97	%	66-130
MSU1240-BSD	74-83-9	Bromomethane	BSD	REC	108	%	53-141
MSU1240-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	105	%	56-143
MSU1240-BSD	104-51-8	n-Butylbenzene	BSD	REC	93	%	75-128
MSU1240-BSD	135-98-8	sec-Butylbenzene	BSD	REC	95	%	77-126
MSU1240-BSD	98-06-6	tert-Butylbenzene	BSD	REC	79	%	78-124
MSU1240-BSD	75-15-0	Carbon disulfide	BSD	REC	96	%	64-133
MSU1240-BSD	56-23-5	Carbon tetrachloride	BSD	REC	108	%	72-136
MSU1240-BSD	108-90-7	Chlorobenzene	BSD	REC	97	%	82-118
MSU1240-BSD	75-00-3	Chloroethane	BSD	REC	104	%	60-138
MSU1240-BSD	67-66-3	Chloroform	BSD	REC	82	%	79-124

* Sample used for QC is not from job MC39199

QC Evaluation: DOD QSM5 Limits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1240-BSD	74-87-3	Chloromethane	BSD	REC	96	%	50-139
MSU1240-BSD	95-49-8	o-Chlorotoluene	BSD	REC	84	%	79-122
MSU1240-BSD	106-43-4	p-Chlorotoluene	BSD	REC	85	%	78-122
MSU1240-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	70	%	62-128
MSU1240-BSD	124-48-1	Dibromochloromethane	BSD	REC	91	%	74-126
MSU1240-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	91	%	77-121
MSU1240-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	94	%	80-119
MSU1240-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	94	%	80-119
MSU1240-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	95	%	79-118
MSU1240-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	95	%	32-152
MSU1240-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	74	%	77-125
MSU1240-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	68	%	73-128
MSU1240-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	96	%	71-131
MSU1240-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	93	%	78-123
MSU1240-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	79	%	75-124
MSU1240-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	78	%	78-122
MSU1240-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	93	%	80-119
MSU1240-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	92	%	60-139
MSU1240-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	78	%	79-125
MSU1240-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	90	%	75-124
MSU1240-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	77	%	73-127
MSU1240-BSD	100-41-4	Ethylbenzene	BSD	REC	92	%	79-121
MSU1240-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	109	%	66-134
MSU1240-BSD	591-78-6	2-Hexanone	BSD	REC	82	%	57-139
MSU1240-BSD	74-88-4	Iodomethane	BSD	REC	108	%	69-131
MSU1240-BSD	98-82-8	Isopropylbenzene	BSD	REC	90	%	72-131
MSU1240-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	97	%	77-127
MSU1240-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	83	%	71-124
MSU1240-BSD	108-10-1	4-Methyl-2-pentanone (MIBK)	BSD	REC	66	%	67-130
MSU1240-BSD	74-95-3	Methylene bromide	BSD	REC	78	%	79-123
MSU1240-BSD	75-09-2	Methylene chloride	BSD	REC	81	%	74-124
MSU1240-BSD	91-20-3	Naphthalene	BSD	REC	82	%	61-128
MSU1240-BSD	103-65-1	n-Propylbenzene	BSD	REC	87	%	76-126
MSU1240-BSD	100-42-5	Styrene	BSD	REC	95	%	78-123
MSU1240-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	110	%	78-124
MSU1240-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	77	%	71-121
MSU1240-BSD	127-18-4	Tetrachloroethene	BSD	REC	104	%	74-129
MSU1240-BSD	108-88-3	Toluene	BSD	REC	90	%	80-121
MSU1240-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	98	%	69-129
MSU1240-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	108	%	69-130
MSU1240-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	86	%	74-131
MSU1240-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	81	%	80-119
MSU1240-BSD	79-01-6	Trichloroethene	BSD	REC	80	%	79-123
MSU1240-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	93	%	65-141
MSU1240-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	74	%	73-122

* Sample used for QC is not from job MC39199

QC Evaluation: DOD QSM5 Limits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MSU1240-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	89	%	76-124
MSU1240-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	93	%	75-124
MSU1240-BSD	108-05-4	Vinyl Acetate	BSD	REC	90	%	54-146
MSU1240-BSD	75-01-4	Vinyl chloride	BSD	REC	99	%	58-137
MSU1240-BSD		m,p-Xylene	BSD	REC	96	%	80-121
MSU1240-BSD	95-47-6	o-Xylene	BSD	REC	96	%	78-122
MSU1240-BSD	1330-20-7	Xylene (total)	BSD	REC	96	%	79-121
MSU1240-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	94	%	80-119
MSU1240-BSD	2037-26-5	Toluene-D8	BSD	SURR	99	%	89-112
MSU1240-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	88	%	85-114
MSU1240-MB	1868-53-7	Dibromofluoromethane	MB	SURR	92	%	80-119
MSU1240-MB	2037-26-5	Toluene-D8	MB	SURR	91	%	89-112
MSU1240-MB	460-00-4	4-Bromofluorobenzene	MB	SURR	82	%	85-114
MC39199-10	1868-53-7	Dibromofluoromethane	SAMP	SURR	92	%	80-119
MC39199-10	2037-26-5	Toluene-D8	SAMP	SURR	91	%	89-112
MC39199-10	460-00-4	4-Bromofluorobenzene	SAMP	SURR	84	%	85-114
MP24716	SW846 6010C						
MP24716-B1	7429-90-5	Aluminum	BSP	REC	98.6	%	86-115
MP24716-B1	7440-36-0	Antimony	BSP	REC	101.8	%	88-113
MP24716-B1	7440-39-3	Barium	BSP	REC	99.5	%	88-113
MP24716-B1	7440-41-7	Beryllium	BSP	REC	99.4	%	89-112
MP24716-B1	7440-43-9	Cadmium	BSP	REC	100.2	%	88-113
MP24716-B1	7440-70-2	Calcium	BSP	REC	105.2	%	87-113
MP24716-B1	7440-47-3	Chromium	BSP	REC	101.2	%	90-113
MP24716-B1	7440-48-4	Cobalt	BSP	REC	102	%	89-114
MP24716-B1	7440-50-8	Copper	BSP	REC	98	%	86-114
MP24716-B1	7439-89-6	Iron	BSP	REC	97.4	%	87-115
MP24716-B1	7439-92-1	Lead	BSP	REC	100	%	86-113
MP24716-B1	7439-95-4	Magnesium	BSP	REC	105.6	%	85-113
MP24716-B1	7439-96-5	Manganese	BSP	REC	107	%	90-114
MP24716-B1	7440-02-0	Nickel	BSP	REC	101.2	%	88-113
MP24716-B1	7440-09-7	Potassium	BSP	REC	102.8	%	86-114
MP24716-B1	7782-49-2	Selenium	BSP	REC	103	%	83-114
MP24716-B1	7440-22-4	Silver	BSP	REC	93.5	%	84-115
MP24716-B1	7440-23-5	Sodium	BSP	REC	107.2	%	87-115
MP24716-B1	7440-28-0	Thallium	BSP	REC	102.2	%	85-114
MP24716-B1	7440-62-2	Vanadium	BSP	REC	98.2	%	90-111
MP24716-B1	7440-66-6	Zinc	BSP	REC	98.6	%	87-115
MP24716-S1	7429-90-5	Aluminum	MS	REC	101	%	86-115
MP24716-S1	7440-36-0	Antimony	MS	REC	103	%	88-113
MP24716-S1	7440-39-3	Barium	MS	REC	101.4	%	88-113
MP24716-S1	7440-41-7	Beryllium	MS	REC	101.6	%	89-112
MP24716-S1	7440-43-9	Cadmium	MS	REC	100.6	%	88-113

* Sample used for QC is not from job MC39199

QC Evaluation: DOD QSM5 Limits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP24716-S1	7440-70-2	Calcium	MS	REC	106.8	%	87-113
MP24716-S1	7440-47-3	Chromium	MS	REC	96.8	%	90-113
MP24716-S1	7440-48-4	Cobalt	MS	REC	103.8	%	89-114
MP24716-S1	7440-50-8	Copper	MS	REC	93.2	%	86-114
MP24716-S1	7439-89-6	Iron	MS	REC	120 [b]	%	87-115
MP24716-S1	7439-92-1	Lead	MS	REC	101	%	86-113
MP24716-S1	7439-95-4	Magnesium	MS	REC	106.5	%	85-113
MP24716-S1	7439-96-5	Manganese	MS	REC	91.4	%	90-114
MP24716-S1	7440-02-0	Nickel	MS	REC	102.8	%	88-113
MP24716-S1	7440-09-7	Potassium	MS	REC	104.7	%	86-114
MP24716-S1	7782-49-2	Selenium	MS	REC	105	%	83-114
MP24716-S1	7440-22-4	Silver	MS	REC	90.5	%	84-115
MP24716-S1	7440-23-5	Sodium	MS	REC	102.4	%	87-115
MP24716-S1	7440-28-0	Thallium	MS	REC	100.6	%	85-114
MP24716-S1	7440-62-2	Vanadium	MS	REC	95	%	90-111
MP24716-S1	7440-66-6	Zinc	MS	REC	99.1	%	87-115
MP24716-S2	7429-90-5	Aluminum	MSD	REC	98	%	86-115
MP24716-S2	7429-90-5	Aluminum	MSD	RPD	3	%	20
MP24716-S2	7440-36-0	Antimony	MSD	REC	102	%	88-113
MP24716-S2	7440-36-0	Antimony	MSD	RPD	1	%	20
MP24716-S2	7440-39-3	Barium	MSD	REC	98.9	%	88-113
MP24716-S2	7440-39-3	Barium	MSD	RPD	2.4	%	20
MP24716-S2	7440-41-7	Beryllium	MSD	REC	99	%	89-112
MP24716-S2	7440-41-7	Beryllium	MSD	RPD	2.6	%	20
MP24716-S2	7440-43-9	Cadmium	MSD	REC	99.6	%	88-113
MP24716-S2	7440-43-9	Cadmium	MSD	RPD	1	%	20
MP24716-S2	7440-70-2	Calcium	MSD	REC	107.6	%	87-113
MP24716-S2	7440-70-2	Calcium	MSD	RPD	.4	%	20
MP24716-S2	7440-47-3	Chromium	MSD	REC	98.6	%	90-113
MP24716-S2	7440-47-3	Chromium	MSD	RPD	1.8	%	20
MP24716-S2	7440-48-4	Cobalt	MSD	REC	102.8	%	89-114
MP24716-S2	7440-48-4	Cobalt	MSD	RPD	1	%	20
MP24716-S2	7440-50-8	Copper	MSD	REC	95.4	%	86-114
MP24716-S2	7440-50-8	Copper	MSD	RPD	2.3	%	20
MP24716-S2	7439-89-6	Iron	MSD	REC	121 [c]	%	87-115
MP24716-S2	7439-89-6	Iron	MSD	RPD	.4	%	20
MP24716-S2	7439-92-1	Lead	MSD	REC	99.8	%	86-113
MP24716-S2	7439-92-1	Lead	MSD	RPD	1.2	%	20
MP24716-S2	7439-95-4	Magnesium	MSD	REC	106.1	%	85-113
MP24716-S2	7439-95-4	Magnesium	MSD	RPD	.3	%	20
MP24716-S2	7439-96-5	Manganese	MSD	REC	99.4	%	90-114
MP24716-S2	7439-96-5	Manganese	MSD	RPD	3	%	20
MP24716-S2	7440-02-0	Nickel	MSD	REC	102	%	88-113
MP24716-S2	7440-02-0	Nickel	MSD	RPD	.8	%	20
MP24716-S2	7440-09-7	Potassium	MSD	REC	104.3	%	86-114

* Sample used for QC is not from job MC39199

QC Evaluation: DOD QSM5 Limits

Job Number: MC39199
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP24716-S2	7440-09-7	Potassium	MSD	RPD	.3	%	20
MP24716-S2	7782-49-2	Selenium	MSD	REC	104.2	%	83-114
MP24716-S2	7782-49-2	Selenium	MSD	RPD	.8	%	20
MP24716-S2	7440-22-4	Silver	MSD	REC	92.5	%	84-115
MP24716-S2	7440-22-4	Silver	MSD	RPD	2.2	%	20
MP24716-S2	7440-23-5	Sodium	MSD	REC	106.4	%	87-115
MP24716-S2	7440-23-5	Sodium	MSD	RPD	.9	%	20
MP24716-S2	7440-28-0	Thallium	MSD	REC	100	%	85-114
MP24716-S2	7440-28-0	Thallium	MSD	RPD	.6	%	20
MP24716-S2	7440-62-2	Vanadium	MSD	REC	96.6	%	90-111
MP24716-S2	7440-62-2	Vanadium	MSD	RPD	1.7	%	20
MP24716-S2	7440-66-6	Zinc	MSD	REC	98.3	%	87-115
MP24716-S2	7440-66-6	Zinc	MSD	RPD	.8	%	20
MP24716A	SW846 6020A						
MP24716A-B1	7440-38-2	Arsenic	BSP	REC	108	%	84-116
MP24716A-S1	7440-38-2	Arsenic	MS	REC	112	%	84-116
MP24716A-S2	7440-38-2	Arsenic	MSD	REC	112	%	84-116
MP24716A-S2	7440-38-2	Arsenic	MSD	RPD	0	%	20
MP24730	SW846 7470A						
MP24730-B1	7439-97-6	Mercury	BSP	REC	110	%	82-119
MP24730-S1	7439-97-6	Mercury	MS	REC	113.3	%	82-119
MP24730-S2	7439-97-6	Mercury	MSD	REC	113.3	%	82-119
MP24730-S2	7439-97-6	Mercury	MSD	RPD	0	%	20

(a) Outside control limits. Refer to Blank Spike Duplicate.
(b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
(c) Spike duplicate recovery indicates possible matrix interference and/or sample nonhomogeneity.

* Sample used for QC is not from job MC39199

New England ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: MC39199
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1240-MB	U29830.D	1	06/23/15	MC	n/a	n/a	MSU1240

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39199-10

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	2.0	ug/l	
71-43-2	Benzene	ND	0.50	0.27	ug/l	
108-86-1	Bromobenzene	ND	5.0	0.26	ug/l	
74-97-5	Bromochloromethane	ND	5.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.18	ug/l	
75-25-2	Bromoform	ND	1.0	0.39	ug/l	
74-83-9	Bromomethane	ND	2.0	0.79	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	3.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	0.50	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.50	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.57	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.19	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	2.0	0.49	ug/l	
67-66-3	Chloroform	ND	1.0	0.40	ug/l	
74-87-3	Chloromethane	ND	2.0	0.49	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	0.60	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	0.46	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	0.83	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.22	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.33	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.24	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.24	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.37	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.53	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.28	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.28	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.48	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	0.21	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	0.29	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.7	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	0.23	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.27	ug/l	

Method Blank Summary

Job Number: MC39199
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1240-MB	U29830.D	1	06/23/15	MC	n/a	n/a	MSU1240

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39199-10

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.24	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	0.45	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.7	ug/l	
74-88-4	Iodomethane	ND	5.0	0.50	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	0.27	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	0.77	ug/l	
74-95-3	Methylene bromide	ND	5.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.27	ug/l	
91-20-3	Naphthalene	ND	5.0	0.61	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	0.29	ug/l	
100-42-5	Styrene	ND	5.0	0.28	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.25	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.29	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.29	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.78	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.74	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.42	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.32	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.25	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.47	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.39	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.29	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.20	ug/l	
108-05-4	Vinyl Acetate	ND	5.0	1.4	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.45	ug/l	
	m,p-Xylene	ND	1.0	0.47	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

Method Blank Summary

Job Number: MC39199
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1240-MB	U29830.D	1	06/23/15	MC	n/a	n/a	MSU1240

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39199-10

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	92%	72-133%
2037-26-5	Toluene-D8	91%	85-114%
460-00-4	4-Bromofluorobenzene	82%	70-134%

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC39199
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1240-BS	U29827.D	1	06/23/15	MC	n/a	n/a	MSU1240
MSU1240-BSD	U29828.D	1	06/23/15	MC	n/a	n/a	MSU1240

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39199-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	82.2	164	33.9	68	83* [a]	14-172/25
71-43-2	Benzene	50	41.6	83	41.5	83	0	68-127/25
108-86-1	Bromobenzene	50	46.8	94	46.4	93	1	74-124/25
74-97-5	Bromochloromethane	50	43.2	86	44.1	88	2	68-135/25
75-27-4	Bromodichloromethane	50	38.2	76	38.5	77	1	72-144/25
75-25-2	Bromoform	50	48.7	97	48.4	97	1	59-147/25
74-83-9	Bromomethane	50	48.6	97	54.0	108	11	34-175/25
78-93-3	2-Butanone (MEK)	50	62.1	124	52.4	105	17	43-147/25
104-51-8	n-Butylbenzene	50	46.0	92	46.5	93	1	77-136/25
135-98-8	sec-Butylbenzene	50	47.4	95	47.5	95	0	75-134/25
98-06-6	tert-Butylbenzene	50	39.1	78	39.3	79	1	74-132/25
75-15-0	Carbon disulfide	50	45.2	90	47.8	96	6	34-171/25
56-23-5	Carbon tetrachloride	50	52.4	105	53.9	108	3	55-153/25
108-90-7	Chlorobenzene	50	48.1	96	48.6	97	1	71-123/25
75-00-3	Chloroethane	50	47.0	94	51.8	104	10	58-175/25
67-66-3	Chloroform	50	40.8	82	40.9	82	0	67-136/25
74-87-3	Chloromethane	50	42.9	86	47.9	96	11	25-182/25
95-49-8	o-Chlorotoluene	50	42.2	84	42.2	84	0	72-130/25
106-43-4	p-Chlorotoluene	50	42.5	85	42.4	85	0	73-127/25
96-12-8	1,2-Dibromo-3-chloropropane	50	44.7	89	35.1	70	24	50-159/25
124-48-1	Dibromochloromethane	50	44.4	89	45.3	91	2	73-139/25
106-93-4	1,2-Dibromoethane	50	44.9	90	45.5	91	1	69-132/25
95-50-1	1,2-Dichlorobenzene	50	47.2	94	46.8	94	1	77-125/25
541-73-1	1,3-Dichlorobenzene	50	46.7	93	47.0	94	1	77-124/25
106-46-7	1,4-Dichlorobenzene	50	47.3	95	47.3	95	0	73-128/25
75-71-8	Dichlorodifluoromethane	50	42.6	85	47.6	95	11	23-157/25
75-34-3	1,1-Dichloroethane	50	36.9	74	36.9	74	0	63-145/25
107-06-2	1,2-Dichloroethane	50	40.0	80	33.8	68	17	58-145/25
75-35-4	1,1-Dichloroethene	50	47.1	94	47.9	96	2	56-158/25
156-59-2	cis-1,2-Dichloroethene	50	46.3	93	46.7	93	1	67-133/25
156-60-5	trans-1,2-Dichloroethene	50	39.1	78	39.5	79	1	66-136/25
78-87-5	1,2-Dichloropropane	50	38.5	77	39.0	78	1	75-133/25
142-28-9	1,3-Dichloropropane	50	45.3	91	46.5	93	3	70-127/25
594-20-7	2,2-Dichloropropane	50	43.1	86	45.9	92	6	52-163/25
563-58-6	1,1-Dichloropropene	50	39.4	79	38.8	78	2	77-140/25
10061-01-5	cis-1,3-Dichloropropene	50	43.5	87	44.8	90	3	74-141/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC39199
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1240-BS	U29827.D	1	06/23/15	MC	n/a	n/a	MSU1240
MSU1240-BSD	U29828.D	1	06/23/15	MC	n/a	n/a	MSU1240

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39199-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	50	36.6	73* b	38.3	77	5	77-143/25
100-41-4	Ethylbenzene	50	45.4	91	45.8	92	1	71-129/25
87-68-3	Hexachlorobutadiene	50	53.0	106	54.6	109	3	64-146/25
591-78-6	2-Hexanone	50	48.5	97	41.2	82	16	22-163/25
74-88-4	Iodomethane	50	51.7	103	54.2	108	5	30-166/25
98-82-8	Isopropylbenzene	50	44.8	90	44.8	90	0	72-133/25
99-87-6	p-Isopropyltoluene	50	47.8	96	48.3	97	1	77-134/25
1634-04-4	Methyl Tert Butyl Ether	50	41.0	82	41.5	83	1	46-151/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	37.5	75	33.0	66	13	47-145/25
74-95-3	Methylene bromide	50	41.5	83	39.2	78	6	70-132/25
75-09-2	Methylene chloride	50	39.5	79	40.6	81	3	55-146/25
91-20-3	Naphthalene	50	46.6	93	40.9	82	13	39-176/25
103-65-1	n-Propylbenzene	50	43.5	87	43.4	87	0	74-134/25
100-42-5	Styrene	50	44.6	89	47.3	95	6	71-134/25
630-20-6	1,1,1,2-Tetrachloroethane	50	55.2	110	54.8	110	1	70-137/25
79-34-5	1,1,2,2-Tetrachloroethane	50	38.1	76	38.4	77	1	58-145/25
127-18-4	Tetrachloroethene	50	51.4	103	51.8	104	1	63-137/25
108-88-3	Toluene	50	44.6	89	45.2	90	1	75-126/25
87-61-6	1,2,3-Trichlorobenzene	50	50.7	101	49.2	98	3	27-181/25
120-82-1	1,2,4-Trichlorobenzene	50	55.1	110	54.2	108	2	40-176/25
71-55-6	1,1,1-Trichloroethane	50	40.4	81	42.9	86	6	68-144/25
79-00-5	1,1,2-Trichloroethane	50	39.5	79	40.5	81	3	72-133/25
79-01-6	Trichloroethene	50	41.5	83	39.9	80	4	73-126/25
75-69-4	Trichlorofluoromethane	50	42.6	85	46.7	93	9	43-152/25
96-18-4	1,2,3-Trichloropropane	50	40.2	80	37.1	74	8	58-141/25
95-63-6	1,2,4-Trimethylbenzene	50	44.3	89	44.3	89	0	76-129/25
108-67-8	1,3,5-Trimethylbenzene	50	46.3	93	46.6	93	1	71-127/25
108-05-4	Vinyl Acetate	50	45.5	91	45.1	90	1	10-170/25
75-01-4	Vinyl chloride	50	44.0	88	49.4	99	12	36-167/25
	m,p-Xylene	100	95.2	95	96.0	96	1	68-130/25
95-47-6	o-Xylene	50	46.7	93	47.8	96	2	69-126/25
1330-20-7	Xylene (total)	150	142	95	144	96	1	67-129/25

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC39199
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSU1240-BS	U29827.D	1	06/23/15	MC	n/a	n/a	MSU1240
MSU1240-BSD	U29828.D	1	06/23/15	MC	n/a	n/a	MSU1240

The QC reported here applies to the following samples: **Method:** SW846 8260C

MC39199-10

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	91%	94%	72-133%
2037-26-5	Toluene-D8	98%	99%	85-114%
460-00-4	4-Bromofluorobenzene	87%	88%	70-134%

(a) Outside control limits. Individual spike recoveries within acceptance limits.
(b) Outside control limits. Refer to Blank Spike Duplicate.

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: MC39199
Account: HSMAW H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Method: SW846 8260C **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC39199-10	U29831.D	92	91	84
MSU1240-BS	U29827.D	91	98	87
MSU1240-BSD	U29828.D	94	99	88
MSU1240-MB	U29830.D	92	91	82

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	72-133%
S2 = Toluene-D8	85-114%
S3 = 4-Bromofluorobenzene	70-134%

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	14	28	3.5	<200
Antimony	6.0	1.1	2	0.30	<6.0
Arsenic	4.0	1.6	1.7		
Barium	50	.35	1	0.10	<50
Beryllium	4.0	.15	.25	0.0	<4.0
Bismuth	50	1.3	2.1		
Boron	100	.9	1.1		
Cadmium	4.0	.16	.43	0.0	<4.0
Calcium	5000	6.9	15	1.5	<5000
Chromium	10	.36	.48	-0.10	<10
Cobalt	50	.15	.28	-0.10	<50
Copper	25	.59	2.4	-0.50	<25
Gold	50	1.1	1.5		
Iron	100	3.3	17	2.9	<100
Lead	5.0	.78	1.7	0.10	<5.0
Lithium	500	2.3	2.5		
Magnesium	5000	23	54	3.8	<5000
Manganese	15	.056	1.4	0.30	<15
Molybdenum	100	1.7	3.6		
Nickel	40	.21	.5	-0.20	<40
Palladium	50	.92	2.6		
Platinum	50	4.6	5.4		
Potassium	5000	41	49	-63	<5000
Selenium	10	1.5	2	-0.60	<10
Silicon	100	1.1	30		
Silver	5.0	.56	1	-0.60	<5.0
Sodium	5000	17	77	-180	<5000
Sulfur	50	2.3	4.6		
Strontium	10	.2	.22		
Thallium	5.0	.54	1.7	-0.40	<5.0
Tin	100	.39	.81		
Titanium	50	.34	.51		
Tungsten	100	3.1	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.61	.51	0.0	<10
Zinc	20	.53	1	0.0	<20
Zirconium	50	.19	1.2		

Associated samples MP24716: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	MC39199-4F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum	0.0	10100	10000	101.0	75-125
Antimony	0.0	515	500	103.0	75-125
Arsenic					
Barium	41.7	2070	2000	101.4	75-125
Beryllium	0.0	508	500	101.6	75-125
Bismuth					
Boron					
Cadmium	0.0	503	500	100.6	75-125
Calcium	24100	50800	25000	106.8	75-125
Chromium	0.0	484	500	96.8	75-125
Cobalt	6.8	526	500	103.8	75-125
Copper	0.0	466	500	93.2	75-125
Gold					
Iron	12500	24500	10000	120.0(a)	75-125
Lead	0.0	1010	1000	101.0	75-125
Lithium					
Magnesium	2770	29400	25000	106.5	75-125
Manganese	843	1300	500	91.4	75-125
Molybdenum					
Nickel	5.1	519	500	102.8	75-125
Palladium					
Platinum					
Potassium	3730	29900	25000	104.7	75-125
Selenium	0.0	525	500	105.0	75-125
Silicon					
Silver	0.0	181	200	90.5	75-125
Sodium	91400	117000	25000	102.4	75-125
Sulfur					
Strontium					
Thallium	0.0	503	500	100.6	75-125
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	MC39199-4F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium	0.0	475	500	95.0	75-125
Zinc	7.6	503	500	99.1	75-125
Zirconium					

Associated samples MP24716: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	MC39199-4F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum	0.0	9800	10000	98.0	3.0	20
Antimony	0.0	510	500	102.0	1.0	20
Arsenic						
Barium	41.7	2020	2000	98.9	2.4	20
Beryllium	0.0	495	500	99.0	2.6	20
Bismuth						
Boron						
Cadmium	0.0	498	500	99.6	1.0	20
Calcium	24100	51000	25000	107.6	0.4	20
Chromium	0.0	493	500	98.6	1.8	20
Cobalt	6.8	521	500	102.8	1.0	20
Copper	0.0	477	500	95.4	2.3	20
Gold						
Iron	12500	24600	10000	121.0(a)	0.4	20
Lead	0.0	998	1000	99.8	1.2	20
Lithium						
Magnesium	2770	29300	25000	106.1	0.3	20
Manganese	843	1340	500	99.4	3.0	20
Molybdenum						
Nickel	5.1	515	500	102.0	0.8	20
Palladium						
Platinum						
Potassium	3730	29800	25000	104.3	0.3	20
Selenium	0.0	521	500	104.2	0.8	20
Silicon						
Silver	0.0	185	200	92.5	2.2	20
Sodium	91400	118000	25000	106.4	0.9	20
Sulfur						
Strontium						
Thallium	0.0	500	500	100.0	0.6	20
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	MC39199-4F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium	0.0	483	500	96.6	1.7	20
Zinc	7.6	499	500	98.3	0.8	20
Zirconium						

Associated samples MP24716: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike duplicate recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum	9860	10000	98.6	80-120
Antimony	509	500	101.8	80-120
Arsenic				
Barium	1990	2000	99.5	80-120
Beryllium	497	500	99.4	80-120
Bismuth				
Boron				
Cadmium	501	500	100.2	80-120
Calcium	26300	25000	105.2	80-120
Chromium	506	500	101.2	80-120
Cobalt	510	500	102.0	80-120
Copper	490	500	98.0	80-120
Gold				
Iron	9740	10000	97.4	80-120
Lead	1000	1000	100.0	80-120
Lithium				
Magnesium	26400	25000	105.6	80-120
Manganese	535	500	107.0	80-120
Molybdenum				
Nickel	506	500	101.2	80-120
Palladium				
Platinum				
Potassium	25700	25000	102.8	80-120
Selenium	515	500	103.0	80-120
Silicon				
Silver	187	200	93.5	80-120
Sodium	26800	25000	107.2	80-120
Sulfur				
Strontium				
Thallium	511	500	102.2	80-120
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium	491	500	98.2	80-120
Zinc	493	500	98.6	80-120
Zirconium				

Associated samples MP24716: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	MC39199-4F Original	SDL 1:5	%DIF	QC Limits
Aluminum	0.00	0.00	NC	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic				
Barium	41.7	42.0	0.7	0-10
Beryllium	0.00	0.00	NC	0-10
Bismuth				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium	24100	24700	2.4	0-10
Chromium	0.00	0.00	NC	0-10
Cobalt	6.80	6.30	7.4	0-10
Copper	0.00	0.00	NC	0-10
Gold				
Iron	12500	12900	3.1	0-10
Lead	0.00	0.00	NC	0-10
Lithium				
Magnesium	2770	2840	2.7	0-10
Manganese	843	845	0.2	0-10
Molybdenum				
Nickel	5.10	5.20	2.0	0-10
Palladium				
Platinum				
Potassium	3730	3550	5.0	0-10
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium	91400	93000	1.8	0-10
Sulfur				
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 06/11/15

Metal	MC39199-4F Original	SDL 1:5	%DIF	QC Limits
Vanadium	0.00	0.00	NC	0-10
Zinc	7.60	11.1	46.1 (a)	0-10
Zirconium				

Associated samples MP24716: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/11/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.3	4.4		
Antimony	4.0	.022	.058		
Arsenic	4.0	.046	.42	0.20	<4.0
Barium	2.0	.016	.076		
Beryllium	1.0	.015	.042		
Boron	10	.24	.34		
Cadmium	2.0	.012	.026		
Calcium	500	4.2	30		
Chromium	8.0	.032	.42		
Cobalt	1.0	.0064	.028		
Copper	8.0	.017	1		
Iron	50	.72	3.4		
Lead	2.0	.013	.036		
Magnesium	500	1.4	2		
Manganese	4.0	.0096	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.015	.14		
Potassium	500	3.4	5.2		
Selenium	2.0	.15	.3		
Silver	2.0	.0088	.022		
Sodium	500	2	8.8		
Strontium	20	.01	.026		
Thallium	2.0	.042	.068		
Tin	10	.015	.048		
Titanium	2.0	.2	.26		
Vanadium	20	.2	1.4		
Zinc	10	.066	2		

Associated samples MP24716A: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/11/15

Metal	MC39199-4F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	620	1180	500	112.0	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP24716A: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/11/15

Metal	MC39199-4F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	620	1180	500	112.0	0.0	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP24716A: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/11/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	540	500	108.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP24716A: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24716A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 06/11/15

Metal	MC39199-4F Original	SDL 10:50%DIF		QC Limits
Aluminum				
Antimony				
Arsenic	620	593	4.4	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP24716A: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24730 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date:				06/15/15		06/15/15	
Metal	RL	IDL	MDL	MB raw	final	MB raw	final
Mercury	0.20	.035	.096	-0.0090	<0.20	-0.010	<0.20

Associated samples MP24730: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24730
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/15/15

Metal	MC39199-4F Original	MS	Spikelot HGRWS1	% Rec	QC Limits
Mercury	0.0	3.4	3	113.3	75-125

Associated samples MP24730: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24730
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/15/15

Metal	MC39199-4F Original	MSD	Spikelot HGRWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	3.4	3	113.3	0.0	20

Associated samples MP24730: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP24730
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 06/15/15

Metal	BSP Result	Spikelot HGRWS1	% Rec	QC Limits
Mercury	3.3	3	110.0	80-120

Associated samples MP24730: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

7.3.3

7

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN50947	5.0	0.0	mg/l	250	252	100.8	80-120%
Chloride	GN50958	1.0	0.0	mg/l	10	10.5	105.0	80-120%
Dissolved Organic Carbon	GN50890	1.0	0.30	mg/l	10	9.76	97.6	80-120%

Associated Samples:
Batch GN50890: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F
Batch GN50947: MC39199-1, MC39199-2, MC39199-3, MC39199-4, MC39199-5, MC39199-6, MC39199-7, MC39199-8, MC39199-9
Batch GN50958: MC39199-1, MC39199-2, MC39199-3, MC39199-4, MC39199-5, MC39199-6, MC39199-7, MC39199-8, MC39199-9
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN50947	MC39199-4	mg/l	33.3	32.2	3.4	0-20%
Chloride	GN50958	MC39199-4	mg/l	175	175	0.0	0-20%
Dissolved Organic Carbon	GN50890	MC39199-4F	mg/l	1.1	0.71	43.1(a)	0-20%

Associated Samples:
Batch GN50890: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F
Batch GN50947: MC39199-1, MC39199-2, MC39199-3, MC39199-4, MC39199-5, MC39199-6, MC39199-7, MC39199-8, MC39199-9
Batch GN50958: MC39199-1, MC39199-2, MC39199-3, MC39199-4, MC39199-5, MC39199-6, MC39199-7, MC39199-8, MC39199-9
(*) Outside of QC limits
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39199
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN50947	MC39199-4	mg/l	33.3	250	282	99.5	75-125%
Chloride	GN50958	MC39199-4	mg/l	175	100	275	100.0	75-125%
Dissolved Organic Carbon	GN50890	MC39199-4F	mg/l	1.1	10	11.2	101.0	75-125%

Associated Samples:
Batch GN50890: MC39199-1F, MC39199-2F, MC39199-3F, MC39199-4F, MC39199-5F, MC39199-6F, MC39199-7F, MC39199-8F, MC39199-9F
Batch GN50947: MC39199-1, MC39199-2, MC39199-3, MC39199-4, MC39199-5, MC39199-6, MC39199-7, MC39199-8, MC39199-9
Batch GN50958: MC39199-1, MC39199-2, MC39199-3, MC39199-4, MC39199-5, MC39199-6, MC39199-7, MC39199-8, MC39199-9
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

CHAIN OF CUSTODY

ACCUTEST

495 Tech Center West, Bldg 1, Marlboro, MA 01752
TEL: (508)481-6200 FAX: (508)-481-7753

Accutest Job #:	MC39199
Accutest Quote #:	Page 1 of 1
AMS P.O. #:	
Project No.:	

Client Information

Name: Accutest New England
Address: 50 D'Angelo Drive
City: Marlborough State: MA Zip: 01752
Send Report to: FrankD@Accutest.com
Any questions contact: Frank D'Agostino
Phone/Fax #: (508)481-6200 / (508)481-7753

Subcontract Laboratory Information

Name: Accutest of New Jersey
Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Contact: Sample Management
Phone: (732) 329-0200

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles	Preservation HCL	NaOH	HNO3	H3PO4	None	SO4 by 300	**MS/MSD				Comments
MC39199-1	6/9/15	10:35 AM	GW	1					x	X					
MC39199-2	6/9/15	10:00 AM	GW	1					x	X					MA
MC39199-3	6/9/15	12:40 PM	GW	1					x	X					
MC39199-4 ,-40,-45	6/9/15	10:40 AM	GW	3					x	X	X				
MC39199-5	6/9/15	12:49 PM	GW	1					x	X					
MC39199-6	6/9/15	11:05 AM	GW	1					x	X					
MC39199-7	6/9/15	11:25 AM	GW	1					x	X					
MC39199-8	6/9/15	1:30 PM	GW	1					x	X					
MC39199-9	6/9/15	00:00	GW	1					x	X					
			GW	1					x	X					

[X] STD 6/23/15
[ ] Other _____ (Days)

INITIAL ASESSMENT Am 3/0
LABEL VERIFICATION N

Data Deliverable Information

[ ] Commercial "A"
[ ] Commercial "B"
[X] Commercial "BN"
[ ] Reduced Tier 1
[ ] Full Tier 1
[ ] PDF
[ ] Compact Disk Deliverable
[ ] Electronic Delivery:
[ ] State Forms
[ ] Other (Specify)

Comments / Remarks

*Please notify Accutest if surcharges applied. All DW samples are subject to MCL compliance reporting
**MS/MSD
FEDEX # 6406 1362 2986

10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date & Time:	Received By:	Date & Time:
1	6/10/15	1 Fedex	1
2 FEDEX	6-11-15 1000	2	2
3		3	3

Seal #: Headspace: Yes No NA
Preserved where applicable:
Temperature °C 3.2 On Ice

MC39199: Chain of Custody
Page 1 of 2
Accutest New Jersey

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC39199 **Client:** **Project:**

Date / Time Received: 6/11/2015 10:00:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2);

Cooler Temps (Corrected) °C: Cooler 1: (2.9);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☐	☑	☐
2. Trip Blank listed on COC:	☐	☑	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☑	☐

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

MC39199: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5 Limits

Job Number: MC39199
Account: Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA
Collected: 06/09/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No Exceptions found.

* Sample used for QC is not from job MC39199

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39199
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride	GP89807/GN27126	2.0	0.0	mg/l	80	83.4	104.3	90-110%
Sulfate	GP89807/GN27126	10	0.0	mg/l	80	85.1	106.4	90-110%

Associated Samples:
Batch GP89807: MC39199-1, MC39199-2, MC39199-3, MC39199-4, MC39199-5, MC39199-6, MC39199-7, MC39199-8, MC39199-9
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39199
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chloride	GP89807/GN27126	MC39199-4	mg/l	170	172	1.2	0-20%
Sulfate	GP89807/GN27126	MC39199-4	mg/l	14.3	14.3	0.0	0-20%

Associated Samples:
Batch GP89807: MC39199-1, MC39199-2, MC39199-3, MC39199-4, MC39199-5, MC39199-6, MC39199-7, MC39199-8, MC39199-9
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC39199
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP89807/GN27126	MC39199-4	mg/l	170	80	246	95.0	80-120%
Sulfate	GP89807/GN27126	MC39199-4	mg/l	14.3	80	95.2	101.1	80-120%

Associated Samples:
Batch GP89807: MC39199-1, MC39199-2, MC39199-3, MC39199-4, MC39199-5, MC39199-6, MC39199-7, MC39199-8, MC39199-9
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

FALL 2015 ANALYTICAL REPORTS

New England ACCUTEST LABORATORIES

11/06/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC42342

Sampling Date: 10/21/15

Report to:

H&S Environmental
160 East Main Street
Westborough, MA 01581
eanderson@hsenv.com

ATTN: Elizabeth Anderson

Total number of pages in report: **82**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Accutest Laboratories

Sample Summary

H&S Environmental

Job No: MC42342

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42342-3	10/21/15	14:45	KGA	10/21/15	AQ	Ground Water	SHM-96-5B_FA115
MC42342-3F	10/21/15	14:45	KGA	10/21/15	AQ	Groundwater Filtered	SHM-96-5B_FA115
MC42342-4	10/21/15	11:05	KGA	10/21/15	AQ	Ground Water	SHM-10-12_FA115
MC42342-4F	10/21/15	11:05	KGA	10/21/15	AQ	Groundwater Filtered	SHM-10-12_FA115
MC42342-5	10/21/15	11:25	KGA	10/21/15	AQ	Ground Water	DUP2_FA115
MC42342-5F	10/21/15	11:25	KGA	10/21/15	AQ	Groundwater Filtered	DUP2_FA115
MC42342-6	10/21/15	13:50	KGA	10/21/15	AQ	Ground Water	SHM-96-5C_FA115
MC42342-6F	10/21/15	13:50	KGA	10/21/15	AQ	Groundwater Filtered	SHM-96-5C_FA115
MC42342-7	10/21/15	13:00	KGA	10/21/15	AQ	Ground Water	SHL-5_FA115
MC42342-7F	10/21/15	13:00	KGA	10/21/15	AQ	Groundwater Filtered	SHL-5_FA115
MC42342-8	10/21/15	13:44	KGA	10/21/15	AQ	Ground Water	SHL-21_FA115
MC42342-8F	10/21/15	13:44	KGA	10/21/15	AQ	Groundwater Filtered	SHL-21_FA115
MC42342-9	10/21/15	12:55	KGA	10/21/15	AQ	Ground Water	SHP-99-35X_FA115

Sample Summary
(continued)

H&S Environmental

Job No: MC42342

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42342-9F	10/21/15	12:55	KGA	10/21/15	AQ	Groundwater Filtered	SHP-99-35X_FA115
MC42342-10	10/21/15	14:10	KGA	10/21/15	AQ	Ground Water	SHP-05-44_FA115
MC42342-10F	10/21/15	14:10	KGA	10/21/15	AQ	Groundwater Filtered	SHP-05-44_FA115
MC42342-11	10/21/15	11:20	KGA	10/21/15	AQ	Ground Water	SHM-10-11_FA115
MC42342-11F	10/21/15	11:20	KGA	10/21/15	AQ	Groundwater Filtered	SHM-10-11_FA115
MC42342-12	10/21/15	11:25	KGA	10/21/15	AQ	Ground Water	SHM-10-06A_FA115
MC42342-12F	10/21/15	11:25	KGA	10/21/15	AQ	Groundwater Filtered	SHM-10-06A_FA115
MC42342-13	10/21/15	13:20	KGA	10/21/15	AQ	Ground Water	SHL-23_FA115
MC42342-13D	10/21/15	13:20	KGA	10/21/15	AQ	Water Dup/MSD	SHL-23_FA115
MC42342-13F	10/21/15	13:20	KGA	10/21/15	AQ	Groundwater Filtered	SHL-23_FA115
MC42342-13FD	10/21/15	13:20	KGA	10/21/15	AQ	Water Dup/MSD	SHL-23_FA115
MC42342-13FS	10/21/15	13:20	KGA	10/21/15	AQ	Water Matrix Spike	SHL-23_FA115
MC42342-13S	10/21/15	13:20	KGA	10/21/15	AQ	Water Matrix Spike	SHL-23_FA115

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC42342
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	11/5/2015 4:36:54 PM

13 Sample(s) were collected on 10/21/2015 and were received at Accutest on 10/21/2015 properly preserved, at 1.1 Deg. C and intact. These Samples received an Accutest job number of MC42342. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. Sample MC42342-1,2 cancelled analyese per request.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP25356

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42342-13FMS, MC42342-13FMSD, MC42342-13FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Manganese are outside control limits for sample MP25356-SD1. Serial Dilution RPD acceptable due to low duplicate and sample concentrations.

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP25356A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42342-13FMS, MC42342-13FMSD, MC42342-13FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Arsenic are outside control limits for sample MP25356A-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** N:GP93212

- Sulfate: Analysis performed at Accutest Laboratories, Dayton, NJ.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ **Batch ID:** GN52126

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42204-3MS, MC42204-3MSD were used as the QC samples for Chloride.

Matrix: AQ **Batch ID:** GN52229

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42342-13MS, MC42342-13MSD were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ **Batch ID:** GN52186

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42342-13DUP, MC42342-13MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ **Batch ID:** GN52187

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7DUP, MC42370-7MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SW846 9060

Matrix: AQ **Batch ID:** GN52152

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42342-13FMS, MC42342-13FMSD were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ **Batch ID:** GN52153

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7FMS, MC42370-7FMSD were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ **Batch ID:** GN52216

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-3FMS, MC42426-3FMSD were used as the QC samples for Dissolved Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC42342).

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Accutest Labs of New England, Inc.	**Job No**	MC42342
Site:	HSMAW: Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	10/30/2015 3:55:39 P

On 10/27/2015, 11 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 2.5 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of MC42342 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** GP93212

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42342-11MS, MC42342-13DUP, MC42342-13MS were used as the QC samples for Sulfate.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Job Number: MC42342
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/21/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42342-3	**SHM-96-5B_FA115**					
Alkalinity, Total as CaCO3		256	5.0	3.9	mg/l	SM21 2320B
Chloride		19.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		7.2 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-3F	**SHM-96-5B_FA115**					
Arsenic		799	20	10	ug/l	SW846 6020A
Iron		11000	100	50	ug/l	SW846 6010C
Manganese		11600	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		2.2	1.0	0.084	mg/l	SW846 9060
MC42342-4	**SHM-10-12_FA115**					
Alkalinity, Total as CaCO3		136	5.0	3.9	mg/l	SM21 2320B
Chloride		4.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		6.1 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-4F	**SHM-10-12_FA115**					
Arsenic		3850	100	50	ug/l	SW846 6020A
Iron		85600	500	250	ug/l	SW846 6010C
Manganese		7760	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		4.1	1.0	0.084	mg/l	SW846 9060
MC42342-5	**DUP2_FA115**					
Alkalinity, Total as CaCO3		129	5.0	3.9	mg/l	SM21 2320B
Chloride		4.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		6.2 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-5F	**DUP2_FA115**					
Arsenic		3940	100	50	ug/l	SW846 6020A
Iron		85900	500	250	ug/l	SW846 6010C
Manganese		7790	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		3.6	1.0	0.084	mg/l	SW846 9060
MC42342-6	**SHM-96-5C_FA115**					
Alkalinity, Total as CaCO3		265	5.0	3.9	mg/l	SM21 2320B
Chloride		20.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.0 J	10	0.50	mg/l	EPA 300/SW846 9056A

Summary of Hits

Job Number: MC42342
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/21/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42342-6F	**SHM-96-5C_FA115**					
Arsenic		39.6	4.0	2.0	ug/l	SW846 6020A
Iron		22200	500	250	ug/l	SW846 6010C
Manganese		7820	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		5.2	1.0	0.084	mg/l	SW846 9060
MC42342-7	**SHL-5_FA115**					
Alkalinity, Total as CaCO3		38.1	5.0	3.9	mg/l	SM21 2320B
Chloride		31.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		2.4 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-7F	**SHL-5_FA115**					
Arsenic		12.6	4.0	2.0	ug/l	SW846 6020A
Iron		7000	100	50	ug/l	SW846 6010C
Manganese		293	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		10.7	1.0	0.084	mg/l	SW846 9060
MC42342-8	**SHL-21_FA115**					
Alkalinity, Total as CaCO3		25.8	5.0	3.9	mg/l	SM21 2320B
Chloride		4.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.0 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-8F	**SHL-21_FA115**					
Dissolved Organic Carbon		1.2	1.0	0.084	mg/l	SW846 9060
MC42342-9	**SHP-99-35X_FA115**					
Alkalinity, Total as CaCO3		461	5.0	3.9	mg/l	SM21 2320B
Chloride		12.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.1 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-9F	**SHP-99-35X_FA115**					
Arsenic		89.0	4.0	2.0	ug/l	SW846 6020A
Iron		23800	500	250	ug/l	SW846 6010C
Manganese		11100	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		7.1	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42342
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/21/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42342-10	**SHP-05-44_FA115**					
Alkalinity, Total as CaCO3		35.0	5.0	3.9	mg/l	SM21 2320B
Chloride		10.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.3 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-10F	**SHP-05-44_FA115**					
Dissolved Organic Carbon		1.0	1.0	0.084	mg/l	SW846 9060
MC42342-11	**SHM-10-11_FA115**					
Alkalinity, Total as CaCO3		51.5	5.0	3.9	mg/l	SM21 2320B
Chloride		31.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		45.1	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-11F	**SHM-10-11_FA115**					
Arsenic		503	20	10	ug/l	SW846 6020A
Iron		59700	500	250	ug/l	SW846 6010C
Manganese		2430	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.6	1.0	0.084	mg/l	SW846 9060
MC42342-12	**SHM-10-06A_FA115**					
Alkalinity, Total as CaCO3		26.8	5.0	3.9	mg/l	SM21 2320B
Chloride		1.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.1 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-12F	**SHM-10-06A_FA115**					
Manganese		1170	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.2	1.0	0.084	mg/l	SW846 9060
MC42342-13	**SHL-23_FA115**					
Alkalinity, Total as CaCO3		4.1 J	5.0	3.9	mg/l	SM21 2320B
Chloride		3.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.4 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42342-13F	**SHL-23_FA115**					
Manganese		9.3 J	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.6	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42342
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/21/15

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SHM-96-5B_FA115		
Lab Sample ID:	MC42342-3	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	256	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	19.0	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	7.2 J	10	0.50	mg/l	1	10/29/15 02:23	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-96-5B_FA115		
Lab Sample ID:	MC42342-3F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	799	20	10	ug/l	10	10/23/15	11/02/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	11000	100	50	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	11600	75	38	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18623
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-96-5B_FA115		
Lab Sample ID:	MC42342-3F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	0.084	mg/l	1	11/04/15 01:20	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-12_FA115		
Lab Sample ID:	MC42342-4	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	136	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	4.5	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	6.1 J	10	0.50	mg/l	1	10/29/15 08:22	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-12_FA115		
Lab Sample ID:	MC42342-4F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3850	100	50	ug/l	50	10/23/15	11/02/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	85600	500	250	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7760	75	38	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18623
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-12_FA115		
Lab Sample ID:	MC42342-4F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.1	1.0	0.084	mg/l	1	10/28/15 23:44	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP2_FA115		
Lab Sample ID:	MC42342-5	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	129	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	4.5	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	6.2 J	10	0.50	mg/l	1	10/29/15 02:47	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP2_FA115		
Lab Sample ID:	MC42342-5F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3940	100	50	ug/l	50	10/23/15	11/02/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	85900	500	250	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7790	75	38	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18623
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP2_FA115		
Lab Sample ID:	MC42342-5F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.6	1.0	0.084	mg/l	1	10/29/15 00:03	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-96-5C_FA115		
Lab Sample ID:	MC42342-6	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	265	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	20.5	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	5.0 J	10	0.50	mg/l	1	10/29/15 03:11	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-96-5C_FA115		
Lab Sample ID:	MC42342-6F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	39.6	4.0	2.0	ug/l	2	10/23/15	10/29/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	22200	500	250	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7820	75	38	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18614
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-96-5C_FA115		
Lab Sample ID:	MC42342-6F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	5.2	1.0	0.084	mg/l	1	10/29/15 00:18	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-5_FA115		
Lab Sample ID:	MC42342-7	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	38.1	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	31.0	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	2.4 J	10	0.50	mg/l	1	10/29/15 03:34	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-5_FA115		
Lab Sample ID:	MC42342-7F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	12.6	4.0	2.0	ug/l	2	10/23/15	10/29/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	7000	100	50	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	293	15	7.5	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18614
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-5_FA115		
Lab Sample ID:	MC42342-7F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	10.7	1.0	0.084	mg/l	1	10/29/15 01:07	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-21_FA115		
Lab Sample ID:	MC42342-8	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	25.8	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	4.5	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	5.0 J	10	0.50	mg/l	1	10/29/15 03:58	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-21_FA115		
Lab Sample ID:	MC42342-8F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/23/15	10/29/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18614
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-21_FA115		
Lab Sample ID:	MC42342-8F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.2	1.0	0.084	mg/l	1	10/29/15 01:28	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-35X_FA115		
Lab Sample ID:	MC42342-9	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	461	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	12.0	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	5.1 J	10	0.50	mg/l	1	10/29/15 04:22	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-35X_FA115		
Lab Sample ID:	MC42342-9F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	89.0	4.0	2.0	ug/l	2	10/23/15	10/29/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	23800	500	250	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	11100	75	38	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18614
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-35X_FA115		
Lab Sample ID:	MC42342-9F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	7.1	1.0	0.084	mg/l	1	10/29/15 01:42	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-44_FA115		
Lab Sample ID:	MC42342-10	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	35.0	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	10.0	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	5.3 J	10	0.50	mg/l	1	10/29/15 04:46	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-44_FA115		
Lab Sample ID:	MC42342-10F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/23/15	10/29/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18614
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-44_FA115		
Lab Sample ID:	MC42342-10F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.0	1.0	0.084	mg/l	1	10/29/15 02:00	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-11_FA115		
Lab Sample ID:	MC42342-11	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	51.5	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	31.5	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	45.1	10	0.50	mg/l	1	10/29/15 06:22	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-11_FA115		
Lab Sample ID:	MC42342-11F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	503	20	10	ug/l	10	10/23/15	11/02/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	59700	500	250	ug/l	5	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	2430	15	7.5	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18623
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-11_FA115		
Lab Sample ID:	MC42342-11F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.6	1.0	0.084	mg/l	1	10/29/15 02:14	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-06A_FA115		
Lab Sample ID:	MC42342-12	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	26.8	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	1.5	1.0	0.76	mg/l	1	10/24/15	MC	SM 4500 CL C-11
Sulfate [a]	5.1 J	10	0.50	mg/l	1	10/29/15 06:46	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-06A_FA115		
Lab Sample ID:	MC42342-12F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/23/15	10/29/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	1170	15	7.5	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18614
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-06A_FA115		
Lab Sample ID:	MC42342-12F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	0.084	mg/l	1	10/29/15 05:52	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-23_FA115		
Lab Sample ID:	MC42342-13	**Date Sampled:**	10/21/15
Matrix:	AQ - Ground Water	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	4.1 J	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	3.0	1.0	0.76	mg/l	1	11/04/15	MC	SM 4500 CL C-11
Sulfate [a]	5.4 J	10	0.50	mg/l	1	10/29/15 07:58	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-23_FA115		
Lab Sample ID:	MC42342-13F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/23/15	10/29/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	9.3 J	15	7.5	ug/l	1	10/23/15	10/26/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18606
(2) Instrument QC Batch: MA18614
(3) Prep QC Batch: MP25356
(4) Prep QC Batch: MP25356A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-23_FA115		
Lab Sample ID:	MC42342-13F	**Date Sampled:**	10/21/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/21/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.6	1.0	0.084	mg/l	1	10/28/15 23:14	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

(P1 of 2)

Accutest Job #: MC42342
Accutest Control #:

Client Information

Name: H&S Environmental
Address: 160 East Main Street, Suite 2F
City: Westborough
State: MA Zip: 01581
Send Report to: Laurie Ekes (lekes@hsenv.com)
Phone #: (508)367-7190

Facility Information

Project Name: Devens
Location: Shepley's
Project No.:
FAX #: Office number (508) 366-7442

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (Filt)	Alklinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCL (Filt)	8260							
Trip Blank	10/21/15	—	VGA	~~DI WG~~	3	3								X							-1
RBL1_Fall15	10/21/15	1515	VGA	~~DI WG~~	3	3								X							-2
SHM-96-5B-Fall15	10/21/15	1445	VGA	WG	4	2		1		1	X	X	X								-3F
SHM-10-12-Fall15	10/21/15	1105		WG	4	2		1		1	X	X	X								-4F
Dup-2_Fall15	10/21/15	1125		WG	~~4~~ 3	1		1		1	X	X	X								-5F
SHM-96-5C_Fall15	10/21/15	1350	VGA	WG	4	2		1		1	X	X	X								-6F
SHL-5_Fall15	10/21/15	1300	VGA	WG	4	2		1		1	X	X	X								-7F
SHL-21_Fall15	10/21/15	1344		WG	4	2		1		1	X	X	X								-8F
SHP-99-35X_Fall15	10/21/15	1255		WG	4	2		1		1	X	X	X								-9F
SHP-85-44_Fall15	10/21/15	1410		WG	4	2		1		1	X	X	X								-10F

Turnaround Information

- [X] 10 Day STD
- [/] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020

13A, 5F
5T1

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	10/21/15 1640	1	2		2
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished by Sampler:	Date Time:	Received By:	Seal #	Preserved	On Ice:
5		5		[ ]	[X] 1.1°

5.1 5

MC42342: Chain of Custody
Page 1 of 4

(P2of2)

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC42342
Accutest Control #:

Client Information

Name: H&S Environmental
Address: 160 East Main Street, Suite 2F
City: Westborough
State: MA Zip: 01581
Send Report to: Laurie Ekes (lekes@hsenv.com)
Phone #: (508)367-7190

Facility Information

Project Name: Devens
Location: Shepley's
Project No.:
FAX #: Office number (508) 366-7442

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation: VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (Filtered)	Alklinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl (Filtered)								
SHM-10-11_F1/15	10/21/15	1120		WG	4	2		1		1	X	X	X								-11F
SHM-10-06A_F1/15	10/21/15	1125		WG	4	2		1		1	X	X	X								-12F
SHL-23_F1/15	10/21/15	1320		WG	4	2		1		1	X	X	X								-13F
SHL-23-MS_F1/15	10/21/15	1320		WG	4	2		1		1	X	X	X								-13F MS
SHL-23-MSD_F1/15	10/21/15	1320		WG	4	2		1		1	X	X	X								-13F MSD

Turnaround Information

- [x] 10 Day STD
- [x] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	10/21/15 1640	1 [signature]	2		2
3		3	4		4
5		5			

Seal #: Preserved: [ ] On Ice: [x] 1.1°

MC42342: Chain of Custody
Page 2 of 4

MC42342: Chain of Custody
Page 3 of 4

Frank D'Agostino

MC42342

From: Laurie Ekes <LEkes@hsenv.com>
Sent: Thursday, October 22, 2015 2:31 PM
To: Frank D'Agostino
Subject: RE: MC42342 incorrect samples

No please cancel.

Laurie

From: Frank D'Agostino [mailto:frankd@accutest.com]
Sent: Thursday, October 22, 2015 2:30 PM
To: Laurie Ekes
Subject: RE: MC42342 incorrect samples

You do not need the 8260 on the Trip Blank Equipment Blank?

Frank D'Agostino
Project Manager
Accutest Laboratories of NE
Voice: 508.481.6200 Ext. 2104
Fax: 508.481.7753
frankd@accutest.com

ACCUTEST LABORATORIES

"The National Testing Laboratory with Total Performance you can count on"

From: Laurie Ekes [mailto:LEkes@hsenv.com]
Sent: Thursday, October 22, 2015 2:07 PM
To: Frank D'Agostino
Subject: MC42342 incorrect samples

Please cancel the VOC analyses for samples MC42342-1 and -2 ..there are NO VOCs in the sample set. Please let me know if you see anything funny like this on future COCs.
Also the log in folks (or someone who is there when he drops off his samples) are asking questions of Kevin that he can't answer. I think we've worked it out but please call me with method questions.

Thank you

Laurie Ekes

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42342 **Client:** HS **Project:**

Date / Time Received: 10/21/2015 4:40:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.1/1.1);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	G1;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

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MC42342: Chain of Custody
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QC Evaluation: DOD QSM5 Limits

Job Number: MC42342
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/21/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP25356	SW846 6010C						
MP25356-B1	7439-89-6	Iron	BSP	REC	101	%	87-115
MP25356-B1	7439-96-5	Manganese	BSP	REC	104	%	90-114
MP25356-S1	7439-89-6	Iron	MS	REC	101	%	87-115
MP25356-S1	7439-96-5	Manganese	MS	REC	101.9	%	90-114
MP25356-S2	7439-89-6	Iron	MSD	REC	102	%	87-115
MP25356-S2	7439-89-6	Iron	MSD	RPD	1	%	20
MP25356-S2	7439-96-5	Manganese	MSD	REC	103.5	%	90-114
MP25356-S2	7439-96-5	Manganese	MSD	RPD	1.5	%	20
MP25356A	SW846 6020A						
MP25356A-B1	7440-38-2	Arsenic	BSP	REC	110	%	84-116
MP25356A-S1	7440-38-2	Arsenic	MS	REC	107.2	%	84-116
MP25356A-S2	7440-38-2	Arsenic	MSD	REC	108.2	%	84-116
MP25356A-S2	7440-38-2	Arsenic	MSD	RPD	.9	%	20

* Sample used for QC is not from job MC42342

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	15	28		
Antimony	6.0	.76	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.24	1		
Beryllium	4.0	.18	.25		
Bismuth	50	.9	2.1		
Boron	100	.43	1.1		
Cadmium	4.0	.14	.43		
Calcium	5000	5.3	15		
Chromium	10	.37	.48		
Cobalt	50	.14	.28		
Copper	25	.48	2.4		
Gold	50	.95	1.5		
Iron	100	3.2	17	7.1	<100
Lead	5.0	.56	1.7		
Lithium	500	2	2.5		
Magnesium	5000	22	54		
Manganese	15	.04	1.4	0.40	<15
Molybdenum	100	2	3.6		
Nickel	40	.19	.5		
Palladium	50	1.2	2.6		
Platinum	50	3.8	5.4		
Potassium	5000	40	49		
Selenium	10	1	2		
Silicon	100	13	30		
Silver	5.0	.6	1		
Sodium	5000	10	77		
Sulfur	50	1.6	4.6		
Strontium	10	.15	.22		
Thallium	5.0	.47	1.7		
Tin	100	.26	.81		
Titanium	50	.38	.51		
Tungsten	100	3.1	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.36	.51		
Zinc	20	.096	1		
Zirconium	50	.29	1.2		

Associated samples MP25356: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	MC42342-13F Original MS		Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	0.0	10100	10000	101.0	75-125
Lead					
Lithium					
Magnesium					
Manganese	9.3	519	500	101.9	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	MC42342-13F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25356: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	MC42342-13F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	0.0	10200	10000	102.0	1.0	20
Lead						
Lithium						
Magnesium						
Manganese	9.3	527	500	103.5	1.5	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	MC42342-13F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25356: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	10100	10000	101.0	80-120
Lead				
Lithium				
Magnesium				
Manganese	520	500	104.0	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25356: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	MC42342-13F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	0.00	0.00	NC	0-10
Lead				
Lithium				
Magnesium				
Manganese	9.30	10.6	14.0 (a)	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/23/15

Metal	MC42342-13F Original SDL 1:5	%DIF	QC Limits
Vanadium			
Zinc			
Zirconium			

Associated samples MP25356: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Serial Dilution RPD acceptable due to low duplicate and sample concentrations.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/23/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.46	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25356A: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/23/15

Metal	MC42342-13F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	1.2	537	500	107.2	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25356A: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/23/15

Metal	MC42342-13F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	1.2	542	500	108.2	0.9	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25356A: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/23/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	550	500	110.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25356A: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25356A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/23/15

Metal	MC42342-13F Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	1.18	2.20	86.4 (a)	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25356A: MC42342-3F, MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-12F, MC42342-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN52186	5.0	0.0	mg/l	250	255	102.0	80-120%
Alkalinity, Total as CaCO3	GN52187	5.0	0.0	mg/l	250	256	102.4	80-120%
Chloride	GN52126	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Chloride	GN52229	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Dissolved Organic Carbon	GN52152	1.0	0.11	mg/l	10	10.1	101.0	80-120%
Dissolved Organic Carbon	GN52153	1.0	0.086	mg/l	10	10.0	100.0	80-120%
Dissolved Organic Carbon	GN52216	1.0	0.18	mg/l	10	9.77	97.7	80-120%

Associated Samples:
Batch GN52126: MC42342-3, MC42342-4, MC42342-5, MC42342-6, MC42342-7, MC42342-8, MC42342-9, MC42342-10, MC42342-11, MC42342-12
Batch GN52152: MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-13F
Batch GN52153: MC42342-12F
Batch GN52186: MC42342-3, MC42342-4, MC42342-5, MC42342-6, MC42342-7, MC42342-8, MC42342-9, MC42342-10, MC42342-13
Batch GN52187: MC42342-11, MC42342-12
Batch GN52216: MC42342-3F
Batch GN52229: MC42342-13
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN52186	MC42342-13	mg/l	4.1	4.1	0.0	0-20%
Alkalinity, Total as CaCO3	GN52187	MC42370-7	mg/l	39.1	38.1	2.6	0-20%

Associated Samples:
Batch GN52186: MC42342-3, MC42342-4, MC42342-5, MC42342-6, MC42342-7, MC42342-8, MC42342-9, MC42342-10, MC42342-13
Batch GN52187: MC42342-11, MC42342-12
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN52186	MC42342-13	mg/l	4.1	250	261	102.8	75-125%
Alkalinity, Total as CaCO3	GN52187	MC42370-7	mg/l	39.1	250	294	102.0	75-125%
Chloride	GN52126	MC42204-3	mg/l	36.5	10	46.0	95.0	75-125%
Chloride	GN52229	MC42342-13	mg/l	3.0	10	13.5	105.0	75-125%
Dissolved Organic Carbon	GN52152	MC42342-13F	mg/l	1.6	10	10.9	92.3	75-125%
Dissolved Organic Carbon	GN52153	MC42370-7F	mg/l	2.3	10	12.3	100.0	75-125%
Dissolved Organic Carbon	GN52216	MC42426-3F	mg/l	0.19	10	9.4	92.1	75-125%

Associated Samples:
Batch GN52126: MC42342-3, MC42342-4, MC42342-5, MC42342-6, MC42342-7, MC42342-8, MC42342-9, MC42342-10, MC42342-11, MC42342-12
Batch GN52152: MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-13F
Batch GN52153: MC42342-12F
Batch GN52186: MC42342-3, MC42342-4, MC42342-5, MC42342-6, MC42342-7, MC42342-8, MC42342-9, MC42342-10, MC42342-13
Batch GN52187: MC42342-11, MC42342-12
Batch GN52216: MC42342-3F
Batch GN52229: MC42342-13
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42342
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GN52126	MC42204-3	mg/l	36.5	10	46.0	0.0	
Chloride	GN52229	MC42342-13	mg/l	3.0	10	13.5	0.0	
Dissolved Organic Carbon	GN52152	MC42342-13F	mg/l	1.6	10	10.9	0.0	
Dissolved Organic Carbon	GN52153	MC42370-7F	mg/l	2.3	10	12.2	0.8	
Dissolved Organic Carbon	GN52216	MC42426-3F	mg/l	0.19	10	9.4	0.0	

Associated Samples:
Batch GN52126: MC42342-3, MC42342-4, MC42342-5, MC42342-6, MC42342-7, MC42342-8, MC42342-9, MC42342-10, MC42342-11, MC42342-12
Batch GN52152: MC42342-4F, MC42342-5F, MC42342-6F, MC42342-7F, MC42342-8F, MC42342-9F, MC42342-10F, MC42342-11F, MC42342-13F
Batch GN52153: MC42342-12F
Batch GN52216: MC42342-3F
Batch GN52229: MC42342-13
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

2 of 137

495 Technology Center West, Building One, Marlborough, MA 01752
TEL. 508-481-6200
www.accutest.com

FED-EX Tracking # 6484 9125 2904
Bottle Order Control #
Accutest Quote #
Accutest Job # MC42342

Client / Reporting Information

Company Name: Accutest Laboratories
Street Address: 495 Technology Center West, Bldg One
City State Zip: Marlborough, MA (
Project Contact E-mail: frankd frankd@accutest.com
Phone # Fax #: 508-481-6200
Sampler(s) Name(s) Phone: KGA

Project Information

Project Name: Fort Devens, Shepley's Hill, Devens, MA
Street
City State
Project #
Client Purchase Order #
Project Manager
Attention:

Billing Information (if different from Report to)
Company Name
Street Address
City State Zip

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	SO4 by 300	LAB USE ONLY
3	SHM-96-5B_FA115		10/21/15	2:45:00 PM	KGA	AQ	1					x				X	
4	SHM-10-12_FA115		10/21/15	11:05:00 AM	KGA	AQ	1					x				X	MA
5	DUP2_FA115		10/21/15	11:25:00 AM	KGA	AQ	1					x				X	
6	SHM-96-5C_FA115		10/21/15	1:50:00 PM	KGA	AQ	1					x				X	
7	SHL-5_FA115		10/21/15	1:00:00 PM	KGA	AQ	1					x				X	
8	SHL-21_FA115		10/21/15	1:44:00 PM	KGA	AQ	1					x				X	
9	SHP-99-35X_FA115		10/21/15	12:55:00 PM	KGA	AQ	1					x				X	
10	SHP-05-44_FA115		10/21/15	2:10:00 PM	KGA	AQ	1					x				X	
11	SHM-10-11_FA115		10/21/15	11:20:00 AM	KGA	AQ	1					x				X	
12	SHM-10-06A_FA115		10/21/15	11:25:00 AM	KGA	AQ	1					x				X	
13S	SHL-23_FA115		10/21/15	1:20:00 PM	KGA	AQ										X	
13D	SHL-23_FA115		10/21/15	1:20:00 PM	KGA	AQ										X	

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 4 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/4/2015

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A"
- [ ] Commercial "B"
- [ ] NJ Reduced
- [ ] NJ Full
- [ ] FULL CLP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only

Comments / Special Instructions

Ship to ALNJ - SO4 by 300 "Limited Volume"
-13 volume needed for MS/MSD

INITIAL ASESSMENT Am 2A

LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Tin	Received By:	Relinquished By:	Date Time:	Received By:
1	10/26/15	1	2 FEDEX	10-27-15 10:35	2
Relinquished by Sampler 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # [ ] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [ ] Cooler Temp. 2.3 2.0

8.1

8

MC42342: Chain of Custody
Page 1 of 3
Accutest New Jersey

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West, Building One, Marlborough, MA 01752
TEL. 508-481-6200
www.accutest.com

FED-EX Tracking #
Bottle Order Control #
Accutest Quote #
Accutest Job # MC42342

Client / Reporting Information

Company Name: Accutest Laboratories
Street Address: 495 Technology Center West, Bldg One
City: Marlborough, State: MA Zip: (
Project Contact: frankd E-mail: frankd@accutest.com
Phone #: 508-481-6200 Fax #:
Sampler(s) Name(s): KGA Phone:

Project Information

Project Name: Fort Devens, Shepley's Hill, Devens, MA
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	SO4 by 300										LAB USE ONLY
13	SHL-23_FA115		10/21/15	1:20:00 PM	KGA	AQ	1					x				X										MS/MSD

Number of preserved Bottles

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 4 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/4/2015

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A"
- [ ] Commercial "B"
- [ ] NJ Reduced
- [ ] NJ Full
- [ ] FULL CLP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only

Comments / Special Instructions

Ship to ALNJ - SO4 by 300 "Limited Volume"
-13 volume needed for MS/MSD

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	10/26/15	1 Fedex	2 FX	10-27-15 1035	2
3		3	4		4
5		5			

Relinquished by: 5 — Date Time: — Received By: 5

Custody Seal # — [ ] Intact [ ] Not intact — Preserved where applicable [ ] — On Ice [ ] — Cooler Temp.

8.1

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MC42342: Chain of Custody
Page 2 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42342 **Client:** **Project:**

Date / Time Received: 10/27/2015 10:35:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.3);

Cooler Temps (Corrected) °C: Cooler 1: (2.5);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☐	☑	☐
2. Trip Blank listed on COC:	☐	☑	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☑	☐

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

8.1

8

MC42342: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5 Limits

Job Number: MC42342
Account: Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/21/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No Exceptions found.

* Sample used for QC is not from job MC42342

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42342
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Sulfate	GP93212/GN35189	10	1.1	mg/l	80	79.6	99.5	90-110%

Associated Samples:
Batch GP93212: MC42342-3, MC42342-4, MC42342-5, MC42342-6, MC42342-7, MC42342-8, MC42342-9, MC42342-10, MC42342-11, MC42342-12, MC42342-13
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42342
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Sulfate	GP93212/GN35189	MC42342-13	mg/l	5.4	5.1	5.7	0-20%

Associated Samples:
Batch GP93212: MC42342-3, MC42342-4, MC42342-5, MC42342-6, MC42342-7, MC42342-8, MC42342-9, MC42342-10, MC42342-11, MC42342-12, MC42342-13
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42342
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Sulfate	GP93212/GN35189	MC42342-11	mg/l	45.1	80	125	99.9	80-120%
Sulfate	GP93212/GN35189	MC42342-13	mg/l	5.4	80	85.7	100.4	80-120%

Associated Samples:
Batch GP93212: MC42342-3, MC42342-4, MC42342-5, MC42342-6, MC42342-7, MC42342-8, MC42342-9, MC42342-10, MC42342-11, MC42342-12, MC42342-13
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

11/12/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC42370

Sampling Date: 10/22/15

Report to:

H&S Environmental

lekes@hsenv.com

ATTN: Laurie Ekes

Total number of pages in report: **99**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Accutest LabLink@162554 09:06 12-Nov-2015

Sample Summary

H&S Environmental

Job No: MC42370

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42370-1	10/22/15	14:20		10/22/15	AQ	Ground Water	EPA-PZ-2012-2B_FA115
MC42370-1F	10/22/15	14:20		10/22/15	AQ	Groundwater Filtered	EPA-PZ-2012-2B_FA115
MC42370-2	10/22/15	11:00		10/22/15	AQ	Ground Water	SHL-10_FALL15
MC42370-2F	10/22/15	11:00		10/22/15	AQ	Groundwater Filtered	SHL-10_FALL15
MC42370-3	10/22/15	11:10		10/22/15	AQ	Ground Water	EPA-PZ-2012-1B_FA115
MC42370-3F	10/22/15	11:10		10/22/15	AQ	Groundwater Filtered	EPA-PZ-2012-1B_FA115
MC42370-4	10/22/15	11:00		10/22/15	AQ	Ground Water	DUP-5_FA115
MC42370-4F	10/22/15	11:00		10/22/15	AQ	Groundwater Filtered	DUP-5_FA115
MC42370-5	10/22/15	10:53		10/22/15	AQ	Ground Water	SHL-3_FA115
MC42370-5F	10/22/15	10:53		10/22/15	AQ	Groundwater Filtered	SHL-3_FA115
MC42370-6	10/22/15	11:25		10/22/15	AQ	Ground Water	SHM-10-14_FA115
MC42370-6F	10/22/15	11:25		10/22/15	AQ	Groundwater Filtered	SHM-10-14_FA115
MC42370-7	10/22/15	12:25		10/22/15	AQ	Ground Water	EPA-PZ-2012-1A_FA115

Sample Summary
(continued)

H&S Environmental

Job No: MC42370

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42370-7D	10/22/15	12:25		10/22/15	AQ	Water Dup/MSD	EPA-PZ-2012-1A_FA115
MC42370-7F	10/22/15	12:25		10/22/15	AQ	Groundwater Filtered	EPA-PZ-2012-1A_FA115
MC42370-7FD	10/22/15	12:25		10/22/15	AQ	Water Dup/MSD	EPA-PZ-2012-1A_FA115
MC42370-7FS	10/22/15	12:25		10/22/15	AQ	Water Matrix Spike	EPA-PZ-2012-1A_FA115
MC42370-7S	10/22/15	12:25		10/22/15	AQ	Water Matrix Spike	EPA-PZ-2012-1A_FA115
MC42370-8	10/22/15	12:38		10/22/15	AQ	Ground Water	SHM-10-07_FA115
MC42370-8F	10/22/15	12:38		10/22/15	AQ	Groundwater Filtered	SHM-10-07_FA115
MC42370-9	10/22/15	13:05		10/22/15	AQ	Ground Water	DUP3_FA115
MC42370-9F	10/22/15	13:05		10/22/15	AQ	Groundwater Filtered	DUP3_FA115
MC42370-10	10/22/15	13:00		10/22/15	AQ	Ground Water	SHM-93-10C_FA115
MC42370-10F	10/22/15	13:00		10/22/15	AQ	Groundwater Filtered	SHM-93-10C_FA115
MC42370-11	10/22/15	14:40		10/22/15	AQ	Ground Water	SHL-13_FA115
MC42370-11F	10/22/15	14:40		10/22/15	AQ	Groundwater Filtered	SHL-13_FA115

Sample Summary
(continued)

H&S Environmental

Job No: MC42370

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42370-12	10/22/15	13:05		10/22/15	AQ	Ground Water	SHP-99-29X_FA115
MC42370-12F	10/22/15	13:05		10/22/15	AQ	Groundwater Filtered	SHP-99-29X_FA115
MC42370-13	10/22/15	14:05		10/22/15	AQ	Ground Water	SHM-10-06_FA115
MC42370-13F	10/22/15	14:05		10/22/15	AQ	Groundwater Filtered	SHM-10-06_FA115
MC42370-14	10/22/15	14:15		10/22/15	AQ	Ground Water	SHM-10-13_FA115
MC42370-14F	10/22/15	14:15		10/22/15	AQ	Groundwater Filtered	SHM-10-13_FA115
MC42370-15	10/22/15	15:15		10/22/15	AQ	Ground Water	EPA-PZ-2012-2A_FA115
MC42370-15F	10/22/15	15:15		10/22/15	AQ	Groundwater Filtered	EPA-PZ-2012-2A_FA115
MC42370-16	10/22/15	15:15		10/22/15	AQ	Ground Water	N7-P2-FA115
MC42370-16F	10/22/15	15:15		10/22/15	AQ	Groundwater Filtered	N7-P2-FA115

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC42370
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	11/9/2015 11:17:16 AM

16 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 10/22/2015 and were received at Accutest on 10/22/2015 properly preserved, at 1.2 Deg. C and intact. These Samples received an Accutest job number of MC42370. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP25369

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7FMS, MC42370-7FMSD, MC42370-7FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Iron are outside control limits for sample MP25369-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP25369A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7FMS, MC42370-7FMSD, MC42370-7FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Arsenic are outside control limits for sample MP25369A-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** N:GP93236

- MC42370-1 through MC42370-16 for Sulfate: Analysis performed at Accutest Laboratories, Dayton, NJ.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ **Batch ID:** GN52229

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42342-13MS, MC42342-13MSD were used as the QC samples for Chloride.

Matrix: AQ **Batch ID:** GN52260

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7MS were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ	**Batch ID:** GN52187

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7DUP, MC42370-7MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ	**Batch ID:** GN52204

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42383-1DUP, MC42383-1MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SW846 9060

Matrix: AQ	**Batch ID:** GN52153

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7FMS, MC42370-7FMSD were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ	**Batch ID:** GN52216

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-3FMS, MC42426-3FMSD were used as the QC samples for Dissolved Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC42370).

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Accutest Labs of New England, Inc.	**Job No**	MC42370
Site:	HSMAW: Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	11/2/2015 10:03:21 A

On 10/27/2015, 16 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 2.5 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of MC42370 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** GP93236

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7DUP, MC42370-7MS, MC42370-8MS were used as the QC samples for Sulfate.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Job Number: MC42370
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/22/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42370-1	**EPA-PZ-2012-2B_FA115**					
Alkalinity, Total as CaCO3		159	5.0	3.9	mg/l	SM21 2320B
Chloride		17.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		7.5 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-1F	**EPA-PZ-2012-2B_FA115**					
Manganese		7080	150	75	ug/l	SW846 6010C
Dissolved Organic Carbon		1.8	1.0	0.084	mg/l	SW846 9060
MC42370-2	**SHL-10_FALL15**					
Alkalinity, Total as CaCO3		36.1	5.0	3.9	mg/l	SM21 2320B
Chloride		3.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		10.1	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-2F	**SHL-10_FALL15**					
Dissolved Organic Carbon		0.50 J	1.0	0.084	mg/l	SW846 9060
MC42370-3	**EPA-PZ-2012-1B_FA115**					
Alkalinity, Total as CaCO3		266	5.0	3.9	mg/l	SM21 2320B
Chloride		18.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		6.7 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-3F	**EPA-PZ-2012-1B_FA115**					
Arsenic		288	10	5.0	ug/l	SW846 6020A
Iron		19200	100	50	ug/l	SW846 6010C
Manganese		9450	150	75	ug/l	SW846 6010C
Dissolved Organic Carbon		2.2	1.0	0.084	mg/l	SW846 9060
MC42370-4	**DUP-5_FA115**					
Alkalinity, Total as CaCO3		38.1	5.0	3.9	mg/l	SM21 2320B
Chloride		3.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		10.1	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-4F	**DUP-5_FA115**					
Dissolved Organic Carbon		0.39 J	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42370
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/22/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42370-5	**SHL-3_FA115**					
Alkalinity, Total as CaCO3		54.6	5.0	3.9	mg/l	SM21 2320B
Chloride		2.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		10.2	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-5F	**SHL-3_FA115**					
Dissolved Organic Carbon		1.0	1.0	0.084	mg/l	SW846 9060
MC42370-6	**SHM-10-14_FA115**					
Alkalinity, Total as CaCO3		169	5.0	3.9	mg/l	SM21 2320B
Chloride		4.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		2.7 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-6F	**SHM-10-14_FA115**					
Arsenic		2320	100	50	ug/l	SW846 6020A
Iron		63500	1000	500	ug/l	SW846 6010C
Manganese		3650	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		4.7	1.0	0.084	mg/l	SW846 9060
MC42370-7	**EPA-PZ-2012-1A_FA115**					
Alkalinity, Total as CaCO3		39.1	5.0	3.9	mg/l	SM21 2320B
Chloride		52.2	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		12.3	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-7F	**EPA-PZ-2012-1A_FA115**					
Iron		149	100	50	ug/l	SW846 6010C
Manganese		470	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.3	1.0	0.084	mg/l	SW846 9060
MC42370-8	**SHM-10-07_FA115**					
Alkalinity, Total as CaCO3		127	5.0	3.9	mg/l	SM21 2320B
Chloride		55.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		4.0 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-8F	**SHM-10-07_FA115**					
Arsenic		926	40	20	ug/l	SW846 6020A
Iron		43900	500	250	ug/l	SW846 6010C

Summary of Hits

Job Number: MC42370
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/22/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Manganese		2410	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.8	1.0	0.084	mg/l	SW846 9060
MC42370-9	**DUP3_FA115**					
Alkalinity, Total as CaCO3		95.8	5.0	3.9	mg/l	SM21 2320B
Chloride		3.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		7.1 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-9F	**DUP3_FA115**					
Arsenic		3920	100	50	ug/l	SW846 6020A
Iron		47700	500	250	ug/l	SW846 6010C
Manganese		8260	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		1.7	1.0	0.084	mg/l	SW846 9060
MC42370-10	**SHM-93-10C_FA115**					
Alkalinity, Total as CaCO3		162	5.0	3.9	mg/l	SM21 2320B
Chloride		23.2	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		19.9	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-10F	**SHM-93-10C_FA115**					
Arsenic		11.6	4.0	2.0	ug/l	SW846 6020A
Dissolved Organic Carbon		0.83 J	1.0	0.084	mg/l	SW846 9060
MC42370-11	**SHL-13_FA115**					
Alkalinity, Total as CaCO3		22.7	5.0	3.9	mg/l	SM21 2320B
Chloride		89.7	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.3 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-11F	**SHL-13_FA115**					
Arsenic		2.9 J	4.0	2.0	ug/l	SW846 6020A
Iron		1210	100	50	ug/l	SW846 6010C
Manganese		549	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.0	1.0	0.084	mg/l	SW846 9060
MC42370-12	**SHP-99-29X_FA115**					
Alkalinity, Total as CaCO3		108	5.0	3.9	mg/l	SM21 2320B
Chloride		2.8	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		6.2 J	10	0.50	mg/l	EPA 300/SW846 9056A

Summary of Hits

Job Number: MC42370
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/22/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42370-12F	**SHP-99-29X_FA115**					
Arsenic		3810	100	50	ug/l	SW846 6020A
Iron		48500	500	250	ug/l	SW846 6010C
Manganese		8340	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		1.5	1.0	0.084	mg/l	SW846 9060
MC42370-13	**SHM-10-06_FA115**					
Alkalinity, Total as CaCO3		183	5.0	3.9	mg/l	SM21 2320B
Chloride		17.7	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		3.7 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-13F	**SHM-10-06_FA115**					
Arsenic		2150	100	50	ug/l	SW846 6020A
Iron		88800	500	250	ug/l	SW846 6010C
Manganese		2090	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		5.4	1.0	0.084	mg/l	SW846 9060
MC42370-14	**SHM-10-13_FA115**					
Alkalinity, Total as CaCO3		162	5.0	3.9	mg/l	SM21 2320B
Chloride		35.7	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		102	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-14F	**SHM-10-13_FA115**					
Arsenic		4.5	4.0	2.0	ug/l	SW846 6020A
Iron		354	100	50	ug/l	SW846 6010C
Manganese		327	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.8	1.0	0.084	mg/l	SW846 9060
MC42370-15	**EPA-PZ-2012-2A_FA115**					
Alkalinity, Total as CaCO3		9.3	5.0	3.9	mg/l	SM21 2320B
Chloride		1.8	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		7.5 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-15F	**EPA-PZ-2012-2A_FA115**					
Dissolved Organic Carbon		0.42 J	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42370
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/22/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42370-16	**N7-P2-FA115**					
Alkalinity, Total as CaCO3		65.9	5.0	3.9	mg/l	SM21 2320B
Chloride		11.3	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		47.0	10	0.50	mg/l	EPA 300/SW846 9056A
MC42370-16F	**N7-P2-FA115**					
Arsenic		157	4.0	2.0	ug/l	SW846 6020A
Iron		28100	500	250	ug/l	SW846 6010C
Manganese		1510	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.2	1.0	0.084	mg/l	SW846 9060

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	EPA-PZ-2012-2B_FA115		
Lab Sample ID:	MC42370-1	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	159	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	17.0	1.0	0.76	mg/l	1	11/04/15	MC	SM 4500 CL C-11
Sulfate [a]	7.5 J	10	0.50	mg/l	1	10/29/15 16:40	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-2B_FA115		
Lab Sample ID:	MC42370-1F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	7080	150	75	ug/l	10	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25369
(5) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-2B_FA115		
Lab Sample ID:	MC42370-1F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.8	1.0	0.084	mg/l	1	10/29/15 06:08	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-10_FALL15		
Lab Sample ID:	MC42370-2	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	36.1	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	3.0	1.0	0.76	mg/l	1	11/04/15	MC	SM 4500 CL C-11
Sulfate [a]	10.1	10	0.50	mg/l	1	10/29/15 17:04	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-10_FALL15		
Lab Sample ID:	MC42370-2F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-10_FALL15		
Lab Sample ID:	MC42370-2F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.50 J	1.0	0.084	mg/l	1	10/29/15 06:25	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-1B_FA115		
Lab Sample ID:	MC42370-3	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	266	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	18.5	1.0	0.76	mg/l	1	11/04/15	MC	SM 4500 CL C-11
Sulfate [a]	6.7 J	10	0.50	mg/l	1	10/29/15 17:28	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-1B_FA115		
Lab Sample ID:	MC42370-3F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	288	10	5.0	ug/l	5	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	19200	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	9450	150	75	ug/l	10	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25369
(5) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-1B_FA115		
Lab Sample ID:	MC42370-3F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	0.084	mg/l	1	10/29/15 06:39	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-5_FA115		
Lab Sample ID:	MC42370-4	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	38.1	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	3.0	1.0	0.76	mg/l	1	11/04/15	MC	SM 4500 CL C-11
Sulfate [a]	10.1	10	0.50	mg/l	1	10/29/15 17:52	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-5_FA115		
Lab Sample ID:	MC42370-4F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-5_FA115		
Lab Sample ID:	MC42370-4F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.39 J	1.0	0.084	mg/l	1	10/29/15 07:28	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-3_FA115		
Lab Sample ID:	MC42370-5	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	54.6	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	2.0	1.0	0.76	mg/l	1	11/04/15	MC	SM 4500 CL C-11
Sulfate [a]	10.2	10	0.50	mg/l	1	10/29/15 18:16	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-3_FA115		
Lab Sample ID:	MC42370-5F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-3_FA115		
Lab Sample ID:	MC42370-5F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.0	1.0	0.084	mg/l	1	10/29/15 07:46	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-14_FA115		
Lab Sample ID:	MC42370-6	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	169	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	4.0	1.0	0.76	mg/l	1	11/04/15	MC	SM 4500 CL C-11
Sulfate [a]	2.7 J	10	0.50	mg/l	1	10/29/15 18:40	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-14_FA115		
Lab Sample ID:	MC42370-6F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2320	100	50	ug/l	50	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	63500	1000	500	ug/l	10	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	3650	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25369
(5) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-14_FA115		
Lab Sample ID:	MC42370-6F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.7	1.0	0.084	mg/l	1	10/29/15 08:01	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-1A_FA115		
Lab Sample ID:	MC42370-7	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	39.1	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	52.2	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	12.3	10	0.50	mg/l	1	10/29/15 20:39	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-1A_FA115		
Lab Sample ID:	MC42370-7F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	149	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	470	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-1A_FA115		
Lab Sample ID:	MC42370-7F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.3	1.0	0.084	mg/l	1	10/29/15 05:37	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-07_FA115		
Lab Sample ID:	MC42370-8	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	127	5.0	3.9	mg/l	1	10/31/15	MC	SM21 2320B
Chloride	55.5	1.0	0.76	mg/l	1	11/04/15	MC	SM 4500 CL C-11
Sulfate [a]	4.0 J	10	0.50	mg/l	1	10/29/15 21:27	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-07_FA115		
Lab Sample ID:	MC42370-8F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	926	40	20	ug/l	20	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	43900	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	2410	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25369
(5) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-07_FA115		
Lab Sample ID:	MC42370-8F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.8	1.0	0.084	mg/l	1	10/29/15 08:16	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP3_FA115		
Lab Sample ID:	MC42370-9	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	95.8	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	3.0	1.0	0.76	mg/l	1	11/04/15	MC	SM 4500 CL C-11
Sulfate [a]	7.1 J	10	0.50	mg/l	1	10/29/15 21:51	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP3_FA115		
Lab Sample ID:	MC42370-9F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3920	100	50	ug/l	50	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	47700	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]
Manganese	8260	75	38	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18633
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP3_FA115		
Lab Sample ID:	MC42370-9F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.7	1.0	0.084	mg/l	1	10/29/15 08:31	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93-10C_FA115		
Lab Sample ID:	MC42370-10	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	162	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	23.2	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	19.9	10	0.50	mg/l	1	10/29/15 22:15	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93-10C_FA115		
Lab Sample ID:	MC42370-10F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	11.6	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93-10C_FA115		
Lab Sample ID:	MC42370-10F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.83 J	1.0	0.084	mg/l	1	11/04/15 01:39	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-13_FA115		
Lab Sample ID:	MC42370-11	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	22.7	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	89.7	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	5.3 J	10	0.50	mg/l	1	10/29/15 22:39	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-13_FA115		
Lab Sample ID:	MC42370-11F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.9 J	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	1210	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	549	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-13_FA115		
Lab Sample ID:	MC42370-11F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.0	1.0	0.084	mg/l	1	11/04/15 01:53	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-29X_FA115		
Lab Sample ID:	MC42370-12	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	108	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	2.8	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	6.2 J	10	0.50	mg/l	1	10/29/15 23:03	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-29X_FA115		
Lab Sample ID:	MC42370-12F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3810	100	50	ug/l	50	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	48500	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]
Manganese	8340	75	38	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18633
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-29X_FA115		
Lab Sample ID:	MC42370-12F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.5	1.0	0.084	mg/l	1	11/04/15 02:08	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-06_FA115		
Lab Sample ID:	MC42370-13	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	183	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	17.7	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	3.7 J	10	0.50	mg/l	1	10/29/15 23:27	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-06_FA115		
Lab Sample ID:	MC42370-13F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2150	100	50	ug/l	50	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	88800	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	2090	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25369
(5) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-06_FA115		
Lab Sample ID:	MC42370-13F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	5.4	1.0	0.084	mg/l	1	11/04/15 02:59	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-13_FA115		
Lab Sample ID:	MC42370-14	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	162	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	35.7	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	102	10	0.50	mg/l	1	10/29/15 23:51	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-13_FA115		
Lab Sample ID:	MC42370-14F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	4.5	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	354	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	327	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-13_FA115		
Lab Sample ID:	MC42370-14F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.8	1.0	0.084	mg/l	1	11/04/15 03:14	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-2A_FA115		
Lab Sample ID:	MC42370-15	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	9.3	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	1.8	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	7.5 J	10	0.50	mg/l	1	10/30/15 01:02	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-2A_FA115		
Lab Sample ID:	MC42370-15F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-2A_FA115		
Lab Sample ID:	MC42370-15F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.42 J	1.0	0.084	mg/l	1	11/04/15 03:31	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N7-P2-FA115		
Lab Sample ID:	MC42370-16	**Date Sampled:**	10/22/15
Matrix:	AQ - Ground Water	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	65.9	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	11.3	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	47.0	10	0.50	mg/l	1	10/30/15 01:26	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N7-P2-FA115		
Lab Sample ID:	MC42370-16F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	157	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	28100	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	1510	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25369
(5) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N7-P2-FA115		
Lab Sample ID:	MC42370-16F	**Date Sampled:**	10/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	0.084	mg/l	1	11/04/15 03:45	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

(Plot 2)

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC42370
Accutest Control #:

Client Information		Facility Information	
Name: H&S Environmental		Project Name: Devens	
Address: 160 East Main Street, Suite 2F		Location: Shepley's	
City: Westborough		Project No.	
State: MA	Zip: 01581		
Send Report to: Laurie Ekes (lekes@hsenv.com)			
Phone #: (508)367-7190		FAX #: Office number (508) 366-7442	

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation: VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (Field Filter)	Alklinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl								
EPA-P2-2012-2B-Fg115	10/22/15	1420	-1F	WG	4	2		1		1	X	X	X								-1
SHL-10_Fg115	10/22/15	1100	-2F	WG	4	2		1		1	X	X	X								-2
EPA-P2-2012-1B_Fg115	10/22/15	1110	-3F	WG	4	2		1		1	X	X	X								
DUP-5_Fg115	10/22/15	1100	-4F	WG	4	2		1		1	X	X	X								
SHL-3_Fg115	10/22/15	1053	-5F	Wb	4	2		1		1	X	X	X								-3
SHM-10-14_Fg115	10/22/15	1125	-6F	Wb	4	2		1		1	X	X	X								-4
EPA-P2-2012-1A_Fg115	10/22/15	1225	-7F	Wb	4	2		1		1	X	X	X								-5
EPA-P2-2012-1A-MS_Fg115	10/22/15	1225	-7SF	Wb	4	2		1		1	X	X	X								
EPA-P2-2012-1A_MSD_Fg115	10/22/15	1225	-7DF	Wb	4	2		1		1	X	X	X								
SHM-10-07_Fg115	10/22/15	1238	-8F	Wb	4	2		1		1	X	X	X								-6

Turnaround Information

- [x] 10 Day STD
- [ ] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020

13C, 6A, 1C2

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	10/22/15 1645	1 [signature]	2		2
3		3	4		4
5		5	Seal #	Preserved ☐	On Ice: ☑ 1.2°C

5.1

5

MC42370: Chain of Custody
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ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC42370
Accutest Control #:

Client Information		Facility Information	
Name: H&S Environmental		Project Name: Devens	
Address: 160 East Main Street, Suite 2F		Location: Shepley's	
City: Westborough		Project No.	
State: MA	Zip: 01581		
Send Report to: Laurie Ekes (lekes@hsenv.com)			
Phone #: (508)367-7190		FAX #: Office number (508) 366-7442	

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation: VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (Cr/Pb/Fe/Mn)	Alklinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl								
DVP3 - Fall 15	10/22/15	1305	-9F	WG	4	2		1		1	X	X	X								-7
SHM-93-10C-Fall15	10/22/15	1300	-10F	WG	4	2		1		1	X	X	X								-8
SHL-13 - Fall15	10/22/15	1440	1L6A-11F	WG	4	2		1		1	X	X	X								-9
SHP-99-29X-Fall15	10/22/15	1305	-12F	WG	4	2		1		1	X	X	X								-10
SHM-10-06-Fall15	10/22/15	1405	-13F	WG	4	2		1		1	X	X	X								-11
SHM-10-13-Fall15	10/22/15	1415	-14F	WG	4	2		1		1	X	X	X								-12
EPA-P2-2012-2A-Fall15	10/22/15	1515	-15F	WG	4	2		1		1	X	X	X								-13
N7-P2-Fall15	10/22/15	1515	-16F	WG	4	2		1		1	X	X	X								-14

Turnaround Information	Data Deliverable Information	Comments / Remarks
[X] 10 Day STD [ ] 5 Day STD (By Contract only) [ ] 5 Day Rush [ ] 3 Day Rush [ ] 2 Day Rush [ ] 1 Day Rush Approved By:	[ ] Comm A [ ] Comm B [ ] Full T1 [ ] Other [ ] CT RCP [ ] MA MCP [ ] NYASP CAT A [ ] NYASP CATB EDD Format:	Analyze Arsenic by SW6020

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	10/22/15 1645	1 [signature]	2		2
3		3	4		4
5		5	Seal #	Preserved ☐	On Ice: ☑ 1.2°C

MC42370: Chain of Custody
Page 2 of 4

Frank D'Agostino

From: Laurie Ekes <LEkes@hsenv.com>
Sent: Friday, October 30, 2015 10:11 AM
To: Frank D'Agostino
Subject: samples

Thank you for your time yesterday. It was nice to meet you and see the lab. I hope to be able to come again with Mark for a formal audit.

I was reviewing the log in for the the Shepley's round at Devens and found an error. (couldn't read the handwriting) Sample MC42370-16/16F was logged in as N7-PZ_Fa115 It should be N7-P2_Fa115.

Please make the correction. Thank you

Laurie

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42370 **Client:** HS **Project:**

Date / Time Received: 10/22/2015 4:45:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.2/1.2);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Thermometer ID:	G1;	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☐	☐	☐
2. Trip Blank listed on COC:	☐	☐	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☐	☐

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC42370: Chain of Custody
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QC Evaluation: DOD QSM5 Limits

Job Number: MC42370
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/22/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP25369	SW846 6010C						
MP25369-B1	7439-89-6	Iron	BSP	REC	101	%	87-115
MP25369-B1	7439-96-5	Manganese	BSP	REC	99.4	%	90-114
MP25369-S1	7439-89-6	Iron	MS	REC	100.5	%	87-115
MP25369-S1	7439-96-5	Manganese	MS	REC	98.8	%	90-114
MP25369-S2	7439-89-6	Iron	MSD	REC	99.5	%	87-115
MP25369-S2	7439-89-6	Iron	MSD	RPD	1	%	20
MP25369-S2	7439-96-5	Manganese	MSD	REC	96	%	90-114
MP25369-S2	7439-96-5	Manganese	MSD	RPD	1.5	%	20
MP25369A	SW846 6020A						
MP25369A-B1	7440-38-2	Arsenic	BSP	REC	104	%	84-116
MP25369A-S1	7440-38-2	Arsenic	MS	REC	105.4	%	84-116
MP25369A-S2	7440-38-2	Arsenic	MSD	REC	103.2	%	84-116
MP25369A-S2	7440-38-2	Arsenic	MSD	RPD	2.1	%	20

* Sample used for QC is not from job MC42370

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	28		
Antimony	6.0	1.2	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.21	1		
Beryllium	4.0	.1	.25		
Bismuth	50	.89	2.1		
Boron	100	1	1.1		
Cadmium	4.0	.26	.43		
Calcium	5000	4.9	15		
Chromium	10	.29	.48		
Cobalt	50	.24	.28		
Copper	25	.58	2.4		
Gold	50	.91	1.5		
Iron	100	13	17	4.4	<100
Lead	5.0	1	1.7		
Lithium	500	.8	2.5		
Magnesium	5000	23	54		
Manganese	15	.11	1.4	0.40	<15
Molybdenum	100	.21	3.6		
Nickel	40	.24	.5		
Palladium	50	1.2	2.6		
Platinum	50	5.3	5.4		
Potassium	5000	30	49		
Selenium	10	2.3	2		
Silicon	100	1.1	30		
Silver	5.0	.43	1		
Sodium	5000	8	77		
Sulfur	50	1.7	4.6		
Strontium	10	.15	.22		
Thallium	5.0	1.2	1.7		
Tin	100	.69	.81		
Titanium	50	.46	.51		
Tungsten	100	2.8	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.29	.51		
Zinc	20	.3	1		
Zirconium	50	.19	1.2		

Associated samples MP25369: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	149	10200	10000	100.5	75-125
Lead					
Lithium					
Magnesium					
Manganese	470	964	500	98.8	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25369: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	149	10100	10000	99.5	1.0	20
Lead						
Lithium						
Magnesium						
Manganese	470	950	500	96.0	1.5	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25369: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	10100	10000	101.0	80-120
Lead				
Lithium				
Magnesium				
Manganese	497	500	99.4	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25369: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	149	166	11.2 (a)	0-10
Lead				
Lithium				
Magnesium				
Manganese	470	489	4.1	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original SDL 1:5	%DIF	QC Limits
Vanadium			
Zinc			
Zirconium			

Associated samples MP25369: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.36	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25369A: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	1.1	528	500	105.4	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25369A: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	1.1	517	500	103.2	2.1	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25369A: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	520	500	104.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25369A: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	1.13	1.42	26.0 (a)	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25369A: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F, MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN52187	5.0	0.0	mg/l	250	256	102.4	80-120%
Alkalinity, Total as CaCO3	GN52204	5.0	0.0	mg/l	250	250	100.0	80-120%
Chloride	GN52229	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Chloride	GN52260	1.0	0.0	mg/l	10	9.8	98.0	80-120%
Dissolved Organic Carbon	GN52153	1.0	0.086	mg/l	10	10.0	100.0	80-120%
Dissolved Organic Carbon	GN52216	1.0	0.18	mg/l	10	9.77	97.7	80-120%

Associated Samples:
Batch GN52153: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F
Batch GN52187: MC42370-1, MC42370-2, MC42370-3, MC42370-4, MC42370-5, MC42370-6, MC42370-7, MC42370-8
Batch GN52204: MC42370-9, MC42370-10, MC42370-11, MC42370-12, MC42370-13, MC42370-14, MC42370-15, MC42370-16
Batch GN52216: MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F
Batch GN52229: MC42370-1, MC42370-2, MC42370-3, MC42370-4, MC42370-5, MC42370-6, MC42370-8, MC42370-9
Batch GN52260: MC42370-7, MC42370-10, MC42370-11, MC42370-12, MC42370-13, MC42370-14, MC42370-15, MC42370-16
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN52187	MC42370-7	mg/l	39.1	38.1	2.6	0-20%
Alkalinity, Total as CaCO3	GN52204	MC42383-1	mg/l	89.6	89.6	0.0	0-20%

Associated Samples:
Batch GN52187: MC42370-1, MC42370-2, MC42370-3, MC42370-4, MC42370-5, MC42370-6, MC42370-7, MC42370-8
Batch GN52204: MC42370-9, MC42370-10, MC42370-11, MC42370-12, MC42370-13, MC42370-14, MC42370-15, MC42370-16
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN52187	MC42370-7	mg/l	39.1	250	294	102.0	75-125%
Alkalinity, Total as CaCO3	GN52204	MC42383-1	mg/l	89.6	250	339	99.8	75-125%
Chloride	GN52229	MC42342-13	mg/l	3.0	10	13.5	105.0	75-125%
Chloride	GN52260	MC42370-7	mg/l	52.2	10	61.2	90.0	75-125%
Chloride	GN52260	MC42370-7	mg/l	52.2	10	61.2	90.0	75-125%
Dissolved Organic Carbon	GN52153	MC42370-7F	mg/l	2.3	10	12.3	100.0	75-125%
Dissolved Organic Carbon	GN52216	MC42426-3F	mg/l	0.19	10	9.4	92.1	75-125%

Associated Samples:
Batch GN52153: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F
Batch GN52187: MC42370-1, MC42370-2, MC42370-3, MC42370-4, MC42370-5, MC42370-6, MC42370-7, MC42370-8
Batch GN52204: MC42370-9, MC42370-10, MC42370-11, MC42370-12, MC42370-13, MC42370-14, MC42370-15, MC42370-16
Batch GN52216: MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F
Batch GN52229: MC42370-1, MC42370-2, MC42370-3, MC42370-4, MC42370-5, MC42370-6, MC42370-8, MC42370-9
Batch GN52260: MC42370-7, MC42370-10, MC42370-11, MC42370-12, MC42370-13, MC42370-14, MC42370-15, MC42370-16
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42370
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GN52229	MC42342-13	mg/l	3.0	10	13.5	0.0	
Dissolved Organic Carbon	GN52153	MC42370-7F	mg/l	2.3	10	12.2	0.8	
Dissolved Organic Carbon	GN52216	MC42426-3F	mg/l	0.19	10	9.4	0.0	

Associated Samples:
Batch GN52153: MC42370-1F, MC42370-2F, MC42370-3F, MC42370-4F, MC42370-5F, MC42370-6F, MC42370-7F, MC42370-8F, MC42370-9F
Batch GN52216: MC42370-10F, MC42370-11F, MC42370-12F, MC42370-13F, MC42370-14F, MC42370-15F, MC42370-16F
Batch GN52229: MC42370-1, MC42370-2, MC42370-3, MC42370-4, MC42370-5, MC42370-6, MC42370-8, MC42370-9
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West, Building One, Marlborough, MA 01752
TEL. 508-481-6200
www.accutest.com

Page 1 of 1

FED-EX Tracking # 6484 1125 3164
Bottle Order Control #
Accutest Quote #
Accutest Job # MC42370

Client / Reporting Information

Company Name: Accutest Laboratories
Street Address: 495 Technology Center West, Bldg One
City: Marlborough, State: MA Zip: (
Project Contact: frankd E-mail: frankd@accutest.com
Phone #: 508-481-6200 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Fort Devens, Shepley's Hill, Devens, MA
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	SO4 by 300	LAB USE ONLY
10	SHM-93-10C_FA115		10/22/15	1:00:00 PM		AQ										X	MA

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 4 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/5/2015

Emergency & Rush T/A data available VIA Labline

Data Deliverable Information

- [ ] Commercial "A"
- [ ] Commercial "B"
- [ ] NJ Reduced
- [ ] NJ Full
- [ ] FULL CLP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only

Comments / Special Instructions

Ship to ALNJ - Missing sample from original COC. Please notify Michelle upon receipt.

INITIAL ASESSMENT NL 3A

LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date/Time:	Received By:
1	10/22/15	1	2 FedEx	10/23/15 10:30	2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # [ ] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [X] Cooler Temp. 4.0°C

8.1

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MC42370: Chain of Custody
Page 1 of 3
Accutest New Jersey

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42370 **Client:** ACCUTEST Lab., MA **Project:** FORT DEVENS, SHEPLEY'S HILL,DEVENS, MA

Date / Time Received: 10/27/2015 10:35:00 AM **Delivery Method:** FedEx **Airbill #'s:** 648491252904

Cooler Temps (Raw Measured) °C: Cooler 1: (2.3); Cooler 2: (1.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.5); Cooler 2: (1.2);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☐		☑	3. COC Present:	☑		☐
2. Custody Seals Intact:	☐		☑	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No, Coolers	1		

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☐	☑	☐
2. Trip Blank listed on COC:	☐	☑	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☑	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments MC42370-10 did not rec'd.
Revised PN, -10 RECEIVED 10/28/15 @ 10:20 ADDED TO COC.

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

8.1

8

MC42370: Chain of Custody
Page 2 of 3

Sample Receipt Summary - Problem Resolution

Accutest Job Number: MC42370

Initiator: ANDREWM

CSR: Michelle

Response Date: 10/28/2015

Response: -10 was sent last night, will receive today, 10/28

REVISED 10/28:
Please proceed w/analysis on -10

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
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QC Evaluation: DOD QSM5 Limits

Job Number: MC42370
Account: Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/22/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No Exceptions found.

* Sample used for QC is not from job MC42370

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42370
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Sulfate	GP93236/GN35250	10	0.0	mg/l	80	79.3	99.1	90-110%

Associated Samples:
Batch GP93236: MC42370-1, MC42370-2, MC42370-3, MC42370-4, MC42370-5, MC42370-6, MC42370-7, MC42370-8, MC42370-9, MC42370-10, MC42370-11, MC42370-12, MC42370-13, MC42370-14, MC42370-15, MC42370-16
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42370
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Sulfate	GP93236/GN35250	MC42370-7	mg/l	12.3	12.4	0.8	0-20%

Associated Samples:
Batch GP93236: MC42370-1, MC42370-2, MC42370-3, MC42370-4, MC42370-5, MC42370-6, MC42370-7, MC42370-8, MC42370-9, MC42370-10, MC42370-11, MC42370-12, MC42370-13, MC42370-14, MC42370-15, MC42370-16
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42370
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Sulfate	GP93236/GN35250	MC42370-7	mg/l	12.3	80	78.3	82.5	80-120%
Sulfate	GP93236/GN35250	MC42370-8	mg/l	4.0	80	71.4	84.3	80-120%

Associated Samples:
Batch GP93236: MC42370-1, MC42370-2, MC42370-3, MC42370-4, MC42370-5, MC42370-6, MC42370-7, MC42370-8, MC42370-9, MC42370-10, MC42370-11, MC42370-12, MC42370-13, MC42370-14, MC42370-15, MC42370-16
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

11/12/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC42414

Sampling Date: 10/23/15

Report to:

H&S Environmental

lekes@hsenv.com

ATTN: Laurie Ekes

Total number of pages in report: **87**

Reza Tand
Lab Director

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Accutest Laboratories

Sample Summary

H&S Environmental

Job No: MC42414

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42414-1	10/23/15	14:00		10/23/15	AQ	Ground Water	SHL-11_FA115
MC42414-1F	10/23/15	14:00		10/23/15	AQ	Groundwater Filtered	SHL-11_FA115
MC42414-2	10/23/15	13:15		10/23/15	AQ	Ground Water	N5-P1_FA115
MC42414-2F	10/23/15	13:15		10/23/15	AQ	Groundwater Filtered	N5-P1_FA115
MC42414-3	10/23/15	14:15		10/23/15	AQ	Ground Water	SHM-13-02_FA115
MC42414-3F	10/23/15	14:15		10/23/15	AQ	Groundwater Filtered	SHM-13-02_FA115
MC42414-4	10/23/15	10:05		10/23/15	AQ	Ground Water	SHM-13-03_FA115
MC42414-4F	10/23/15	10:05		10/23/15	AQ	Groundwater Filtered	SHM-13-03_FA115
MC42414-5	10/23/15	12:30		10/23/15	AQ	Ground Water	PSP-01_FA115
MC42414-5F	10/23/15	12:30		10/23/15	AQ	Groundwater Filtered	PSP-01_FA115
MC42414-6	10/23/15	11:05		10/23/15	AQ	Ground Water	N7-P1_FA115
MC42414-6F	10/23/15	11:05		10/23/15	AQ	Groundwater Filtered	N7-P1_FA115
MC42414-7	10/23/15	11:02		10/23/15	AQ	Ground Water	SHM-10-10_FA115

Accutest Laboratories

Sample Summary
(continued)

H&S Environmental

Job No: MC42414

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42414-7F	10/23/15	11:02		10/23/15	AQ	Groundwater Filtered	SHM-10-10_FA115
MC42414-8	10/23/15	11:50		10/23/15	AQ	Ground Water	SHL-20_FA115
MC42414-8F	10/23/15	11:50		10/23/15	AQ	Groundwater Filtered	SHL-20_FA115
MC42414-9	10/23/15	10:40		10/23/15	AQ	Ground Water	N5-P2_FA115
MC42414-9F	10/23/15	10:40		10/23/15	AQ	Groundwater Filtered	N5-P2_FA115
MC42414-10	10/23/15	09:25		10/23/15	AQ	Ground Water	SHM-93_22B_FA115
MC42414-10F	10/23/15	09:25		10/23/15	AQ	Groundwater Filtered	SHM-93_22B_FA115
MC42414-11	10/23/15	10:35		10/23/15	AQ	Ground Water	SHM-93_22C_FA115
MC42414-11F	10/23/15	10:35		10/23/15	AQ	Groundwater Filtered	SHM-93_22C_FA115
MC42414-12	10/23/15	10:05		10/23/15	AQ	Ground Water	SHM-10-15_FA115
MC42414-12F	10/23/15	10:05		10/23/15	AQ	Groundwater Filtered	SHM-10-15_FA115
MC42414-13	10/23/15	12:32		10/23/15	AQ	Ground Water	SHM-13-07_FA115
MC42414-13F	10/23/15	12:32		10/23/15	AQ	Groundwater Filtered	SHM-13-07_FA115

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC42414
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	11/9/2015 12:39:07 PM

13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 10/23/2015 and were received at Accutest on 10/23/2015 properly preserved, at 3.1 Deg. C and intact. These Samples received an Accutest job number of MC42414. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP25370

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42414-1FMS, MC42414-1FMSD, MC42414-1FSDL were used as the QC samples for metals.
- MP25370-S1/S2 Recovery(s) for Manganese are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- MC42414-1F for Manganese: Matrix spike and matrix spike duplicate recoveries outside of the control limits. J-flag applied.

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP25370A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42414-1FMS, MC42414-1FMSD, MC42414-1FSDL were used as the QC samples for metals.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** N:GP93271

- MC42414-1 through MC42414-13 for Sulfate: Analysis performed at Accutest Laboratories, Dayton, NJ.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ **Batch ID:** GN52260

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7MS were used as the QC samples for Chloride.

Matrix: AQ **Batch ID:** GN52266

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42450-1MS were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ **Batch ID:** GN52209

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42448-1DUP, MC42448-1MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ **Batch ID:** GN52211

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42448-3DUP, MC42448-3MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SW846 9060

Matrix: AQ **Batch ID:** GN52217

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-4FMSD, MC42426-4FMS were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ **Batch ID:** GN52218

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-5FMS, MC42426-5FMSD were used as the QC samples for Dissolved Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC42414).

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Accutest Labs of New England, Inc.	**Job No**	MC42414
Site:	HSMAW: Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	11/4/2015 2:26:32 PM

On 10/28/2015, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 1.2 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of MC42414 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** GP93271

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42414-3DUP, MC42414-3MS, MC42414-9MS were used as the QC samples for Sulfate.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Job Number: MC42414
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/23/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42414-1	**SHL-11_FA115**					
Alkalinity, Total as CaCO3		173	5.0	3.9	mg/l	SM21 2320B
Chloride		41.2	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		52.7	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-1F	**SHL-11_FA115**					
Arsenic		642	20	10	ug/l	SW846 6020A
Iron		45800	500	250	ug/l	SW846 6010C
Manganese [b]		3560 J	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.0	1.0	0.084	mg/l	SW846 9060
MC42414-2	**N5-P1_FA115**					
Alkalinity, Total as CaCO3		250	5.0	3.9	mg/l	SM21 2320B
Chloride		15.8	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		13.5	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-2F	**N5-P1_FA115**					
Arsenic		2170	100	50	ug/l	SW846 6020A
Iron		3440	100	50	ug/l	SW846 6010C
Manganese		7250	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		2.7	1.0	0.084	mg/l	SW846 9060
MC42414-3	**SHM-13-02_FA115**					
Alkalinity, Total as CaCO3		155	5.0	3.9	mg/l	SM21 2320B
Chloride		14.8	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		10	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-3F	**SHM-13-02_FA115**					
Arsenic		2.6 J	4.0	2.0	ug/l	SW846 6020A
Manganese		13200	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		1.7	1.0	0.084	mg/l	SW846 9060
MC42414-4	**SHM-13-03_FA115**					
Alkalinity, Total as CaCO3		273	5.0	3.9	mg/l	SM21 2320B
Chloride		37.2	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.4 J	10	0.50	mg/l	EPA 300/SW846 9056A

Summary of Hits

Job Number: MC42414
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/23/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42414-4F	**SHM-13-03_FA115**					
Arsenic		68.7	4.0	2.0	ug/l	SW846 6020A
Iron		6610	100	50	ug/l	SW846 6010C
Manganese		10800	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		3.9	1.0	0.084	mg/l	SW846 9060
MC42414-5	**PSP-01_FA115**					
Alkalinity, Total as CaCO3		25.8	5.0	3.9	mg/l	SM21 2320B
Chloride		87.7	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.4 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-5F	**PSP-01_FA115**					
Arsenic		2.1 J	4.0	2.0	ug/l	SW846 6020A
Manganese		17.8	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		4.1	1.0	0.084	mg/l	SW846 9060
MC42414-6	**N7-P1_FA115**					
Alkalinity, Total as CaCO3		61.8	5.0	3.9	mg/l	SM21 2320B
Chloride		17.7	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		37.8	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-6F	**N7-P1_FA115**					
Arsenic		55.5	4.0	2.0	ug/l	SW846 6020A
Iron		4250	100	50	ug/l	SW846 6010C
Manganese		805	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		0.77 J	1.0	0.084	mg/l	SW846 9060
MC42414-7	**SHM-10-10_FA115**					
Alkalinity, Total as CaCO3		271	5.0	3.9	mg/l	SM21 2320B
Chloride		50.7	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		6.6 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-7F	**SHM-10-10_FA115**					
Arsenic		2.9 J	4.0	2.0	ug/l	SW846 6020A
Manganese		16000	150	75	ug/l	SW846 6010C
Dissolved Organic Carbon		3.9	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42414
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/23/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42414-8	**SHL-20_FA115**					
Alkalinity, Total as CaCO3		139	5.0	3.9	mg/l	SM21 2320B
Chloride		61.7	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		3.5 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-8F	**SHL-20_FA115**					
Arsenic		855	20	10	ug/l	SW846 6020A
Iron		59300	500	250	ug/l	SW846 6010C
Manganese		2060	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.2	1.0	0.084	mg/l	SW846 9060
MC42414-9	**N5-P2_FA115**					
Alkalinity, Total as CaCO3		574	5.0	3.9	mg/l	SM21 2320B
Chloride		14.8	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		4.2 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-9F	**N5-P2_FA115**					
Arsenic		25.7	4.0	2.0	ug/l	SW846 6020A
Iron		68200	500	250	ug/l	SW846 6010C
Manganese		426	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		13.1	1.0	0.084	mg/l	SW846 9060
MC42414-10	**SHM-93_22B_FA115**					
Alkalinity, Total as CaCO3		283	5.0	3.9	mg/l	SM21 2320B
Chloride		17.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		5.2 J	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-10F	**SHM-93_22B_FA115**					
Arsenic		670	20	10	ug/l	SW846 6020A
Iron		12500	100	50	ug/l	SW846 6010C
Manganese		11500	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		4.0	1.0	0.084	mg/l	SW846 9060
MC42414-11	**SHM-93_22C_FA115**					
Alkalinity, Total as CaCO3		201	5.0	3.9	mg/l	SM21 2320B
Chloride		24.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		3.9 J	10	0.50	mg/l	EPA 300/SW846 9056A

Summary of Hits

Job Number: MC42414
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/23/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42414-11F	**SHM-93_22C_FA115**					
Arsenic		137	4.0	2.0	ug/l	SW846 6020A
Iron		1410	100	50	ug/l	SW846 6010C
Manganese		271	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.5	1.0	0.084	mg/l	SW846 9060
MC42414-12	**SHM-10-15_FA115**					
Alkalinity, Total as CaCO3		197	5.0	3.9	mg/l	SM21 2320B
Chloride		9.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		11.3	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-12F	**SHM-10-15_FA115**					
Arsenic		5450	200	100	ug/l	SW846 6020A
Iron		41500	500	250	ug/l	SW846 6010C
Manganese		7600	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		2.9	1.0	0.084	mg/l	SW846 9060
MC42414-13	**SHM-13-07_FA115**					
Alkalinity, Total as CaCO3		90.6	5.0	3.9	mg/l	SM21 2320B
Chloride		68.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate [a]		11.6	10	0.50	mg/l	EPA 300/SW846 9056A
MC42414-13F	**SHM-13-07_FA115**					
Arsenic		531	20	10	ug/l	SW846 6020A
Iron		11500	100	50	ug/l	SW846 6010C
Manganese		1390	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.7	1.0	0.084	mg/l	SW846 9060

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.
(b) Matrix spike and matrix spike duplicate recoveries outside of the control limits. J-flag applied.

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SHL-11_FA115		
Lab Sample ID:	MC42414-1	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	173	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	41.2	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	52.7	10	0.50	mg/l	1	10/31/15 01:45	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-11_FA115		
Lab Sample ID:	MC42414-1F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	642	20	10	ug/l	10	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	45800	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese [a]	3560 J	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

(a) Matrix spike and matrix spike duplicate recoveries outside of the control limits. J-flag applied.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-11_FA115		
Lab Sample ID:	MC42414-1F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.0	1.0	0.084	mg/l	1	11/04/15 16:26	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N5-P1_FA115		
Lab Sample ID:	MC42414-2	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	250	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	15.8	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	13.5	10	0.50	mg/l	1	10/31/15 02:09	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N5-P1_FA115		
Lab Sample ID:	MC42414-2F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2170	100	50	ug/l	50	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	3440	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	7250	75	38	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N5-P1_FA115		
Lab Sample ID:	MC42414-2F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.7	1.0	0.084	mg/l	1	11/04/15 16:44	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-02_FA115		
Lab Sample ID:	MC42414-3	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	155	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	14.8	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	10	10	0.50	mg/l	1	10/31/15 04:08	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-02_FA115		
Lab Sample ID:	MC42414-3F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.6 J	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	13200	75	38	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-02_FA115		
Lab Sample ID:	MC42414-3F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.7	1.0	0.084	mg/l	1	11/04/15 08:46	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-03_FA115		
Lab Sample ID:	MC42414-4	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	273	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	37.2	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	5.4 J	10	0.50	mg/l	1	10/31/15 04:32	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-03_FA115		
Lab Sample ID:	MC42414-4F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	68.7	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	6610	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	10800	75	38	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-03_FA115		
Lab Sample ID:	MC42414-4F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.9	1.0	0.084	mg/l	1	11/04/15 09:35	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	PSP-01_FA115		
Lab Sample ID:	MC42414-5	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	25.8	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	87.7	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	5.4 J	10	0.50	mg/l	1	10/31/15 04:56	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	PSP-01_FA115		
Lab Sample ID:	MC42414-5F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.1 J	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	17.8	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25370
(4) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	PSP-01_FA115		
Lab Sample ID:	MC42414-5F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.1	1.0	0.084	mg/l	1	11/04/15 09:50	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N7-P1_FA115		
Lab Sample ID:	MC42414-6	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	61.8	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	17.7	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	37.8	10	0.50	mg/l	1	10/31/15 05:20	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N7-P1_FA115		
Lab Sample ID:	MC42414-6F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	55.5	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	4250	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	805	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25370
(4) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N7-P1_FA115		
Lab Sample ID:	MC42414-6F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.77 J	1.0	0.084	mg/l	1	11/04/15 10:05	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-10_FA115		
Lab Sample ID:	MC42414-7	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	271	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	50.7	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	6.6 J	10	0.50	mg/l	1	10/31/15 05:44	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-10_FA115		
Lab Sample ID:	MC42414-7F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.9 J	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	50 U	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	16000	150	75	ug/l	10	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-10_FA115		
Lab Sample ID:	MC42414-7F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.9	1.0	0.084	mg/l	1	11/04/15 10:22	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-20_FA115		
Lab Sample ID:	MC42414-8	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	139	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	61.7	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	3.5 J	10	0.50	mg/l	1	10/31/15 06:08	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-20_FA115		
Lab Sample ID:	MC42414-8F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	855	20	10	ug/l	10	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	59300	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	2060	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-20_FA115		
Lab Sample ID:	MC42414-8F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	0.084	mg/l	1	11/04/15 10:40	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N5-P2_FA115		
Lab Sample ID:	MC42414-9	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	574	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	14.8	1.0	0.76	mg/l	1	11/06/15	MC	SM 4500 CL C-11
Sulfate [a]	4.2 J	10	0.50	mg/l	1	10/31/15 06:56	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N5-P2_FA115		
Lab Sample ID:	MC42414-9F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	25.7	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	68200	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	426	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N5-P2_FA115		
Lab Sample ID:	MC42414-9F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	13.1	1.0	0.084	mg/l	1	11/04/15 14:28	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93_22B_FA115		
Lab Sample ID:	MC42414-10	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	283	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	17.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate [a]	5.2 J	10	0.50	mg/l	1	10/31/15 08:08	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93_22B_FA115		
Lab Sample ID:	MC42414-10F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	670	20	10	ug/l	10	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	12500	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	11500	75	38	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93_22B_FA115		
Lab Sample ID:	MC42414-10F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.0	1.0	0.084	mg/l	1	11/04/15 14:49	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93_22C_FA115		
Lab Sample ID:	MC42414-11	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	201	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	24.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate [a]	3.9 J	10	0.50	mg/l	1	10/31/15 08:32	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93_22C_FA115		
Lab Sample ID:	MC42414-11F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	137	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	1410	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	271	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25370
(4) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-93_22C_FA115		
Lab Sample ID:	MC42414-11F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.5	1.0	0.084	mg/l	1	11/04/15 15:04	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-15_FA115		
Lab Sample ID:	MC42414-12	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	197	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	9.0	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate [a]	11.3	10	0.50	mg/l	1	10/31/15 08:55	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-15_FA115		
Lab Sample ID:	MC42414-12F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	5450	200	100	ug/l	100	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	41500	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]
Manganese	7600	75	38	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18633
(3) Prep QC Batch: MP25370
(4) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-15_FA115		
Lab Sample ID:	MC42414-12F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.9	1.0	0.084	mg/l	1	11/04/15 15:19	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-07_FA115		
Lab Sample ID:	MC42414-13	**Date Sampled:**	10/23/15
Matrix:	AQ - Ground Water	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	90.6	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	68.0	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate [a]	11.6	10	0.50	mg/l	1	10/31/15 09:19	ANJ	EPA 300/SW846 9056A

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-07_FA115		
Lab Sample ID:	MC42414-13F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	531	20	10	ug/l	10	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	11500	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	1390	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25370
(4) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-07_FA115		
Lab Sample ID:	MC42414-13F	**Date Sampled:**	10/23/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/23/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.7	1.0	0.084	mg/l	1	11/04/15 16:11	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

(P1 of 2)

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #:

Accutest Control #: MC42414

Client Information		Facility Information	
Name: H&S Environmental		Project Name: Devens	
Address: 160 East Main Street, Suite 2F		Location: Shepley's	
City: Westborough		Project No.	
State: MA	Zip: 01581		
Send Report to: Laurie Ekes (lekes@hsenv.com)			
Phone #: (508)367-7190		FAX #: Office number (508) 366-7442	

Analytical Information

	Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation voc	NaOH	HNO3	H2So4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (Field Filter)	Alklinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl (Field Filter)
-1F	SHL-11-Fg115	10/23/15	1400		WG	4	2		1		1	X	X	X
-2F	N5-P1-Fg115	10/23/15	1315		WG	4	2		1		1	X	X	X
-3F	SHM-13-02-Fg115	10/23/15	1415		WG	4	2		1		1	X	X	X
-4F	SHM-13-03-Fg115	10/23/15	1005		WG	4	2		1		1	X	X	X
-5F	PSP-01-Fg115	10/23/15	1230		WG	4	2		1		1	X	X	X
-6F	N7-P1-Fg115	10/23/15	1105		WG	4	2		1		1	X	X	X
-7F	SHM-10-10-Fg115	10/23/15	1102		WG	4	2		1		1	X	X	X
-8F	SHL-20-Fg115	10/23/15	1150		WG	4	2		1		1	X	X	X
-9F	N5-P2-Fg115	10/23/15	1040		WG	4	2		1		1	X	X	X
-10F	SHM-93-22B-Fg115	10/23/15	925		WG	4	2		1		1	X	X	X

Turnaround Information	Data Deliverable Information	Comments / Remarks
[X] 10 Day STD [ ] 5 Day STD (By Contract only) [ ] 5 Day Rush [ ] 3 Day Rush [ ] 2 Day Rush [ ] 1 Day Rush Approved By:	[ ] Comm A [ ] Comm B [ ] Full T1 [ ] Other [ ] CT RCP [ ] MA MCP [ ] NYASP CAT A [ ] NYASP CATB EDD Format:	Analyze Arsenic by SW6020 BD, GA

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	10/23/15 1605	1 [signature]	2		2
3		3	4		4
5		5	Seal #	Preserved ☐	On Ice: ☒ 3.1°C

5.1

5

MC42414: Chain of Custody
Page 1 of 3

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

(p 2 of 2)

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #:

Accutest Control #: MC42414

Client Information

Name: H&S Environmental
Address: 160 East Main Street, Suite 2F
City: Westborough
State: MA Zip: 01581
Send Report to: Laurie Ekes (lekes@hsenv.com)
Phone #: (508)367-7190

Facility Information

Project Name: Devens
Location: Shepley's
Project No.:
FAX #: Office number (508) 366-7442

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (FTN B1P)	Alkinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl
-11F SHM-93-22C-Fall15	10/23/15	1035		WG	4	2		1		1	X	X	X
-12F SHM-10-15-Fall15	10/23/15	1005		WG	4	2		1		1	X	X	X
-13F SHM-B-07-Fall15	10/23/15	1232		WG	4	2		1		1	X	X	X
			VIA	~~WG~~	4	2		1		1			

Turnaround Information

- [X] 10 Day STD
- [ ] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020 13D

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	10/23/15 1605	1	2		2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by Sampler: 5	Date Time:	Received By: 5	Seal #	Preserved ☐	On Ice: ~~☐~~ 3.1°C

MC42414: Chain of Custody
Page 2 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42414 **Client:** H&S **Project:** DEVENS

Date / Time Received: 10/23/2015 4:05:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (3.1/4.8);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	IRGUN1;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☐
2. Trip Blank listed on COC:	☐		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC42414: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5 Limits

Job Number: MC42414
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/23/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP25370	SW846 6010C						
MP25370-B1	7439-89-6	Iron	BSP	REC	92.3	%	87-115
MP25370-B1	7439-96-5	Manganese	BSP	REC	98.8	%	90-114
MP25370-S1	7439-89-6	Iron	MS	REC	89	%	87-115
MP25370-S1	7439-96-5	Manganese	MS	REC	156 [a]	%	90-114
MP25370-S2	7439-89-6	Iron	MSD	REC	95	%	87-115
MP25370-S2	7439-89-6	Iron	MSD	RPD	1.1	%	20
MP25370-S2	7439-96-5	Manganese	MSD	REC	156 [a]	%	90-114
MP25370-S2	7439-96-5	Manganese	MSD	RPD	0	%	20
MP25370A	SW846 6020A						
MP25370A-B1	7440-38-2	Arsenic	BSP	REC	108.6	%	84-116
MP25370A-S1	7440-38-2	Arsenic	MS	REC	111.6	%	84-116
MP25370A-S2	7440-38-2	Arsenic	MSD	REC	109.6	%	84-116
MP25370A-S2	7440-38-2	Arsenic	MSD	RPD	.8	%	20

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

* Sample used for QC is not from job MC42414

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	28		
Antimony	6.0	1.2	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.21	1		
Beryllium	4.0	.1	.25		
Bismuth	50	.89	2.1		
Boron	100	1	1.1		
Cadmium	4.0	.26	.43		
Calcium	5000	4.9	15		
Chromium	10	.29	.48		
Cobalt	50	.24	.28		
Copper	25	.58	2.4		
Gold	50	.91	1.5		
Iron	100	13	17	15.5	<100
Lead	5.0	1	1.7		
Lithium	500	.8	2.5		
Magnesium	5000	23	54		
Manganese	15	.11	1.4	0.60	<15
Molybdenum	100	.21	3.6		
Nickel	40	.24	.5		
Palladium	50	1.2	2.6		
Platinum	50	5.3	5.4		
Potassium	5000	30	49		
Selenium	10	2.3	2		
Silicon	100	1.1	30		
Silver	5.0	.43	1		
Sodium	5000	8	77		
Sulfur	50	1.7	4.6		
Strontium	10	.15	.22		
Thallium	5.0	1.2	1.7		
Tin	100	.69	.81		
Titanium	50	.46	.51		
Tungsten	100	2.8	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.29	.51		
Zinc	20	.3	1		
Zirconium	50	.19	1.2		

Associated samples MP25370: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	45800	54700	10000	89.0	75-125
Lead					
Lithium					
Magnesium					
Manganese	3560	4340	500	156.0(a)	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370 | Methods: SW846 6010C
Matrix Type: AQUEOUS | Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25370: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	45800	55300	10000	95.0	1.1	20
Lead						
Lithium						
Magnesium						
Manganese	3560	4340	500	156.0(a)	0.0	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25370: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	9230	10000	92.3	80-120
Lead				
Lithium				
Magnesium				
Manganese	494	500	98.8	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25370: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	45800	45700	0.3	0-10
Lead				
Lithium				
Magnesium				
Manganese	3560	3660	3.0	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original SDL 1:5	%DIF	QC Limits
Vanadium			
Zinc			
Zirconium			

Associated samples MP25370: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.59	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25370A: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	642	1200	500	111.6	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25370A: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	642	1190	500	109.6	0.8	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25370A: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	543	500	108.6	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25370A: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	642	626	2.5	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25370A: MC42414-1F, MC42414-2F, MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN52209	5.0	0.0	mg/l	250	251	100.4	80-120%
Alkalinity, Total as CaCO3	GN52211	5.0	0.0	mg/l	250	249	99.6	80-120%
Chloride	GN52260	1.0	0.0	mg/l	10	9.8	98.0	80-120%
Chloride	GN52266	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Dissolved Organic Carbon	GN52217	1.0	0.030	mg/l	10	9.68	96.8	80-120%
Dissolved Organic Carbon	GN52218	1.0	0.20	mg/l	10	9.57	95.7	80-120%

Associated Samples:
Batch GN52209: MC42414-1, MC42414-2, MC42414-3, MC42414-4, MC42414-5, MC42414-6, MC42414-7, MC42414-8, MC42414-9
Batch GN52211: MC42414-10, MC42414-11, MC42414-12, MC42414-13
Batch GN52217: MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F
Batch GN52218: MC42414-1F, MC42414-2F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F
Batch GN52260: MC42414-1, MC42414-2, MC42414-3, MC42414-4, MC42414-5, MC42414-6, MC42414-7, MC42414-8, MC42414-9
Batch GN52266: MC42414-10, MC42414-11, MC42414-12, MC42414-13
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN52209	MC42448-1	mg/l	34.0	35.0	2.9	0-20%
Alkalinity, Total as CaCO3	GN52211	MC42448-3	mg/l	31.9	33.0	3.4	0-20%

Associated Samples:
Batch GN52209: MC42414-1, MC42414-2, MC42414-3, MC42414-4, MC42414-5, MC42414-6, MC42414-7, MC42414-8, MC42414-9
Batch GN52211: MC42414-10, MC42414-11, MC42414-12, MC42414-13
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN52209	MC42448-1	mg/l	34.0	250	283	99.6	75-125%
Alkalinity, Total as CaCO3	GN52211	MC42448-3	mg/l	31.9	250	288	102.4	75-125%
Chloride	GN52260	MC42370-7	mg/l	52.2	10	61.2	90.0	75-125%
Chloride	GN52260	MC42370-7	mg/l	52.2	10	61.2	90.0	75-125%
Chloride	GN52266	MC42450-1	mg/l	0.0	10	10.0	100.0	75-125%
Chloride	GN52266	MC42450-1	mg/l	0.0	10	10.0	100.0	75-125%
Dissolved Organic Carbon	GN52217	MC42426-4F	mg/l	0.16	10	9.6	94.4	75-125%
Dissolved Organic Carbon	GN52218	MC42426-5F	mg/l	0.17	10	9.9	97.3	75-125%

Associated Samples:
Batch GN52209: MC42414-1, MC42414-2, MC42414-3, MC42414-4, MC42414-5, MC42414-6, MC42414-7, MC42414-8, MC42414-9
Batch GN52211: MC42414-10, MC42414-11, MC42414-12, MC42414-13
Batch GN52217: MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F
Batch GN52218: MC42414-1F, MC42414-2F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F
Batch GN52260: MC42414-1, MC42414-2, MC42414-3, MC42414-4, MC42414-5, MC42414-6, MC42414-7, MC42414-8, MC42414-9
Batch GN52266: MC42414-10, MC42414-11, MC42414-12, MC42414-13
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42414
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Dissolved Organic Carbon	GN52217	MC42426-4F	mg/l	0.16	10	9.7	1.0	
Dissolved Organic Carbon	GN52218	MC42426-5F	mg/l	0.17	10	10	1.0	

Associated Samples:
Batch GN52217: MC42414-3F, MC42414-4F, MC42414-5F, MC42414-6F, MC42414-7F, MC42414-8F
Batch GN52218: MC42414-1F, MC42414-2F, MC42414-9F, MC42414-10F, MC42414-11F, MC42414-12F, MC42414-13F
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West, Building One, Marlborough, MA 01752
TEL. 508-481-6200
www.accutest.com

FED-EX Tracking # 6489 9125 3164
Bottle Order Control #
Accutest Quote #
Accutest Job # MC42414

Client / Reporting Information

Company Name: Accutest Laboratories
Street Address: 495 Technology Center West, Bldg One
City State Zip: Marlborough, MA (
Project Contact: frankd E-mail: frankd@accutest.com
Phone #: 508-481-6200 Fax #
Sampler(s) Name(s) Phone

Project Information

Project Name: Fort Devens, Shepley's Hill, Devens, MA
Street
City State
Project #
Client Purchase Order #
Project Manager

Billing Information (if different from Report to)

Company Name
Street Address
City State Zip
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WIP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	SO4 by 300	LAB USE ONLY
1	SHL-11_FA115		10/23/15	2:00:00 PM		AQ	1					x				X	
2	N5-P1_FA115		10/23/15	1:15:00 PM		AQ	1					x				X	MA
3	SHM-13-02_FA115		10/23/15	2:15:00 PM		AQ	1					x				X	
4	SHM-13-03_FA115		10/23/15	10:05:00 AM		AQ	1					x				X	
5	PSP-01_FA115		10/23/15	12:30:00 PM		AQ	1					x				X	
6	N7-P1_FA115		10/23/15	11:05:00 AM		AQ	1					x				X	
7	SHM-10-10_FA115		10/23/15	11:02:00 AM		AQ	1					x				X	
8	SHL-20_FA115		10/23/15	11:50:00 AM		AQ	1					x				X	
9	N5-P2_FA115		10/23/15	10:40:00 AM		AQ	1					x				X	
10	SHM-93_22B_FA115		10/23/15	9:25:00 AM		AQ	1					x				X	
11	SHM-93_22C_FA115		10/23/15	10:35:00 AM		AQ	1					x				X	
12	SHM-10-15_FA115		10/23/15	10:05:00 AM		AQ	1					x				X	

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 4 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/6/2015

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A"
- [ ] Commercial "B"
- [ ] NJ Reduced
- [ ] NJ Full
- [ ] FULL CLP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only

Comments / Special Instructions

Ship to ALNJ - SO4 by 300 *Limited Volume*

INITIAL ASESSMENT NL3A

LABEL VERIFICATION OB

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	10/27/15	1	2 Fed Ex	10/28/15 1020	2
3		3	4		4
5		5			

Custody Seal # [ ] Intact [ ] Not intact Preserved where applicable [ ] On Ice [✓] Cooler Temp. 1.0°C/P

8.1

8

MC42414: Chain of Custody
Page 1 of 3
Accutest New Jersey

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West, Building One, Marlborough, MA 01752
TEL. 508-481-6200
www.accutest.com

FED-EX Tracking #
Bottle Order Control #
Accutest Quote #
Accutest Job # MC42414

Client / Reporting Information

Company Name: Accutest Laboratories
Street Address: 495 Technology Center West, Bldg One
City / State / Zip: Marlborough, MA (
Project Contact / E-mail: frankd / frankd@accutest.com
Phone # / Fax #: 508-481-6200
Sampler(s) Name(s) / Phone

Project Information

Project Name: Fort Devens, Shepley's Hill, Devens, MA
Street
City / State
Project #
Client Purchase Order #
Project Manager

Billing Information (if different from Report to)

Company Name
Street Address
City / State / Zip
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	SO4 by 300	LAB USE ONLY
13	SHM-13-07_FA115		10/23/15	12:32:00 PM		AQ	1					x				X	

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 4 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/6/2015

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A"
- [ ] Commercial "B"
- [ ] NJ Reduced
- [ ] NJ Full
- [ ] FULL CLP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only

Comments / Special Instructions

Ship to ALNJ - SO4 by 300 *Limited Volume*

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	10/27/15	1 FED EX	2 FEDX	10/28/15 1020	2
3		3	4		4
5		5			

Custody Seal # [ ] Intact [ ] Not intact
Preserved where applicable [ ]
On Ice [ ]
Cooler Temp.

8.1

8

MC42414: Chain of Custody
Page 2 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42414 **Client:** **Project:**

Date / Time Received: 10/28/2015 10:20:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (1.0);

Cooler Temps (Corrected) °C: Cooler 1: (1.2);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☐	☑	☐
2. Trip Blank listed on COC:	☐	☑	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☐	☑

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

MC42414: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5 Limits

Job Number: MC42414
Account: Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/23/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No Exceptions found.

* Sample used for QC is not from job MC42414

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42414
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Sulfate	GP93271/GN35332	10	0.0	mg/l	80	77.3	96.6	90-110%

Associated Samples:
Batch GP93271: MC42414-1, MC42414-2, MC42414-3, MC42414-4, MC42414-5, MC42414-6, MC42414-7, MC42414-8, MC42414-9, MC42414-10, MC42414-11, MC42414-12, MC42414-13
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42414
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Sulfate	GP93271/GN35332	MC42414-3	mg/l	10	9.9	1.0	0-20%

Associated Samples:
Batch GP93271: MC42414-1, MC42414-2, MC42414-3, MC42414-4, MC42414-5, MC42414-6, MC42414-7, MC42414-8, MC42414-9, MC42414-10, MC42414-11, MC42414-12, MC42414-13
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42414
Account: ALNE - Accutest Labs of New England, Inc.
Project: HSMAW: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Sulfate	GP93271/GN35332	MC42414-3	mg/l	10	80	89.4	99.3	80-120%
Sulfate	GP93271/GN35332	MC42414-9	mg/l	4.2	80	82.3	97.6	80-120%

Associated Samples:
Batch GP93271: MC42414-1, MC42414-2, MC42414-3, MC42414-4, MC42414-5, MC42414-6, MC42414-7, MC42414-8, MC42414-9, MC42414-10, MC42414-11, MC42414-12, MC42414-13
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

11/12/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC42448

Sampling Date: 10/26/15

Report to:

H&S Environmental
160 East Main Street
Westborough, MA 01581
eanderson@hsenv.com

ATTN: Elizabeth Anderson

Total number of pages in report: **117**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Accutest Laboratories

Sample Summary

H&S Environmental

Job No: MC42448

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42448-1	10/26/15	13:45	KGA	10/26/15	AQ	Ground Water	SHM-05-41B_FA115
MC42448-1F	10/26/15	13:45	KGA	10/26/15	AQ	Groundwater Filtered	SHM-05-41B_FA115
MC42448-2	10/26/15	13:55	KGA	10/26/15	AQ	Ground Water	DUP-1_FA115
MC42448-2F	10/26/15	13:55	KGA	10/26/15	AQ	Groundwater Filtered	DUP-1_FA115
MC42448-3	10/26/15	12:20	KGA	10/26/15	AQ	Ground Water	SHM-05-41A_FA115
MC42448-3F	10/26/15	12:20	KGA	10/26/15	AQ	Groundwater Filtered	SHM-05-41A_FA115
MC42448-4	10/26/15	11:20	KGA	10/26/15	AQ	Ground Water	SHM-05-41C_FA115
MC42448-4F	10/26/15	11:20	KGA	10/26/15	AQ	Groundwater Filtered	SHM-05-41C_FA115
MC42448-5	10/26/15	10:15	KGA	10/26/15	AQ	Ground Water	SHL-22_FA115
MC42448-5F	10/26/15	10:15	KGA	10/26/15	AQ	Groundwater Filtered	SHL-22_FA115
MC42448-6	10/26/15	11:30	KGA	10/26/15	AQ	Ground Water	DUP-4_FA115
MC42448-6F	10/26/15	11:30	KGA	10/26/15	AQ	Groundwater Filtered	DUP-4_FA115
MC42448-7	10/26/15	12:35	KGA	10/26/15	AQ	Ground Water	EPA-PZ-2012-5B_FA115

Sample Summary
(continued)

H&S Environmental

Job No: MC42448

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42448-7F	10/26/15	12:35	KGA	10/26/15	AQ	Groundwater Filtered	EPA-PZ-2012-5B_FA115
MC42448-8	10/26/15	11:30	KGA	10/26/15	AQ	Ground Water	EPA-PZ-2012-5A_FA115
MC42448-8F	10/26/15	11:30	KGA	10/26/15	AQ	Groundwater Filtered	EPA-PZ-2012-5A_FA115
MC42448-9	10/26/15	10:20	KGA	10/26/15	AQ	Ground Water	EPA-PZ-2012-4B_FA115
MC42448-9F	10/26/15	10:20	KGA	10/26/15	AQ	Groundwater Filtered	EPA-PZ-2012-4B_FA115
MC42448-10	10/26/15	11:10	KGA	10/26/15	AQ	Ground Water	EPA-PZ-2012-4A_FA115
MC42448-10F	10/26/15	11:10	KGA	10/26/15	AQ	Groundwater Filtered	EPA-PZ-2012-4A_FA115
MC42448-11	10/26/15	14:10	KGA	10/26/15	AQ	Ground Water	N1-PZ_FA115
MC42448-11F	10/26/15	14:10	KGA	10/26/15	AQ	Groundwater Filtered	N1-PZ_FA115
MC42448-12	10/26/15	13:17	KGA	10/26/15	AQ	Ground Water	EPA-PZ-2012-6B_FA115
MC42448-12F	10/26/15	13:17	KGA	10/26/15	AQ	Groundwater Filtered	EPA-PZ-2012-6B_FA115
MC42448-13	10/26/15	14:30	KGA	10/26/15	AQ	Ground Water	EPA-PZ-2012-6A_FA115
MC42448-13F	10/26/15	14:30	KGA	10/26/15	AQ	Groundwater Filtered	EPA-PZ-2012-6A_FA115

Sample Summary
(continued)

H&S Environmental

Job No: MC42448

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42448-14	10/26/15	14:35	KGA	10/26/15	AQ	Ground Water	EPA-PZ-2012-3A_FA115
MC42448-14F	10/26/15	14:35	KGA	10/26/15	AQ	Groundwater Filtered	EPA-PZ-2012-3A_FA115
MC42448-15	10/26/15	15:30	KGA	10/26/15	AQ	Ground Water	EPA-PZ-2012-3B_FA115
MC42448-15F	10/26/15	15:30	KGA	10/26/15	AQ	Groundwater Filtered	EPA-PZ-2012-3B_FA115

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC42448
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	11/12/2015 9:25:52 AM

15 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 10/26/2015 and were received at Accutest on 10/26/2015 properly preserved, at 1.2 Deg. C and intact. These Samples received an Accutest job number of MC42448. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP25369

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7FMS, MC42370-7FMSD, MC42370-7FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Iron are outside control limits for sample MP25369-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Matrix: AQ **Batch ID:** MP25370

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42414-1FMS, MC42414-1FMSD, MC42414-1FSDL were used as the QC samples for metals.
- Matrix Spike, Matrix Spike Duplicate Recovery(s) for Manganese are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Matrix: AQ **Batch ID:** MP25386

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42505-1FMS, MC42505-1FMSD, MC42505-1FSDL were used as the QC samples for metals.
- MP25386-S1 for Manganese: Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP25369A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42370-7FMS, MC42370-7FMSD, MC42370-7FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Arsenic are outside control limits for sample MP25369A-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Matrix: AQ **Batch ID:** MP25370A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42414-1FMS, MC42414-1FMSD, MC42414-1FSDL were used as the QC samples for metals.

Matrix: AQ **Batch ID:** MP25386A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42505-1FMS, MC42505-1FMSD, MC42505-1FSDL were used as the QC samples for metals.

Wet Chemistry By Method ASTM516-90,02

Matrix: AQ **Batch ID:** GN52207

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42448-2DUP, MC42448-2MS were used as the QC samples for Sulfate.

Matrix: AQ **Batch ID:** GN52221

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42448-1DUP, MC42448-1MS were used as the QC samples for Sulfate.

Matrix: AQ **Batch ID:** GN52222

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42513-10DUP, MC42513-10MS were used as the QC samples for Sulfate.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ **Batch ID:** GN52266

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42450-1MS were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ	**Batch ID:** GN52209

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42448-1DUP, MC42448-1MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ	**Batch ID:** GN52211

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42448-3DUP, MC42448-3MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ	**Batch ID:** GN52271

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42448-8DUP, MC42448-8MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SW846 9060

Matrix: AQ	**Batch ID:** GN52216

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-3FMS, MC42426-3FMSD were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ	**Batch ID:** GN52217

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-4FMSD, MC42426-4FMS were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ	**Batch ID:** GN52289

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-6FMS, MC42426-6FMSD were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ	**Batch ID:** GN52290

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-7FMS, MC42426-7FMSD were used as the QC samples for Dissolved Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC42448).

Summary of Hits

Job Number: MC42448
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/26/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42448-1	**SHM-05-41B_FA115**					
Alkalinity, Total as CaCO3		34.0	5.0	3.9	mg/l	SM21 2320B
Chloride		17.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		5.8	5.0	0.81	mg/l	ASTM516-90,02
MC42448-1F	**SHM-05-41B_FA115**					
Arsenic		614	20	10	ug/l	SW846 6020A
Iron		27300	200	100	ug/l	SW846 6010C
Manganese		890	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.7	1.0	0.084	mg/l	SW846 9060
MC42448-2	**DUP-1_FA115**					
Alkalinity, Total as CaCO3		38.1	5.0	3.9	mg/l	SM21 2320B
Chloride		12.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		3.4 J	5.0	0.81	mg/l	ASTM516-90,02
MC42448-2F	**DUP-1_FA115**					
Arsenic		573	20	10	ug/l	SW846 6020A
Iron		25400	200	100	ug/l	SW846 6010C
Manganese		843	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.0	1.0	0.084	mg/l	SW846 9060
MC42448-3	**SHM-05-41A_FA115**					
Alkalinity, Total as CaCO3		31.9	5.0	3.9	mg/l	SM21 2320B
Chloride		5.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		5.4	5.0	0.81	mg/l	ASTM516-90,02
MC42448-3F	**SHM-05-41A_FA115**					
Arsenic		15.0	4.0	2.0	ug/l	SW846 6020A
Iron		6330	100	50	ug/l	SW846 6010C
Manganese		308	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.2	1.0	0.084	mg/l	SW846 9060
MC42448-4	**SHM-05-41C_FA115**					
Alkalinity, Total as CaCO3		370	5.0	3.9	mg/l	SM21 2320B
Chloride		33.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		2.1 J	5.0	0.81	mg/l	ASTM516-90,02

Summary of Hits

Job Number: MC42448
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/26/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42448-4F	**SHM-05-41C_FA115**					
Arsenic		851	20	10	ug/l	SW846 6020A
Iron		15700	100	50	ug/l	SW846 6010C
Manganese		2740	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		6.4	1.0	0.084	mg/l	SW846 9060
MC42448-5	**SHL-22_FA115**					
Alkalinity, Total as CaCO3		362	5.0	3.9	mg/l	SM21 2320B
Chloride		19.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		5.8	5.0	0.81	mg/l	ASTM516-90,02
MC42448-5F	**SHL-22_FA115**					
Arsenic		15.9	4.0	2.0	ug/l	SW846 6020A
Iron		123	100	50	ug/l	SW846 6010C
Manganese		10200	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		2.2	1.0	0.084	mg/l	SW846 9060
MC42448-6	**DUP-4_FA115**					
Alkalinity, Total as CaCO3		21.6	5.0	3.9	mg/l	SM21 2320B
Chloride		9.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		5.5	5.0	0.81	mg/l	ASTM516-90,02
MC42448-6F	**DUP-4_FA115**					
Iron		6570	100	50	ug/l	SW846 6010C
Manganese		94.2	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		6.7	1.0	0.084	mg/l	SW846 9060
MC42448-7	**EPA-PZ-2012-5B_FA115**					
Alkalinity, Total as CaCO3		286	5.0	3.9	mg/l	SM21 2320B
Chloride		18.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		1.7 J	5.0	0.81	mg/l	ASTM516-90,02
MC42448-7F	**EPA-PZ-2012-5B_FA115**					
Arsenic		3.7 J	4.0	2.0	ug/l	SW846 6020A
Iron		181	100	50	ug/l	SW846 6010C
Manganese		12300	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		2.2	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42448
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/26/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42448-8	**EPA-PZ-2012-5A_FA115**					
Alkalinity, Total as CaCO3		21.6	5.0	3.9	mg/l	SM21 2320B
Chloride		9.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		5.5	5.0	0.81	mg/l	ASTM516-90,02
MC42448-8F	**EPA-PZ-2012-5A_FA115**					
Iron		6560	100	50	ug/l	SW846 6010C
Manganese		90.4	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		5.8	1.0	0.084	mg/l	SW846 9060
MC42448-9	**EPA-PZ-2012-4B_FA115**					
Alkalinity, Total as CaCO3		224	5.0	3.9	mg/l	SM21 2320B
Chloride		17.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		11.0	5.0	0.81	mg/l	ASTM516-90,02
MC42448-9F	**EPA-PZ-2012-4B_FA115**					
Arsenic		3520	100	50	ug/l	SW846 6020A
Iron		85600	500	250	ug/l	SW846 6010C
Manganese		984	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		4.0	1.0	0.084	mg/l	SW846 9060
MC42448-10	**EPA-PZ-2012-4A_FA115**					
Alkalinity, Total as CaCO3		48.4	5.0	3.9	mg/l	SM21 2320B
Chloride		210	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		6.1	5.0	0.81	mg/l	ASTM516-90,02
MC42448-10F	**EPA-PZ-2012-4A_FA115**					
Arsenic		5.6	4.0	2.0	ug/l	SW846 6020A
Iron		14300	100	50	ug/l	SW846 6010C
Manganese		2000	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		7.6	1.0	0.084	mg/l	SW846 9060
MC42448-11	**N1-PZ_FA115**					
Alkalinity, Total as CaCO3		51.5	5.0	3.9	mg/l	SM21 2320B
Chloride		57.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		9.8	5.0	0.81	mg/l	ASTM516-90,02

Summary of Hits

Job Number: MC42448
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/26/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42448-11F	**N1-PZ_FA115**					
Arsenic		115	4.0	2.0	ug/l	SW846 6020A
Iron		6000	100	50	ug/l	SW846 6010C
Manganese		1890	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		4.8	1.0	0.084	mg/l	SW846 9060
MC42448-12	**EPA-PZ-2012-6B_FA115**					
Alkalinity, Total as CaCO3		46.4	5.0	3.9	mg/l	SM21 2320B
Chloride		5.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		3.5 J	5.0	0.81	mg/l	ASTM516-90,02
MC42448-12F	**EPA-PZ-2012-6B_FA115**					
Arsenic		386	20	10	ug/l	SW846 6020A
Iron		19600	100	50	ug/l	SW846 6010C
Manganese		667	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.4	1.0	0.084	mg/l	SW846 9060
MC42448-13	**EPA-PZ-2012-6A_FA115**					
Alkalinity, Total as CaCO3		25.8	5.0	3.9	mg/l	SM21 2320B
Chloride		67.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		12.8	5.0	0.81	mg/l	ASTM516-90,02
MC42448-13F	**EPA-PZ-2012-6A_FA115**					
Dissolved Organic Carbon		1.6	1.0	0.084	mg/l	SW846 9060
MC42448-14	**EPA-PZ-2012-3A_FA115**					
Alkalinity, Total as CaCO3		105	5.0	3.9	mg/l	SM21 2320B
Chloride		39.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		1.1 J	5.0	0.81	mg/l	ASTM516-90,02
MC42448-14F	**EPA-PZ-2012-3A_FA115**					
Arsenic		16.4	4.0	2.0	ug/l	SW846 6020A
Iron		16400	100	50	ug/l	SW846 6010C
Manganese		674	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		9.1	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42448
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/26/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42448-15	**EPA-PZ-2012-3B_FA115**					
Alkalinity, Total as CaCO3		260	5.0	3.9	mg/l	SM21 2320B
Chloride		17.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		4.5 J	5.0	0.81	mg/l	ASTM516-90,02
MC42448-15F	**EPA-PZ-2012-3B_FA115**					
Arsenic		4070	200	100	ug/l	SW846 6020A
Iron		63400	500	250	ug/l	SW846 6010C
Manganese		6620	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		3.3	1.0	0.084	mg/l	SW846 9060

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SHM-05-41B_FA115		
Lab Sample ID:	MC42448-1	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	34.0	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	17.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	5.8	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41B_FA115		
Lab Sample ID:	MC42448-1F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	614	20	10	ug/l	10	10/27/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	27300	200	100	ug/l	2	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	890	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25369
(5) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41B_FA115		
Lab Sample ID:	MC42448-1F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.7	1.0	0.084	mg/l	1	11/04/15 04:05	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-1_FA115		
Lab Sample ID:	MC42448-2	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	38.1	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	12.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	3.4 J	5.0	0.81	mg/l	1	11/03/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-1_FA115		
Lab Sample ID:	MC42448-2F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	573	20	10	ug/l	10	10/27/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	25400	200	100	ug/l	2	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	843	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25369
(5) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-1_FA115		
Lab Sample ID:	MC42448-2F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.0	1.0	0.084	mg/l	1	11/04/15 07:56	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41A_FA115		
Lab Sample ID:	MC42448-3	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	31.9	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	5.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	5.4	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41A_FA115		
Lab Sample ID:	MC42448-3F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	15.0	4.0	2.0	ug/l	2	10/27/15	10/28/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	6330	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	308	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18612
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41A_FA115		
Lab Sample ID:	MC42448-3F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.2	1.0	0.084	mg/l	1	11/04/15 08:11	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41C_FA115		
Lab Sample ID:	MC42448-4	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	370	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	33.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	2.1 J	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41C_FA115		
Lab Sample ID:	MC42448-4F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	851	20	10	ug/l	10	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	15700	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	2740	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25369
(4) Prep QC Batch: MP25369A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-41C_FA115		
Lab Sample ID:	MC42448-4F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	6.4	1.0	0.084	mg/l	1	11/04/15 08:28	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-22_FA115		
Lab Sample ID:	MC42448-5	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	362	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	19.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	5.8	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-22_FA115		
Lab Sample ID:	MC42448-5F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	15.9	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	123	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	10200	75	38	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-22_FA115		
Lab Sample ID:	MC42448-5F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	0.084	mg/l	1	11/10/15 13:27	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-4_FA115		
Lab Sample ID:	MC42448-6	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	21.6	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	9.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	5.5	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-4_FA115		
Lab Sample ID:	MC42448-6F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	6570	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	94.2	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25370
(4) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-4_FA115		
Lab Sample ID:	MC42448-6F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	6.7	1.0	0.084	mg/l	1	11/10/15 13:46	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-5B_FA115		
Lab Sample ID:	MC42448-7	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	286	5.0	3.9	mg/l	1	11/03/15	BF	SM21 2320B
Chloride	18.0	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	1.7 J	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-5B_FA115		
Lab Sample ID:	MC42448-7F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3.7 J	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	181	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]
Manganese	12300	75	38	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-5B_FA115		
Lab Sample ID:	MC42448-7F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	0.084	mg/l	1	11/10/15 14:02	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-5A_FA115		
Lab Sample ID:	MC42448-8	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	21.6	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	9.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	5.5	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-5A_FA115		
Lab Sample ID:	MC42448-8F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	6560	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	90.4	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25370
(4) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-5A_FA115		
Lab Sample ID:	MC42448-8F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	5.8	1.0	0.084	mg/l	1	11/10/15 14:18	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-4B_FA115		
Lab Sample ID:	MC42448-9	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	224	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	17.0	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	11.0	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-4B_FA115		
Lab Sample ID:	MC42448-9F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3520	100	50	ug/l	50	10/27/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [5]
Iron	85600	500	250	ug/l	5	10/27/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	984	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18623
(2) Instrument QC Batch: MA18628
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25370
(5) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-4B_FA115		
Lab Sample ID:	MC42448-9F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.0	1.0	0.084	mg/l	1	11/10/15 15:08	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-4A_FA115		
Lab Sample ID:	MC42448-10	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	48.4	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	210	10	7.6	mg/l	10	11/07/15	MC	SM 4500 CL C-11
Sulfate	6.1	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-4A_FA115		
Lab Sample ID:	MC42448-10F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	5.6	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	14300	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	2000	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25370
(4) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-4A_FA115		
Lab Sample ID:	MC42448-10F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	7.6	1.0	0.084	mg/l	1	11/10/15 15:24	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N1-PZ_FA115		
Lab Sample ID:	MC42448-11	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	51.5	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	57.0	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	9.8	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N1-PZ_FA115		
Lab Sample ID:	MC42448-11F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	115	4.0	2.0	ug/l	2	10/27/15	10/29/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	6000	100	50	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]
Manganese	1890	15	7.5	ug/l	1	10/27/15	11/02/15	EAL	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18614
(2) Instrument QC Batch: MA18628
(3) Prep QC Batch: MP25370
(4) Prep QC Batch: MP25370A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N1-PZ_FA115		
Lab Sample ID:	MC42448-11F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.8	1.0	0.084	mg/l	1	11/10/15 15:39	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-6B_FA115		
Lab Sample ID:	MC42448-12	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	46.4	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	5.0	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	3.5 J	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-6B_FA115		
Lab Sample ID:	MC42448-12F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	386	20	10	ug/l	10	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	19600	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	667	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-6B_FA115		
Lab Sample ID:	MC42448-12F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.4	1.0	0.084	mg/l	1	11/10/15 15:55	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-6A_FA115		
Lab Sample ID:	MC42448-13	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	25.8	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	67.0	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	12.8	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-6A_FA115		
Lab Sample ID:	MC42448-13F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-6A_FA115		
Lab Sample ID:	MC42448-13F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.6	1.0	0.084	mg/l	1	11/10/15 16:12	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-3A_FA115		
Lab Sample ID:	MC42448-14	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	105	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	39.5	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	1.1 J	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-3A_FA115		
Lab Sample ID:	MC42448-14F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	16.4	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	16400	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	674	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-3A_FA115		
Lab Sample ID:	MC42448-14F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	9.1	1.0	0.084	mg/l	1	11/10/15 19:55	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-3B_FA115		
Lab Sample ID:	MC42448-15	**Date Sampled:**	10/26/15
Matrix:	AQ - Ground Water	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	260	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	17.0	1.0	0.76	mg/l	1	11/07/15	MC	SM 4500 CL C-11
Sulfate	4.5 J	5.0	0.81	mg/l	1	11/04/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-3B_FA115		
Lab Sample ID:	MC42448-15F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	4070	200	100	ug/l	100	10/29/15	11/03/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	63400	500	250	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]
Manganese	6620	75	38	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18629
(2) Instrument QC Batch: MA18633
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-3B_FA115		
Lab Sample ID:	MC42448-15F	**Date Sampled:**	10/26/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/26/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.3	1.0	0.084	mg/l	1	11/10/15 20:11	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

(p1of2)

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC42448
Accutest Control #:

Client Information		Facility Information	
Name: H&S Environmental		Project Name: Devens	
Address: 160 East Main Street, Suite 2F		Location: Shepley's	
City: Westborough		Project No.	
State: MA	Zip: 01581		
Send Report to: Laurie Ekes (lekes@hsenv.com)			
Phone #: (508)367-7190		FAX #: Office number (508) 366-7442	

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation voc	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (Fill Filter)	Alklinity, Chloride, Sulfate 1-250 ml Poly 950	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl Fill Filter							
SHM-05-41B_Fill5	10/26/15	1345	KGA	WG	4	2		1		1	X	X	X							-1F
DVP-1_Fill5	10/26/15	1355	KGA	WG	4	2		1		1	X	X	X							-2F
SHM-05-41A_Fill5	10/26/15	1220	KGA	WG	4	2		1		1	X	X	X							-3F
SHM-05-41C-Fill5	10/26/15	1120	KGA	WG	4	2		1		1	X	X	X							-4F
SHL-22_Fill5	10/26/15	1015	KGA	WG	4	2		1		1	X	X	X							-5F
DVP-4_Fill5	10/26/15	1130		WG	4	2		1		1	X	X	X							-6F
EPA-P2-2012-5B_Fill5	10/26/15	1235		WG	4	2		1		1	X	X	X							-7F
EPA-P2-2012-5A_Fill5	10/26/15	1130		WG	4	2		1		1	X	X	X							-8F
EPA-P2-2012-4B_Fill5	10/26/15	1020		WG	4	2		1		1	X	X	X							-9F
EPA-P2-2012-4A_Fill5	10/26/15	1110		WG	4	2		1		1	X	X	X							-10F

Turnaround Information

- [X] 10 Day STD
- [ ] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020

1H4, 13E, 6A

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	10/26/15 1630	1 [signature]	2		2
3		3	4		4
5		5	Seal #	Preserved ☐	On Ice: ☑ 1.2-1.0 °C

5.1

5

MC42448: Chain of Custody
Page 1 of 3

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ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC42448
Accutest Control #:

Client Information		Facility Information	
Name: H&S Environmental		Project Name: Devens	
Address: 160 East Main Street, Suite 2F		Location: Shepley's	
City: Westborough		Project No.	
State: MA	Zip: 01581		
Send Report to: Laurie Ekes (lekes@hsenv.com)			
Phone #: (508)367-7190		FAX #: Office number (508) 366-7442	

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation: VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (Field Filter)	Alklinity, Chloride, Sulfate 1-250 ml Poly 950	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl (Field Filter)								
N1-P2-Fil15	10/26/15	1410		WG	4	2		1		1	X	X	X								-11F
EPA-P2-2012-6B-Fil15	10/26/15	1317		WG	4	2		1		1	X	X	X								-12F
EPA-P2-2012-6A-Fil15	10/26/15	1430		WG	4	2		1		1	X	X	X								-13F
EPA-P2-2012-3A-Fil15	10/26/15	1435		WG	4	2		1		1	X	X	X								-14F
EPA-P2-2012-3B-Fil15	10/26/15	1530		WG	4	2		1		1	X	X	X								-15F

Turnaround Information	Data Deliverable Information	Comments / Remarks
[X] 10 Day STD [ ] 5 Day STD (By Contract only) [ ] 5 Day Rush [ ] 3 Day Rush [ ] 2 Day Rush [ ] 1 Day Rush Approved By:	[ ] Comm A [ ] Comm B [ ] Full T1 [ ] Other [ ] CT RCP [ ] MA MCP [ ] NYASP CAT A [ ] NYASP CATB EDD Format:	Analyze Arsenic by SW6020 1 #4, 13E 6A

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	10/26/15 1630	1 [signature]	2		2
3		3	4		4
5		5	Seal #	Preserved [ ]	On Ice: [X] 1.2-1.0°C

MC42448: Chain of Custody
Page 2 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42448 **Client:** H-S **Project:**

Date / Time Received: 10/26/2015 4:30:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.2/1.2); #2: (1/1);

Cooler Security	Y	or N		Y	or N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	or N
1. Temp criteria achieved:	☑	☐
2. Thermometer ID:	G1;	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	2	

Quality Control Preservation	Y	or N	N/A
1. Trip Blank present / cooler:	☐	☐	☐
2. Trip Blank listed on COC:	☐	☐	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☐	☐

Sample Integrity - Documentation	Y	or N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	or N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	or N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC42448: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5 Limits

Job Number: MC42448
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/26/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP25369	SW846 6010C						
MP25369-B1	7439-89-6	Iron	BSP	REC	101	%	87-115
MP25369-B1	7439-96-5	Manganese	BSP	REC	99.4	%	90-114
MP25369-S1*	7439-89-6	Iron	MS	REC	100.5	%	87-115
MP25369-S1*	7439-96-5	Manganese	MS	REC	98.8	%	90-114
MP25369-S2*	7439-89-6	Iron	MSD	REC	99.5	%	87-115
MP25369-S2*	7439-89-6	Iron	MSD	RPD	1	%	20
MP25369-S2*	7439-96-5	Manganese	MSD	REC	96	%	90-114
MP25369-S2*	7439-96-5	Manganese	MSD	RPD	1.5	%	20
MP25369A	SW846 6020A						
MP25369A-B1	7440-38-2	Arsenic	BSP	REC	104	%	84-116
MP25369A-S1*	7440-38-2	Arsenic	MS	REC	105.4	%	84-116
MP25369A-S2*	7440-38-2	Arsenic	MSD	REC	103.2	%	84-116
MP25369A-S2*	7440-38-2	Arsenic	MSD	RPD	2.1	%	20
MP25370	SW846 6010C						
MP25370-B1	7439-89-6	Iron	BSP	REC	92.3	%	87-115
MP25370-B1	7439-96-5	Manganese	BSP	REC	98.8	%	90-114
MP25370-S1*	7439-89-6	Iron	MS	REC	89	%	87-115
MP25370-S1*	7439-96-5	Manganese	MS	REC	156 [a]	%	90-114
MP25370-S2*	7439-89-6	Iron	MSD	REC	95	%	87-115
MP25370-S2*	7439-89-6	Iron	MSD	RPD	1.1	%	20
MP25370-S2*	7439-96-5	Manganese	MSD	REC	156 [a]	%	90-114
MP25370-S2*	7439-96-5	Manganese	MSD	RPD	0	%	20
MP25370A	SW846 6020A						
MP25370A-B1	7440-38-2	Arsenic	BSP	REC	108.6	%	84-116
MP25370A-S1*	7440-38-2	Arsenic	MS	REC	111.6	%	84-116
MP25370A-S2*	7440-38-2	Arsenic	MSD	REC	109.6	%	84-116
MP25370A-S2*	7440-38-2	Arsenic	MSD	RPD	.8	%	20
MP25386	SW846 6010C						
MP25386-B1	7439-89-6	Iron	BSP	REC	96.1	%	87-115
MP25386-B1	7439-96-5	Manganese	BSP	REC	94.4	%	90-114
MP25386-S1*	7439-89-6	Iron	MS	REC	109	%	87-115
MP25386-S1*	7439-96-5	Manganese	MS	REC	84 [b]	%	90-114
MP25386-S2*	7439-89-6	Iron	MSD	REC	91	%	87-115
MP25386-S2*	7439-89-6	Iron	MSD	RPD	3.3	%	20

* Sample used for QC is not from job MC42448

QC Evaluation: DOD QSM5 Limits

Job Number: MC42448
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/26/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP25386-S2*	7439-96-5	Manganese	MSD	REC	92	%	90-114
MP25386-S2*	7439-96-5	Manganese	MSD	RPD	2.2	%	20
MP25386A	SW846 6020A						
MP25386A-B1	7440-38-2	Arsenic	BSP	REC	109	%	84-116
MP25386A-S1*	7440-38-2	Arsenic	MS	REC	106	%	84-116
MP25386A-S2*	7440-38-2	Arsenic	MSD	REC	96	%	84-116
MP25386A-S2*	7440-38-2	Arsenic	MSD	RPD	2.2	%	20

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

* Sample used for QC is not from job MC42448

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	28		
Antimony	6.0	1.2	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.21	1		
Beryllium	4.0	.1	.25		
Bismuth	50	.89	2.1		
Boron	100	1	1.1		
Cadmium	4.0	.26	.43		
Calcium	5000	4.9	15		
Chromium	10	.29	.48		
Cobalt	50	.24	.28		
Copper	25	.58	2.4		
Gold	50	.91	1.5		
Iron	100	13	17	4.4	<100
Lead	5.0	1	1.7		
Lithium	500	.8	2.5		
Magnesium	5000	23	54		
Manganese	15	.11	1.4	0.40	<15
Molybdenum	100	.21	3.6		
Nickel	40	.24	.5		
Palladium	50	1.2	2.6		
Platinum	50	5.3	5.4		
Potassium	5000	30	49		
Selenium	10	2.3	2		
Silicon	100	1.1	30		
Silver	5.0	.43	1		
Sodium	5000	8	77		
Sulfur	50	1.7	4.6		
Strontium	10	.15	.22		
Thallium	5.0	1.2	1.7		
Tin	100	.69	.81		
Titanium	50	.46	.51		
Tungsten	100	2.8	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.29	.51		
Zinc	20	.3	1		
Zirconium	50	.19	1.2		

Associated samples MP25369: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	149	10200	10000	100.5	75-125
Lead					
Lithium					
Magnesium					
Manganese	470	964	500	98.8	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25369: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	149	10100	10000	99.5	1.0	20
Lead						
Lithium						
Magnesium						
Manganese	470	950	500	96.0	1.5	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25369: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	10100	10000	101.0	80-120
Lead				
Lithium				
Magnesium				
Manganese	497	500	99.4	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25369: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	149	166	11.2 (a)	0-10
Lead				
Lithium				
Magnesium				
Manganese	470	489	4.1	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original SDL 1:5	%DIF	QC Limits
Vanadium			
Zinc			
Zirconium			

Associated samples MP25369: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.36	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25369A: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	1.1	528	500	105.4	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25369A: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	1.1	517	500	103.2	2.1	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25369A: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	520	500	104.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25369A: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25369A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42370-7F Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	1.13	1.42	26.0 (a)	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25369A: MC42448-1F, MC42448-2F, MC42448-3F, MC42448-4F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	28		
Antimony	6.0	1.2	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.21	1		
Beryllium	4.0	.1	.25		
Bismuth	50	.89	2.1		
Boron	100	1	1.1		
Cadmium	4.0	.26	.43		
Calcium	5000	4.9	15		
Chromium	10	.29	.48		
Cobalt	50	.24	.28		
Copper	25	.58	2.4		
Gold	50	.91	1.5		
Iron	100	13	17	15.5	<100
Lead	5.0	1	1.7		
Lithium	500	.8	2.5		
Magnesium	5000	23	54		
Manganese	15	.11	1.4	0.60	<15
Molybdenum	100	.21	3.6		
Nickel	40	.24	.5		
Palladium	50	1.2	2.6		
Platinum	50	5.3	5.4		
Potassium	5000	30	49		
Selenium	10	2.3	2		
Silicon	100	1.1	30		
Silver	5.0	.43	1		
Sodium	5000	8	77		
Sulfur	50	1.7	4.6		
Strontium	10	.15	.22		
Thallium	5.0	1.2	1.7		
Tin	100	.69	.81		
Titanium	50	.46	.51		
Tungsten	100	2.8	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.29	.51		
Zinc	20	.3	1		
Zirconium	50	.19	1.2		

Associated samples MP25370: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	45800	54700	10000	89.0	75-125
Lead					
Lithium					
Magnesium					
Manganese	3560	4340	500	156.0(a)	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25370: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	45800	55300	10000	95.0	1.1	20
Lead						
Lithium						
Magnesium						
Manganese	3560	4340	500	156.0(a)	0.0	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25370: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	9230	10000	92.3	80-120
Lead				
Lithium				
Magnesium				
Manganese	494	500	98.8	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25370: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	45800	45700	0.3	0-10
Lead				
Lithium				
Magnesium				
Manganese	3560	3660	3.0	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original SDL 1:5	%DIF	QC Limits
Vanadium			
Zinc			
Zirconium			

Associated samples MP25370: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.59	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25370A: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	642	1200	500	111.6	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25370A: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	642	1190	500	109.6	0.8	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25370A: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	543	500	108.6	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25370A: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25370A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/27/15

Metal	MC42414-1F Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	642	626	2.5	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25370A: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	28		
Antimony	6.0	1.2	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.21	1		
Beryllium	4.0	.1	.25		
Bismuth	50	.89	2.1		
Boron	100	1	1.1		
Cadmium	4.0	.26	.43		
Calcium	5000	4.9	15		
Chromium	10	.29	.48		
Cobalt	50	.24	.28		
Copper	25	.58	2.4		
Gold	50	.91	1.5		
Iron	100	13	17	8.2	<100
Lead	5.0	1	1.7		
Lithium	500	.8	2.5		
Magnesium	5000	23	54		
Manganese	15	.11	1.4	0.60	<15
Molybdenum	100	.21	3.6		
Nickel	40	.24	.5		
Palladium	50	1.2	2.6		
Platinum	50	5.3	5.4		
Potassium	5000	30	49		
Selenium	10	2.3	2		
Silicon	100	1.1	30		
Silver	5.0	.43	1		
Sodium	5000	8	77		
Sulfur	50	1.7	4.6		
Strontium	10	.15	.22		
Thallium	5.0	1.2	1.7		
Tin	100	.69	.81		
Titanium	50	.46	.51		
Tungsten	100	2.8	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.29	.51		
Zinc	20	.3	1		
Zirconium	50	.19	1.2		

Associated samples MP25386: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	44600	55500	10000	109.0	75-125
Lead					
Lithium					
Magnesium					
Manganese	1410	1830	500	84.0 (a)	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25386: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	44600	53700	10000	91.0	3.3	20
Lead						
Lithium						
Magnesium						
Manganese	1410	1870	500	92.0	2.2	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386 | Methods: SW846 6010C
Matrix Type: AQUEOUS | Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25386: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	9610	10000	96.1	80-120
Lead				
Lithium				
Magnesium				
Manganese	472	500	94.4	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25386: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	44600	44800	0.4	0-10
Lead				
Lithium				
Magnesium				
Manganese	1410	1460	3.6	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original SDL 1:5	%DIF	QC Limits
Vanadium			
Zinc			
Zirconium			

Associated samples MP25386: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.46	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25386A: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	1760	2290	500	106.0	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25386A: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	1760	2240	500	96.0	2.2	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25386A: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	545	500	109.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25386A: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	SDL 25:125%	DIF	QC Limits
Aluminum				
Antimony				
Arsenic	1760	1680	4.3	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25386A: MC42448-12F, MC42448-13F, MC42448-14F, MC42448-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN52209	5.0	0.0	mg/l	250	251	100.4	80-120%
Alkalinity, Total as CaCO3	GN52211	5.0	0.0	mg/l	250	249	99.6	80-120%
Alkalinity, Total as CaCO3	GN52271	5.0	0.0	mg/l	250	256	102.4	80-120%
Chloride	GN52266	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Dissolved Organic Carbon	GN52216	1.0	0.18	mg/l	10	9.77	97.7	80-120%
Dissolved Organic Carbon	GN52217	1.0	0.030	mg/l	10	9.68	96.8	80-120%
Dissolved Organic Carbon	GN52289	1.0	0.099	mg/l	10	9.64	96.4	80-120%
Dissolved Organic Carbon	GN52290	1.0	0.061	mg/l	10	10.6	106.0	80-120%
Sulfate	GN52207	5.0	0.0	mg/l	20	20.4	102.0	80-120%
Sulfate	GN52221	5.0	0.0	mg/l	20.0	20.2	101.0	80-120%
Sulfate	GN52222	5.0	0.0	mg/l	20	20.5	102.5	80-120%

Associated Samples:
Batch GN52207: MC42448-2
Batch GN52209: MC42448-1
Batch GN52211: MC42448-2, MC42448-3, MC42448-4, MC42448-5, MC42448-6, MC42448-7
Batch GN52216: MC42448-1F
Batch GN52217: MC42448-2F, MC42448-3F, MC42448-4F
Batch GN52221: MC42448-1, MC42448-3, MC42448-4, MC42448-5, MC42448-6, MC42448-7, MC42448-8, MC42448-9, MC42448-10, MC42448-11
Batch GN52222: MC42448-12, MC42448-13, MC42448-14, MC42448-15
Batch GN52266: MC42448-1, MC42448-2, MC42448-3, MC42448-4, MC42448-5, MC42448-6, MC42448-7, MC42448-8, MC42448-9, MC42448-10, MC42448-11, MC42448-12, MC42448-13, MC42448-14, MC42448-15
Batch GN52271: MC42448-8, MC42448-9, MC42448-10, MC42448-11, MC42448-12, MC42448-13, MC42448-14, MC42448-15
Batch GN52289: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F, MC42448-12F, MC42448-13F
Batch GN52290: MC42448-14F, MC42448-15F
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN52209	MC42448-1	mg/l	34.0	35.0	2.9	0-20%
Alkalinity, Total as CaCO3	GN52211	MC42448-3	mg/l	31.9	33.0	3.4	0-20%
Alkalinity, Total as CaCO3	GN52271	MC42448-8	mg/l	21.6	22.7	5.0	0-20%
Sulfate	GN52207	MC42448-2	mg/l	3.4	3.7	8.5	0-20%
Sulfate	GN52221	MC42448-1	mg/l	5.8	5.9	1.7	0-20%
Sulfate	GN52222	MC42513-10	mg/l	4.8	4.8	0.0	0-20%

Associated Samples:
Batch GN52207: MC42448-2
Batch GN52209: MC42448-1
Batch GN52211: MC42448-2, MC42448-3, MC42448-4, MC42448-5, MC42448-6, MC42448-7
Batch GN52221: MC42448-1, MC42448-3, MC42448-4, MC42448-5, MC42448-6, MC42448-7, MC42448-8, MC42448-9, MC42448-10, MC42448-11
Batch GN52222: MC42448-12, MC42448-13, MC42448-14, MC42448-15
Batch GN52271: MC42448-8, MC42448-9, MC42448-10, MC42448-11, MC42448-12, MC42448-13, MC42448-14, MC42448-15
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN52209	MC42448-1	mg/l	34.0	250	283	99.6	75-125%
Alkalinity, Total as CaCO3	GN52211	MC42448-3	mg/l	31.9	250	288	102.4	75-125%
Alkalinity, Total as CaCO3	GN52271	MC42448-8	mg/l	21.6	250	271	99.8	75-125%
Chloride	GN52266	MC42450-1	mg/l	0.0	10	10.0	100.0	75-125%
Chloride	GN52266	MC42450-1	mg/l	0.0	10	10.0	100.0	75-125%
Dissolved Organic Carbon	GN52216	MC42426-3F	mg/l	0.19	10	9.4	92.1	75-125%
Dissolved Organic Carbon	GN52217	MC42426-4F	mg/l	0.16	10	9.6	94.4	75-125%
Dissolved Organic Carbon	GN52289	MC42426-6F	mg/l	0.12	10	10.1	99.8	75-125%
Dissolved Organic Carbon	GN52290	MC42426-7F	mg/l	0.13	10	9.4	92.7	75-125%
Sulfate	GN52207	MC42448-2	mg/l	3.4	20	24.6	106.0	75-125%
Sulfate	GN52221	MC42448-1	mg/l	5.8	20.0	26.1	101.5	75-125%
Sulfate	GN52222	MC42513-10	mg/l	4.8	20	24.2	97.0	75-125%

Associated Samples:
Batch GN52207: MC42448-2
Batch GN52209: MC42448-1
Batch GN52211: MC42448-2, MC42448-3, MC42448-4, MC42448-5, MC42448-6, MC42448-7
Batch GN52216: MC42448-1F
Batch GN52217: MC42448-2F, MC42448-3F, MC42448-4F
Batch GN52221: MC42448-1, MC42448-3, MC42448-4, MC42448-5, MC42448-6, MC42448-7, MC42448-8, MC42448-9, MC42448-10, MC42448-11
Batch GN52222: MC42448-12, MC42448-13, MC42448-14, MC42448-15
Batch GN52266: MC42448-1, MC42448-2, MC42448-3, MC42448-4, MC42448-5, MC42448-6, MC42448-7, MC42448-8, MC42448-9, MC42448-10, MC42448-11, MC42448-12, MC42448-13, MC42448-14, MC42448-15
Batch GN52271: MC42448-8, MC42448-9, MC42448-10, MC42448-11, MC42448-12, MC42448-13, MC42448-14, MC42448-15
Batch GN52289: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F, MC42448-12F, MC42448-13F
Batch GN52290: MC42448-14F, MC42448-15F
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42448
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Dissolved Organic Carbon	GN52216	MC42426-3F	mg/l	0.19	10	9.4	0.0	
Dissolved Organic Carbon	GN52217	MC42426-4F	mg/l	0.16	10	9.7	1.0	
Dissolved Organic Carbon	GN52289	MC42426-6F	mg/l	0.12	10	9.6	5.1	
Dissolved Organic Carbon	GN52290	MC42426-7F	mg/l	0.13	10	9.4	0.0	

Associated Samples:
Batch GN52216: MC42448-1F
Batch GN52217: MC42448-2F, MC42448-3F, MC42448-4F
Batch GN52289: MC42448-5F, MC42448-6F, MC42448-7F, MC42448-8F, MC42448-9F, MC42448-10F, MC42448-11F, MC42448-12F, MC42448-13F
Batch GN52290: MC42448-14F, MC42448-15F
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

11/18/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC42487

Sampling Date: 10/27/15

Report to:

H&S Environmental

lekes@hsenv.com

ATTN: Laurie Ekes

Total number of pages in report: **100**

Reza Tand
Lab Director

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Accutest Laboratories

Sample Summary

H&S Environmental

Job No: MC42487

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42487-1	10/27/15	10:25	KGA	10/27/15	AQ	Ground Water	DUP-6_FA115
MC42487-1F	10/27/15	10:25	KGA	10/27/15	AQ	Groundwater Filtered	DUP-6_FA115
MC42487-2	10/27/15	10:10	KGA	10/27/15	AQ	Ground Water	SHL-8S_FA115
MC42487-2F	10/27/15	10:10	KGA	10/27/15	AQ	Groundwater Filtered	SHL-8S_FA115
MC42487-3	10/27/15	12:00	KGA	10/27/15	AQ	Ground Water	SHL-8D_FA115
MC42487-3F	10/27/15	12:00	KGA	10/27/15	AQ	Groundwater Filtered	SHL-8D_FA115
MC42487-4	10/27/15	13:40	KGA	10/27/15	AQ	Ground Water	SHP-05-47B_FA115
MC42487-4F	10/27/15	13:40	KGA	10/27/15	AQ	Groundwater Filtered	SHP-05-47B_FA115
MC42487-5	10/27/15	14:35	KGA	10/27/15	AQ	Ground Water	SHL-18_FA115
MC42487-5F	10/27/15	14:35	KGA	10/27/15	AQ	Groundwater Filtered	SHL-18_FA115
MC42487-6	10/27/15	13:42	KGA	10/27/15	AQ	Ground Water	SHM-11-02_FA115
MC42487-6F	10/27/15	13:42	KGA	10/27/15	AQ	Groundwater Filtered	SHM-11-02_FA115
MC42487-7	10/27/15	10:50	KGA	10/27/15	AQ	Ground Water	EPA-PZ-2012-7A_FA115

Accutest Laboratories

Sample Summary
(continued)

H&S Environmental

Job No: MC42487

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42487-7F	10/27/15	10:50	KGA	10/27/15	AQ	Groundwater Filtered	EPA-PZ-2012-7A_FA115
MC42487-8	10/27/15	13:50	KGA	10/27/15	AQ	Ground Water	SHM-13-01_FA115
MC42487-8F	10/27/15	13:50	KGA	10/27/15	AQ	Groundwater Filtered	SHM-13-01_FA115
MC42487-9	10/27/15	12:00	KGA	10/27/15	AQ	Ground Water	EPA-PZ-2012-7B_FA115
MC42487-9F	10/27/15	12:00	KGA	10/27/15	AQ	Groundwater Filtered	EPA-PZ-2012-7B_FA115
MC42487-10	10/27/15	11:45	KGA	10/27/15	AQ	Ground Water	SHP-01-37X_FA115
MC42487-10F	10/27/15	11:45	KGA	10/27/15	AQ	Groundwater Filtered	SHP-01-37X_FA115
MC42487-11	10/27/15	11:30	KGA	10/27/15	AQ	Ground Water	SHL-4_FA115
MC42487-11F	10/27/15	11:30	KGA	10/27/15	AQ	Groundwater Filtered	SHL-4_FA115
MC42487-12	10/27/15	10:27	KGA	10/27/15	AQ	Ground Water	SHL-19_FA115
MC42487-12F	10/27/15	10:27	KGA	10/27/15	AQ	Groundwater Filtered	SHL-19_FA115
MC42487-13	10/27/15	10:30	KGA	10/27/15	AQ	Ground Water	SHP-01-36X_FA115
MC42487-13F	10/27/15	10:30	KGA	10/27/15	AQ	Groundwater Filtered	SHP-01-36X_FA115

Accutest Laboratories

Sample Summary
(continued)

H&S Environmental

Job No: MC42487

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42487-14	10/27/15	10:32	KGA	10/27/15	AQ	Ground Water	N1-P1_FA115
MC42487-14F	10/27/15	10:32	KGA	10/27/15	AQ	Groundwater Filtered	N1-P1_FA115
MC42487-15	10/27/15	11:23	KGA	10/27/15	AQ	Ground Water	N1-P3_FA115
MC42487-15F	10/27/15	11:23	KGA	10/27/15	AQ	Groundwater Filtered	N1-P3_FA115
MC42487-16	10/27/15	14:15	KGA	10/27/15	AQ	Ground Water	N2-P1_FA115
MC42487-16F	10/27/15	14:15	KGA	10/27/15	AQ	Groundwater Filtered	N2-P1_FA115
MC42487-17	10/27/15	15:00	KGA	10/27/15	AQ	Ground Water	N2-P2_FA115
MC42487-17F	10/27/15	15:00	KGA	10/27/15	AQ	Groundwater Filtered	N2-P2_FA115
MC42487-18	10/27/15	15:05	KGA	10/27/15	AQ	Ground Water	SHM-11-06_FA115
MC42487-18D	10/27/15	15:05	KGA	10/27/15	AQ	Water Dup/MSD	SHM-11-06_FA115
MC42487-18F	10/27/15	15:05	KGA	10/27/15	AQ	Groundwater Filtered	SHM-11-06_FA115
MC42487-18FD	10/27/15	15:05	KGA	10/27/15	AQ	Water Dup/MSD	SHM-11-06_FA115
MC42487-18FS	10/27/15	15:05	KGA	10/27/15	AQ	Water Matrix Spike	SHM-11-06_FA115

Accutest Laboratories

Sample Summary
(continued)

H&S Environmental

Job No: MC42487

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42487-18S	10/27/15	15:05	KGA	10/27/15	AQ	Water Matrix Spike	SHM-11-06_FA115
MC42487-19	10/27/15	14:55	KGA	10/27/15	AQ	Ground Water	SHL-24_FA115
MC42487-19F	10/27/15	14:55	KGA	10/27/15	AQ	Groundwater Filtered	SHL-24_FA115

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC42487
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	11/18/2015 11:13:55 AM

19 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 10/27/2015 and were received at Accutest on 10/27/2015 properly preserved, at 4.2 Deg. C and intact. These Samples received an Accutest job number of MC42487. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP25385

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-18FMS, MC42487-18FMSD, MC42487-18FSDL were used as the QC samples for metals.

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP25385A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-18FMS, MC42487-18FMSD, MC42487-18FSDL were used as the QC samples for metals.

Wet Chemistry By Method ASTM516-90,02

Matrix: AQ **Batch ID:** GN52264

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-11DUP, MC42487-11MS were used as the QC samples for Sulfate.

Matrix: AQ **Batch ID:** GN52265

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-1DUP, MC42487-1MS were used as the QC samples for Sulfate.

Matrix: AQ **Batch ID:** GN52305

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-18DUP, MC42487-18MS were used as the QC samples for Sulfate.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ	**Batch ID:** GN52286

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-18MS, MC42487-18MSD were used as the QC samples for Chloride.
- MC42487-11, -12 for Chloride: Elevated RL due to dilution required for matrix interference.

Matrix: AQ	**Batch ID:** GN52318

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-19MS, MC42487-19MSD were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ	**Batch ID:** GN52271

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42448-8DUP, MC42448-8MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ	**Batch ID:** GN52272

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-3DUP, MC42487-3MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ	**Batch ID:** GN52273

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-18DUP, MC42487-18MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SW846 9060

Matrix: AQ	**Batch ID:** GN52290

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-7FMS, MC42426-7FMSD were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ	**Batch ID:** GN52291

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-8FMS, MC42426-8FMSD were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ	**Batch ID:** GN52331

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-18FMS, MC42487-18FMSD were used as the QC samples for Dissolved Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC42487).

Summary of Hits

Job Number: MC42487
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/27/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42487-1	**DUP-6_FA115**					
Alkalinity, Total as CaCO3		22.7	5.0	3.9	mg/l	SM21 2320B
Chloride		6.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		7.2	5.0	0.81	mg/l	ASTM516-90,02
MC42487-1F	**DUP-6_FA115**					
Arsenic		2.1 J	4.0	2.0	ug/l	SW846 6020A
Dissolved Organic Carbon		0.21 J	1.0	0.084	mg/l	SW846 9060
MC42487-2	**SHL-8S_FA115**					
Alkalinity, Total as CaCO3		21.6	5.0	3.9	mg/l	SM21 2320B
Chloride		6.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		7.3	5.0	0.81	mg/l	ASTM516-90,02
MC42487-2F	**SHL-8S_FA115**					
Dissolved Organic Carbon		0.49 J	1.0	0.084	mg/l	SW846 9060
MC42487-3	**SHL-8D_FA115**					
Alkalinity, Total as CaCO3		28.8	5.0	3.9	mg/l	SM21 2320B
Chloride		6.3	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		3.6 J	5.0	0.81	mg/l	ASTM516-90,02
MC42487-3F	**SHL-8D_FA115**					
Iron		69.5 J	100	50	ug/l	SW846 6010C
Manganese		39.1	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.0	1.0	0.084	mg/l	SW846 9060
MC42487-4	**SHP-05-47B_FA115**					
Alkalinity, Total as CaCO3		23.7	5.0	3.9	mg/l	SM21 2320B
Chloride		80.0	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		6.3	5.0	0.81	mg/l	ASTM516-90,02
MC42487-4F	**SHP-05-47B_FA115**					
Arsenic		2.8 J	4.0	2.0	ug/l	SW846 6020A
Iron		497	100	50	ug/l	SW846 6010C
Manganese		457	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.9	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42487
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/27/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42487-5	**SHL-18_FA115**					
Alkalinity, Total as CaCO3		24.7	5.0	3.9	mg/l	SM21 2320B
Chloride		1.3	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		20.8	5.0	0.81	mg/l	ASTM516-90,02
MC42487-5F	**SHL-18_FA115**					
Arsenic		2.5 J	4.0	2.0	ug/l	SW846 6020A
Dissolved Organic Carbon		0.41 J	1.0	0.084	mg/l	SW846 9060
MC42487-6	**SHM-11-02_FA115**					
Alkalinity, Total as CaCO3		50.5	5.0	3.9	mg/l	SM21 2320B
Chloride		36.0	1.0	0.76	mg/l	SM 4500 CL C-11
MC42487-6F	**SHM-11-02_FA115**					
Iron		3340	100	50	ug/l	SW846 6010C
Manganese		278	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		27.7	1.0	0.084	mg/l	SW846 9060
MC42487-7	**EPA-PZ-2012-7A_FA115**					
Alkalinity, Total as CaCO3		40.2	5.0	3.9	mg/l	SM21 2320B
Chloride		145	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		7.9	5.0	0.81	mg/l	ASTM516-90,02
MC42487-7F	**EPA-PZ-2012-7A_FA115**					
Manganese		8.9 J	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		0.80 J	1.0	0.084	mg/l	SW846 9060
MC42487-8	**SHM-13-01_FA115**					
Alkalinity, Total as CaCO3		14.4	5.0	3.9	mg/l	SM21 2320B
Chloride		48.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		7.6	5.0	0.81	mg/l	ASTM516-90,02
MC42487-8F	**SHM-13-01_FA115**					
Arsenic		2.1 J	4.0	2.0	ug/l	SW846 6020A
Dissolved Organic Carbon		0.47 J	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42487
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/27/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42487-9	**EPA-PZ-2012-7B_FA115**					
Alkalinity, Total as CaCO3		77.3	5.0	3.9	mg/l	SM21 2320B
Chloride		3.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		12.2	5.0	0.81	mg/l	ASTM516-90,02
MC42487-9F	**EPA-PZ-2012-7B_FA115**					
Arsenic		1330	50	25	ug/l	SW846 6020A
Iron		36900	500	250	ug/l	SW846 6010C
Manganese		1380	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.6	1.0	0.084	mg/l	SW846 9060
MC42487-10	**SHP-01-37X_FA115**					
Alkalinity, Total as CaCO3		25.8	5.0	3.9	mg/l	SM21 2320B
Chloride		95.0	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		6.3	5.0	0.81	mg/l	ASTM516-90,02
MC42487-10F	**SHP-01-37X_FA115**					
Arsenic		14.0	4.0	2.0	ug/l	SW846 6020A
Iron		1090	100	50	ug/l	SW846 6010C
Manganese		136	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.8	1.0	0.084	mg/l	SW846 9060
MC42487-11	**SHL-4_FA115**					
Alkalinity, Total as CaCO3		71.1	5.0	3.9	mg/l	SM21 2320B
Chloride [a]		15.0	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		15.9	5.0	0.81	mg/l	ASTM516-90,02
MC42487-11F	**SHL-4_FA115**					
Arsenic		37.4	4.0	2.0	ug/l	SW846 6020A
Iron		3470	100	50	ug/l	SW846 6010C
Manganese		2320	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.0	1.0	0.084	mg/l	SW846 9060
MC42487-12	**SHL-19_FA115**					
Alkalinity, Total as CaCO3		334	5.0	3.9	mg/l	SM21 2320B
Chloride [a]		75.0	50	38	mg/l	SM 4500 CL C-11
Sulfate		17.4	5.0	0.81	mg/l	ASTM516-90,02

Summary of Hits

Job Number: MC42487
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/27/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42487-12F	**SHL-19_FA115**					
Arsenic		3.1 J	4.0	2.0	ug/l	SW846 6020A
Iron		8850	100	50	ug/l	SW846 6010C
Manganese		2770	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.0	1.0	0.084	mg/l	SW846 9060
MC42487-13	**SHP-01-36X_FA115**					
Alkalinity, Total as CaCO3		23.7	5.0	3.9	mg/l	SM21 2320B
Chloride		105	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		7.7	5.0	0.81	mg/l	ASTM516-90,02
MC42487-13F	**SHP-01-36X_FA115**					
Arsenic		9.0	4.0	2.0	ug/l	SW846 6020A
Iron		686	100	50	ug/l	SW846 6010C
Manganese		111	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.7	1.0	0.084	mg/l	SW846 9060
MC42487-14	**N1-P1_FA115**					
Alkalinity, Total as CaCO3		175	5.0	3.9	mg/l	SM21 2320B
Chloride		45.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		3.3 J	5.0	0.81	mg/l	ASTM516-90,02
MC42487-14F	**N1-P1_FA115**					
Iron		65.3 J	100	50	ug/l	SW846 6010C
Manganese		1480	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.6	1.0	0.084	mg/l	SW846 9060
MC42487-15	**N1-P3_FA115**					
Alkalinity, Total as CaCO3		23.7	5.0	3.9	mg/l	SM21 2320B
Chloride		90.0	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		3.2 J	5.0	0.81	mg/l	ASTM516-90,02
MC42487-15F	**N1-P3_FA115**					
Arsenic		17.6	4.0	2.0	ug/l	SW846 6020A
Iron		1660	100	50	ug/l	SW846 6010C
Manganese		502	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.7	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42487
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/27/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42487-16	**N2-P1_FA115**					
Alkalinity, Total as CaCO3		156	5.0	3.9	mg/l	SM21 2320B
Chloride		34.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		42.6	10	1.6	mg/l	ASTM516-90,02
MC42487-16F	**N2-P1_FA115**					
Arsenic		517	20	10	ug/l	SW846 6020A
Iron		39100	500	250	ug/l	SW846 6010C
Manganese		2760	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.1	1.0	0.084	mg/l	SW846 9060
MC42487-17	**N2-P2_FA115**					
Alkalinity, Total as CaCO3		191	5.0	3.9	mg/l	SM21 2320B
Chloride		36.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		18.2	5.0	0.81	mg/l	ASTM516-90,02
MC42487-17F	**N2-P2_FA115**					
Arsenic		235	10	5.0	ug/l	SW846 6020A
Iron		6390	100	50	ug/l	SW846 6010C
Manganese		6030	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		2.7	1.0	0.084	mg/l	SW846 9060
MC42487-18	**SHM-11-06_FA115**					
Alkalinity, Total as CaCO3		118	5.0	3.9	mg/l	SM21 2320B
Chloride		40.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		13.7	5.0	0.81	mg/l	ASTM516-90,02
MC42487-18F	**SHM-11-06_FA115**					
Arsenic		821	50	25	ug/l	SW846 6020A
Iron		46800	500	250	ug/l	SW846 6010C
Manganese		687	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.2	1.0	0.084	mg/l	SW846 9060
MC42487-19	**SHL-24_FA115**					
Alkalinity, Total as CaCO3		51.5	5.0	3.9	mg/l	SM21 2320B
Chloride		24.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		20.4	5.0	0.81	mg/l	ASTM516-90,02

Summary of Hits

Job Number: MC42487
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/27/15

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42487-19F	**SHL-24_FA115**					
Arsenic		6.5	4.0	2.0	ug/l	SW846 6020A
Dissolved Organic Carbon		0.37 J	1.0	0.084	mg/l	SW846 9060

(a) Elevated RL due to dilution required for matrix interference.

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	DUP-6_FA115		
Lab Sample ID:	MC42487-1	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	22.7	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	6.0	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	7.2	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-6_FA115		
Lab Sample ID:	MC42487-1F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.1 J	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	DUP-6_FA115		
Lab Sample ID:	MC42487-1F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.21 J	1.0	0.084	mg/l	1	11/10/15 20:28	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-8S_FA115		
Lab Sample ID:	MC42487-2	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	21.6	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	6.0	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	7.3	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-8S_FA115		
Lab Sample ID:	MC42487-2F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-8S_FA115		
Lab Sample ID:	MC42487-2F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.49 J	1.0	0.084	mg/l	1	11/10/15 20:43	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-8D_FA115		
Lab Sample ID:	MC42487-3	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	28.8	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	6.3	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	3.6 J	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-8D_FA115		
Lab Sample ID:	MC42487-3F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	69.5 J	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	39.1	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-8D_FA115		
Lab Sample ID:	MC42487-3F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.0	1.0	0.084	mg/l	1	11/10/15 21:35	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-47B_FA115		
Lab Sample ID:	MC42487-4	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	23.7	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	80.0	10	7.6	mg/l	10	11/09/15	EL	SM 4500 CL C-11
Sulfate	6.3	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-47B_FA115		
Lab Sample ID:	MC42487-4F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.8 J	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	497	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	457	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-47B_FA115		
Lab Sample ID:	MC42487-4F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.9	1.0	0.084	mg/l	1	11/10/15 21:52	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-18_FA115		
Lab Sample ID:	MC42487-5	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	24.7	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	1.3	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	20.8	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-18_FA115		
Lab Sample ID:	MC42487-5F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.5 J	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-18_FA115		
Lab Sample ID:	MC42487-5F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.41 J	1.0	0.084	mg/l	1	11/10/15 22:10	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-11-02_FA115		
Lab Sample ID:	MC42487-6	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	50.5	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	36.0	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	0.81 U	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-11-02_FA115		
Lab Sample ID:	MC42487-6F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	3340	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	278	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-11-02_FA115		
Lab Sample ID:	MC42487-6F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	27.7	1.0	0.084	mg/l	1	11/10/15 22:31	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-7A_FA115		
Lab Sample ID:	MC42487-7	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	40.2	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	145	10	7.6	mg/l	10	11/09/15	EL	SM 4500 CL C-11
Sulfate	7.9	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-7A_FA115		
Lab Sample ID:	MC42487-7F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	8.9 J	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-7A_FA115		
Lab Sample ID:	MC42487-7F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.80 J	1.0	0.084	mg/l	1	11/10/15 22:47	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-01_FA115		
Lab Sample ID:	MC42487-8	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	14.4	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	48.0	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	7.6	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-01_FA115		
Lab Sample ID:	MC42487-8F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.1 J	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-01_FA115		
Lab Sample ID:	MC42487-8F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.47 J	1.0	0.084	mg/l	1	11/11/15 02:31	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-7B_FA115		
Lab Sample ID:	MC42487-9	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	77.3	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	3.0	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	12.2	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-7B_FA115		
Lab Sample ID:	MC42487-9F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	1330	50	25	ug/l	25	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	36900	500	250	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	1380	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25385
(5) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	EPA-PZ-2012-7B_FA115		
Lab Sample ID:	MC42487-9F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.6	1.0	0.084	mg/l	1	11/11/15 02:49	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-37X_FA115		
Lab Sample ID:	MC42487-10	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	25.8	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	95.0	10	7.6	mg/l	10	11/09/15	EL	SM 4500 CL C-11
Sulfate	6.3	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-37X_FA115		
Lab Sample ID:	MC42487-10F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	14.0	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	1090	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	136	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-37X_FA115		
Lab Sample ID:	MC42487-10F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.8	1.0	0.084	mg/l	1	11/11/15 03:04	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-4_FA115		
Lab Sample ID:	MC42487-11	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	71.1	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride [a]	15.0	10	7.6	mg/l	10	11/09/15	EL	SM 4500 CL C-11
Sulfate	15.9	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

(a) Elevated RL due to dilution required for matrix interference.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-4_FA115		
Lab Sample ID:	MC42487-11F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	37.4	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	3470	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	2320	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-4_FA115		
Lab Sample ID:	MC42487-11F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.0	1.0	0.084	mg/l	1	11/11/15 03:19	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-19_FA115		
Lab Sample ID:	MC42487-12	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	334	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride [a]	75.0	50	38	mg/l	50	11/09/15	EL	SM 4500 CL C-11
Sulfate	17.4	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

(a) Elevated RL due to dilution required for matrix interference.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-19_FA115		
Lab Sample ID:	MC42487-12F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3.1 J	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	8850	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	2770	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-19_FA115		
Lab Sample ID:	MC42487-12F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.0	1.0	0.084	mg/l	1	11/11/15 04:09	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-36X_FA115		
Lab Sample ID:	MC42487-13	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	23.7	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	105	10	7.6	mg/l	10	11/09/15	EL	SM 4500 CL C-11
Sulfate	7.7	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-36X_FA115		
Lab Sample ID:	MC42487-13F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	9.0	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	686	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	111	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-36X_FA115		
Lab Sample ID:	MC42487-13F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.7	1.0	0.084	mg/l	1	11/11/15 04:25	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N1-P1_FA115		
Lab Sample ID:	MC42487-14	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	175	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	45.0	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	3.3 J	5.0	0.81	mg/l	1	11/07/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N1-P1_FA115		
Lab Sample ID:	MC42487-14F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	65.3 J	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	1480	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N1-P1_FA115		
Lab Sample ID:	MC42487-14F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.6	1.0	0.084	mg/l	1	11/11/15 04:41	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N1-P3_FA115		
Lab Sample ID:	MC42487-15	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	23.7	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	90.0	10	7.6	mg/l	10	11/09/15	EL	SM 4500 CL C-11
Sulfate	3.2 J	5.0	0.81	mg/l	1	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N1-P3_FA115		
Lab Sample ID:	MC42487-15F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	17.6	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	1660	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	502	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N1-P3_FA115		
Lab Sample ID:	MC42487-15F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.7	1.0	0.084	mg/l	1	11/11/15 05:00	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N2-P1_FA115		
Lab Sample ID:	MC42487-16	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	156	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	34.5	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	42.6	10	1.6	mg/l	2	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N2-P1_FA115		
Lab Sample ID:	MC42487-16F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	517	20	10	ug/l	10	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	39100	500	250	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	2760	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25385
(5) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N2-P1_FA115		
Lab Sample ID:	MC42487-16F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.1	1.0	0.084	mg/l	1	11/11/15 05:15	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N2-P2_FA115		
Lab Sample ID:	MC42487-17	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	191	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	36.0	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	18.2	5.0	0.81	mg/l	1	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N2-P2_FA115		
Lab Sample ID:	MC42487-17F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	235	10	5.0	ug/l	5	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	6390	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Manganese	6030	75	38	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25385
(5) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Accutest Laboratories

Report of Analysis

Client Sample ID:	N2-P2_FA115		
Lab Sample ID:	MC42487-17F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.7	1.0	0.084	mg/l	1	11/12/15 20:26	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-11-06_FA115		
Lab Sample ID:	MC42487-18	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	118	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	40.5	1.0	0.76	mg/l	1	11/09/15	EL	SM 4500 CL C-11
Sulfate	13.7	5.0	0.81	mg/l	1	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-11-06_FA115		
Lab Sample ID:	MC42487-18F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	821	50	25	ug/l	25	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	46800	500	250	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	687	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25385
(5) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-11-06_FA115		
Lab Sample ID:	MC42487-18F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	0.084	mg/l	1	11/12/15 20:12	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-24_FA115		
Lab Sample ID:	MC42487-19	**Date Sampled:**	10/27/15
Matrix:	AQ - Ground Water	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	51.5	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	24.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	20.4	5.0	0.81	mg/l	1	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-24_FA115		
Lab Sample ID:	MC42487-19F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	6.5	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25385
(4) Prep QC Batch: MP25385A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Accutest Laboratories

Report of Analysis

Client Sample ID:	SHL-24_FA115		
Lab Sample ID:	MC42487-19F	**Date Sampled:**	10/27/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/27/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.37 J	1.0	0.084	mg/l	1	11/12/15 20:41	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

(p lot 3)

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC42487
Accutest Control #:

Client Information

Name: H&S Environmental
Address: 160 East Main Street, Suite 2F
City: Westborough
State: MA Zip: 01581
Send Report to: Laurie Ekes (lekes@hsenv.com)
Phone #: (508)367-7190

Facility Information

Project Name: Devens
Location: Shepley's
Project No.
FAX #: Office number (508) 366-7442

Analytical Information

Field ID / Point of Collection	Collection Date	Time	Sampled By	Matrix	# of bottles	Preservation: VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (Field Filter)	Alkilinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl (Field Filter)								
DVP-6_Fall15	10/27/15	1025	KGA	WG	4	2		1		1	X	X	X								-1F
SHL-85_Fall15	10/27/15	1010	KGA	WG	4	2		1		1	X	X	X								-2F
SHL-80_Fall15	10/27/15	1200	KGA	WG	4	2		1		1	X	X	X								-3F
SMP-05-47B_Fall15	10/27/15	1340	KGA	WG	4	2		1		1	X	X	X								-4F
SHL-68_Fall15	10/27/15	1435		WG	4	2		1		1	X	X	X								-5F
SHM-11-02_Fall15	10/27/15	1342		WG	4	2		1		1	X	X	X								-6F
EPA-P2-2012-7A_Fall15	10/27/15	1050		WG	4	2		1		1	X	X	X								-7F
SHM-13-01_Fall15	10/27/15	1350		WG	4	2		1		1	X	X	X								-8F
EPA-P2-2012-7B_Fall15	10/27/15	1200		WG	4	2		1		1	X	X	X								-9F
SMP-01-37X-Fall15	10/27/15	1145		WG	4	2		1		1	X	X	X								-10F

Turnaround Information

- [X] 10 Day STD
- [ ] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020

6B; 14A, ~~1B~~

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	10/27/15 1630	1	2		2
3		3	4		4
5		5	Seal #	Preserved ☐	On Ice: ☑

14-24-4.2°C

5.1 5

MC42487: Chain of Custody
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ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #:

Accutest Control #:

Client Information

Name: H&S Environmental
Address: 160 East Main Street, Suite 2F
City: Westborough
State: MA Zip: 01581
Send Report to: Laurie Ekes (lekes@hsenv.com)
Phone #: (508)367-7190

Facility Information

Project Name: Devens
Location: Shepley's
Project No.:
FAX #: Office number (508) 366-7442

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation: voc	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 ml HNO3 (Field Filtr)	Alkinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl (Field Filtr)								
SHL-4_Fall 15	10/27/15	1130		WG	4	2		1		1	X	X	X								-11F
SHL-19_Fall15	10/27/15	1027		WG	4	2		1		1	X	X	X								-12F
SHP-01-36X_Fall15	10/27/15	1030		WG	4	2		1		1	X	X	X								-13F
M1-P1_Fall15	10/27/15	1032		WG	4	2		1		1	X	X	X								-14F
M1-P3_Fall15	10/27/15	1123		wb	4	2		1		1	X	X	X								-15F
M2-P1_Fall15	10/27/15	1415		wb	4	2		1		1	X	X	X								-16F
M2-P2_Fall15	10/27/15	1500		wb	4	2		1		1	X	X	X								-17F
SHM-11-06_Fall15	10/27/15	1505		wb	4	2		1		1	X	X	X								-18mwF
SHM-11-06-MSD Fall15	10/27/15	1505		wb	4	2		1		1	X	X	X								
SHM-11-06-MS_Fall15	10/27/15	1505		wb	4	2		1		1	X	X	X								

Turnaround Information

- [X] 10 Day STD
- [ ] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	10/27/15 1630	1	2		2
3		3	4		4
5		5	Seal #	Preserved ☐	On Ice: ☑

1.4 - 2.4 - 4.2°C

5.1 5

MC42487: Chain of Custody
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ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #:

Accutest Control #:

Client Information		Facility Information	
Name	H&S Environmental	Project Name	Devens
Address	160 East Main Street, Suite 2F	Location	Shepley's
City	Westborough	Project No.	
State	MA Zip 01581		
Send Report to:	Laurie Ekes (lekes@hsenv.com)		
Phone #:	(508)367-7190	FAX #:	Office number (508) 366-7442

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation voc	NaOH	HNO3	H2So4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3 (Full filter)	Alklinity, Chloride, Sulfate 1-250 ml Poly 500	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl (Full filter)								
SHL-24-Fall5	10/27/15	1455		WG	4	2		1		1	X	X	X								-19F
				WG	4	2		1		1	VOA										
				WG	4	2		1		1											
				WG	4	2		1		1											

Turnaround Information	Data Deliverable Information	Comments / Remarks
[X] 10 Day STD [ ] 5 Day STD (By Contract only) [ ] 5 Day Rush [ ] 3 Day Rush [ ] 2 Day Rush [ ] 1 Day Rush Approved By:	[ ] Comm A [ ] Comm B [ ] Full T1 [ ] Other [ ] CT RCP [ ] MA MCP [ ] NYASP CAT A [ ] NYASP CATB EDD Format:	Analyze Arsenic by SW6020

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	10/27/15 1630	1 [signature]	2		2
3		3	4		4
5		5	Seal #	Preserved ☐	On Ice: ☑

1.4-2.4 -4.2°C

5.1

5

MC42487: Chain of Custody
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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42487 **Client:** KLF **Project:**

Date / Time Received: 10/27/2015 4:30:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.4/1.4); #2: (2.4/2.4); #3: (4.2/4.2);

Cooler Security	Y	or	N
1. Custody Seals Present:	☑		☐
2. Custody Seals Intact:	☑		☐
3. COC Present:	☑		☐
4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	G1;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	3		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☐
2. Trip Blank listed on COC:	☐		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC42487: Chain of Custody
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QC Evaluation: DOD QSM5 Limits

Job Number: MC42487
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/27/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP25385	SW846 6010C						
MP25385-B1	7439-89-6	Iron	BSP	REC	97.3	%	87-115
MP25385-B1	7439-96-5	Manganese	BSP	REC	95.8	%	90-114
MP25385-S1	7439-89-6	Iron	MS	REC	102	%	87-115
MP25385-S1	7439-96-5	Manganese	MS	REC	94.6	%	90-114
MP25385-S2	7439-89-6	Iron	MSD	REC	98	%	87-115
MP25385-S2	7439-89-6	Iron	MSD	RPD	.7	%	20
MP25385-S2	7439-96-5	Manganese	MSD	REC	94.6	%	90-114
MP25385-S2	7439-96-5	Manganese	MSD	RPD	0	%	20
MP25385A	SW846 6020A						
MP25385A-B1	7440-38-2	Arsenic	BSP	REC	110	%	84-116
MP25385A-S1	7440-38-2	Arsenic	MS	REC	109.8	%	84-116
MP25385A-S2	7440-38-2	Arsenic	MSD	REC	109.8	%	84-116
MP25385A-S2	7440-38-2	Arsenic	MSD	RPD	0	%	20

* Sample used for QC is not from job MC42487

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	28		
Antimony	6.0	1.2	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.21	1		
Beryllium	4.0	.1	.25		
Bismuth	50	.89	2.1		
Boron	100	1	1.1		
Cadmium	4.0	.26	.43		
Calcium	5000	4.9	15		
Chromium	10	.29	.48		
Cobalt	50	.24	.28		
Copper	25	.58	2.4		
Gold	50	.91	1.5		
Iron	100	13	17	11.3	<100
Lead	5.0	1	1.7		
Lithium	500	.8	2.5		
Magnesium	5000	23	54		
Manganese	15	.11	1.4	0.80	<15
Molybdenum	100	.21	3.6		
Nickel	40	.24	.5		
Palladium	50	1.2	2.6		
Platinum	50	5.3	5.4		
Potassium	5000	30	49		
Selenium	10	2.3	2		
Silicon	100	1.1	30		
Silver	5.0	.43	1		
Sodium	5000	8	77		
Sulfur	50	1.7	4.6		
Strontium	10	.15	.22		
Thallium	5.0	1.2	1.7		
Tin	100	.69	.81		
Titanium	50	.46	.51		
Tungsten	100	2.8	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.29	.51		
Zinc	20	.3	1		
Zirconium	50	.19	1.2		

Associated samples MP25385: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42487-18F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	46800	57000	10000	102.0	75-125
Lead					
Lithium					
Magnesium					
Manganese	687	1160	500	94.6	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/29/15

Metal	MC42487-18F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25385: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42487-18F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	46800	56600	10000	98.0	0.7	20
Lead						
Lithium						
Magnesium						
Manganese	687	1160	500	94.6	0.0	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/29/15

Metal	MC42487-18F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25385: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	9730	10000	97.3	80-120
Lead				
Lithium				
Magnesium				
Manganese	479	500	95.8	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25385: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42487-18F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	46800	46700	0.1	0-10
Lead				
Lithium				
Magnesium				
Manganese	687	697	1.4	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42487-18F Original SDL 1:5	%DIF	QC Limits
Vanadium			
Zinc			
Zirconium			

Associated samples MP25385: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.57	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25385A: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	MC42487-18F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	821	1370	500	109.8	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25385A: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	MC42487-18F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	821	1370	500	109.8	0.0	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25385A: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	550	500	110.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25385A: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25385A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	MC42487-18F Original	SDL 25:125%DIF		QC Limits
Aluminum				
Antimony				
Arsenic	821	808	1.6	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25385A: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F, MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F, MC42487-17F, MC42487-18F, MC42487-19F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN52271	5.0	0.0	mg/l	250	256	102.4	80-120%
Alkalinity, Total as CaCO3	GN52272	5.0	0.0	mg/l	250	253	101.2	80-120%
Alkalinity, Total as CaCO3	GN52273	5.0	0.0	mg/l	250	256	102.4	80-120%
Chloride	GN52286	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Chloride	GN52318	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Dissolved Organic Carbon	GN52290	1.0	0.061	mg/l	10	10.6	106.0	80-120%
Dissolved Organic Carbon	GN52291	1.0	0.051	mg/l	10	9.65	96.5	80-120%
Dissolved Organic Carbon	GN52331	1.0	0.13	mg/l	10	9.69	96.9	80-120%
Sulfate	GN52264	5.0	0.0	mg/l	20	20.0	100.0	80-120%
Sulfate	GN52265	5.0	0.0	mg/l	20	20.5	102.5	80-120%
Sulfate	GN52305	5.0	0.0	mg/l	20	20.5	102.5	80-120%

Associated Samples:
Batch GN52264: MC42487-11, MC42487-12, MC42487-13, MC42487-14
Batch GN52265: MC42487-1, MC42487-2, MC42487-3, MC42487-4, MC42487-5, MC42487-6, MC42487-7, MC42487-8, MC42487-9, MC42487-10
Batch GN52271: MC42487-1, MC42487-2
Batch GN52272: MC42487-3, MC42487-4, MC42487-5, MC42487-6, MC42487-7, MC42487-8, MC42487-9, MC42487-10, MC42487-11, MC42487-12
Batch GN52273: MC42487-13, MC42487-14, MC42487-15, MC42487-16, MC42487-17, MC42487-18, MC42487-19
Batch GN52286: MC42487-1, MC42487-2, MC42487-3, MC42487-4, MC42487-5, MC42487-6, MC42487-7, MC42487-8, MC42487-9, MC42487-10, MC42487-11, MC42487-12, MC42487-13, MC42487-14, MC42487-15, MC42487-16, MC42487-17, MC42487-18
Batch GN52290: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F
Batch GN52291: MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F
Batch GN52305: MC42487-15, MC42487-16, MC42487-17, MC42487-18, MC42487-19
Batch GN52318: MC42487-19
Batch GN52331: MC42487-17F, MC42487-18F, MC42487-19F
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN52271	MC42448-8	mg/l	21.6	22.7	5.0	0-20%
Alkalinity, Total as CaCO3	GN52272	MC42487-3	mg/l	28.8	27.8	3.5	0-20%
Alkalinity, Total as CaCO3	GN52273	MC42487-18	mg/l	118	122	3.3	0-20%
Sulfate	GN52264	MC42487-11	mg/l	15.9	15.9	0.0	0-20%
Sulfate	GN52265	MC42487-1	mg/l	7.2	7.5	4.1	0-20%
Sulfate	GN52305	MC42487-18	mg/l	13.7	13.5	1.5	0-20%

Associated Samples:
Batch GN52264: MC42487-11, MC42487-12, MC42487-13, MC42487-14
Batch GN52265: MC42487-1, MC42487-2, MC42487-3, MC42487-4, MC42487-5, MC42487-6, MC42487-7, MC42487-8, MC42487-9, MC42487-10
Batch GN52271: MC42487-1, MC42487-2
Batch GN52272: MC42487-3, MC42487-4, MC42487-5, MC42487-6, MC42487-7, MC42487-8, MC42487-9, MC42487-10, MC42487-11, MC42487-12
Batch GN52273: MC42487-13, MC42487-14, MC42487-15, MC42487-16, MC42487-17, MC42487-18, MC42487-19
Batch GN52305: MC42487-15, MC42487-16, MC42487-17, MC42487-18, MC42487-19
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN52271	MC42448-8	mg/l	21.6	250	271	99.8	75-125%
Alkalinity, Total as CaCO3	GN52272	MC42487-3	mg/l	28.8	250	281	100.9	75-125%
Alkalinity, Total as CaCO3	GN52273	MC42487-18	mg/l	118	250	368	100.0	75-125%
Chloride	GN52286	MC42487-18	mg/l	40.5	10	52.0	115.0	75-125%
Chloride	GN52318	MC42487-19	mg/l	24.0	10	34.5	105.0	75-125%
Dissolved Organic Carbon	GN52290	MC42426-7F	mg/l	0.13	10	9.4	92.7	75-125%
Dissolved Organic Carbon	GN52291	MC42426-8F	mg/l	0.074	10	9.9	98.3	75-125%
Dissolved Organic Carbon	GN52331	MC42487-18F	mg/l	2.2	10	11.7	95.0	75-125%
Sulfate	GN52264	MC42487-11	mg/l	15.9	20	33.6	88.5	75-125%
Sulfate	GN52265	MC42487-1	mg/l	7.2	20	25.3	90.5	75-125%
Sulfate	GN52305	MC42487-18	mg/l	13.7	20	32.9	96.0	75-125%

Associated Samples:
Batch GN52264: MC42487-11, MC42487-12, MC42487-13, MC42487-14
Batch GN52265: MC42487-1, MC42487-2, MC42487-3, MC42487-4, MC42487-5, MC42487-6, MC42487-7, MC42487-8, MC42487-9, MC42487-10
Batch GN52271: MC42487-1, MC42487-2
Batch GN52272: MC42487-3, MC42487-4, MC42487-5, MC42487-6, MC42487-7, MC42487-8, MC42487-9, MC42487-10, MC42487-11, MC42487-12
Batch GN52273: MC42487-13, MC42487-14, MC42487-15, MC42487-16, MC42487-17, MC42487-18, MC42487-19
Batch GN52286: MC42487-1, MC42487-2, MC42487-3, MC42487-4, MC42487-5, MC42487-6, MC42487-7, MC42487-8, MC42487-9, MC42487-10, MC42487-11, MC42487-12, MC42487-13, MC42487-14, MC42487-15, MC42487-16, MC42487-17, MC42487-18
Batch GN52290: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F
Batch GN52291: MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F
Batch GN52305: MC42487-15, MC42487-16, MC42487-17, MC42487-18, MC42487-19
Batch GN52318: MC42487-19
Batch GN52331: MC42487-17F, MC42487-18F, MC42487-19F
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42487
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GN52286	MC42487-18	mg/l	40.5	10	52.0	0.0	
Chloride	GN52318	MC42487-19	mg/l	24.0	10	34.5	0.0	
Dissolved Organic Carbon	GN52290	MC42426-7F	mg/l	0.13	10	9.4	0.0	
Dissolved Organic Carbon	GN52291	MC42426-8F	mg/l	0.074	10	9.6	3.1	
Dissolved Organic Carbon	GN52331	MC42487-18F	mg/l	2.2	10	10.6	9.9	

Associated Samples:
Batch GN52286: MC42487-1, MC42487-2, MC42487-3, MC42487-4, MC42487-5, MC42487-6, MC42487-7, MC42487-8, MC42487-9, MC42487-10, MC42487-11, MC42487-12, MC42487-13, MC42487-14, MC42487-15, MC42487-16, MC42487-17, MC42487-18
Batch GN52290: MC42487-1F, MC42487-2F, MC42487-3F, MC42487-4F, MC42487-5F, MC42487-6F, MC42487-7F
Batch GN52291: MC42487-8F, MC42487-9F, MC42487-10F, MC42487-11F, MC42487-12F, MC42487-13F, MC42487-14F, MC42487-15F, MC42487-16F
Batch GN52318: MC42487-19
Batch GN52331: MC42487-17F, MC42487-18F, MC42487-19F
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

11/16/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC42505

Sampling Date: 10/28/15

Report to:

H&S Environmental
160 East Main Street
Westborough, MA 01581
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Total number of pages in report: **85**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Sample Summary

H&S Environmental

Job No: MC42505

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42505-1	10/28/15	11:45	KGA	10/28/15	AQ	Ground Water	SHM-10-16_FA115
MC42505-1F	10/28/15	11:45	KGA	10/28/15	AQ	Groundwater Filtered	SHM-10-16_FA115
MC42505-2	10/28/15	10:00	KGA	10/28/15	AQ	Ground Water	SHM-05-42A_FA115
MC42505-2F	10/28/15	10:00	KGA	10/28/15	AQ	Groundwater Filtered	SHM-05-42A_FA115
MC42505-3	10/28/15	10:55	KGA	10/28/15	AQ	Ground Water	SHM-05-42B_FA115
MC42505-3F	10/28/15	10:55	KGA	10/28/15	AQ	Groundwater Filtered	SHM-05-42B_FA115
MC42505-4	10/28/15	09:52	KGA	10/28/15	AQ	Ground Water	SHM-13-08_FA115
MC42505-4F	10/28/15	09:52	KGA	10/28/15	AQ	Groundwater Filtered	SHM-13-08_FA115
MC42505-5	10/28/15	11:12	KGA	10/28/15	AQ	Ground Water	SHM-13-04_FA115
MC42505-5F	10/28/15	11:12	KGA	10/28/15	AQ	Groundwater Filtered	SHM-13-04_FA115
MC42505-6	10/28/15	12:25	KGA	10/28/15	AQ	Ground Water	SHM-13-05_FA115
MC42505-6F	10/28/15	12:25	KGA	10/28/15	AQ	Groundwater Filtered	SHM-13-05_FA115
MC42505-7	10/28/15	10:20	KGA	10/28/15	AQ	Ground Water	SHP-95-27X_FA115

Sample Summary
(continued)

H&S Environmental

Job No: MC42505

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42505-7F	10/28/15	10:20	KGA	10/28/15	AQ	Groundwater Filtered	SHP-95-27X_FA115
MC42505-8	10/28/15	12:35	KGA	10/28/15	AQ	Ground Water	SHP-01-38A_FA115
MC42505-8F	10/28/15	12:35	KGA	10/28/15	AQ	Groundwater Filtered	SHP-01-38A_FA115
MC42505-9	10/28/15	11:10	KGA	10/28/15	AQ	Ground Water	SHP-01-38B_FA115
MC42505-9F	10/28/15	11:10	KGA	10/28/15	AQ	Groundwater Filtered	SHP-01-38B_FA115
MC42505-10	10/28/15	13:05	KGA	10/28/15	AQ	Ground Water	SHM-97-32X_FA115
MC42505-10F	10/28/15	13:05	KGA	10/28/15	AQ	Groundwater Filtered	SHM-97-32X_FA115
MC42505-11	10/28/15	12:00	KGA	10/28/15	AQ	Ground Water	SHP-05-45B_FA115
MC42505-11F	10/28/15	12:00	KGA	10/28/15	AQ	Groundwater Filtered	SHP-05-45B_FA115
MC42505-12	10/28/15	13:00	KGA	10/28/15	AQ	Ground Water	SHP-05-45A_FA115
MC42505-12F	10/28/15	13:00	KGA	10/28/15	AQ	Groundwater Filtered	SHP-05-45A_FA115
MC42505-13	10/28/15	10:40	KGA	10/28/15	AQ	Ground Water	SHP-05-46A_FA115
MC42505-13F	10/28/15	10:40	KGA	10/28/15	AQ	Groundwater Filtered	SHP-05-46A_FA115

Sample Summary
(continued)

H&S Environmental

Job No: MC42505

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42505-14	10/28/15	09:40	KGA	10/28/15	AQ	Ground Water	SHP-05-46B_FA115
MC42505-14F	10/28/15	09:40	KGA	10/28/15	AQ	Groundwater Filtered	SHP-05-46B_FA115
MC42505-15	10/28/15	13:55	KGA	10/28/15	AQ	Ground Water	SHL-9_FA115
MC42505-15F	10/28/15	13:55	KGA	10/28/15	AQ	Groundwater Filtered	SHL-9_FA115

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC42505
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	11/14/2015 1:36:38 PM

15 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 10/28/2015 and were received at Accutest on 10/28/2015 properly preserved, at 2.9 Deg. C and intact. These Samples received an Accutest job number of MC42505. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP25386

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42505-1FMS, MC42505-1FMSD, MC42505-1FSDL were used as the QC samples for metals.
- MP25386-S1 for Manganese: Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- MC42505-1F for Manganese: Matrix spike recovery outside of the control limit. J-flag applied.

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP25386A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42505-1FMS, MC42505-1FMSD, MC42505-1FSDL were used as the QC samples for metals.

Wet Chemistry By Method ASTM516-90,02

Matrix: AQ **Batch ID:** GN52305

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-18DUP, MC42487-18MS were used as the QC samples for Sulfate.

Matrix: AQ **Batch ID:** GN52329

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42505-10DUP, MC42505-10MS were used as the QC samples for Sulfate.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ **Batch ID:** GN52318

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-19MS, MC42487-19MSD were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ	**Batch ID:** GN52273

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-18DUP, MC42487-18MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ	**Batch ID:** GN52274

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42505-4DUP, MC42505-4MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ	**Batch ID:** GN52306

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42541-4DUP, MC42541-4MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SW846 9060

Matrix: AQ	**Batch ID:** GN52331

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-18FMS, MC42487-18FMSD were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ	**Batch ID:** GN52332

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-9FMS, MC42426-9FMSD were used as the QC samples for Dissolved Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC42505).

Summary of Hits

Job Number: MC42505
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/28/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42505-1	**SHM-10-16_FA115**					
Alkalinity, Total as CaCO3		290	5.0	3.9	mg/l	SM21 2320B
Chloride		29.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		4.6 J	5.0	0.81	mg/l	ASTM516-90,02
MC42505-1F	**SHM-10-16_FA115**					
Arsenic		1760	50	25	ug/l	SW846 6020A
Iron		44600	500	250	ug/l	SW846 6010C
Manganese [a]		1410 J	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		4.0	1.0	0.084	mg/l	SW846 9060
MC42505-2	**SHM-05-42A_FA115**					
Alkalinity, Total as CaCO3		31.9	5.0	3.9	mg/l	SM21 2320B
Chloride		4.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		8.3	5.0	0.81	mg/l	ASTM516-90,02
MC42505-2F	**SHM-05-42A_FA115**					
Iron		122	100	50	ug/l	SW846 6010C
Manganese		199	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		0.98 J	1.0	0.084	mg/l	SW846 9060
MC42505-3	**SHM-05-42B_FA115**					
Alkalinity, Total as CaCO3		221	5.0	3.9	mg/l	SM21 2320B
Chloride		14.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		2.4 J	5.0	0.81	mg/l	ASTM516-90,02
MC42505-3F	**SHM-05-42B_FA115**					
Arsenic		206	10	5.0	ug/l	SW846 6020A
Iron		27500	500	250	ug/l	SW846 6010C
Manganese		6950	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		2.5	1.0	0.084	mg/l	SW846 9060
MC42505-4	**SHM-13-08_FA115**					
Alkalinity, Total as CaCO3		126	5.0	3.9	mg/l	SM21 2320B
Chloride		145	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		10.4	5.0	0.81	mg/l	ASTM516-90,02

Summary of Hits

Job Number: MC42505
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/28/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42505-4F	**SHM-13-08_FA115**					
Arsenic		954	50	25	ug/l	SW846 6020A
Iron		78000	500	250	ug/l	SW846 6010C
Manganese		1620	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.8	1.0	0.084	mg/l	SW846 9060
MC42505-5	**SHM-13-04_FA115**					
Alkalinity, Total as CaCO3		38.1	5.0	3.9	mg/l	SM21 2320B
Chloride		175	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		11.8	5.0	0.81	mg/l	ASTM516-90,02
MC42505-5F	**SHM-13-04_FA115**					
Arsenic		212	10	5.0	ug/l	SW846 6020A
Iron		4620	100	50	ug/l	SW846 6010C
Manganese		429	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		0.94 J	1.0	0.084	mg/l	SW846 9060
MC42505-6	**SHM-13-05_FA115**					
Alkalinity, Total as CaCO3		359	5.0	3.9	mg/l	SM21 2320B
Chloride		43.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		12.5	5.0	0.81	mg/l	ASTM516-90,02
MC42505-6F	**SHM-13-05_FA115**					
Arsenic		12.3	4.0	2.0	ug/l	SW846 6020A
Iron		3470	100	50	ug/l	SW846 6010C
Manganese		3660	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.9	1.0	0.084	mg/l	SW846 9060
MC42505-7	**SHP-95-27X_FA115**					
Alkalinity, Total as CaCO3		79.3	5.0	3.9	mg/l	SM21 2320B
Chloride		13.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		6.5	5.0	0.81	mg/l	ASTM516-90,02
MC42505-7F	**SHP-95-27X_FA115**					
Arsenic		100	4.0	2.0	ug/l	SW846 6020A
Iron		16200	100	50	ug/l	SW846 6010C
Manganese		8270	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		1.4	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42505
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/28/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42505-8	**SHP-01-38A_FA115**					
Alkalinity, Total as CaCO3		112	5.0	3.9	mg/l	SM21 2320B
Chloride		10.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		20.5	5.0	0.81	mg/l	ASTM516-90,02
MC42505-8F	**SHP-01-38A_FA115**					
Arsenic		314	10	5.0	ug/l	SW846 6020A
Iron		38400	500	250	ug/l	SW846 6010C
Manganese		2950	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.8	1.0	0.084	mg/l	SW846 9060
MC42505-9	**SHP-01-38B_FA115**					
Alkalinity, Total as CaCO3		145	5.0	3.9	mg/l	SM21 2320B
Chloride		43.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		7.0	5.0	0.81	mg/l	ASTM516-90,02
MC42505-9F	**SHP-01-38B_FA115**					
Arsenic		903	20	10	ug/l	SW846 6020A
Iron		43600	500	250	ug/l	SW846 6010C
Manganese		2320	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		4.4	1.0	0.084	mg/l	SW846 9060
MC42505-10	**SHM-97-32X_FA115**					
Alkalinity, Total as CaCO3		184	5.0	3.9	mg/l	SM21 2320B
Chloride		38.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		4.5 J	5.0	0.81	mg/l	ASTM516-90,02
MC42505-10F	**SHM-97-32X_FA115**					
Arsenic		76.4	4.0	2.0	ug/l	SW846 6020A
Iron		11200	100	50	ug/l	SW846 6010C
Manganese		7280	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		2.3	1.0	0.084	mg/l	SW846 9060
MC42505-11	**SHP-05-45B_FA115**					
Alkalinity, Total as CaCO3		185	5.0	3.9	mg/l	SM21 2320B
Chloride		43.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		12.3	5.0	0.81	mg/l	ASTM516-90,02

Summary of Hits

Job Number: MC42505
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/28/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42505-11F	**SHP-05-45B_FA115**					
Arsenic		24.5	4.0	2.0	ug/l	SW846 6020A
Iron		170	100	50	ug/l	SW846 6010C
Manganese		43.9	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.0	1.0	0.084	mg/l	SW846 9060
MC42505-12	**SHP-05-45A_FA115**					
Alkalinity, Total as CaCO3		109	5.0	3.9	mg/l	SM21 2320B
Chloride		7.5	1.0	0.76	mg/l	SM 4500 CL C-11
MC42505-12F	**SHP-05-45A_FA115**					
Arsenic		28.1	4.0	2.0	ug/l	SW846 6020A
Iron		17500	100	50	ug/l	SW846 6010C
Manganese		325	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		6.3	1.0	0.084	mg/l	SW846 9060
MC42505-13	**SHP-05-46A_FA115**					
Alkalinity, Total as CaCO3		64.9	5.0	3.9	mg/l	SM21 2320B
Chloride		3.0	1.0	0.76	mg/l	SM 4500 CL C-11
MC42505-13F	**SHP-05-46A_FA115**					
Arsenic		25.8	4.0	2.0	ug/l	SW846 6020A
Iron		6800	100	50	ug/l	SW846 6010C
Manganese		284	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.3	1.0	0.084	mg/l	SW846 9060
MC42505-14	**SHP-05-46B_FA115**					
Alkalinity, Total as CaCO3		93.7	5.0	3.9	mg/l	SM21 2320B
Chloride		26.5	1.0	0.76	mg/l	SM 4500 CL C-11
MC42505-14F	**SHP-05-46B_FA115**					
Arsenic		7.7	4.0	2.0	ug/l	SW846 6020A
Iron		8020	100	50	ug/l	SW846 6010C
Manganese		361	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		12.3	1.0	0.084	mg/l	SW846 9060

Summary of Hits

Job Number: MC42505
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/28/15

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42505-15	**SHL-9_FA115**					
Alkalinity, Total as CaCO3		82.4	5.0	3.9	mg/l	SM21 2320B
Chloride		13.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		1.6 J	5.0	0.81	mg/l	ASTM516-90,02
MC42505-15F	**SHL-9_FA115**					
Arsenic		18.5	4.0	2.0	ug/l	SW846 6020A
Iron		15900	100	50	ug/l	SW846 6010C
Manganese		451	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		11.1	1.0	0.084	mg/l	SW846 9060

(a) Matrix spike recovery outside of the control limit. J-flag applied.

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SHM-10-16_FA115		
Lab Sample ID:	MC42505-1	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	290	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	29.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	4.6 J	5.0	0.81	mg/l	1	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-16_FA115		
Lab Sample ID:	MC42505-1F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	1760	50	25	ug/l	25	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	44600	500	250	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese [a]	1410 J	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25386
(5) Prep QC Batch: MP25386A

(a) Matrix spike recovery outside of the control limit. J-flag applied.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-10-16_FA115		
Lab Sample ID:	MC42505-1F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.0	1.0	0.084	mg/l	1	11/12/15 20:58	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-42A_FA115		
Lab Sample ID:	MC42505-2	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	31.9	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	4.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	8.3	5.0	0.81	mg/l	1	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-42A_FA115		
Lab Sample ID:	MC42505-2F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/29/15	11/03/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	122	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	199	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-42A_FA115		
Lab Sample ID:	MC42505-2F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.98 J	1.0	0.084	mg/l	1	11/12/15 21:17	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-42B_FA115		
Lab Sample ID:	MC42505-3	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	221	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	14.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	2.4 J	5.0	0.81	mg/l	1	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-42B_FA115		
Lab Sample ID:	MC42505-3F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	206	10	5.0	ug/l	5	10/29/15	11/04/15	EAL	SW846 6020A [1]	SW846 3010A [4]
Iron	27500	500	250	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]
Manganese	6950	75	38	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA18629
(2) Instrument QC Batch: MA18633
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-42B_FA115		
Lab Sample ID:	MC42505-3F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.5	1.0	0.084	mg/l	1	11/12/15 22:05	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-08_FA115		
Lab Sample ID:	MC42505-4	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	126	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	145	10	7.6	mg/l	10	11/11/15	MC	SM 4500 CL C-11
Sulfate	10.4	5.0	0.81	mg/l	1	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-08_FA115		
Lab Sample ID:	MC42505-4F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	954	50	25	ug/l	25	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	78000	500	250	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	1620	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25386
(5) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-08_FA115		
Lab Sample ID:	MC42505-4F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.8	1.0	0.084	mg/l	1	11/12/15 22:22	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-04_FA115		
Lab Sample ID:	MC42505-5	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	38.1	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	175	10	7.6	mg/l	10	11/11/15	MC	SM 4500 CL C-11
Sulfate	11.8	5.0	0.81	mg/l	1	11/10/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-04_FA115		
Lab Sample ID:	MC42505-5F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	212	10	5.0	ug/l	5	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	4620	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	429	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-04_FA115		
Lab Sample ID:	MC42505-5F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	0.94 J	1.0	0.084	mg/l	1	11/12/15 22:38	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-05_FA115		
Lab Sample ID:	MC42505-6	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	359	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	43.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	12.5	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-05_FA115		
Lab Sample ID:	MC42505-6F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	12.3	4.0	2.0	ug/l	2	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	3470	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	3660	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-05_FA115		
Lab Sample ID:	MC42505-6F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.9	1.0	0.084	mg/l	1	11/12/15 22:55	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-95-27X_FA115		
Lab Sample ID:	MC42505-7	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	79.3	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	13.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	6.5	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-95-27X_FA115		
Lab Sample ID:	MC42505-7F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	100	4.0	2.0	ug/l	2	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	16200	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Manganese	8270	75	38	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25386
(5) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-95-27X_FA115		
Lab Sample ID:	MC42505-7F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.4	1.0	0.084	mg/l	1	11/12/15 23:09	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-38A_FA115		
Lab Sample ID:	MC42505-8	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	112	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	10.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	20.5	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-38A_FA115		
Lab Sample ID:	MC42505-8F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	314	10	5.0	ug/l	5	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	38400	500	250	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	2950	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25386
(5) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-38A_FA115		
Lab Sample ID:	MC42505-8F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.8	1.0	0.084	mg/l	1	11/13/15 02:50	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-38B_FA115		
Lab Sample ID:	MC42505-9	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	145	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	43.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	7.0	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-38B_FA115		
Lab Sample ID:	MC42505-9F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	903	20	10	ug/l	10	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	43600	500	250	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	2320	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25386
(5) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-01-38B_FA115		
Lab Sample ID:	MC42505-9F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.4	1.0	0.084	mg/l	1	11/13/15 03:08	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-97-32X_FA115		
Lab Sample ID:	MC42505-10	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	184	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	38.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	4.5 J	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-97-32X_FA115		
Lab Sample ID:	MC42505-10F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	76.4	4.0	2.0	ug/l	2	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	11200	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Manganese	7280	75	38	ug/l	5	10/29/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25386
(5) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-97-32X_FA115		
Lab Sample ID:	MC42505-10F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.3	1.0	0.084	mg/l	1	11/13/15 03:27	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-45B_FA115		
Lab Sample ID:	MC42505-11	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	185	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	43.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	12.3	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-45B_FA115		
Lab Sample ID:	MC42505-11F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	24.5	4.0	2.0	ug/l	2	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	170	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	43.9	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-45B_FA115		
Lab Sample ID:	MC42505-11F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.0	1.0	0.084	mg/l	1	11/13/15 03:44	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-45A_FA115		
Lab Sample ID:	MC42505-12	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	109	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	7.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	0.81 U	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-45A_FA115		
Lab Sample ID:	MC42505-12F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	28.1	4.0	2.0	ug/l	2	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	17500	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	325	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-45A_FA115		
Lab Sample ID:	MC42505-12F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	6.3	1.0	0.084	mg/l	1	11/13/15 04:32	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-46A_FA115		
Lab Sample ID:	MC42505-13	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	64.9	5.0	3.9	mg/l	1	11/07/15	MC	SM21 2320B
Chloride	3.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	0.81 U	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-46A_FA115		
Lab Sample ID:	MC42505-13F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	25.8	4.0	2.0	ug/l	2	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	6800	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	284	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-46A_FA115		
Lab Sample ID:	MC42505-13F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.3	1.0	0.084	mg/l	1	11/13/15 04:50	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-46B_FA115		
Lab Sample ID:	MC42505-14	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	93.7	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	26.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	0.81 U	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-46B_FA115		
Lab Sample ID:	MC42505-14F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	7.7	4.0	2.0	ug/l	2	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	8020	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	361	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-46B_FA115		
Lab Sample ID:	MC42505-14F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	12.3	1.0	0.084	mg/l	1	11/13/15 05:05	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-9_FA115		
Lab Sample ID:	MC42505-15	**Date Sampled:**	10/28/15
Matrix:	AQ - Ground Water	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	82.4	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	13.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	1.6 J	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-9_FA115		
Lab Sample ID:	MC42505-15F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	18.5	4.0	2.0	ug/l	2	10/29/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	15900	100	50	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	451	15	7.5	ug/l	1	10/29/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18629
(3) Prep QC Batch: MP25386
(4) Prep QC Batch: MP25386A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHL-9_FA115		
Lab Sample ID:	MC42505-15F	**Date Sampled:**	10/28/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/28/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	11.1	1.0	0.084	mg/l	1	11/13/15 05:21	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

(Plot 2)

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC42505
Accutest Control #:

Client Information		Facility Information	
Name	H&S Environmental	Project Name	Devens
Address	160 East Main Street, Suite 2F	Location	Shepley's
City	Westborough	Project No.	
State	MA Zip 01581		
Send Report to:	Laurie Ekes (lekes@hsenv.com)		
Phone #:	(508)367-7190	FAX #:	Office number (508) 366-7442

Analytical Information

	Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 ml P HNO3 (Field Filter)	Alklinity, Chloride, Sulfate 1-250 ml Poly 500	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl (Field Filter)
-1F	SHM-10-16_Fall15	10/28/15	1145	KGA	WG	4	2		1		1	X	X	X
-2F	SHM-05-42A_Fall15	10/28/15	1000	KGA	WG	4	2		1		1	X	X	X
-3F	SHM-05-42B_Fall15	10/28/15	1055	KGA	WG	4	2		1		1	X	X	X
-4F	SHM-13-08_Fall15	10/28/15	952		WG	4	2		1		1	X	X	X
-5F	SHM-13-04_Fall15	10/28/15	1112		WG	4	2		1		1	X	X	X
-6F	SHM-13-05_Fall15	10/28/15	1225		WG	4	2		1		1	X	X	X
-7F	SHP-95-27X_Fall15	10/28/15	1020		WG	4	2		1		1	X	X	X
-8F	SHP-01-38A_Fall15	10/28/15	1235		WG	4	2		1		1	X	X	X
-9F	SHP-01-38B_Fall15	10/28/15	1110		WG	4	2		1		1	X	X	X
-10F	SHM-99-32X_Fall15	10/28/15	1305		WG	4	2		1		1	X	X	X

Turnaround Information

- [x] 10 Day STD
- [ ] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020 Loc 14B, 6B,

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	10/28/15 1500	1 [signature]	2		2
3		3	4		4
5		5	Seal #	Preserved ☐	On Ice: ☑ 1.6°, 2.9°

MC42505: Chain of Custody
Page 1 of 3

(P2of2)

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC42505
Accutest Control #:

Client Information

Name: H&S Environmental
Address: 160 East Main Street, Suite 2F
City: Westborough
State: MA Zip: 01581
Send Report to: Laurie Ekes (lekes@hsenv.com)
Phone #: (508)367-7190

Facility Information

Project Name: Devens
Location: Shepley's
Project No.:
FAX #: Office number (508) 366-7442

Analytical Information

	Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 ml P HNO3 (Field Filt.)	Alkalinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl (Field Filt.)
-11F	SMP-05-45B_Fall15	10/28/15	1200		WG	4	2		1		1	X	X	X
-12F	SMP-05-45A_Fall15	10/28/15	1300		WG	4	2		1		1	X	X	X
-13F	SMP-05-46A_Fall15	10/28/15	1040		WG	4	2		1		1	X	X	X
-14F	SMP-05-46B_Fall15	10/28/15	940		WG	4	2		1		1	X	X	X
-15F	SHL-9_Fall15	10/28/15	1355		WG	4	2		1		1	X	X	X

Turnaround Information

- [x] 10 Day STD
- [ ] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	10/28/15 1500	1	2		2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by Sampler: 5	Date Time:	Received By: 5	Seal #	Preserved [ ]	On Ice: [x] 1.6, 2.9°

MC42505: Chain of Custody
Page 2 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42505 **Client:** H&S **Project:** DEVENS

Date / Time Received: 10/28/2015 3:00:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.6/1.6); #2: (2.9/2.9);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Thermometer ID:	G1;	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	2	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☐	☐	☑
2. Trip Blank listed on COC:	☐	☐	☑
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☐	☑

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC42505: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5 Limits

Job Number: MC42505
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/28/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP25386	SW846 6010C						
MP25386-B1	7439-89-6	Iron	BSP	REC	96.1	%	87-115
MP25386-B1	7439-96-5	Manganese	BSP	REC	94.4	%	90-114
MP25386-S1	7439-89-6	Iron	MS	REC	109	%	87-115
MP25386-S1	7439-96-5	Manganese	MS	REC	84 [a]	%	90-114
MP25386-S2	7439-89-6	Iron	MSD	REC	91	%	87-115
MP25386-S2	7439-89-6	Iron	MSD	RPD	3.3	%	20
MP25386-S2	7439-96-5	Manganese	MSD	REC	92	%	90-114
MP25386-S2	7439-96-5	Manganese	MSD	RPD	2.2	%	20
MP25386A	SW846 6020A						
MP25386A-B1	7440-38-2	Arsenic	BSP	REC	109	%	84-116
MP25386A-S1	7440-38-2	Arsenic	MS	REC	106	%	84-116
MP25386A-S2	7440-38-2	Arsenic	MSD	REC	96	%	84-116
MP25386A-S2	7440-38-2	Arsenic	MSD	RPD	2.2	%	20

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

* Sample used for QC is not from job MC42505

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	28		
Antimony	6.0	1.2	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.21	1		
Beryllium	4.0	.1	.25		
Bismuth	50	.89	2.1		
Boron	100	1	1.1		
Cadmium	4.0	.26	.43		
Calcium	5000	4.9	15		
Chromium	10	.29	.48		
Cobalt	50	.24	.28		
Copper	25	.58	2.4		
Gold	50	.91	1.5		
Iron	100	13	17	8.2	<100
Lead	5.0	1	1.7		
Lithium	500	.8	2.5		
Magnesium	5000	23	54		
Manganese	15	.11	1.4	0.60	<15
Molybdenum	100	.21	3.6		
Nickel	40	.24	.5		
Palladium	50	1.2	2.6		
Platinum	50	5.3	5.4		
Potassium	5000	30	49		
Selenium	10	2.3	2		
Silicon	100	1.1	30		
Silver	5.0	.43	1		
Sodium	5000	8	77		
Sulfur	50	1.7	4.6		
Strontium	10	.15	.22		
Thallium	5.0	1.2	1.7		
Tin	100	.69	.81		
Titanium	50	.46	.51		
Tungsten	100	2.8	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.29	.51		
Zinc	20	.3	1		
Zirconium	50	.19	1.2		

Associated samples MP25386: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	44600	55500	10000	109.0	75-125
Lead					
Lithium					
Magnesium					
Manganese	1410	1830	500	84.0 (a)	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25386: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	44600	53700	10000	91.0	3.3	20
Lead						
Lithium						
Magnesium						
Manganese	1410	1870	500	92.0	2.2	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386 | Methods: SW846 6010C
Matrix Type: AQUEOUS | Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25386: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	9610	10000	96.1	80-120
Lead				
Lithium				
Magnesium				
Manganese	472	500	94.4	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25386: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	44600	44800	0.4	0-10
Lead				
Lithium				
Magnesium				
Manganese	1410	1460	3.6	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original SDL 1:5	%DIF	QC Limits
Vanadium			
Zinc			
Zirconium			

Associated samples MP25386: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.46	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25386A: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	1760	2290	500	106.0	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25386A: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	1760	2240	500	96.0	2.2	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25386A: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	545	500	109.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25386A: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25386A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/29/15

Metal	MC42505-1F Original	SDL 25:125%	DIF	QC Limits
Aluminum				
Antimony				
Arsenic	1760	1680	4.3	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25386A: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F, MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN52273	5.0	0.0	mg/l	250	256	102.4	80-120%
Alkalinity, Total as CaCO3	GN52274	5.0	0.0	mg/l	250	253	101.2	80-120%
Alkalinity, Total as CaCO3	GN52306	5.0	2.1	mg/l	250	252	100.8	80-120%
Chloride	GN52318	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Dissolved Organic Carbon	GN52331	1.0	0.13	mg/l	10	9.69	96.9	80-120%
Dissolved Organic Carbon	GN52332	1.0	0.12	mg/l	10	9.61	96.1	80-120%
Sulfate	GN52305	5.0	0.0	mg/l	20	20.5	102.5	80-120%
Sulfate	GN52329	5.0	0.0	mg/l	20	20.2	101.0	80-120%

Associated Samples:
Batch GN52273: MC42505-1, MC42505-2, MC42505-3
Batch GN52274: MC42505-4, MC42505-5, MC42505-6, MC42505-7, MC42505-8, MC42505-9, MC42505-10, MC42505-11, MC42505-12, MC42505-13
Batch GN52305: MC42505-1, MC42505-2, MC42505-3, MC42505-4, MC42505-5
Batch GN52306: MC42505-14, MC42505-15
Batch GN52318: MC42505-1, MC42505-2, MC42505-3, MC42505-4, MC42505-5, MC42505-6, MC42505-7, MC42505-8, MC42505-9, MC42505-10, MC42505-11, MC42505-12, MC42505-13, MC42505-14, MC42505-15
Batch GN52329: MC42505-6, MC42505-7, MC42505-8, MC42505-9, MC42505-10, MC42505-11, MC42505-12, MC42505-13, MC42505-14, MC42505-15
Batch GN52331: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F
Batch GN52332: MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN52273	MC42487-18	mg/l	118	122	3.3	0-20%
Alkalinity, Total as CaCO3	GN52274	MC42505-4	mg/l	126	128	1.6	0-20%
Alkalinity, Total as CaCO3	GN52306	MC42541-4	mg/l	122	122	0.0	0-20%
Sulfate	GN52305	MC42487-18	mg/l	13.7	13.5	1.5	0-20%
Sulfate	GN52329	MC42505-10	mg/l	4.5	4.5	0.0	0-20%

Associated Samples:
Batch GN52273: MC42505-1, MC42505-2, MC42505-3
Batch GN52274: MC42505-4, MC42505-5, MC42505-6, MC42505-7, MC42505-8, MC42505-9, MC42505-10, MC42505-11, MC42505-12, MC42505-13
Batch GN52305: MC42505-1, MC42505-2, MC42505-3, MC42505-4, MC42505-5
Batch GN52306: MC42505-14, MC42505-15
Batch GN52329: MC42505-6, MC42505-7, MC42505-8, MC42505-9, MC42505-10, MC42505-11, MC42505-12, MC42505-13, MC42505-14, MC42505-15
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN52273	MC42487-18	mg/l	118	250	368	100.0	75-125%
Alkalinity, Total as CaCO3	GN52274	MC42505-4	mg/l	126	250	357	92.4	75-125%
Alkalinity, Total as CaCO3	GN52306	MC42541-4	mg/l	122	250	370	99.2	75-125%
Chloride	GN52318	MC42487-19	mg/l	24.0	10	34.5	105.0	75-125%
Dissolved Organic Carbon	GN52331	MC42487-18F	mg/l	2.2	10	11.7	95.0	75-125%
Dissolved Organic Carbon	GN52332	MC42426-9F	mg/l	0.10	10	9.8	97.0	75-125%
Sulfate	GN52305	MC42487-18	mg/l	13.7	20	32.9	96.0	75-125%
Sulfate	GN52329	MC42505-10	mg/l	4.5	20	25.2	103.5	75-125%

Associated Samples:
Batch GN52273: MC42505-1, MC42505-2, MC42505-3
Batch GN52274: MC42505-4, MC42505-5, MC42505-6, MC42505-7, MC42505-8, MC42505-9, MC42505-10, MC42505-11, MC42505-12, MC42505-13
Batch GN52305: MC42505-1, MC42505-2, MC42505-3, MC42505-4, MC42505-5
Batch GN52306: MC42505-14, MC42505-15
Batch GN52318: MC42505-1, MC42505-2, MC42505-3, MC42505-4, MC42505-5, MC42505-6, MC42505-7, MC42505-8, MC42505-9, MC42505-10, MC42505-11, MC42505-12, MC42505-13, MC42505-14, MC42505-15
Batch GN52329: MC42505-6, MC42505-7, MC42505-8, MC42505-9, MC42505-10, MC42505-11, MC42505-12, MC42505-13, MC42505-14, MC42505-15
Batch GN52331: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F
Batch GN52332: MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42505
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GN52318	MC42487-19	mg/l	24.0	10	34.5	0.0	
Dissolved Organic Carbon	GN52331	MC42487-18F	mg/l	2.2	10	10.6	9.9	
Dissolved Organic Carbon	GN52332	MC42426-9F	mg/l	0.10	10	9.7	1.0	

Associated Samples:
Batch GN52318: MC42505-1, MC42505-2, MC42505-3, MC42505-4, MC42505-5, MC42505-6, MC42505-7, MC42505-8, MC42505-9, MC42505-10, MC42505-11, MC42505-12, MC42505-13, MC42505-14, MC42505-15
Batch GN52331: MC42505-1F, MC42505-2F, MC42505-3F, MC42505-4F, MC42505-5F, MC42505-6F, MC42505-7F
Batch GN52332: MC42505-8F, MC42505-9F, MC42505-10F, MC42505-11F, MC42505-12F, MC42505-13F, MC42505-14F, MC42505-15F
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

11/16/15

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC42541

Sampling Date: 10/29/15

Report to:

H&S Environmental
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Westborough, MA 01581
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ATTN: Elizabeth Anderson

Total number of pages in report: **62**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Accutest Laboratories

Sample Summary

H&S Environmental

Job No: MC42541

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42541-1	10/29/15	10:28	WG	10/29/15	AQ	Ground Water	SHP-99-31A
MC42541-1F	10/29/15	10:28	WG	10/29/15	AQ	Groundwater Filtered	SHP-99-31A
MC42541-2	10/29/15	11:15	WG	10/29/15	AQ	Ground Water	SHP-99-31B
MC42541-2F	10/29/15	11:15	WG	10/29/15	AQ	Groundwater Filtered	SHP-99-31B
MC42541-3	10/29/15	11:30	WG	10/29/15	AQ	Ground Water	SHP-99-31C
MC42541-3F	10/29/15	11:30	WG	10/29/15	AQ	Groundwater Filtered	SHP-99-31C
MC42541-4	10/29/15	11:50	WG	10/29/15	AQ	Ground Water	N3-P1
MC42541-4F	10/29/15	11:50	WG	10/29/15	AQ	Groundwater Filtered	N3-P1
MC42541-5	10/29/15	11:05	WG	10/29/15	AQ	Ground Water	N3-P2
MC42541-5F	10/29/15	11:05	WG	10/29/15	AQ	Groundwater Filtered	N3-P2
MC42541-6	10/29/15	11:15	WG	10/29/15	AQ	Ground Water	SHM-05-39A
MC42541-6F	10/29/15	11:15	WG	10/29/15	AQ	Groundwater Filtered	SHM-05-39A
MC42541-7	10/29/15	12:24	WG	10/29/15	AQ	Ground Water	SHM-05-39B

Sample Summary
(continued)

H&S Environmental

Job No: MC42541

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC42541-7F	10/29/15	12:24	WG	10/29/15	AQ	Groundwater Filtered	SHM-05-39B
MC42541-8	10/29/15	10:22	WG	10/29/15	AQ	Ground Water	SHM-05-40X
MC42541-8F	10/29/15	10:22	WG	10/29/15	AQ	Groundwater Filtered	SHM-05-40X
MC42541-9	10/29/15	15:15	WG	10/29/15	AQ	Ground Water	SHP-05-43
MC42541-9F	10/29/15	15:15	WG	10/29/15	AQ	Groundwater Filtered	SHP-05-43

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC42541
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	11/16/2015 12:40:50 PM

9 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 10/29/2015 and were received at Accutest on 10/29/2015 properly preserved, at 3.1 Deg. C and intact. These Samples received an Accutest job number of MC42541. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP25399

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42541-1FMS, MC42541-1FMSD, MC42541-1FSDL were used as the QC samples for metals.

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP25399A

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42541-1FMS, MC42541-1FMSD, MC42541-1FSDL were used as the QC samples for metals.

Wet Chemistry By Method ASTM516-90,02

Matrix: AQ **Batch ID:** GN52330

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42541-1DUP, MC42541-1MS were used as the QC samples for Sulfate.

Matrix: AQ **Batch ID:** GN52349

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42541-9DUP, MC42541-9MS were used as the QC samples for Sulfate.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ	**Batch ID:** GN52318

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42487-19MS, MC42487-19MSD were used as the QC samples for Chloride.

Matrix: AQ	**Batch ID:** GN52322

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42607-35MS, MC42607-35MSD were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ	**Batch ID:** GN52306

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42541-4DUP, MC42541-4MS were used as the QC samples for Alkalinity, Total as CaCO3.

Matrix: AQ	**Batch ID:** GN52309

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42688-6DUP, MC42688-6MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SW846 9060

Matrix: AQ	**Batch ID:** GN52332

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-9FMS, MC42426-9FMSD were used as the QC samples for Dissolved Organic Carbon.

Matrix: AQ	**Batch ID:** GN52333

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-10FMS, MC42426-10FMSD were used as the QC samples for Dissolved Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC42541).

Summary of Hits

Job Number: MC42541
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/29/15

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Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42541-1	**SHP-99-31A**					
Alkalinity, Total as CaCO3		16.5	5.0	3.9	mg/l	SM21 2320B
Chloride		62.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		7.4	5.0	0.81	mg/l	ASTM516-90,02
MC42541-1F	**SHP-99-31A**					
Arsenic		18.7	4.0	2.0	ug/l	SW846 6020A
Iron		7300	100	50	ug/l	SW846 6010C
Manganese		443	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		2.4	1.0	0.084	mg/l	SW846 9060
MC42541-2	**SHP-99-31B**					
Alkalinity, Total as CaCO3		56.7	5.0	3.9	mg/l	SM21 2320B
Chloride		5.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		6.2	5.0	0.81	mg/l	ASTM516-90,02
MC42541-2F	**SHP-99-31B**					
Arsenic		58.7	4.0	2.0	ug/l	SW846 6020A
Iron		7430	100	50	ug/l	SW846 6010C
Manganese		340	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.5	1.0	0.084	mg/l	SW846 9060
MC42541-3	**SHP-99-31C**					
Alkalinity, Total as CaCO3		313	5.0	3.9	mg/l	SM21 2320B
Chloride		22.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		5.0	5.0	0.81	mg/l	ASTM516-90,02
MC42541-3F	**SHP-99-31C**					
Arsenic		194	10	5.0	ug/l	SW846 6020A
Iron		14700	100	50	ug/l	SW846 6010C
Manganese		5200	75	38	ug/l	SW846 6010C
Dissolved Organic Carbon		3.6	1.0	0.084	mg/l	SW846 9060
MC42541-4	**N3-P1**					
Alkalinity, Total as CaCO3		122	5.0	3.9	mg/l	SM21 2320B
Chloride		20.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		25.0	5.0	0.81	mg/l	ASTM516-90,02

Summary of Hits

Job Number: MC42541
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/29/15

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42541-4F	**N3-P1**					
Arsenic		11.5	4.0	2.0	ug/l	SW846 6020A
Dissolved Organic Carbon		2.1	1.0	0.084	mg/l	SW846 9060
MC42541-5	**N3-P2**					
Alkalinity, Total as CaCO3		37.1	5.0	3.9	mg/l	SM21 2320B
Chloride		3.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		5.2	5.0	0.81	mg/l	ASTM516-90,02
MC42541-5F	**N3-P2**					
Manganese		11.4 J	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.4	1.0	0.084	mg/l	SW846 9060
MC42541-6	**SHM-05-39A**					
Alkalinity, Total as CaCO3		56.7	5.0	3.9	mg/l	SM21 2320B
Chloride		17.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		5.4	5.0	0.81	mg/l	ASTM516-90,02
MC42541-6F	**SHM-05-39A**					
Manganese		417	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.8	1.0	0.084	mg/l	SW846 9060
MC42541-7	**SHM-05-39B**					
Alkalinity, Total as CaCO3		62.8	5.0	3.9	mg/l	SM21 2320B
Chloride		535	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		10.4	5.0	0.81	mg/l	ASTM516-90,02
MC42541-7F	**SHM-05-39B**					
Arsenic		293	10	5.0	ug/l	SW846 6020A
Iron		37800	500	250	ug/l	SW846 6010C
Manganese		1500	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		3.0	1.0	0.084	mg/l	SW846 9060
MC42541-8	**SHM-05-40X**					
Alkalinity, Total as CaCO3		174	5.0	3.9	mg/l	SM21 2320B
Chloride		13.0	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		4.5 J	5.0	0.81	mg/l	ASTM516-90,02

Summary of Hits

Job Number: MC42541
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/29/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC42541-8F	**SHM-05-40X**					
Arsenic		3060	100	50	ug/l	SW846 6020A
Iron		39800	500	250	ug/l	SW846 6010C
Manganese		955	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		4.3	1.0	0.084	mg/l	SW846 9060
MC42541-9	**SHP-05-43**					
Alkalinity, Total as CaCO3		33.0	5.0	3.9	mg/l	SM21 2320B
Chloride		26.5	1.0	0.76	mg/l	SM 4500 CL C-11
Sulfate		9.2	5.0	0.81	mg/l	ASTM516-90,02
MC42541-9F	**SHP-05-43**					
Dissolved Organic Carbon		10.1	1.0	0.084	mg/l	SW846 9060

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SHP-99-31A		
Lab Sample ID:	MC42541-1	**Date Sampled:**	10/29/15
Matrix:	AQ - Ground Water	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	16.5	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	62.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	7.4	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-31A		
Lab Sample ID:	MC42541-1F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	18.7	4.0	2.0	ug/l	2	10/30/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	7300	100	50	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	443	15	7.5	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18631
(3) Prep QC Batch: MP25399
(4) Prep QC Batch: MP25399A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-31A		
Lab Sample ID:	MC42541-1F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.4	1.0	0.084	mg/l	1	11/13/15 05:39	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-31B		
Lab Sample ID:	MC42541-2	**Date Sampled:**	10/29/15
Matrix:	AQ - Ground Water	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	56.7	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	5.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	6.2	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-31B		
Lab Sample ID:	MC42541-2F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	58.7	4.0	2.0	ug/l	2	10/30/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	7430	100	50	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	340	15	7.5	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18631
(3) Prep QC Batch: MP25399
(4) Prep QC Batch: MP25399A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-31B		
Lab Sample ID:	MC42541-2F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.5	1.0	0.084	mg/l	1	11/13/15 20:31	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-31C		
Lab Sample ID:	MC42541-3	**Date Sampled:**	10/29/15
Matrix:	AQ - Ground Water	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	313	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	22.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	5.0	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-31C		
Lab Sample ID:	MC42541-3F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	194	10	5.0	ug/l	5	10/30/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	14700	100	50	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]
Manganese	5200	75	38	ug/l	5	10/30/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18631
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25399
(5) Prep QC Batch: MP25399A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-99-31C		
Lab Sample ID:	MC42541-3F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.6	1.0	0.084	mg/l	1	11/13/15 20:47	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N3-P1		
Lab Sample ID:	MC42541-4	**Date Sampled:**	10/29/15
Matrix:	AQ - Ground Water	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	122	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	20.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	25.0	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N3-P1		
Lab Sample ID:	MC42541-4F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	11.5	4.0	2.0	ug/l	2	10/30/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18631
(3) Prep QC Batch: MP25399
(4) Prep QC Batch: MP25399A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N3-P1		
Lab Sample ID:	MC42541-4F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.1	1.0	0.084	mg/l	1	11/13/15 21:04	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N3-P2		
Lab Sample ID:	MC42541-5	**Date Sampled:**	10/29/15
Matrix:	AQ - Ground Water	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	37.1	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	3.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	5.2	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N3-P2		
Lab Sample ID:	MC42541-5F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/30/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	11.4 J	15	7.5	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18631
(3) Prep QC Batch: MP25399
(4) Prep QC Batch: MP25399A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	N3-P2		
Lab Sample ID:	MC42541-5F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.4	1.0	0.084	mg/l	1	11/13/15 21:19	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-39A		
Lab Sample ID:	MC42541-6	**Date Sampled:**	10/29/15
Matrix:	AQ - Ground Water	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	56.7	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	17.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	5.4	5.0	0.81	mg/l	1	11/12/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-39A		
Lab Sample ID:	MC42541-6F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/30/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	417	15	7.5	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18631
(3) Prep QC Batch: MP25399
(4) Prep QC Batch: MP25399A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-39A		
Lab Sample ID:	MC42541-6F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.8	1.0	0.084	mg/l	1	11/13/15 22:11	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-39B		
Lab Sample ID:	MC42541-7	**Date Sampled:**	10/29/15
Matrix:	AQ - Ground Water	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	62.8	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	535	10	7.6	mg/l	10	11/11/15	MC	SM 4500 CL C-11
Sulfate	10.4	5.0	0.81	mg/l	1	11/14/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-39B		
Lab Sample ID:	MC42541-7F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	293	10	5.0	ug/l	5	10/30/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	37800	500	250	ug/l	5	10/30/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	1500	15	7.5	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18631
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25399
(5) Prep QC Batch: MP25399A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-39B		
Lab Sample ID:	MC42541-7F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.0	1.0	0.084	mg/l	1	11/13/15 22:26	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-40X		
Lab Sample ID:	MC42541-8	**Date Sampled:**	10/29/15
Matrix:	AQ - Ground Water	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	174	5.0	3.9	mg/l	1	11/10/15	EL	SM21 2320B
Chloride	13.0	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	4.5 J	5.0	0.81	mg/l	1	11/14/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-40X		
Lab Sample ID:	MC42541-8F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3060	100	50	ug/l	50	10/30/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [5]
Iron	39800	500	250	ug/l	5	10/30/15	11/04/15	EC	SW846 6010C [3]	SW846 3010A [4]
Manganese	955	15	7.5	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18631
(3) Instrument QC Batch: MA18633
(4) Prep QC Batch: MP25399
(5) Prep QC Batch: MP25399A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-05-40X		
Lab Sample ID:	MC42541-8F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.3	1.0	0.084	mg/l	1	11/13/15 22:41	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-43		
Lab Sample ID:	MC42541-9	**Date Sampled:**	10/29/15
Matrix:	AQ - Ground Water	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	33.0	5.0	3.9	mg/l	1	11/11/15	MC	SM21 2320B
Chloride	26.5	1.0	0.76	mg/l	1	11/11/15	MC	SM 4500 CL C-11
Sulfate	9.2	5.0	0.81	mg/l	1	11/14/15	HS	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-43		
Lab Sample ID:	MC42541-9F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	2.0 U	4.0	2.0	ug/l	2	10/30/15	11/04/15	EAL	SW846 6020A [2]	SW846 3010A [4]
Iron	50 U	100	50	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]
Manganese	7.5 U	15	7.5	ug/l	1	10/30/15	11/02/15	EAL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18628
(2) Instrument QC Batch: MA18631
(3) Prep QC Batch: MP25399
(4) Prep QC Batch: MP25399A

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHP-05-43		
Lab Sample ID:	MC42541-9F	**Date Sampled:**	10/29/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/29/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	10.1	1.0	0.084	mg/l	1	11/13/15 22:56	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

CHAIN OF CUSTODY

ACCUTEST LABORATORIES

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC42541
Accutest Control #:

Client Information

Name: H&S Environmental
Address: 160 East Main Street, Suite 2F
City: Westborough
State: MA Zip: 01581
Send Report to: Laurie Ekes (lekes@hsenv.com)
Phone #: (508)367-7190

Facility Information

Project Name: Devens
Location: Shepley's
Project No.
FAX #: Office number (508) 366-7442

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation: VOC	NaOH	HNO3	H2SO4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3	Alklinity, Chloride, Sulfate 1-500ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl								
SHP-99-31A	10/29/15	1028	SE	WG	4	2		1		1	X	X	X							-1F	
SHP-99-31B		1115		WG	4	2		1		1	X	X	X							-2F	
SHP-99-31C		1130		WG	4	2		1		1	X	X	X							-3F	
N3-P1		1150		WG	4	2		1		1	X	X	X							-4F	
N3-P2		1105		WG	4	2		1		1	X	X	X							-5F	
SHM-OS-39A		1115		WG	4	2		1		1	X	X	X							-6F	
SHM-OS-39B		1224		WG	4	2		1		1	X	X	X							-7F	14D
SHM-OS-40X		1022		WG	4	2		1		1	X	X	X							-8F	6C
SHP-OS-43		1515		WG	4	2		1		1	X	X	X							-9F	

Turnaround Information

- [x] 10 Day STD
- [ ] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 S ENOS	10/29/15 17:00	1 [signature]	2		2
3		3	4		4
5		5	Seal #	Preserved ☐	On Ice: ☑ 3.1°

MC42541: Chain of Custody
Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC42541 **Client:** H-S **Project:**

Date / Time Received: 10/29/2015 5:00:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (3.1/3.1);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	G1;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☐
2. Trip Blank listed on COC:	☐		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC42541: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5 Limits

Job Number: MC42541
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 10/29/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP25399	SW846 6010C						
MP25399-B1	7439-89-6	Iron	BSP	REC	96	%	87-115
MP25399-B1	7439-96-5	Manganese	BSP	REC	97.2	%	90-114
MP25399-S1	7439-89-6	Iron	MS	REC	92	%	87-115
MP25399-S1	7439-96-5	Manganese	MS	REC	94.8	%	90-114
MP25399-S2	7439-89-6	Iron	MSD	REC	96	%	87-115
MP25399-S2	7439-89-6	Iron	MSD	RPD	2.4	%	20
MP25399-S2	7439-96-5	Manganese	MSD	REC	94.2	%	90-114
MP25399-S2	7439-96-5	Manganese	MSD	RPD	.3	%	20
MP25399A	SW846 6020A						
MP25399A-B1	7440-38-2	Arsenic	BSP	REC	105.8	%	84-116
MP25399A-S1	7440-38-2	Arsenic	MS	REC	104.5	%	84-116
MP25399A-S2	7440-38-2	Arsenic	MSD	REC	104.5	%	84-116
MP25399A-S2	7440-38-2	Arsenic	MSD	RPD	0	%	20

* Sample used for QC is not from job MC42541

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/30/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.3	28		
Antimony	6.0	1.2	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.21	1		
Beryllium	4.0	.1	.25		
Bismuth	50	.89	2.1		
Boron	100	1	1.1		
Cadmium	4.0	.26	.43		
Calcium	5000	4.9	15		
Chromium	10	.29	.48		
Cobalt	50	.24	.28		
Copper	25	.58	2.4		
Gold	50	.91	1.5		
Iron	100	13	17	11.5	<100
Lead	5.0	1	1.7		
Lithium	500	.8	2.5		
Magnesium	5000	23	54		
Manganese	15	.11	1.4	0.60	<15
Molybdenum	100	.21	3.6		
Nickel	40	.24	.5		
Palladium	50	1.2	2.6		
Platinum	50	5.3	5.4		
Potassium	5000	30	49		
Selenium	10	2.3	2		
Silicon	100	1.1	30		
Silver	5.0	.43	1		
Sodium	5000	8	77		
Sulfur	50	1.7	4.6		
Strontium	10	.15	.22		
Thallium	5.0	1.2	1.7		
Tin	100	.69	.81		
Titanium	50	.46	.51		
Tungsten	100	2.8	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/30/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.29	.51		
Zinc	20	.3	1		
Zirconium	50	.19	1.2		

Associated samples MP25399: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/30/15

Metal	MC42541-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	7300	16500	10000	92.0	75-125
Lead					
Lithium					
Magnesium					
Manganese	443	917	500	94.8	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/30/15

Metal	MC42541-1F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25399: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/30/15

Metal	MC42541-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	7300	16900	10000	96.0	2.4	20
Lead						
Lithium						
Magnesium						
Manganese	443	914	500	94.2	0.3	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/30/15

Metal	MC42541-1F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25399: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/30/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	9600	10000	96.0	80-120
Lead				
Lithium				
Magnesium				
Manganese	486	500	97.2	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/30/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25399: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/30/15

Metal	MC42541-1F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	7300	7650	4.8	0-10
Lead				
Lithium				
Magnesium				
Manganese	443	457	3.2	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/30/15

Metal	MC42541-1F Original SDL 1:5	%DIF	QC Limits
Vanadium			
Zinc			
Zirconium			

Associated samples MP25399: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/30/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.40	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25399A: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/30/15

Metal	MC42541-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	18.7	541	500	104.5	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25399A: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/30/15

Metal	MC42541-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	18.7	541	500	104.5	0.0	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25399A: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/30/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	529	500	105.8	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25399A: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25399A
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/30/15

Metal	MC42541-1F Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	18.7	18.0	3.5	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25399A: MC42541-1F, MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN52306	5.0	2.1	mg/l	250	252	100.8	80-120%
Alkalinity, Total as CaCO3	GN52309	5.0	0.0	mg/l	250	251	100.4	80-120%
Chloride	GN52318	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Chloride	GN52322	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Dissolved Organic Carbon	GN52332	1.0	0.12	mg/l	10	9.61	96.1	80-120%
Dissolved Organic Carbon	GN52333	1.0	0.22	mg/l	10	9.54	95.4	80-120%
Sulfate	GN52330	5.0	0.0	mg/l	20	20.6	103.0	80-120%
Sulfate	GN52349	5.0	0.0	mg/l	20	20.7	103.5	80-120%

Associated Samples:
Batch GN52306: MC42541-1, MC42541-2, MC42541-3, MC42541-4, MC42541-5, MC42541-6, MC42541-7, MC42541-8
Batch GN52309: MC42541-9
Batch GN52318: MC42541-1, MC42541-2, MC42541-3
Batch GN52322: MC42541-4, MC42541-5, MC42541-6, MC42541-7, MC42541-8, MC42541-9
Batch GN52330: MC42541-1, MC42541-2, MC42541-3, MC42541-4, MC42541-5, MC42541-6
Batch GN52332: MC42541-1F
Batch GN52333: MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F
Batch GN52349: MC42541-7, MC42541-8, MC42541-9
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN52306	MC42541-4	mg/l	122	122	0.0	0-20%
Alkalinity, Total as CaCO3	GN52309	MC42688-6	mg/l	197	193	2.1	0-20%
Sulfate	GN52330	MC42541-1	mg/l	7.4	7.6	2.7	0-20%
Sulfate	GN52349	MC42541-9	mg/l	9.2	9.3	1.1	0-20%

Associated Samples:
Batch GN52306: MC42541-1, MC42541-2, MC42541-3, MC42541-4, MC42541-5, MC42541-6, MC42541-7, MC42541-8
Batch GN52309: MC42541-9
Batch GN52330: MC42541-1, MC42541-2, MC42541-3, MC42541-4, MC42541-5, MC42541-6
Batch GN52349: MC42541-7, MC42541-8, MC42541-9
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN52306	MC42541-4	mg/l	122	250	370	99.2	75-125%
Alkalinity, Total as CaCO3	GN52309	MC42688-6	mg/l	197	250	445	99.2	75-125%
Chloride	GN52318	MC42487-19	mg/l	24.0	10	34.5	105.0	75-125%
Chloride	GN52322	MC42607-35	mg/l	48.5	10	59.5	110.0	75-125%
Dissolved Organic Carbon	GN52332	MC42426-9F	mg/l	0.10	10	9.8	97.0	75-125%
Dissolved Organic Carbon	GN52333	MC42426-10F	mg/l	0.21	10	9.6	93.9	75-125%
Sulfate	GN52330	MC42541-1	mg/l	7.4	20	28.0	103.0	75-125%
Sulfate	GN52349	MC42541-9	mg/l	9.2	20	29.9	103.5	75-125%

Associated Samples:
Batch GN52306: MC42541-1, MC42541-2, MC42541-3, MC42541-4, MC42541-5, MC42541-6, MC42541-7, MC42541-8
Batch GN52309: MC42541-9
Batch GN52318: MC42541-1, MC42541-2, MC42541-3
Batch GN52322: MC42541-4, MC42541-5, MC42541-6, MC42541-7, MC42541-8, MC42541-9
Batch GN52330: MC42541-1, MC42541-2, MC42541-3, MC42541-4, MC42541-5, MC42541-6
Batch GN52332: MC42541-1F
Batch GN52333: MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F
Batch GN52349: MC42541-7, MC42541-8, MC42541-9
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC42541
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GN52318	MC42487-19	mg/l	24.0	10	34.5	0.0	
Chloride	GN52322	MC42607-35	mg/l	48.5	10	59.5	0.0	
Dissolved Organic Carbon	GN52332	MC42426-9F	mg/l	0.10	10	9.7	1.0	
Dissolved Organic Carbon	GN52333	MC42426-10F	mg/l	0.21	10	9.8	2.1	

Associated Samples:
Batch GN52318: MC42541-1, MC42541-2, MC42541-3
Batch GN52322: MC42541-4, MC42541-5, MC42541-6, MC42541-7, MC42541-8, MC42541-9
Batch GN52332: MC42541-1F
Batch GN52333: MC42541-2F, MC42541-3F, MC42541-4F, MC42541-5F, MC42541-6F, MC42541-7F, MC42541-8F, MC42541-9F
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

New England ACCUTEST LABORATORIES

01/25/16

Effective January 1, 2016, SGS has acquired all of the assets of Accutest Laboratories and will continue to operate as SGS-Accutest. SGS-Accutest is part of SGS, the world's leading inspection, verification, testing and certification company.

Technical Report for

H&S Environmental

Fort Devens, Shepley's Hill, Devens, MA

Accutest Job Number: MC43671

Sampling Date: 12/22/15

Report to:

H&S Environmental

lekes@hsenv.com

ATTN: Laurie Ekes

Total number of pages in report: **35**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

H. (Brad) Madadian
Lab Director

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

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Test results relate only to samples analyzed.

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Accutest LabLink@164252 09:28 25-Jan-2016

Sample Summary

H&S Environmental

Job No: MC43671

Fort Devens, Shepley's Hill, Devens, MA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
MC43671-1	12/22/15	14:15	KGA	12/22/15	AQ	Ground Water	SHM-13-06_FAL15
MC43671-1F	12/22/15	14:15	KGA	12/22/15	AQ	Groundwater Filtered	SHM-13-06_FAL15

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	H&S Environmental	**Job No**	MC43671
Site:	Fort Devens, Shepley's Hill, Devens, MA	**Report Date**	1/5/2016 2:01:51 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 12/22/2015 and were received at Accutest on 12/22/2015 properly preserved, at 2.1 Deg. C and intact. These Samples received an Accutest job number of MC43671. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP25654

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC43671-1FMS, MC43671-1FMSD, MC43671-1FSDL were used as the QC samples for metals.

Metals By Method SW846 6020A

Matrix: AQ **Batch ID:** MP25655

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC43671-1FMS, MC43671-1FMSD, MC43671-1FSDL were used as the QC samples for metals.
- MC43671-1F for Arsenic: Matrix spike duplicate recovery outside of the control limit. J-flag applied.
- MP25655-S2 for Arsenic: Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Wet Chemistry By Method ASTM516-90,02

Matrix: AQ **Batch ID:** GN52778

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC43720-2DUP, MC43720-2MS were used as the QC samples for Sulfate.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ **Batch ID:** GN52737

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC43671-1MS, MC43671-1MSD were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 2320B

Matrix: AQ	**Batch ID:** GN52744

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC43671-1DUP, MC43671-1MS were used as the QC samples for Alkalinity, Total as CaCO3.

Wet Chemistry By Method SW846 9060

Matrix: AQ	**Batch ID:** GN52776

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC42426-13FMS, MC42426-13FMSD were used as the QC samples for Dissolved Organic Carbon.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC43671).

Summary of Hits

Job Number: MC43671
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 12/22/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
MC43671-1	**SHM-13-06_FAL15**					
Alkalinity, Total as CaCO3		56.7	5.0	3.9	mg/l	SM21 2320B
Chloride		192	10	7.6	mg/l	SM 4500 CL C-11
Sulfate		9.1	5.0	0.81	mg/l	ASTM516-90,02
MC43671-1F	**SHM-13-06_FAL15**					
Arsenic [a]		2160 J	100	50	ug/l	SW846 6020A
Iron		32600	500	250	ug/l	SW846 6010C
Manganese		1640	15	7.5	ug/l	SW846 6010C
Dissolved Organic Carbon		1.0	1.0	0.084	mg/l	SW846 9060

(a) Matrix spike duplicate recovery outside of the control limit. J-flag applied.

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SHM-13-06_FAL15		
Lab Sample ID:	MC43671-1	**Date Sampled:**	12/22/15
Matrix:	AQ - Ground Water	**Date Received:**	12/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	56.7	5.0	3.9	mg/l	1	12/26/15	MC	SM21 2320B
Chloride	192	10	7.6	mg/l	10	12/24/15	MC	SM 4500 CL C-11
Sulfate	9.1	5.0	0.81	mg/l	1	12/31/15	BF	ASTM516-90,02

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-06_FAL15		
Lab Sample ID:	MC43671-1F	**Date Sampled:**	12/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	12/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

Dissolved Metals Analysis

Analyte	Result	LOQ	LOD	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	2160 J	100	50	ug/l	50	12/28/15	12/30/15	VY	SW846 6020A [2]	SW846 3010A [4]
Iron	32600	500	250	ug/l	5	12/28/15	12/29/15	VY	SW846 6010C [1]	SW846 3010A [3]
Manganese	1640	15	7.5	ug/l	1	12/28/15	12/29/15	VY	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA18787
(2) Instrument QC Batch: MA18795
(3) Prep QC Batch: MP25654
(4) Prep QC Batch: MP25655

(a) Matrix spike duplicate recovery outside of the control limit. J-flag applied.

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

Report of Analysis

Client Sample ID:	SHM-13-06_FAL15		
Lab Sample ID:	MC43671-1F	**Date Sampled:**	12/22/15
Matrix:	AQ - Groundwater Filtered	**Date Received:**	12/22/15
		Percent Solids:	n/a
Project:	Fort Devens, Shepley's Hill, Devens, MA		

General Chemistry

Analyte	Result	LOQ	LOD	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.0	1.0	0.084	mg/l	1	12/30/15 22:36	CF	SW846 9060

LOQ = Limit of Quantitation
LOD = Limit of Detection

U = Indicates a result < LOD
J = Indicates a result > = LOD but < LOQ

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

495 Technology Center West
Building One, Marlbourough, MA 01752
508-481-6200 FAX: 508-481-7753

Accutest Job #: MC43671
Accutest Control #:

Client Information		Facility Information	
Name: H&S Environmental		Project Name: Devens	
Address: 160 East Main Street, Suite 2F		Location: Shepley's	
City: Westborough		Project No.	
State: MA	Zip: 01581		
Send Report to: Laurie Ekes (lekes@hsenv.com)			
Phone #: (508)367-7190		FAX #: Office number (508) 366-7442	

Analytical Information

Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Preservation: VOC	NaOH	HNO3	H2So4	None	Dissolved Metals (As, Fe, Mn) SW6010/6020 1-250 mlP HNO3	Alkinity, Chloride, Sulfate 1-250 ml Poly	Dissolved Organic Carbon (DOC) 2-40ml VOA HCl (phosphoric acid)
-1F SHM-13-06_FAL15	12/22/15	1415	1264	WG	~~4~~ 5	~~3~~ 3		1		1	✓	✓	✓

Turnaround Information

- [X] 10 Day STD
- [ ] 5 Day STD (By Contract only)
- [ ] 5 Day Rush
- [ ] 3 Day Rush
- [ ] 2 Day Rush
- [ ] 1 Day Rush

Approved By:

Data Deliverable Information

- [ ] Comm A
- [ ] Comm B
- [ ] Full T1
- [ ] Other
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP CAT A
- [ ] NYASP CATB

EDD Format:

Comments / Remarks

Analyze Arsenic by SW6020

13A 6C

Sample Custody must be documented below each time samples change possesion, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	12/22/15 1515	1 [signature]	2		2
3		3	4		4
5		5	Seal #	Preserved ☐ FRGKN1	On Ice: ☑ 2.1°C

5.1

5

MC43671: Chain of Custody
Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC43671 **Client:** H&S **Project:** DEVENS

Date / Time Received: 12/22/2015 3:15:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (2.1/2.1);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

MC43671: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5 Limits

Job Number: MC43671
Account: H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA
Collected: 12/22/15

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP25654	SW846 6010C						
MP25654-B1	7439-89-6	Iron	BSP	REC	97.3	%	87-115
MP25654-B1	7439-96-5	Manganese	BSP	REC	101.6	%	90-114
MP25654-S1	7439-89-6	Iron	MS	REC	104	%	87-115
MP25654-S1	7439-96-5	Manganese	MS	REC	112	%	90-114
MP25654-S2	7439-89-6	Iron	MSD	REC	103	%	87-115
MP25654-S2	7439-89-6	Iron	MSD	RPD	.2	%	20
MP25654-S2	7439-96-5	Manganese	MSD	REC	112	%	90-114
MP25654-S2	7439-96-5	Manganese	MSD	RPD	0	%	20
MP25655	SW846 6020A						
MP25655-B1	7440-38-2	Arsenic	BSP	REC	101.8	%	84-116
MP25655-S1	7440-38-2	Arsenic	MS	REC	116	%	84-116
MP25655-S2	7440-38-2	Arsenic	MSD	REC	130 [a]	%	84-116
MP25655-S2	7440-38-2	Arsenic	MSD	RPD	2.5	%	20

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

* Sample used for QC is not from job MC43671

New England ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	15	28		
Antimony	6.0	.76	2		
Arsenic	4.0	1.3	1.7		
Barium	50	.24	1		
Beryllium	4.0	.18	.25		
Bismuth	50	.9	2.1		
Boron	100	.43	1.1		
Cadmium	4.0	.14	.43		
Calcium	5000	5.3	15		
Chromium	10	.37	.48		
Cobalt	50	.14	.28		
Copper	25	.48	2.4		
Gold	50	.95	1.5		
Iron	100	3.2	17	10.6	<100
Lead	5.0	.56	1.7		
Lithium	500	2	2.5		
Magnesium	5000	22	54		
Manganese	15	.04	1.4	0.60	<15
Molybdenum	100	2	3.6		
Nickel	40	.19	.5		
Palladium	50	1.2	2.6		
Platinum	50	3.8	5.4		
Potassium	5000	40	49		
Selenium	10	1	2		
Silicon	100	13	30		
Silver	5.0	.6	1		
Sodium	5000	10	77		
Sulfur	50	1.6	4.6		
Strontium	10	.15	.22		
Thallium	5.0	.47	1.7		
Tin	100	.26	.81		
Titanium	50	.38	.51		
Tungsten	100	3.1	22		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.36	.51		
Zinc	20	.096	1		
Zirconium	50	.29	1.2		

Associated samples MP25654: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	MC43671-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Gold					
Iron	32600	43000	10000	104.0	75-125
Lead					
Lithium					
Magnesium					
Manganese	1640	2200	500	112.0	75-125
Molybdenum					
Nickel					
Palladium					
Platinum					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Sulfur					
Strontium					
Thallium					
Tin					
Titanium					
Tungsten					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	MC43671-1F Original MS	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25654: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	MC43671-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Gold						
Iron	32600	42900	10000	103.0	0.2	20
Lead						
Lithium						
Magnesium						
Manganese	1640	2200	500	112.0	0.0	20
Molybdenum						
Nickel						
Palladium						
Platinum						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Sulfur						
Strontium						
Thallium						
Tin						
Titanium						
Tungsten						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	MC43671-1F Original MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Vanadium					
Zinc					
Zirconium					

Associated samples MP25654: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	9730	10000	97.3	80-120
Lead				
Lithium				
Magnesium				
Manganese	508	500	101.6	80-120
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25654: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	MC43671-1F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron	32600	32700	0.4	0-10
Lead				
Lithium				
Magnesium				
Manganese	1640	1640	0.1	0-10
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25654
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/28/15

Metal	MC43671-1F Original	SDL 1:5	%DIF	QC Limits
Vanadium				
Zinc				
Zirconium				

Associated samples MP25654: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25655
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 12/28/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.2	4.4		
Antimony	4.0	.012	.058		
Arsenic	4.0	.1	.42	0.95	<4.0
Barium	2.0	.022	.076		
Beryllium	1.0	.0036	.042		
Boron	10	.072	.34		
Cadmium	2.0	.0056	.026		
Calcium	500	18	30		
Chromium	8.0	.096	.42		
Cobalt	1.0	.0017	.028		
Copper	8.0	.096	1		
Iron	50	2.2	3.4		
Lead	2.0	.0058	.036		
Magnesium	500	1.8	2		
Manganese	4.0	.052	1.2		
Molybdenum	2.0	.028	.24		
Nickel	4.0	.022	.14		
Potassium	500	7	5.2		
Selenium	2.0	.38	.3		
Silver	2.0	.0044	.022		
Sodium	500	4.2	8.8		
Strontium	20	.011	.026		
Thallium	2.0	.028	.068		
Tin	10	.018	.048		
Titanium	2.0	.074	.26		
Vanadium	20	.46	1.4		
Zinc	10	.26	2		

Associated samples MP25655: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25655
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 12/28/15

Metal	MC43671-1F Original	MS	Spikelot MPICP7	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	2160	2740	500	116.0	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP25655: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25655
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 12/28/15

Metal	MC43671-1F Original	MSD	Spikelot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	2160	2810	500	130.0(a)	2.5	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP25655: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25655
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 12/28/15

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	509	500	101.8	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25655: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

QC Batch ID: MP25655
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 12/28/15

Metal	MC43671-1F Original	SDL 50:250%DIF		QC Limits
Aluminum				
Antimony				
Arsenic	2160	2200	1.8	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP25655: MC43671-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN52744	5.0	0.0	mg/l	250	255	102.0	80-120%
Chloride	GN52737	1.0	0.0	mg/l	10	10.3	103.0	80-120%
Dissolved Organic Carbon	GN52776	1.0	0.060	mg/l	10	9.85	98.5	80-120%
Sulfate	GN52778	5.0	0.0	mg/l	20.0	20.6	103.0	80-120%

Associated Samples:
Batch GN52737: MC43671-1
Batch GN52744: MC43671-1
Batch GN52776: MC43671-1F
Batch GN52778: MC43671-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN52744	MC43671-1	mg/l	56.7	55.6	2.0	0-20%
Sulfate	GN52778	MC43720-2	mg/l	13.5	13.5	0.0	0-20%

Associated Samples:
Batch GN52744: MC43671-1
Batch GN52778: MC43671-1
(*) Outside of QC limits

7.2
7

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN52744	MC43671-1	mg/l	56.7	250	291	93.7	75-125%
Chloride	GN52737	MC43671-1	mg/l	192	100	292	100.0	75-125%
Dissolved Organic Carbon	GN52776	MC42426-13F	mg/l	0.045	10	9.9	98.6	75-125%
Sulfate	GN52778	MC43720-2	mg/l	13.5	20.0	33.6	100.5	75-125%

Associated Samples:
Batch GN52737: MC43671-1
Batch GN52744: MC43671-1
Batch GN52776: MC43671-1F
Batch GN52778: MC43671-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC43671
Account: HSMAW - H&S Environmental
Project: Fort Devens, Shepley's Hill, Devens, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GN52737	MC43671-1	mg/l	192	100	292	0.0	
Dissolved Organic Carbon	GN52776	MC42426-13F	mg/l	0.045	10	9.9	0.0	

Associated Samples:
Batch GN52737: MC43671-1
Batch GN52776: MC43671-1F
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

APPENDIX D

Analytical Validation Reports

SPRING 2015 DATA VALIDATION REPORTS

Dissolved Metals
SW 846/6010C/6020A/7470A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill Landfill	SDG #: MC39148
Laboratory: Accutest New England	Date: 08/19/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID:	Lab Sample ID:	Date Sampled:	Analysis	Matrix:
SHM-96-5B--6052015	MC-39148-1F	6/5/2015	Dissolved Metals	Groundwater
SHM-11-02-6052015	MC-39148-2F	6/5/2015	Dissolved Metals	Groundwater
SHL-20-06052015	MC-39148-3F	6/5/2015	Dissolved Metals	Groundwater
SHL-11-06052015	MC-39148-4F	6/4/2015	Dissolved Metals	Groundwater

Summary - Data validation was performed on the data for four (4) groundwater samples submitted for dissolved metals analyses by Methods SW846/6010C for target analyte metals, 6020A for arsenic only and 7470A for mercury.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 06/05/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – A matrix spike/matrix spike duplicate sample was not submitted with this sample set.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – A field duplicate sample was not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table

Client Sample ID:	**Lab Sample ID:**	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier
SHM-96-5B--6052015	MC-39148-1F	No qualification required.				
SHM-11-02-6052015	MC-39148-2F	No qualification required.				
SHL-20-06052015	MC-39148-3F	No qualification required.				
SHL-11-06052015	MC-39148-4F	No qualification required.				

Wet Chemistry
Total Alkalinity (SM2320B), Chloride (SM4500CL-C), Sulfate (E300.0), and
Dissolved Organic Carbon (DOC) (SM5310B)
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill Landfill	SDG #: MC39148
Laboratory: Accutest New England	Date: 08/19/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID:	Lab Sample ID:	Date Sampled:	Analysis	Matrix:
SHM-96-5B--6052015	MC-39148-1	6/5/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-96-5B--6052015	MC-39148-1F	6/5/2015	DOC	Groundwater
SHM-11-02-6052015	MC-39148-2	6/5/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-11-02-6052015	MC-39148-2F	6/5/2015	DOC	Groundwater
SHL-20-06052015	MC-39148-3	6/5/2015	Alkalinity, chloride, sulfate	Groundwater
SHL-20-06052015	MC-39148-3F	6/5/2015	DOC	Groundwater
SHL-11-06052015	MC-39148-4	6/4/2015	Alkalinity, chloride, sulfate	Groundwater
SHL-11-06052015	MC-39148-4F	6/4/2015	DOC	Groundwater

Summary - Data validation was performed on the data for four (4) groundwater samples submitted for the analyses listed above. The samples submitted for sulfate analyses were shipped to Accutest Laboratory in Dayton, NJ for analysis by method E300. Samples were filtered in the field for DOC analyses (sample ID suffix "F").

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for the following alkalinity, chloride and sulfate were free from contamination. Low level contamination was detected in the method blank analyzed for DOC (0.3 mg/L) yielding an action level of 1.5 mg/L. The DOC sample results were above the action level and no qualification is required.

Qualification: None required.

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/MSD – A matrix spike/duplicate sample was not submitted with this sample set.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Laboratory Duplicate – Laboratory duplicate (LD) analyses were not performed for samples in this SDG.

Qualification: None required.

Field Duplicate – Field duplicate samples were not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table (all concentrations in mg/L):

Client Sample ID:	**Lab Sample ID:**	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier
SHM-96-5B--6052015	MC-39148-1	No qualification required.				
SHM-96-5B--6052015	MC-39148-1F	No qualification required.				
SHM-11-02-6052015	MC-39148-2	No qualification required.				
SHM-11-02-6052015	MC-39148-2F	No qualification required.				
SHL-20-06052015	MC-39148-3	No qualification required.				
SHL-20-06052015	MC-39148-3F	No qualification required.				
SHL-11-06052015	MC-39148-4	No qualification required.				
SHL-11-06052015	MC-39148-4F	No qualification required.				

Dissolved Metals
SW 846/6010C/6020A/7470A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill Landfill	SDG #: MC39176
Laboratory: Accutest New England	Date: 08/20/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID:	Lab Sample ID:	Date Sampled:	Analysis	Matrix
SHM-13-08-60815	MC39176-1F	6/8/2015	Dissolved Metals	Groundwater
DUP-060815	MC39176-2F	6/8/2015	Dissolved Metals	Groundwater
SHL-12-060815	MC39176-3F	6/8/2015	Dissolved Metals	Groundwater
SHM-10-08-60815	MC39176-4F	6/8/2015	Dissolved Metals	Groundwater
SHM-10-02-60815	MC39176-5F	6/8/2015	Dissolved Metals	Groundwater
SHM-13-03-60815	MC39176-7F	6/8/2015	Dissolved Metals	Groundwater
SHM-13-07-60815	MC39176-8F	6/8/2015	Dissolved Metals	Groundwater
SHM-13-06-60815	MC39176-9F	6/8/2015	Dissolved Metals	Groundwater
SHM-10-04-60815	MC39176-10F	6/8/2015	Dissolved Metals	Groundwater
SHM-93-22B-60815	MC39176-11F	6/8/2015	Dissolved Metals	Groundwater
SHM-05-41B-60815	MC39176-12F	6/8/2015	Dissolved Metals	Groundwater
SHM-05-41C-60815	MC39176-13F	6/8/2015	Dissolved Metals	Groundwater
SHM-07-05X-60815	MC39176-14F	6/8/2015	Dissolved Metals	Groundwater
SHL-15-060815	MC39176-15F	6/8/2015	Dissolved Metals	Groundwater
RB-060815	MC39176-16F	6/8/2015	Dissolved Metals	Rinsate Blank

Summary - Data validation was performed on the data for sixteen (16) groundwater samples and one (1) rinsate blank sample submitted for dissolved metals analyses by Methods SW846/6010C for target analyte metals, 6020A for arsenic only and 7470A for mercury.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 06/09/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample SHM-13-08-60815 (Lab sample ID: MC39176-1F) was spiked and analyzed as Matrix Spike (MS) and Matrix Spike Duplicate (MSD) samples for all analytes. The percent recoveries (%R) and RPDs for all analytes met the laboratory control limits. It should be noted that the %Rs for iron (120%/130%) were above the DOD QSM upper limit of 115%. The spike level was less than four times (4X) the native sample result. The %R for manganese in the MS sample (80%) was below the DOD QSM lower limit but was within the laboratory limit; the MSD results (90%) and RPD (1.9%) were acceptable. No qualifications were required.

Qualification: None required. Laboratory qualifiers were removed.

Field Blank – Sample RB-060815 (Lab Sample ID: MC39176-16F) was a rinsate blank collected 6/8/2015 submitted with this sample set. The results for all target analytes were non-detect.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – One set of field duplicate (FD) samples was submitted with this sample set. Samples SHM-13-08-60815 (Lab sample ID: MC39176-1F) and DUP-060816 (Lab Sample ID: MC39176-2F) were the FD sample pair. The calculated RPDs between detected analytes were all less than 10%.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table

Client Sample ID:	Lab Sample ID:	Analyte	Lab Value	Lab Qualifier	Validated Value	Validation qualifier
SHM-13-08-60815	MC39176-1F	Iron	113,000	J	113,000	none
		Manganese	2,180	J	2,180	none
DUP-060815	MC39176-2F	No qualification required.				
SHL-12-060815	MC39176-3F	No qualification required.				
SHM-10-08-60815	MC39176-4F	No qualification required.				
SHM-10-02-60815	MC39176-5F	No qualification required.				
SHM-13-03-60815	MC39176-7F	No qualification required.				
SHM-13-07-60815	MC39176-8F	No qualification required.				

Client Sample ID:	Lab Sample ID:	Analyte	Lab Value	Lab Qualifier	Validated Value	Validation qualifier
SHM-13-06-60815	MC39176-9F	No qualification required.				
SHM-10-04-60815	MC39176-10F	No qualification required.				
SHM-93-22B-60815	MC39176-11F	No qualification required.				
SHM-05-41B-60815	MC39176-12F	No qualification required.				
SHM-05-41C-60815	MC39176-13F	No qualification required.				
SHM-07-05X-60815	MC39176-14F	No qualification required.				
SHL-15-060815	MC39176-15F	No qualification required.				
RB-060815	MC39176-16F	No qualification required.				

Note: RB = Rinsate Blank

Wet Chemistry

Total Alkalinity (SM2320B), Chloride (SM4500CL-C), Sulfate (E300.0), and Dissolved Organic Carbon (DOC) (SM5310B)

USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill Landfill	SDG #: MC39176
Laboratory: Accutest New England	Date: 08/20/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID:	Lab Sample ID:	Date Sampled:	Analysis	Matrix
SHM-13-08-60815	MC39176-1	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-13-08-60815	MC39176-1F	6/8/2015	DOC	Groundwater
DUP-060815	MC39176-2	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
DUP-060815	MC39176-2F	6/8/2015	DOC	Groundwater
SHL-12-060815	MC39176-3	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHL-12-060815	MC39176-3F	6/8/2015	DOC	Groundwater
SHM-10-08-60815	MC39176-4	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-10-08-60815	MC39176-4F	6/8/2015	DOC	Groundwater
SHM-10-02-60815	MC39176-5	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-10-02-60815	MC39176-5F	6/8/2015	DOC	Groundwater
SHM-13-03-60815	MC39176-7	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-13-03-60815	MC39176-7F	6/8/2015	DOC	Groundwater
SHM-13-07-60815	MC39176-8	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-13-07-60815	MC39176-8F	6/8/2015	DOC	Groundwater
SHM-13-06-60815	MC39176-9	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-13-06-60815	MC39176-9F	6/8/2015	DOC	Groundwater
SHM-10-04-60815	MC39176-10	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-10-04-60815	MC39176-10F	6/8/2015	DOC	Groundwater
SHM-93-22B-60815	MC39176-11	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-93-22B-60815	MC39176-11F	6/8/2015	DOC	Groundwater
SHM-05-41B-60815	MC39176-12	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-05-41B-60815	MC39176-12F	6/8/2015	DOC	Groundwater
SHM-05-41C-60815	MC39176-13	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-05-41C-60815	MC39176-13F	6/8/2015	DOC	Groundwater

Client Sample ID:	Lab Sample ID:	Date Sampled:	Analysis	Matrix
SHM-07-05X-60815	MC39176-14	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-07-05X-60815	MC39176-14F	6/8/2015	DOC	Groundwater
SHL-15-060815	MC39176-15	6/8/2015	Alkalinity, chloride, sulfate	Groundwater
SHL-15-060815	MC39176-15F	6/8/2015	DOC	Groundwater
RB-060815	MC39176-16	6/8/2015	Alkalinity, chloride, sulfate	Rnsate Blank
RB-060815	MC39176-16F	6/8/2015	DOC	Rinsate Blank

Summary - Data validation was performed on the data for sixteen (16) groundwater samples submitted for the analyses listed above. The samples submitted for sulfate analyses were shipped to Accutest Laboratory in Dayton, NJ for analysis by method E300. Samples were filtered in the field for DOC analyses (sample ID suffix "F").

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for all analytes (alkalinity, chloride, sulfate and DOC) were free from contamination. No qualification is required.

Qualification: None required.

Laboratory Control Sample – The LCS %R results for all methods/analytes associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS Sample– Sample SHM-13-08-60815 (Lab sample ID: MC39176-1/-1F for DOC) was spiked and analyzed as Matrix Spike (MS) sample for all analytes. The percent recoveries (%R) for all analytes met the laboratory %R control limits.

Qualification: None required.

Field Blanks – Sample RB-060815 (Lab Sample ID: MC39176-16F) was a rinsate blank collected 6/8/2015

submitted with this sample set. The results for all analytes were non-detect.

Qualification: None required.

Laboratory Duplicate – Sample SHM-13-08-60815 (Lab sample ID: MC39176-1/-1F for DOC) was analyzed as a laboratory duplicate sample for all analytes. The calculated RPDs for alkalinity, chloride and sulfate met the laboratory control limits. The RPD between the DOC results was 40%. This variation is likely due to the low level results detected in this sample.

Qualification: The DOC result in sample SHM-13-08-60815 (Lab sample ID: MC39176-1F) has been qualified as estimated (J).

Field Duplicate – One set of field duplicate (FD) samples was submitted with this sample set. Samples SHM-13-08-60815 (Lab sample ID: MC39176-1/-1F) and DUP-060815 (Lab Sample ID: MC39176-1/-2F) were the FD sample pair. The calculated RPDs for alkalinity and chloride were greater than 40%. The result for sulfate was non-detect in sample SHM-13-08-60815 (Lab sample ID: MC39176-1) but was detected in sample DUP-060515 (Lab Sample ID: MC39176-2) at 3.5 mg/L. The calculated RPD for DOC in the filtered samples was less than 10%.

Qualification: The results for alkalinity and chloride in the native sample and its duplicate have been qualified as estimated (J). The non-detect sulfate result for sample DUP-060816 (Lab Sample ID: MC39176-1) has been qualified as estimated non-detect (UJ).

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table (all concentrations in mg/L):

Client Sample ID:	Lab Sample ID:	Analyte	Lab Value	Lab Qualifier	Validated Value	Validation qualifier
SHM-13-08-60815	MC39176-1	Alkalinity	112	none	112	J
		chloride	140	none	140	J
		Sulfate	0.5	U	0.5	UJ
SHM-13-08-60815	MC39176-1F	DOC	2.4	none	2.4	J
DUP-060815	MC39176-2	Alkalinity	71.8	none	71.8	J
		chloride	220	none	220	J
		Sulfate	3.5	J	3.5	J
DUP-060815	MC39176-2F	No qualification required.				
SHL-12-060815	MC39176-3	No qualification required.				
SHL-12-060815	MC39176-3F	No qualification required.				
SHM-10-08-60815	MC39176-4	No qualification required.				
SHM-10-08-60815	MC39176-4F	No qualification required.				
SHM-10-02-60815	MC39176-5	No qualification required.				
SHM-10-02-60815	MC39176-5F	No qualification required.				
SHM-13-03-60815	MC39176-7	No qualification required.				

Client Sample ID:	Lab Sample ID:	Analyte	Lab Value	Lab Qualifier	Validated Value	Validation qualifier
SHM-13-03-60815	MC39176-7F	No qualification required.				
SHM-13-07-60815	MC39176-8	No qualification required.				
SHM-13-07-60815	MC39176-8F	No qualification required.				
SHM-13-06-60815	MC39176-9	No qualification required.				
SHM-13-06-60815	MC39176-9F	No qualification required.				
SHM-10-04-60815	MC39176-10	No qualification required.				
SHM-10-04-60815	MC39176-10F	No qualification required.				
SHM-93-22B-60815	MC39176-11	No qualification required.				
SHM-93-22B-60815	MC39176-11F	No qualification required.				
SHM-05-41B-60815	MC39176-12	No qualification required.				
SHM-05-41B-60815	MC39176-12F	No qualification required.				
SHM-05-41C-60815	MC39176-13	No qualification required.				
SHM-05-41C-60815	MC39176-13F	No qualification required.				
SHM-07-05X-60815	MC39176-14	No qualification required.				
SHM-07-05X-60815	MC39176-14F	No qualification required.				
SHL-15-060815	MC39176-15	No qualification required.				
SHL-15-060815	MC39176-15F	No qualification required.				
RB-060815	MC39176-16	No qualification required.				
RB-060815	MC39176-16F	No qualification required.				

Note: RB = Rinsate Blank

Dissolved Metals
SW 846/6010C/6020A/7470A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill Landfill	SDG #: MC39199
Laboratory: Accutest New England	Date: 08/20/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID:	Lab Sample ID:	Date Sampled:	Analysis	Matrix
SHL-24-060915	MC39199-1F	6/9/2015	Dissolved Metals	Groundwater
DUP-060915	MC39199-2F	6/9/2015	Dissolved Metals	Groundwater
SHL-23-060915	MC39199-3F	6/9/2015	Dissolved Metals	Groundwater
SHM-13-04-60915	MC39199-4F	6/9/2015	Dissolved Metals	Groundwater
SHM-07-03-60915	MC39199-5F	6/9/2015	Dissolved Metals	Groundwater
SHM-10-05A-60915	MC39199-6F	6/9/2015	Dissolved Metals	Groundwater
SHM-10-03-60915	MC39199-7F	6/9/2015	Dissolved Metals	Groundwater
SHM-10-01-60915	MC39199-8F	6/9/2015	Dissolved Metals	Groundwater
DUP-1-060915	MC39199-9F	6/9/2015	Dissolved Metals	Groundwater

Summary - Data validation was performed on the data for nine (9) groundwater samples submitted for dissolved metals analyses by Methods SW846/6010C for target analyte metals, 6020A for arsenic only and 7470A for mercury.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 06/09/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample SHM-13-04-60915 (Lab sample ID: MC39199-4F) was spiked and analyzed as Matrix Spike (MS) and Matrix Spike Duplicate (MSD) samples for all analytes. The percent recoveries (%R) for all analytes met the laboratory %R control limits. It should be noted that the %Rs for iron (120%/121%) were above the DOD QSM upper limit of 115% but were within the upper laboratory control limit of 125%. These high %Rs are likely due to the high concentration of iron in the native sample. No qualifications were required.

Qualification: None required. The laboratory qualifier for iron was removed.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Two sets of field duplicate (FD) samples were submitted with this sample set. Samples SHL-24-060915 (Lab sample ID: MC39199-1F) and DUP-060916 (Lab Sample ID: MC39199-2F) and SHM-10-1-60915 (Lab Sample ID: MC39199-8F) and DUP-1-060915 (Lab Sample ID: MC39199-9F) were FD sample pairs. The calculated RPDs between detected analytes were less than 10%.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table

Client Sample ID:	Lab Sample ID:	Analyte	Lab Value	Lab Qualifier	Validated Value	Validation qualifier
SHL-24-060915	MC39199-1F	No qualification required.				
DUP-060915	MC39199-2F	No qualification required.				
SHL-23-060915	MC39199-3F	No qualification required.				
SHM-13-04-60915	MC39199-4F	Iron	12,500	J	12,500	None
SHM-07-03-60915	MC39199-5F	No qualification required.				
SHM-10-05A-60915	MC39199-6F	No qualification required.				
SHM-10-03-60915	MC39199-7F	No qualification required.				
SHM-10-01-60915	MC39199-8F	No qualification required.				
DUP-1-060915	MC39199-9F	No qualification required.				

Wet Chemistry

Total Alkalinity (SM2320B), Chloride (SM4500CL-C), Sulfate (E300.0), and Dissolved Organic Carbon (DOC) (SM5310B)

USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill Landfill	SDG #: MC39199
Laboratory: Accutest New England	Date: 08/20/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID:	Lab Sample ID:	Date Sampled:	Analysis	Matrix
SHL-24-060915	MC39199-1	6/9/2015	Alkalinity, chloride, sulfate	Groundwater
SHL-24-060915	MC39199-1F	6/9/2015	DOC	Groundwater
DUP-060915	MC39199-2	6/9/2015	Alkalinity, chloride, sulfate	Groundwater
DUP-060915	MC39199-2F	6/9/2015	DOC	Groundwater
SHL-23-060915	MC39199-3	6/9/2015	Alkalinity, chloride, sulfate	Groundwater
SHL-23-060915	MC39199-3F	6/9/2015	DOC	Groundwater
SHM-13-04-60915	MC39199-4	6/9/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-13-04-60915	MC39199-4F	6/9/2015	DOC	Groundwater
SHM-07-03-60915	MC39199-5	6/9/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-07-03-60915	MC39199-5F	6/9/2015	DOC	Groundwater
SHM-10-05A-60915	MC39199-6	6/9/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-10-05A-60915	MC39199-6F	6/9/2015	DOC	Groundwater
SHM-10-03-60915	MC39199-7	6/9/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-10-03-60915	MC39199-7F	6/9/2015	DOC	Groundwater
SHM-10-01-60915	MC39199-8	6/9/2015	Alkalinity, chloride, sulfate	Groundwater
SHM-10-01-60915	MC39199-8F	6/9/2015	DOC	Groundwater
DUP-1-060915	MC39199-9	6/9/2015	Alkalinity, chloride, sulfate	Groundwater
DUP-1-060915	MC39199-9F	6/9/2015	DOC	Groundwater

Summary - Data validation was performed on the data for nine (9) groundwater samples submitted for the analyses listed above. The samples submitted for sulfate analyses were shipped to Accutest Laboratory in Dayton, NJ for analysis by method E300. Samples were filtered in the field for DOC analyses (sample ID suffix "F").

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for the following alkalinity, chloride and sulfate were free from contamination. Low level contamination was detected in the method blank analyzed for DOC (0.3 mg/L), yielding an action level of 1.5 mg/L. All DOC sample results were above the action level and no qualification is required.

Qualification: None required.

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS Sample– Sample SHM-13-04-60915 (Lab sample ID: MC39199-4 AND -4F for DOC) was spiked and analyzed as Matrix Spike (MS) sample for all analytes. The percent recoveries (%R) for all analytes met the laboratory %R control limits.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Laboratory Duplicate – Sample SHM-13-04-60915 (Lab sample ID: MC39199-4/-4F for DOC) was analyzed as a laboratory duplicate sample for all analytes. The calculated RPDs for alkalinity, chloride and sulfate met the laboratory control limits. The RPD between the DOC results was 43.1%. This variation is likely due to the low level results detected in this sample.

Qualification: The DOC result in sample SHM-13-04-60915 (Lab sample ID: MC39199-4F) has been qualified as estimated (J).

Field Duplicate – Two sets of field duplicate (FD) samples were submitted with this sample set. Samples SHL-24-060915 (Lab sample ID: MC39199-1/1F) and DUP-060916 (Lab Sample ID: MC39199-2/2F) and SHM-10-1-60915 (Lab Sample ID: MC39199-8/-8F) and DUP-1-060915 (Lab Sample ID: MC39199-9/-9F) were FD sample pairs. DOC was non-detect in sample SHL-24-060915 (Lab sample ID: MC39199-1F) but was detected in sample DUP-060916 (Lab Sample ID: MC39199-2F) at 0.52 mg/L. The calculated RPDs between all other

detected analytes were less than 10%.

Qualification: The non-detect DOC result for sample SHL-24-060915 (Lab sample ID: MC39199-1F) has been qualified as estimated non-detect (UJ).

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table (all concentrations in mg/L):

Client Sample ID:	Lab Sample ID:	Analyte	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
SHL-24-060915	MC39199-1	No qualification required.				
SHL-24-060915	MC39199-1F	DOC	0.36	U	0.36	UJ
DUP-060915	MC39199-2	No qualification required.				
DUP-060915	MC39199-2F	No qualification required.				
SHL-23-060915	MC39199-3	No qualification required.				
SHL-23-060915	MC39199-3F	No qualification required.				
SHM-13-04-60915	MC39199-4	No qualification required.				
SHM-13-04-60915	MC39199-4F	DOC	1.1	none	1.1	J
SHM-07-03-60915	MC39199-5	No qualification required.				
SHM-07-03-60915	MC39199-5F	No qualification required.				
SHM-10-05A-60915	MC39199-6	No qualification required.				
SHM-10-05A-60915	MC39199-6F	No qualification required.				
SHM-10-03-60915	MC39199-7	No qualification required.				
SHM-10-03-60915	MC39199-7F	No qualification required.				
SHM-10-01-60915	MC39199-8	No qualification required.				
SHM-10-01-60915	MC39199-8F	No qualification required.				
DUP-1-060915	MC39199-9	No qualification required.				
DUP-1-060915	MC39199-9F	No qualification required.				

FALL 2015 DATA VALIDATION REPORTS

Wet Chemistry

Alkalinity (SM2320B), Sulfate (SW9056), Chloride (SM4500 Cl) and Dissolved Organic Carbon (DOC) (SW9060)

USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42342
Laboratory: Accutest New England	Date: 11/12/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
SHM-96-5B_FA115	MC42342-3	10/21/2015	Miscellaneous Parameters	Groundwater
SHM-10-12_FA115	MC42342-4	10/21/2015	Miscellaneous Parameters	Groundwater
DUP2_FA115	MC42342-5	10/21/2015	Miscellaneous Parameters	Groundwater
SHM-96-5C_FA115	MC42342-6	10/21/2015	Miscellaneous Parameters	Groundwater
SHL-5_FA115	MC42342-7	10/21/2015	Miscellaneous Parameters	Groundwater
SHL-21_FA115	MC42342-8	10/21/2015	Miscellaneous Parameters	Groundwater
SHP-99-35X_FA115	MC42342-9	10/21/2015	Miscellaneous Parameters	Groundwater
SHP-05-44_FA115	MC42342-10	10/21/2015	Miscellaneous Parameters	Groundwater
SHM-10-11_FA115	MC42342-11	10/21/2015	Miscellaneous Parameters	Groundwater
SHM-10-06A_FA115	MC42342-12	10/21/2015	Miscellaneous Parameters	Groundwater
SHL-23_FA115	MC42342-13	10/21/2015	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for ten (10) groundwater samples and one (1) field duplicate sample submitted for the miscellaneous wet chemistry analyses listed above. Samples submitted for dissolved organic carbon (DOC) analyses were field filtered. The samples submitted for sulfate analyses were shipped to Accutest Laboratory in Dayton, NJ for sulfate analysis by method SW9056.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 10/21/2015, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for alkalinity, chloride and sulfate were free from contamination. Low level contamination was detected in the method blanks analyzed for DOC ranging from 0.086 mg/L to

0.18 mg/L. All reported DOC results were above five times the blank levels and the method reporting limits.

Qualification: None required.

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/MSD – Batch matrix spike/duplicate samples analyzed with these samples met the control limits established by the QAPP.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Field Duplicate – Samples SHM10-12_FA115 and DUP2_FA115 (Lab Sample IDs: MC42342-4 and -5) were field duplicate samples submitted with this sample set. There was excellent correlation between results. The results for the detected compounds are summarized in the table below:

Client Sample ID:		SHM-10-12_FA115	DUP2_FA115	RPD (%)
Lab Sample ID:		MC42342-4	MC42342-5	
Chloride	mg/l	4.5	4.5	0
Alkalinity, Total as CaCO3	mg/l	136	129	5.3
DOC	mg/l	4.1	3.6	13
Sulfate	mg/l	6.1	6.2	1.6

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as “ND”; these results should be considered the equivalent of “PQL U.” Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The miscellaneous parameter results reported in this SDG are acceptable as reported. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
SHM-96-5B_FA115	MC42342-3	Miscellaneous Parameters	No qualifications needed			
SHM-10-12_FA115	MC42342-4	Miscellaneous Parameters	No qualifications needed			
DUP2_FA115	MC42342-5	Miscellaneous Parameters	No qualifications needed			
SHM-96-5C_FA115	MC42342-6	Miscellaneous Parameters	No qualifications needed			
SHL-5_FA115	MC42342-7	Miscellaneous Parameters	No qualifications needed			
SHL-21_FA115	MC42342-8	Miscellaneous Parameters	No qualifications needed			
SHP-99-35X_FA115	MC42342-9	Miscellaneous Parameters	No qualifications needed			
SHP-05-44_FA115	MC42342-10	Miscellaneous Parameters	No qualifications needed			
SHM-10-11_FA115	MC42342-11	Miscellaneous Parameters	No qualifications needed			
SHM-10-06A_FA115	MC42342-12	Miscellaneous Parameters	No qualifications needed			
SHL-23_FA115	MC42342-13	Miscellaneous Parameters	No qualifications needed			

Wet Chemistry

Alkalinity (SM2320B), Sulfate (SW9056), Chloride (SM4500 Cl) and Dissolved Organic Carbon (DOC) (SW9060)

USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42370
Laboratory: Accutest New England	Date: 11/12/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analyses	Matrix
EPA-PZ-2012-2B_FA115	MC42370-1	10/22/2015	Miscellaneous Parameters	Groundwater
SHL-10_FALL15	MC42370-2	10/22/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-1B_FA115	MC42370-3	10/22/2015	Miscellaneous Parameters	Groundwater
DUP-5_FA115	MC42370-4	10/22/2015	Miscellaneous Parameters	Groundwater
SHL-3_FA115	MC42370-5	10/22/2015	Miscellaneous Parameters	Groundwater
SHM-10-14_FA115	MC42370-6	10/22/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-1A_FA115	MC42370-7	10/22/2015	Miscellaneous Parameters	Groundwater
SHM-10-07_FA115	MC42370-8	10/22/2015	Miscellaneous Parameters	Groundwater
DUP3_FA115	MC42370-9	10/22/2015	Miscellaneous Parameters	Groundwater
SHM-93-10C_FA115	MC42370-10	10/22/2015	Miscellaneous Parameters	Groundwater
SHL-13_FA115	MC42370-11	10/22/2015	Miscellaneous Parameters	Groundwater
SHP-99-29X_FA115	MC42370-12	10/22/2015	Miscellaneous Parameters	Groundwater
SHM-10-06_FA115	MC42370-13	10/22/2015	Miscellaneous Parameters	Groundwater
SHM-10-13_FA115	MC42370-14	10/22/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-2A_FA115	MC42370-15	10/22/2015	Miscellaneous Parameters	Groundwater
N7-P2-FA115	MC42370-16	10/22/2015	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for fourteen (14) groundwater samples and two (2) field duplicate samples submitted for the miscellaneous wet chemistry analyses listed above. Samples submitted for dissolved organic carbon (DOC) analyses were field filtered. The samples submitted for sulfate analyses were shipped to Accutest Laboratory in Dayton, NJ for sulfate analysis by method SW9056.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 10/22/2015, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for alkalinity, chloride and sulfate were free from contamination. Low level contamination was detected in the method blanks analyzed for DOC at 0.086 mg/L and 0.18 mg/L. The reported results for sample MC42370-2, -4 and -10 were below five times the blank levels. All remaining DOC results were above five times the blank levels and the method reporting limits.

Qualification: The DOC results from samples SHL-10_FALL15, DUP-5_FA115and SHM-93-10C_FA115 (Lab Sample IDs: MC42370-2, -4 and -10) have been qualified as non-detect.

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/MSD – Batch matrix spike/duplicate samples analyzed with these samples met the control limits established by the QAPP.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Field Duplicate – Samples SHP-99-29X_FA115 and DUP3_FA115 (Lab Sample IDs: MC42370-12 and -9) and samples SHL-10_FALL15 and DUP5_FA115 (Lab sample IDs: MC42370-2 and -4) were field duplicate samples submitted with this sample set. There was good correlation between detected results. The results for the detected compounds from both sets of FD samples are summarized in the table below:

Client Sample ID:		SHL-10_FALL15	DUP-5_FA115	
Lab Sample ID:		MC42370-2	MC42370-4	RPD (%R)
Chloride	mg/l	3.0	3.0	0
Alkalinity, Total as CaCO3	mg/l	36.1	38.1	2.7
Sulfate	mg/l	10.1	10.1	0
		SHP-99-29X_FA115	DUP3_FA115	
		MC42370-12	MC42370-9	RPD (%R)
Chloride	mg/l	2.8	3.0	6.9
Alkalinity, Total as CaCO3	mg/l	108	95.8	12
Dissolved Organic Carbon	mg/l	1.5	1.7	12.5
Sulfate	mg/l	6.2	7.1	13.5

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as “ND”; these results should be considered the equivalent of “PQL U.” Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

<u>Qualification Summary Table</u> - The miscellaneous parameter results reported in this SDG are acceptable with the indicated qualified results. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analyte/Analyses	Lab Value (mg/L)	Lab Qualifier	Validated Value (mg/L)	Validation Qualifier
EPA-PZ-2012-2B_FA115	MC42370-1	Miscellaneous Parameters	No qualifications needed			
SHL-10_FALL15	MC42370-2	DOC	0.5	J	1.0	U
EPA-PZ-2012-1B_FA115	MC42370-3	Miscellaneous Parameters	No qualifications needed			
DUP-5_FA115	MC42370-4	DOC	0.39	J	1.0	U
SHL-3_FA115	MC42370-5	Miscellaneous Parameters	No qualifications needed			
SHM-10-14_FA115	MC42370-6	Miscellaneous Parameters	No qualifications needed			
EPA-PZ-2012-1A_FA115	MC42370-7	Miscellaneous Parameters	No qualifications needed			
SHM-10-07_FA115	MC42370-8	Miscellaneous Parameters	No qualifications needed			
DUP3_FA115	MC42370-9	Miscellaneous Parameters	No qualifications needed			
SHM-93-10C_FA115	MC42370-10	DOC	0.83	J	1.0	U
SHL-13_FA115	MC42370-11	Miscellaneous Parameters	No qualifications needed			
SHP-99-29X_FA115	MC42370-12	Miscellaneous Parameters	No qualifications needed			
SHM-10-06_FA115	MC42370-13	Miscellaneous Parameters	No qualifications needed			
SHM-10-13_FA115	MC42370-14	Miscellaneous Parameters	No qualifications needed			
EPA-PZ-2012-2A_FA115	MC42370-15	Miscellaneous Parameters	No qualifications needed			
N7-P2-FA115	MC42370-16	Miscellaneous Parameters	No qualifications needed			

Wet Chemistry

Alkalinity (SM2320B), Sulfate (SW9056), Chloride (SM4500 Cl) and Dissolved Organic Carbon (DOC) (SW9060)

USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42414
Laboratory: Accutest New England	Date: 11/13/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analyses	Matrix
SHL-11_FA115	MC42414-1	10/23/2015	Miscellaneous Parameters	Groundwater
N5-P1_FA115	MC42414-2	10/23/2015	Miscellaneous Parameters	Groundwater
SHM-13-02_FA115	MC42414-3	10/23/2015	Miscellaneous Parameters	Groundwater
SHM-13-03_FA115	MC42414-4	10/23/2015	Miscellaneous Parameters	Groundwater
PSP-01_FA115	MC42414-5	10/23/2015	Miscellaneous Parameters	Groundwater
N7-P1_FA115	MC42414-6	10/23/2015	Miscellaneous Parameters	Groundwater
SHM-10-10_FA115	MC42414-7	10/23/2015	Miscellaneous Parameters	Groundwater
SHL-20_FA115	MC42414-8	10/23/2015	Miscellaneous Parameters	Groundwater
N5-P2_FA115	MC42414-9	10/23/2015	Miscellaneous Parameters	Groundwater
SHM-93_22B_FA115	MC42414-10	10/23/2015	Miscellaneous Parameters	Groundwater
SHM-93_22C_FA115	MC42414-11	10/23/2015	Miscellaneous Parameters	Groundwater
SHM-10-15_FA115	MC42414-12	10/23/2015	Miscellaneous Parameters	Groundwater
SHM-13-07_FA115	MC42414-13	10/23/2015	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for thirteen (13) groundwater samples submitted for the miscellaneous wet chemistry analyses listed above. Samples submitted for dissolved organic carbon (DOC) analyses were field filtered. The samples submitted for sulfate analyses were shipped to Accutest Laboratory in Dayton, NJ for sulfate analysis by method SW9056.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 10/23/2015, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for alkalinity, chloride and sulfate were free from contamination. Low level contamination was detected in the method blanks analyzed for DOC ranging at 0.03 mg/L and 0.2 mg/L. All reported DOC results were above five times the blank levels and the method reporting limits.

Qualification: None required.

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/MSD – Batch matrix spike/duplicate samples analyzed with these samples met the control limits established by the QAPP.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Field Duplicate – Field duplicate samples were not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The miscellaneous parameter results reported in this SDG are acceptable as reported. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analyses	Lab Value (mg/L)	Lab Qualifier	Validated Value (mg/L)	Validation Qualifier
SHL-11_FA115	MC42414-1	Miscellaneous Parameters	No qualifications needed.			
N5-P1_FA115	MC42414-2	Miscellaneous Parameters	No qualifications needed.			
SHM-13-02_FA115	MC42414-3	Miscellaneous Parameters	No qualifications needed.			
SHM-13-03_FA115	MC42414-4	Miscellaneous Parameters	No qualifications needed.			
PSP-01_FA115	MC42414-5	Miscellaneous Parameters	No qualifications needed.			
N7-P1_FA115	MC42414-6	Miscellaneous Parameters	No qualifications needed.			
SHM-10-10_FA115	MC42414-7	Miscellaneous Parameters	No qualifications needed.			
SHL-20_FA115	MC42414-8	Miscellaneous Parameters	No qualifications needed.			
N5-P2_FA115	MC42414-9	Miscellaneous Parameters	No qualifications needed.			
SHM-93_22B_FA115	MC42414-10	Miscellaneous Parameters	No qualifications needed.			
SHM-93_22C_FA115	MC42414-11	Miscellaneous Parameters	No qualifications needed.			
SHM-10-15_FA115	MC42414-12	Miscellaneous Parameters	No qualifications needed.			
SHM-13-07_FA115	MC42414-13	Miscellaneous Parameters	No qualifications needed.			

Wet Chemistry
Alkalinity (SM2320B), Sulfate (ASTM516-90), Chloride (SM4500 Cl) and Dissolved Organic Carbon (DOC) (SW9060)
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42448
Laboratory: Accutest New England	Date: 11/18/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analyses	Matrix
SHM-05-41B_FA115	MC42448-1	10/26/2015	Miscellaneous Parameters	Groundwater
DUP-1_FA115	MC42448-2	10/26/2015	Miscellaneous Parameters	Groundwater
SHM-05-41A_FA115	MC42448-3	10/26/2015	Miscellaneous Parameters	Groundwater
SHM-05-41C_FA115	MC42448-4	10/26/2015	Miscellaneous Parameters	Groundwater
SHL-22_FA115	MC42448-5	10/26/2015	Miscellaneous Parameters	Groundwater
DUP-4_FA115	MC42448-6	10/26/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-5B_FA115	MC42448-7	10/26/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-5A_FA115	MC42448-8	10/26/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-4B_FA115	MC42448-9	10/26/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-4A_FA115	MC42448-10	10/26/2015	Miscellaneous Parameters	Groundwater
N1-P2_FA115	MC42448-11	10/26/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-6B_FA115	MC42448-12	10/26/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-6A_FA115	MC42448-13	10/26/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-3A_FA115	MC42448-14	10/26/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-3B_FA115	MC42448-15	10/26/2015	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for thirteen (13) groundwater samples and two (2) field duplicate samples submitted for the miscellaneous wet chemistry analyses listed above. Samples submitted for dissolved organic carbon (DOC) analyses were field filtered.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. Sample MC42448-11F was logged in as N1-PZ_FA115; the correct location ID is N1-P2.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 10/26/2015, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the

QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for alkalinity, chloride and sulfate were free from contamination. Low level contamination was detected in the method blanks analyzed for DOC ranging from 0.03 mg/L to 0.18 mg/L. All reported DOC results were above five times the blank levels and the method reporting limits.

Qualification: None required.

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/MSD – Batch matrix spike/duplicate samples analyzed with these samples met the control limits established by the QAPP.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Field Duplicate – Samples SHM-05-41B_FA115 and DUP4_FA115 (Lab Sample IDs: MC42448-1 and 2) and samples EPA-PZ-2012-5A_FA115 and DUP4_FA115 (Lab sample IDs: MC4448-8 and -6) were field duplicate samples submitted with this sample set. There was excellent correlation between the detected results in FD samples MC42448-6 and -8. However, the detected results in the FD sample MC42448-1 and -2 varied greatly, possibly due to sample matrix effects. These results are summarized in the table below:

Client Sample ID:		DUP-1_FA115	SHM-05-41B_FA115	RPD (%R)
Lab Sample ID:		MC42448-2	MC42448-1	
Sulfate	mg/l	3.4	5.8	**52.1**
Chloride	mg/l	12.5	17.5	**33.3**
Alkalinity, Total as CaCO3	mg/l	38.1	34.0	11.3
DOC	mg/l	3.0	1.7	**55.3**
Client Sample ID:		DUP-4_FA115	EPA-PZ-2012-5A_FA115	
Lab Sample ID:		MC42448-6	MC42448-8	
Sulfate	mg/l	5.5	5.5	0
Chloride	mg/l	9.5	9.5	0
Alkalinity, Total as CaCO3	mg/l	21.6	21.6	0
DOC	mg/l	6.7	5.8	14.4

Qualification: The results for sulfate, chloride and DOC in samples MC42448-1 and -2 have been qualified as estimated.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The miscellaneous parameter results reported in this SDG are acceptable with the indicated qualified results. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	**Analyses**	**Lab Value (mg/L)**	**Lab Qualifier**	**Validated Value (mg/L)**	**Validation Qualifier**
SHM-05-41B_FA115	MC42448-1	Sulfate	3.4	J	3.4	J
		Chloride	12.5		12.5	J
		DOC	3.0		3.0	J
DUP-1_FA115	MC42448-2	Sulfate	5.8		5.8	J
		Chloride	17.5		17.5	J
		DOC	1.7		1.7	J
SHM-05-41A_FA115	MC42448-3	Miscellaneous Parameters	No qualifications needed.			
SHM-05-41C_FA115	MC42448-4	Miscellaneous Parameters	No qualifications needed.			
SHL-22_FA115	MC42448-5	Miscellaneous Parameters	No qualifications needed.			
DUP-4_FA115	MC42448-6	Miscellaneous Parameters	No qualifications needed.			
EPA-PZ-2012-5B_FA115	MC42448-7	Miscellaneous Parameters	No qualifications needed.			
EPA-PZ-2012-5A_FA115	MC42448-8	Miscellaneous Parameters	No qualifications needed.			
EPA-PZ-2012-4B_FA115	MC42448-9	Miscellaneous Parameters	No qualifications needed.			
EPA-PZ-2012-4A_FA115	MC42448-10	Miscellaneous Parameters	No qualifications needed.			
N1-PZ_FA115	MC42448-11	Miscellaneous Parameters	No qualifications needed.			
EPA-PZ-2012-6B_FA115	MC42448-12	Miscellaneous Parameters	No qualifications needed.			
EPA-PZ-2012-6A_FA115	MC42448-13	Miscellaneous Parameters	No qualifications needed.			
EPA-PZ-2012-3A_FA115	MC42448-14	Miscellaneous Parameters	No qualifications needed.			
EPA-PZ-2012-3B_FA115	MC42448-15	Miscellaneous Parameters	No qualifications needed.			

Wet Chemistry
Alkalinity (SM2320B), Sulfate (ASTM516-90), Chloride (SM4500 Cl) and Dissolved Organic Carbon (DOC) (SW9060)
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42487
Laboratory: Accutest New England	Date: 11/18/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	**Analyses**	**Matrix**
DUP-6_FA115	MC42487-1	10/27/2015	Miscellaneous Parameters	Groundwater
SHL-8S_FA115	MC42487-2	10/27/2015	Miscellaneous Parameters	Groundwater
SHL-8D_FA115	MC42487-3	10/27/2015	Miscellaneous Parameters	Groundwater
SHP-05-47B_FA115	MC42487-4	10/27/2015	Miscellaneous Parameters	Groundwater
SHL-18_FA115	MC42487-5	10/27/2015	Miscellaneous Parameters	Groundwater
SHM-11-02_FA115	MC42487-6	10/27/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-7A_FA115	MC42487-7	10/27/2015	Miscellaneous Parameters	Groundwater
SHM-13-01_FA115	MC42487-8	10/27/2015	Miscellaneous Parameters	Groundwater
EPA-PZ-2012-7B_FA115	MC42487-9	10/27/2015	Miscellaneous Parameters	Groundwater
SHP-01-37X_FA115	MC42487-10	10/27/2015	Miscellaneous Parameters	Groundwater
SHL-4_FA115	MC42487-11	10/27/2015	Miscellaneous Parameters	Groundwater
SHL-19_FA115	MC42487-12	10/27/2015	Miscellaneous Parameters	Groundwater
SHP-01-36X_FA115	MC42487-13	10/27/2015	Miscellaneous Parameters	Groundwater
N1-P1_FA115	MC42487-14	10/27/2015	Miscellaneous Parameters	Groundwater
N1-P3_FA115	MC42487-15	10/27/2015	Miscellaneous Parameters	Groundwater
N2-P1_FA115	MC42487-16	10/27/2015	Miscellaneous Parameters	Groundwater
N2-P2_FA115	MC42487-17	10/27/2015	Miscellaneous Parameters	Groundwater
SHM-11-06_FA115	MC42487-18	10/27/2015	Miscellaneous Parameters	Groundwater
SHL-24_FA115	MC42487-19	10/27/2015	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for eighteen (18) groundwater samples and one (1) field duplicate sample submitted for the miscellaneous wet chemistry analyses listed above. Samples submitted for dissolved organic carbon (DOC) analyses were field filtered.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 10/27/2015, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for alkalinity, chloride and sulfate were free from contamination. Low level contamination was detected in the method blanks analyzed for DOC ranging from 0.051 mg/L to 0.13 mg/L. The reported DOC results for most of the samples were above five times the blank levels and the method reporting limits.

Qualification: The low level DOC results reported in samples DUP6_FA115 and SHL-24+FA115 (Lab Sample IDs: MC42487-1 and -19) were qualified as non-detect (ND).

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/MSD – Batch matrix spike/duplicate samples analyzed with these samples met the control limits established by the QAPP.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Field Duplicate – Samples DUP6_FA115 and SHL-8S_FA115 (Lab Sample IDs: MC42487-1 and -2) were field duplicate samples submitted with this sample set. There was excellent correlation between the detected results.. These results are summarized in the table below:

Client Sample ID:		DUP-6_FA115	SHL-8S_FA115	
Lab Sample ID:		MC42487-1	MC42487-2	RPD
Sulfate	mg/l	7.2	7.3	1.4
Chloride	mg/l	6.0	6.0	0
Alkalinity, Total as CaCO3	mg/l	22.7	21.6	5

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as “ND”; these results should be considered the equivalent of “PQL U.” Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The miscellaneous parameter results reported in this SDG are acceptable with the indicated qualified results. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analyses	Lab Value (mg/L)	Lab Qualifier	Validated Value (mg/L)	Validation Qualifier
DUP-6_FA115	MC42487-1	DOC	0.21	J	1.0	U
SHL-8S_FA115	MC42487-2	Miscellaneous Parameters	No qualification needed			
SHL-8D_FA115	MC42487-3	Miscellaneous Parameters	No qualification needed			
SHP-05-47B_FA115	MC42487-4	Miscellaneous Parameters	No qualification needed			
SHL-18_FA115	MC42487-5	Miscellaneous Parameters	No qualification needed			
SHM-11-02_FA115	MC42487-6	Miscellaneous Parameters	No qualification needed			
EPA-PZ-2012-7A_FA115	MC42487-7	Miscellaneous Parameters	No qualification needed			
SHM-13-01_FA115	MC42487-8	Miscellaneous Parameters	No qualification needed			
EPA-PZ-2012-7B_FA115	MC42487-9	Miscellaneous Parameters	No qualification needed			
SHP-01-37X_FA115	MC42487-10	Miscellaneous Parameters	No qualification needed			
SHL-4_FA115	MC42487-11	Miscellaneous Parameters	No qualification needed			
SHL-19_FA115	MC42487-12	Miscellaneous Parameters	No qualification needed			
SHP-01-36X_FA115	MC42487-13	Miscellaneous Parameters	No qualification needed			
N1-P1_FA115	MC42487-14	Miscellaneous Parameters	No qualification needed			
N1-P3_FA115	MC42487-15	Miscellaneous Parameters	No qualification needed			
N2-P1_FA115	MC42487-16	Miscellaneous Parameters	No qualification needed			
N2-P2_FA115	MC42487-17	Miscellaneous Parameters	No qualification needed			
SHM-11-06_FA115	MC42487-18	Miscellaneous Parameters	No qualification needed			
SHL-24_FA115	MC42487-19	DOC	0.36	J	1.0	U

Wet Chemistry
Alkalinity (SM2320B), Sulfate (ASTM516-90), Chloride (SM4500 Cl) and Dissolved Organic Carbon (DOC) (SW9060)
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42505
Laboratory: Accutest New England	Date: 11/18/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	**Analyses**	**Matrix**
SHM-10-16_FA115	MC42505-1	10/28/2015	Miscellaneous Parameters	Groundwater
SHM-05-42A_FA115	MC42505-2	10/28/2015	Miscellaneous Parameters	Groundwater
SHM-05-42B_FA115	MC42505-3	10/28/2015	Miscellaneous Parameters	Groundwater
SHM-13-08_FA115	MC42505-4	10/28/2015	Miscellaneous Parameters	Groundwater
SHM-13-04_FA115	MC42505-5	10/28/2015	Miscellaneous Parameters	Groundwater
SHM-13-05_FA115	MC42505-6	10/28/2015	Miscellaneous Parameters	Groundwater
SHP-95-27X_FA115	MC42505-7	10/28/2015	Miscellaneous Parameters	Groundwater
SHP-01-38A_FA115	MC42505-8	10/28/2015	Miscellaneous Parameters	Groundwater
SHP-01-38B_FA115	MC42505-9	10/28/2015	Miscellaneous Parameters	Groundwater
SHM-97-32X_FA115	MC42505-10	10/28/2015	Miscellaneous Parameters	Groundwater
SHP-05-45B_FA115	MC42505-11	10/28/2015	Miscellaneous Parameters	Groundwater
SHP-05-45A_FA115	MC42505-12	10/28/2015	Miscellaneous Parameters	Groundwater
SHP-05-46A_FA115	MC42505-13	10/28/2015	Miscellaneous Parameters	Groundwater
SHP-05-46B_FA115	MC42505-14	10/28/2015	Miscellaneous Parameters	Groundwater
SHL-9_FA115	MC42505-15	10/28/2015	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for fifteen (15) groundwater samples submitted for the miscellaneous wet chemistry analyses listed above. Samples submitted for dissolved organic carbon (DOC) analyses were field filtered.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 10/28/2015, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for chloride and sulfate were free from contamination. Alkalinity was reported at a low level of alkalinity in the method blank analyzed in batch GN52306; associated field sample results were greater than five times this level. Low level contamination was detected in the method blanks analyzed for DOC at 0.13 and 0.16 mg/L. The reported DOC results for all samples were above five times the blank levels and the method reporting limits.

Qualification: None required.

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/MSD – Batch matrix spike/duplicate samples analyzed with these samples met the control limits established by the QAPP.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Field Duplicate – Field duplicate samples were not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The miscellaneous parameter results reported in this SDG are acceptable as reported. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analyses	Lab Value (mg/L)	Lab Qualifier	Validated Value (mg/L)	Validation Qualifier
SHM-10-16_FA115	MC42505-1	Miscellaneous Parameters	No qualification needed			
SHM-05-42A_FA115	MC42505-2	Miscellaneous Parameters	No qualification needed			
SHM-05-42B_FA115	MC42505-3	Miscellaneous Parameters	No qualification needed			
SHM-13-08_FA115	MC42505-4	Miscellaneous Parameters	No qualification needed			
SHM-13-04_FA115	MC42505-5	Miscellaneous Parameters	No qualification needed			
SHM-13-05_FA115	MC42505-6	Miscellaneous Parameters	No qualification needed			
SHP-95-27X_FA115	MC42505-7	Miscellaneous Parameters	No qualification needed			
SHP-01-38A_FA115	MC42505-8	Miscellaneous Parameters	No qualification needed			
SHP-01-38B_FA115	MC42505-9	Miscellaneous Parameters	No qualification needed			
SHM-97-32X_FA115	MC42505-10	Miscellaneous Parameters	No qualification needed			

Client Sample ID	Lab Sample ID	Analyses	Lab Value (mg/L)	Lab Qualifier	Validated Value (mg/L)	Validation Qualifier
SHP-05-45B_FA115	MC42505-11	Miscellaneous Parameters	No qualification needed			
SHP-05-45A_FA115	MC42505-12	Miscellaneous Parameters	No qualification needed			
SHP-05-46A_FA115	MC42505-13	Miscellaneous Parameters	No qualification needed			
SHP-05-46B_FA115	MC42505-14	Miscellaneous Parameters	No qualification needed			
SHL-9_FA115	MC42505-15	Miscellaneous Parameters	No qualification needed			

Wet Chemistry
Alkalinity (SM2320B), Sulfate (ASTM516-90), Chloride (SM4500 Cl) and Dissolved Organic Carbon (DOC) (SW9060)
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42541
Laboratory: Accutest New England	Date: 11/18/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analyses	Matrix
SHP-99-31A	MC42541-1	10/29/2015	Miscellaneous Parameters	Groundwater
SHP-99-31B	MC42541-2	10/29/2015	Miscellaneous Parameters	Groundwater
SHP-99-31C	MC42541-3	10/29/2015	Miscellaneous Parameters	Groundwater
N3-P1	MC42541-4	10/29/2015	Miscellaneous Parameters	Groundwater
N3-P2	MC42541-5	10/29/2015	Miscellaneous Parameters	Groundwater
SHM-05-39A	MC42541-6	10/29/2015	Miscellaneous Parameters	Groundwater
SHM-05-39B	MC42541-7	10/29/2015	Miscellaneous Parameters	Groundwater
SHM-05-40X	MC42541-8	10/29/2015	Miscellaneous Parameters	Groundwater
SHP-05-43	MC42541-9	10/29/2015	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for nine (9) groundwater samples submitted for the miscellaneous wet chemistry analyses listed above. Samples submitted for dissolved organic carbon (DOC) analyses were field filtered.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 10/29/2015, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for alkalinity, chloride and sulfate were free from contamination. Low level contamination was detected in the method blanks analyzed for DOC at 0.12 and 0.22 mg/L. The reported DOC results for all samples were above five times the blank levels and the method reporting limits.

Qualification: None required.

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/MSD – Batch matrix spike/duplicate samples analyzed with these samples met the control limits established by the QAPP.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Field Duplicate – Field duplicate samples were not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The miscellaneous parameter results reported in this SDG are acceptable as reported. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	**Analyses**	**Lab Value (mg/L)**	**Lab Qualifier**	**Validated Value (mg/L)**	**Validation Qualifier**
SHP-99-31A	MC42541-1	Miscellaneous Parameters	No qualification needed.			
SHP-99-31B	MC42541-2	Miscellaneous Parameters	No qualification needed.			
SHP-99-31C	MC42541-3	Miscellaneous Parameters	No qualification needed.			
N3-P1	MC42541-4	Miscellaneous Parameters	No qualification needed.			
N3-P2	MC42541-5	Miscellaneous Parameters	No qualification needed.			
SHM-05-39A	MC42541-6	Miscellaneous Parameters	No qualification needed.			
SHM-05-39B	MC42541-7	Miscellaneous Parameters	No qualification needed.			
SHM-05-40X	MC42541-8	Miscellaneous Parameters	No qualification needed.			
SHP-05-43	MC42541-9	Miscellaneous Parameters	No qualification needed.			

Wet Chemistry
Alkalinity (SM2320B), Sulfate (ASTM516-90), Chloride (SM4500 Cl) and Dissolved Organic Carbon (DOC) (SW9060)
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42671
Laboratory: Accutest New England	Date: 1/15/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analyses	Matrix
SHM-13-08_FAL15	MC43671-1	12/22/2015	Miscellaneous Parameters	Groundwater

Summary - Data validation was performed on the data for one (1) groundwater sample submitted for the miscellaneous wet chemistry analyses listed above. Samples submitted for dissolved organic carbon (DOC) analyses were field filtered.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory on 12/22/2015, in acceptable condition and temperature, and were properly preserved. Proper custody was documented.

Qualification: None required.

Holding Times – All samples were analyzed within the respective holding times required by the QAPP for preserved aqueous samples.

Qualification: None required.

Method Blank –The method blanks for alkalinity, chloride and sulfate were free from contamination. Low level contamination was detected in the method blank analyzed for DOC at 0.06 mg/L. The reported DOC result for this sample was above five times the blank level.

Qualification: None required.

Laboratory Control Sample – The LCS %R results for all methods associated with these samples met the control limits established by the QAPP.

Qualification: None required.

MS/MSD – Batch matrix spike/duplicate samples analyzed with these samples met the control limits established by the QAPP.

Qualification: None required.

Field Blanks – Field blank samples were not submitted with this sample set.

Qualification: None required.

Field Duplicate – Field duplicate samples were not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J-qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The miscellaneous parameter results reported in this SDG are acceptable as reported. The data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	**Analyses**	**Lab Value (mg/L)**	**Lab Qualifier**	**Validated Value (mg/L)**	**Validation Qualifier**
SHL-13-08_FAL15	MC43671-1	Miscellaneous Parameters	No qualification needed.			

Dissolved Metals
SW 846/6010C/5020A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42342
Laboratory: Accutest New England	Date: 11/12/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
SHM-96-5B_FA115	MC42342-3F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
SHM-10-12_FA115	MC42342-4F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
DUP2_FA115	MC42342-5F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
SHM-96-5C_FA115	MC42342-6F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
SHL-5_FA115	MC42342-7F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
SHL-21_FA115	MC42342-8F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
SHP-99-35X_FA115	MC42342-9F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
SHP-05-44_FA115	MC42342-10F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
SHM-10-11_FA115	MC42342-11F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
SHM-10-06A_FA115	MC42342-12F	10/21/2015	Dissolved As, Fe, Mn	Groundwater
SHL-23_FA115	MC42342-13F	10/21/2015	Dissolved As, Fe, Mn	Groundwater

Summary - Data validation was performed on the data for ten (10) groundwater samples and one (1) field duplicate sample collected and submitted for dissolved metals analyses by Method SW846/6010C for iron and manganese and Method SW846/6020A for arsenic.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/21/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample SHL23_FA115 (Lab Sample ID: MC42342-13F) was analyzed as MS/SD samples. The %Rs and RPDs were within acceptance limits for all target analytes.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Samples SHM10-12_FA115 and DUP2_FA115 (Lab Sample IDs: MC42342-4F and -5F) were field duplicate samples submitted with this sample set. There was excellent correlation between results. The results for the detected compounds are summarized in the table below:

Client Sample ID:		SHM-10-12_FA115	DUP2_FA115	RPD (%)
Lab Sample ID:		MC42342-4F	MC42342-5F	
Arsenic	ug/l	3850	3940	2.3
Iron	ug/l	85600	85900	0.03
Manganese	ug/l	7760	7790	0.38

Qualification: None required.

Compound Quantitation – Dilutions were required for arsenic, iron and/or manganese in some samples; both diluted and undiluted results were reported. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable as reported. No qualifications were required and the data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	**Lab Value**	**Lab Qualifier**	**Validated Value**	**Validation Qualifier**
SHM-96-5B_FA115	MC42342-3F	Dissolved As, Fe, Mn	No qualifications needed			
SHM-10-12_FA115	MC42342-4F	Dissolved As, Fe, Mn	No qualifications needed			
DUP2_FA115	MC42342-5F	Dissolved As, Fe, Mn	No qualifications needed			
SHM-96-5C_FA115	MC42342-6F	Dissolved As, Fe, Mn	No qualifications needed			
SHL-5_FA115	MC42342-7F	Dissolved As, Fe, Mn	No qualifications needed			
SHL-21_FA115	MC42342-8F	Dissolved As, Fe, Mn	No qualifications needed			
SHP-99-35X_FA115	MC42342-9F	Dissolved As, Fe, Mn	No qualifications needed			
SHP-05-44_FA115	MC42342-10F	Dissolved As, Fe, Mn	No qualifications needed			
SHM-10-11_FA115	MC42342-11F	Dissolved As, Fe, Mn	No qualifications needed			
SHM-10-06A_FA115	MC42342-12F	Dissolved As, Fe, Mn	No qualifications needed			
SHL-23_FA115	MC42342-13F	Dissolved As, Fe, Mn	No qualifications needed			

Dissolved Metals
SW 846/6010C/5020A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42370
Laboratory: Accutest New England	Date: 11/12/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
EPA-PZ-2012-2B_FA115	MC42370-1F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
SHL-10_FALL15	MC42370-2F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-1B_FA115	MC42370-3F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
DUP-5_FA115	MC42370-4F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
SHL-3_FA115	MC42370-5F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
SHM-10-14_FA115	MC42370-6F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-1A_FA115	MC42370-7F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
SHM-10-07_FA115	MC42370-8F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
DUP3_FA115	MC42370-9F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
SHM-93-10C_FA115	MC42370-10F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
SHL-13_FA115	MC42370-11F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
SHP-99-29X_FA115	MC42370-12F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
SHM-10-06_FA115	MC42370-13F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
SHM-10-13_FA115	MC42370-14F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-2A_FA115	MC42370-15F	10/22/2015	Dissolved As, Fe, Mn	Groundwater
N7-P2-FA115	MC42370-16F	10/22/2015	Dissolved As, Fe, Mn	Groundwater

<u>Summary</u> - Data validation was performed on the data for fourteen (14) groundwater samples and two (2) field duplicate samples collected and submitted for dissolved metals analyses by Method SW846/6010C for iron and manganese and Method SW846/6020A for arsenic.

<u>Narrative and Completeness Review</u> – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

<u>Sample Delivery and Condition</u> – All samples arrived at the laboratory on 10/22/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

<u>Holding Times</u> – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample EPA-PZ-2012-1A_FA115 (Lab Sample ID: MC42370-7) was analyzed as MS/SD samples. The %Rs and RPDs were within acceptance limits for all target analytes.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Samples SHP-99-29X_FA115 and DUP3_FA115 (Lab Sample IDs: MC42370-12F and -9F) and samples SHL-10_FALL15 and DUP5_FA115 (Lab sample IDs: MC42370-2F and -4F) were field duplicate samples submitted with this sample set. The results in FD samples MC42370-2F and -4F were non-detect for all analytes. There was excellent correlation between the FD results from samples MC42370-12F and -9F. These results are summarized in the table below:

Client Sample ID:		SHP-99-29X_FA115	DUP3_FA115	
Lab Sample ID:		MC42370-12F	MC42370-9F	RPD (%)
Arsenic	ug/l	3810	3920	2.8
Iron	ug/l	48500	47700	16.6
Manganese	ug/l	8340	8260	0.96

Qualification: None required.

Compound Quantitation – Dilutions were required for arsenic, iron and/or manganese in some samples; both diluted and undiluted results were reported. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable as reported. No qualifications were required and the data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	**Lab Value**	**Lab Qualifier**	**Validated Value**	**Validation Qualifier**
EPA-PZ-2012-2B_FA115	MC42370-1F	Dissolved As, Fe, Mn	No qualifications needed			
SHL-10_FALL15	MC42370-2F	Dissolved As, Fe, Mn	No qualifications needed			
EPA-PZ-2012-1B_FA115	MC42370-3F	Dissolved As, Fe, Mn	No qualifications needed			
DUP-5_FA115	MC42370-4F	Dissolved As, Fe, Mn	No qualifications needed			
SHL-3_FA115	MC42370-5F	Dissolved As, Fe, Mn	No qualifications needed			
SHM-10-14_FA115	MC42370-6F	Dissolved As, Fe, Mn	No qualifications needed			
EPA-PZ-2012-1A_FA115	MC42370-7F	Dissolved As, Fe, Mn	No qualifications needed			
SHM-10-07_FA115	MC42370-8F	Dissolved As, Fe, Mn	No qualifications needed			
DUP3_FA115	MC42370-9F	Dissolved As, Fe, Mn	No qualifications needed			
SHM-93-10C_FA115	MC42370-10F	Dissolved As, Fe, Mn	No qualifications needed			
SHL-13_FA115	MC42370-11F	Dissolved As, Fe, Mn	No qualifications needed			
SHP-99-29X_FA115	MC42370-12F	Dissolved As, Fe, Mn	No qualifications needed			
SHM-10-06_FA115	MC42370-13F	Dissolved As, Fe, Mn	No qualifications needed			
SHM-10-13_FA115	MC42370-14F	Dissolved As, Fe, Mn	No qualifications needed			
EPA-PZ-2012-2A_FA115	MC42370-15F	Dissolved As, Fe, Mn	No qualifications needed			
N7-P2-FA115	MC42370-16F	Dissolved As, Fe, Mn	No qualifications needed			

Dissolved Metals
SW 846/6010C/6020A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42414
Laboratory: Accutest New England	Date: 11/13/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
SHL-11_FA115	MC42414-1F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
N5-P1_FA115	MC42414-2F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
SHM-13-02_FA115	MC42414-3F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
SHM-13-03_FA115	MC42414-4F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
PSP-01_FA115	MC42414-5F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
N7-P1_FA115	MC42414-6F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
SHM-10-10_FA115	MC42414-7F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
SHL-20_FA115	MC42414-8F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
N5-P2_FA115	MC42414-9F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
SHM-93_22B_FA115	MC42414-10F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
SHM-93_22C_FA115	MC42414-11F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
SHM-10-15_FA115	MC42414-12F	10/23/2015	Dissolved As, Fe, Mn	Groundwater
SHM-13-07_FA115	MC42414-13F	10/23/2015	Dissolved As, Fe, Mn	Groundwater

Summary - Data validation was performed on the data for thirteen (13) groundwater samples collected and submitted for dissolved metals analyses by Method SW846/6010C for iron and manganese and Method SW846/6020A for arsenic.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/23/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample SHL11_FA115 (Lab Sample ID: MC42414-1F) was spiked and analyzed as matrix spike/matrix spike duplicate samples. The %Rs and RPDs were within control limits with the exception of manganese. The result for manganese in this sample was greater than four times the spike level.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Field duplicate samples were not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Dilutions were required for arsenic, iron and/or manganese in some samples; both diluted and undiluted results were reported. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable as reported. No qualifications were required and the data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	**Lab Value**	**Lab Qualifier**	**Validated Value**	**Validation Qualifier**
SHL-11_FA115	MC42414-1F	Dissolved As, Fe, Mn	No qualifications needed.			
N5-P1_FA115	MC42414-2F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-13-02_FA115	MC42414-3F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-13-03_FA115	MC42414-4F	Dissolved As, Fe, Mn	No qualifications needed.			
PSP-01_FA115	MC42414-5F	Dissolved As, Fe, Mn	No qualifications needed.			
N7-P1_FA115	MC42414-6F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-10-10_FA115	MC42414-7F	Dissolved As, Fe, Mn	No qualifications needed.			
SHL-20_FA115	MC42414-8F	Dissolved As, Fe, Mn	No qualifications needed.			
N5-P2_FA115	MC42414-9F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-93_22B_FA115	MC42414-10F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-93_22C_FA115	MC42414-11F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-10-15_FA115	MC42414-12F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-13-07_FA115	MC42414-13F	Dissolved As, Fe, Mn	No qualifications needed.			

Dissolved Metals
SW 846/6010C/6020A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42448
Laboratory: Accutest New England	Date: 11/12/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
SHM-05-41B_FA115	MC42448-1F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
DUP-1_FA115	MC42448-2F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
SHM-05-41A_FA115	MC42448-3F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
SHM-05-41C_FA115	MC42448-4F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
SHL-22_FA115	MC42448-5F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
DUP-4_FA115	MC42448-6F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-5B_FA115	MC42448-7F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-5A_FA115	MC42448-8F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-4B_FA115	MC42448-9F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-4A_FA115	MC42448-10F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
N1-P2_FA115	MC42448-11F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-6B_FA115	MC42448-12F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-6A_FA115	MC42448-13F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-3A_FA115	MC42448-14F	10/26/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-3B_FA115	MC42448-15F	10/26/2015	Dissolved As, Fe, Mn	Groundwater

Summary - Data validation was performed on the data for thirteen (13) groundwater samples and two (2) field duplicate samples collected and submitted for dissolved metals analyses by Method SW846/6010C for iron and manganese and Method SW846/6020A for arsenic.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. Sample MC42448-11F was logged in as N1-PZ_FA115; the correct location ID is N1-P2. The correction has been made in the data reporting tables.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/26/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Matrix spike samples were not submitted with this sample set.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Samples SHM-05-41B_FA115 and DUP4_FA115 (Lab Sample IDs: MC42448-1F and 2F) and samples EPA-PZ-2012-5A_FA115 and DUP4_FA115 (Lab sample IDs: MC4448-8F and -6F) were field duplicate samples submitted with this sample set. There was good correlation between the detected results in both sets of FD samples. These results are summarized in the table below:

Client Sample ID:		SHM-05-41B_FA115	DUP-1_FA115	RPD (%R)
Lab Sample ID:		MC42448-1F	MC42448-2F	
Arsenic	ug/l	614	573	6.9
Iron	ug/l	27300	25400	7.2
Manganese	ug/l	890	843	5.4
Client Sample ID:		EPA-PZ-2012-5A_FA115	DUP-4_FA115	
Lab Sample ID:		MC42448-8F	MC42448-6F	
Iron	ug/l	6560	6570	0.15
Manganese	ug/l	90.4	94.2	4.1

Qualification: None required.

Compound Quantitation – Dilutions were required for arsenic, iron and/or manganese in some samples; both diluted and undiluted results were reported. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable as reported. No qualifications were required and the data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
SHM-05-41B_FA115	MC42448-1F	Dissolved As, Fe, Mn	No qualifications needed.			
DUP-1_FA115	MC42448-2F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-05-41A_FA115	MC42448-3F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-05-41C_FA115	MC42448-4F	Dissolved As, Fe, Mn	No qualifications needed.			
SHL-22_FA115	MC42448-5F	Dissolved As, Fe, Mn	No qualifications needed.			
DUP-4_FA115	MC42448-6F	Dissolved As, Fe, Mn	No qualifications needed.			
EPA-PZ-2012-5B_FA115	MC42448-7F	Dissolved As, Fe, Mn	No qualifications needed.			
EPA-PZ-2012-5A_FA115	MC42448-8F	Dissolved As, Fe, Mn	No qualifications needed.			
EPA-PZ-2012-4B_FA115	MC42448-9F	Dissolved As, Fe, Mn	No qualifications needed.			
EPA-PZ-2012-4A_FA115	MC42448-10F	Dissolved As, Fe, Mn	No qualifications needed.			
N1-P2_FA115	MC42448-11F	Dissolved As, Fe, Mn	No qualifications needed.			
EPA-PZ-2012-6B_FA115	MC42448-12F	Dissolved As, Fe, Mn	No qualifications needed.			
EPA-PZ-2012-6A_FA115	MC42448-13F	Dissolved As, Fe, Mn	No qualifications needed.			
EPA-PZ-2012-3A_FA115	MC42448-14F	Dissolved As, Fe, Mn	No qualifications needed.			
EPA-PZ-2012-3B_FA115	MC42448-15F	Dissolved As, Fe, Mn	No qualifications needed.			

Dissolved Metals
SW 846/6010C/6020A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42487
Laboratory: Accutest New England	Date: 11/18/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
DUP-6_FA115	MC42487-1F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHL-8S_FA115	MC42487-2F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHL-8D_FA115	MC42487-3F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHP-05-47B_FA115	MC42487-4F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHL-18_FA115	MC42487-5F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHM-11-02_FA115	MC42487-6F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-7A_FA115	MC42487-7F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHM-13-01_FA115	MC42487-8F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
EPA-PZ-2012-7B_FA115	MC42487-9F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHP-01-37X_FA115	MC42487-10F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHL-4_FA115	MC42487-11F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHL-19_FA115	MC42487-12F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHP-01-36X_FA115	MC42487-13F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
N1-P1_FA115	MC42487-14F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
N1-P3_FA115	MC42487-15F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
N2-P1_FA115	MC42487-16F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
N2-P2_FA115	MC42487-17F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHM-11-06_FA115	MC42487-18F	10/27/2015	Dissolved As, Fe, Mn	Groundwater
SHL-24_FA115	MC42487-19F	10/27/2015	Dissolved As, Fe, Mn	Groundwater

Summary - Data validation was performed on the data for eighteen (18) groundwater samples and one (q) field duplicate sample collected and submitted for dissolved metals analyses by Method SW846/6010C for iron and manganese and Method SW846/6020A for arsenic.

Narrative and Completeness Review – The case narrative and data package were checked for completeness and the case narrative is missing. The lab has been notified (11/18). .

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/27/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample SHM-11-06_FA115 (Lab Sample ID: MC42487-18F) was spiked and analyzed as MS/MSD. The %Rs and RPDs for all analytes were within control limits.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Samples SHL-8S_FA115 and DUP6_FA115 (Lab Sample IDs: MC42487-1F and 2F) were field duplicate samples submitted with this sample set. Arsenic was detected at 2.6 µg/L in sample DUP6_FA115 but was non-detect at 4.0 µg/L in sample SHL-8S_FA115. The results for iron and manganese were non-detect in both samples.

Qualification: None required.

Compound Quantitation – Dilutions were required for arsenic, iron and/or manganese in a few samples; both diluted and undiluted results were reported. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable as reported. No qualifications were required and the data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
DUP-6_FA115	MC42487-1F	Dissolved As, Fe, Mn	No qualifications needed.			
SHL-8S_FA115	MC42487-2F	Dissolved As, Fe, Mn	No qualifications needed.			
SHL-8D_FA115	MC42487-3F	Dissolved As, Fe, Mn	No qualifications needed.			
SHP-05-47B_FA115	MC42487-4F	Dissolved As, Fe, Mn	No qualifications needed.			
SHL-18_FA115	MC42487-5F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-11-02_FA115	MC42487-6F	Dissolved As, Fe, Mn	No qualifications needed.			

Client Sample ID	Lab Sample ID	Analysis	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
EPA-PZ-2012-7A_FA115	MC42487-7F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-13-01_FA115	MC42487-8F	Dissolved As, Fe, Mn	No qualifications needed.			
EPA-PZ-2012-7B_FA115	MC42487-9F	Dissolved As, Fe, Mn	No qualifications needed.			
SHP-01-37X_FA115	MC42487-10F	Dissolved As, Fe, Mn	No qualifications needed.			
SHL-4_FA115	MC42487-11F	Dissolved As, Fe, Mn	No qualifications needed.			
SHL-19_FA115	MC42487-12F	Dissolved As, Fe, Mn	No qualifications needed.			
SHP-01-36X_FA115	MC42487-13F	Dissolved As, Fe, Mn	No qualifications needed.			
N1-P1_FA115	MC42487-14F	Dissolved As, Fe, Mn	No qualifications needed.			
N1-P3_FA115	MC42487-15F	Dissolved As, Fe, Mn	No qualifications needed.			
N2-P1_FA115	MC42487-16F	Dissolved As, Fe, Mn	No qualifications needed.			
N2-P2_FA115	MC42487-17F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-11-06_FA115	MC42487-18F	Dissolved As, Fe, Mn	No qualifications needed.			
SHL-24_FA115	MC42487-19F	Dissolved As, Fe, Mn	No qualifications needed.			

Dissolved Metals
SW 846/6010C/6020A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42505
Laboratory: Accutest New England	Date: 11/18/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	**Analysis**	**Matrix**
SHM-10-16_FA115	MC42505-1F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHM-05-42A_FA115	MC42505-2F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHM-05-42B_FA115	MC42505-3F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHM-13-08_FA115	MC42505-4F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHM-13-04_FA115	MC42505-5F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHM-13-05_FA115	MC42505-6F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHP-95-27X_FA115	MC42505-7F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHP-01-38A_FA115	MC42505-8F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHP-01-38B_FA115	MC42505-9F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHM-97-32X_FA115	MC42505-10F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHP-05-45B_FA115	MC42505-11F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHP-05-45A_FA115	MC42505-12F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHP-05-46A_FA115	MC42505-13F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHP-05-46B_FA115	MC42505-14F	10/28/2015	Dissolved As, Fe, Mn	Groundwater
SHL-9_FA115	MC42505-15F	10/28/2015	Dissolved As, Fe, Mn	Groundwater

Summary - Data validation was performed on the data for fifteen (15) groundwater samples collected and submitted for dissolved metals analyses by Method SW846/6010C for iron and manganese and Method SW846/6020A for arsenic.

Narrative and Completeness Review – The case narrative and data package were checked for completeness and the case narrative is missing. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/28/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample SHM-10-16_FA115 (Lab Sample ID: MC42505-1F) was spiked and analyzed as MS/MSD. The %Rs and RPDs for all analytes were within control limits.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Field duplicate samples were not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Dilutions were required for arsenic, iron and/or manganese in a few samples; both diluted and undiluted results were reported. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable as reported. No qualifications were required and the data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	**Analysis**	**Lab Value**	**Lab Qualifier**	**Validated Value**	**Validation Qualifier**
SHM-10-16_FA115	MC42505-1F	Dissolved As, Fe, Mn	No qualification needed.			
SHM-05-42A_FA115	MC42505-2F	Dissolved As, Fe, Mn	No qualification needed.			
SHM-05-42B_FA115	MC42505-3F	Dissolved As, Fe, Mn	No qualification needed.			
SHM-13-08_FA115	MC42505-4F	Dissolved As, Fe, Mn	No qualification needed.			
SHM-13-04_FA115	MC42505-5F	Dissolved As, Fe, Mn	No qualification needed.			
SHM-13-05_FA115	MC42505-6F	Dissolved As, Fe, Mn	No qualification needed.			
SHP-95-27X_FA115	MC42505-7F	Dissolved As, Fe, Mn	No qualification needed.			
SHP-01-38A_FA115	MC42505-8F	Dissolved As, Fe, Mn	No qualification needed.			
SHP-01-38B_FA115	MC42505-9F	Dissolved As, Fe, Mn	No qualification needed.			
SHM-97-32X_FA115	MC42505-10F	Dissolved As, Fe, Mn	No qualification needed.			
SHP-05-45B_FA115	MC42505-11F	Dissolved As, Fe, Mn	No qualification needed.			
SHP-05-45A_FA115	MC42505-12F	Dissolved As, Fe, Mn	No qualification needed.			
SHP-05-46A_FA115	MC42505-13F	Dissolved As, Fe, Mn	No qualification needed.			
SHP-05-46B_FA115	MC42505-14F	Dissolved As, Fe, Mn	No qualification needed.			
SHL-9_FA115	MC42505-15F	Dissolved As, Fe, Mn	No qualification needed.			

Dissolved Metals
SW 846/6010C/6020A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC42541
Laboratory: Accutest New England	Date: 11/18/2015
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
SHP-99-31A	MC42541-1F	10/29/2015	Dissolved As, Fe, Mn	Groundwater
SHP-99-31B	MC42541-2F	10/29/2015	Dissolved As, Fe, Mn	Groundwater
SHP-99-31C	MC42541-3F	10/29/2015	Dissolved As, Fe, Mn	Groundwater
N3-P1	MC42541-4F	10/29/2015	Dissolved As, Fe, Mn	Groundwater
N3-P2	MC42541-5F	10/29/2015	Dissolved As, Fe, Mn	Groundwater
SHM-05-39A	MC42541-6F	10/29/2015	Dissolved As, Fe, Mn	Groundwater
SHM-05-39B	MC42541-7F	10/29/2015	Dissolved As, Fe, Mn	Groundwater
SHM-05-40X	MC42541-8F	10/29/2015	Dissolved As, Fe, Mn	Groundwater
SHP-05-43	MC42541-9F	10/29/2015	Dissolved As, Fe, Mn	Groundwater

Summary - Data validation was performed on the data for nine (9) groundwater samples collected and submitted for dissolved metals analyses by Method SW846/6010C for iron and manganese and Method SW846/6020A for arsenic.

Narrative and Completeness Review – The case narrative and data package were checked for completeness and the case narrative is missing. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 10/29/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample SHM-99-31A (Lab Sample ID: MC42541-1F) was spiked and analyzed as MS/MSD. The %Rs and RPDs for all analytes were within control limits.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Field duplicate samples were not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Dilutions were required for select analytes in a few samples; both diluted and undiluted results were reported. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable as reported. No qualifications were required and the data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
SHP-99-31A	MC42541-1F	Dissolved As, Fe, Mn	No qualifications needed.			
SHP-99-31B	MC42541-2F	Dissolved As, Fe, Mn	No qualifications needed.			
SHP-99-31C	MC42541-3F	Dissolved As, Fe, Mn	No qualifications needed.			
N3-P1	MC42541-4F	Dissolved As, Fe, Mn	No qualifications needed.			
N3-P2	MC42541-5F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-05-39A	MC42541-6F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-05-39B	MC42541-7F	Dissolved As, Fe, Mn	No qualifications needed.			
SHM-05-40X	MC42541-8F	Dissolved As, Fe, Mn	No qualifications needed.			
SHP-05-43	MC42541-9F	Dissolved As, Fe, Mn	No qualifications needed.			

Dissolved Metals
SW 846/6010C/6020A
USEPA Level II Review

Site: Former Fort Devens, MA – Shepley's Hill	SDG #: MC43671
Laboratory: Accutest New England	Date: 1/15/2016
H&S Environmental, Inc. Reviewer: Laurie Ekes H&S Peer Reviewer:	Project: 1024

Client Sample ID	Lab Sample ID	Date Sampled	Analysis	Matrix
SHM13-08_FAL15	MC43671-1F	12/22/2015	Dissolved As, Fe, Mn	Groundwater

Summary - Data validation was performed on the data for one (1) groundwater sample collected and submitted for dissolved metals analyses by Method SW846/6010C for iron and manganese and Method SW846/6020A for arsenic.

Narrative and Completeness Review – The case narrative and data package were checked for completeness and the case narrative is missing. No discrepancies were noted.

Qualification: None required.

Sample Delivery and Condition – All samples arrived at the laboratory on 12/22/2015 in acceptable condition and temperature and were properly preserved. Proper custody was documented.

Qualification: None required

Holding Times – All samples were analyzed within the 6-month holding time required by the QAPP for preserved aqueous samples.

Qualification: None required

Laboratory Control Sample – The LCS recoveries for the reported target analytes met all %R control limits established in the QAPP.

Qualification: None required.

MS/MSD – Sample SHM-13-06_FAL15 (Lab Sample ID: MC42671-1F) was spiked and analyzed as MS/MSD. The %Rs and RPDs for iron and manganese were within control limits. The MSD %R for arsenic was above the control limit; the natrive samples results was greater than four time the spike level.

Qualification: None required.

Method Blank – The method blanks associated and analyzed with these samples were non-detect for all target analytes.

Qualification: None required.

Field Duplicate – Field duplicate samples were not submitted with this sample set.

Qualification: None required.

Compound Quantitation – Dilutions were required for arsenic (50X) and Iron (5X); both diluted and undiluted results were reported. Analyte non-detections were reported as "ND"; these results should be considered the equivalent of "PQL U." Analyte detections below the PQL were reported as J qualified results. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Qualification Summary Table - The dissolved metals results reported in this SDG are acceptable as reported. No qualifications were required and the data may be used for its intended purpose.

Client Sample ID	Lab Sample ID	Analysis	Lab Value	Lab Qualifier	Validated Value	Validation Qualifier
SHM13-08_FAL15	MC43671-1F	Dissolved As, Fe, Mn	No qualifications needed.			

OPERATION AND MAINTENANCE DATA VALIDATION REPORTS

February 19, 2015
Region I Data Review Worksheet
Project: SHL, Fort Devens
Review Criteria: Fort Devens QAPP,
USEPA Region I Tier II Guidance, and DoD QSM

Total Arsenic by USEPA Methods 6020A

INTRODUCTION

This data validation report covers one water sample collected on January 2, 2015 from the Shepley's Hill Landfill at the former Fort Devens Site, in Ayer, Massachusetts. The sample was submitted to Accutest Laboratories in Marlborough, MA (Accutest) by Sovereign Consulting, Inc. (Sovereign) on January 2, 2015. Accutest assigned the sample to sample delivery group (SDG) MC36216. The sample was analyzed for total arsenic by United States Environmental Protection Agency (USEPA) Method 6020A.

Sample receipt status is presented in Table 1. The field sample identification (ID) and associated Accutest sample ID is presented in Table 2.

Data validation was performed using the ADR.net (Automated Data Review) software and an Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) chemist reviewed the ADR results. The ADR output was adjusted by Amec Foster Wheeler based on professional judgment to complete the validation process. The laboratory's analytical data package was reviewed to assess adherence to acceptable laboratory practices and the data validation requirements specified in the Department of Defense Quality Systems Manual (QSM) for Environmental Laboratories and the applicable analytical methods described above. The level of data validation specified in Table 1 was performed with reference to the Site Specific Quality Assurance Project Plan for Shepley's Hill Landfill Supplemental Investigations, Long-Term Monitoring and Treatment System O & M Services for the Former Fort Devens Army Installation (April 2013) and EPA Region I Tier II Guidance. For Tier II data review, data quality objectives are assessed by review of the Contract Laboratory Program-like summary forms, with no review of the associated raw data.

Table 1. Sample Status

Data Validation Level	Matrix	Preservation	Temperature Sample Receipt	Laboratory	SDG Number
Tier II	Aqueous	Method specified	The cooler was received by the laboratory at 0 ºC	Accutest Laboratories, 495 Tech Center West, Building 1, Marlborough, MA 01752	MC36216

Table 2. Field Sample List

Lab Sample Number	Field ID	Sample Date	Comments
MC36216-1	EFFLUENT 1.2.15	01/02/2015	Effluent Sample

ADR Output Summary

The ADR.net software did not make any qualifications to the data set.

February 19, 2015
Region I Data Review Worksheet
Project: SHL, Fort Devens
Review Criteria: Fort Devens QAPP,
USEPA Region I Tier II Guidance, and DoD QSM

Total Arsenic by USEPA Methods 6020A

ADR Output Adjustment

Amec Foster Wheeler reviewed the Automated Data Review outputs for this set of data for accuracy and conformance with applicable data validation procedures. Based on review of the associated laboratory data package, Amec Foster Wheeler made no changes to the ADR output.

If you have any questions or comments regarding this report, please contact the undersigned at (978) 392-5339.

Sincerely,

Amec Foster Wheeler Environment & Infrastructure, Inc.

PREPARED BY:

Denise King
Environmental Chemist

REVIEWED BY:

Marie Bevier
Environmental Chemist

Data Qualifier Summary

Lab Reporting Batch ID: MC36216 **Laboratory: ACTM**

EDD Filename: MC36216SEDD_2a_1_rev **eQAPP Name: Shepley's Hill Landfill - Accutest**

No Data Review Qualifiers Applied.

Field QC Assignments and Associated Samples

EDD File Name: MC36216

eQapp Name: Shepley's Hill Landfill - Accutest

Associated Samples	Sample Collection Date

February 25, 2015
Region I Data Review Worksheet
Project: SHL, Fort Devens
Review Criteria: Fort Devens QAPP,
USEPA Region I Tier II Guidance, and DoD QSM

Total Arsenic by USEPA Method 6020A

INTRODUCTION

This data validation report covers one water sample collected on February 12, 2015 from the Shepley's Hill Landfill at the former Fort Devens Site, in Ayer, Massachusetts. The sample was submitted to Accutest Laboratories in Marlborough, MA (Accutest) by Sovereign Consulting, Inc. (Sovereign) on February 12, 2015. Accutest assigned the sample to sample delivery group (SDG) MC36853. The sample was analyzed for total arsenic by United States Environmental Protection Agency (USEPA) Method 6020A.

Sample receipt status is presented in Table 1. The field sample identification (ID) and associated Accutest sample ID is presented in Table 2.

Data validation was performed using the ADR.net (Automated Data Review) software and an Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) chemist reviewed the ADR results. The ADR output was adjusted by Amec Foster Wheeler based on professional judgment to complete the validation process. The laboratory's analytical data package was reviewed to assess adherence to acceptable laboratory practices and the data validation requirements specified in the Department of Defense Quality Systems Manual (QSM) for Environmental Laboratories and the applicable analytical methods described above. The level of data validation specified in Table 1 was performed with reference to the Site Specific Quality Assurance Project Plan for Shepley's Hill Landfill Supplemental Investigations, Long-Term Monitoring and Treatment System O & M Services for the Former Fort Devens Army Installation (April 2013) and EPA Region I Tier II Guidance. For Tier II data review, data quality objectives are assessed by review of the Contract Laboratory Program-like summary forms, with no review of the associated raw data.

Table 1. Sample Status

Data Validation Level	Matrix	Preservation	Temperature Sample Receipt	Laboratory	SDG Number
Tier II	Aqueous	Method specified	The cooler was received by the laboratory at 1.8 ºC	Accutest Laboratories, 495 Tech Center West, Building 1, Marlborough, MA 01752	MC36853

Table 2. Field Sample List

Lab Sample Number	Field ID	Sample Date	Comments
MC36853-1	EFFLUENT 2.12.15	02/12/2015	Effluent Sample

ADR Output Summary

The ADR.net software did not make any qualifications to the data set.

ADR Output Adjustment

Amec Foster Wheeler reviewed the Automated Data Review outputs for this set of data for accuracy and conformance with applicable data validation procedures. Based on review of the associated laboratory data package, Amec Foster Wheeler made no changes to the ADR output.

If you have any questions or comments regarding this report, please contact the undersigned at (978) 392-5339.

Sincerely,

Amec Foster Wheeler Environment & Infrastructure, Inc.

PREPARED BY:

Denise King
Environmental Chemist

REVIEWED BY:

Marie Bevier
Environmental Chemist

Data Qualifier Summary

Lab Reporting Batch ID: MC36853 **Laboratory: ACTM**

EDD Filename: MC36853SEDD_2a_1_VAL **eQAPP Name: Shepley's Hill Landfill - Accutest**

No Data Review Qualifiers Applied.

Field QC Assignments and Associated Samples

EDD File Name: MC36853

eQapp Name: Shepley's Hill Landfill - Accutest

Associated Samples	Sample Collection Date

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

March 20, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed is the final validation report for the fractions listed below. This SDG was received on March 18, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #33918:

SDG #	Fraction
MC37155	Metals, Wet Chemistry

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

589 pages-SF

Attachment 1

ADR (Level II)

LDC #33918 (Sovereign Consulting, Inc., Holyoke, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	(3-4) Metals (SW846)		Cl (4500 -CL)		NO_2/NO_3 -N (353.2)		SO_4 (300.0)																											
Matrix: Water/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC37155	03/18/15	04/08/15	3	0	1	0	1	0	1	0																										
Total	T/SM			3	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6

Shaded cells indicate Level IV validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

L:\Sovereign\Shepleys Hill\33918ST.wpd

Data Validation Report
Shepley's Hill

SDG: MC37155

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

March 20, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the March 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Metals by EPA SW 846 Method 6010C and 6020A
Chloride by Standard Method 4500 CL C-11
Nitrate/Nitrite as Nitrogen by EPA Method 353.2
Sulfate by EPA Method 300.0

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, matrix spike and matrix spike duplicate samples (MS/MSD), laboratory control samples (LCS), ICP serial dilutions, and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the ICP serial dilutions which were reviewed manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Laboratory Blanks

Laboratory blanks were performed at the required frequencies. No contaminant concentrations were detected in the method blanks.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogate spikes were not required by the methods.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for arsenic. The associated sample results were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosure I.

VI. Laboratory Duplicate Sample

The laboratory has indicated that there were no laboratory duplicate (DUP) analyses specified for the samples in this SDG, and therefore laboratory duplicate analyses were not performed.

VII. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the LOQ as detected were qualified as follows:

Sample	Finding	Flag
Effluent	All compounds reported as detected below the LOQ.	J (all detects)

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and compound quantitation, data were qualified as estimated in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation, all other results are considered valid and usable for all purposes.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
05-Mar-2015	EFFLUENT	MC37155-1	N	3010A	6010C	S2AVE
05-Mar-2015	EFFLUENT	MC37155-1	N	3010A	6020A	S2AVE
05-Mar-2015	EFFLUENT	MC37155-1	N	Gen Prep	353.2	S2AVE
05-Mar-2015	EFFLUENT	MC37155-1	N	Gen Prep	SM 4500-CL C	S2AVE
05-Mar-2015	EFFLUENT	MC37155-1A	N	Gen Prep	300.0	S2AVE
05-Mar-2015	EW-01	MC37155-2	N	3010A	6010C	S2AVE
05-Mar-2015	EW-01	MC37155-2	N	3010A	6020A	S2AVE
05-Mar-2015	EW-01MS	MP24327-S1	MS	3010A	6020A	S2AVE
05-Mar-2015	EW-01MSD	MP24327-S2	MSD	3010A	6020A	S2AVE
05-Mar-2015	EW-04	MC37155-3	N	3010A	6010C	S2AVE
05-Mar-2015	EW-04	MC37155-3	N	3010A	6020A	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC37155 **Laboratory: ACTM**

EDD Filename: MC37155SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Method Category: **GENCHEM**

Method: **353.2** ***Matrix:*** **Water**

Sample ID: **EFFLUENT** ***Collected:*** **3/5/2015 8:30:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITROGEN, NITRATE-NITRITE	0.058	J	0.054	LOD	0.10	LOQ	mg/L	J	TR

Method Category: **METALS**

Method: **6020A** ***Matrix:*** **Water**

Sample ID: **EFFLUENT** ***Collected:*** **3/5/2015 8:30:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	58.4		2.0	LOD	4.0	LOQ	ug/L	J	Q

Sample ID: **EW-01** ***Collected:*** **3/5/2015 8:40:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **50**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	2000	J	50.0	LOD	100	LOQ	ug/L	J	Q

Sample ID: **EW-04** ***Collected:*** **3/5/2015 8:42:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **50**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3820		50.0	LOD	100	LOQ	ug/L	J	Q

* denotes a non-reportable result

Project Name and Number: - USACE Project: Shepley's Hill (SHL), Devens, MA

Data Qualifier Summary

Lab Reporting Batch ID: MC37155 **Laboratory: ACTM**

EDD Filename: MC37155SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Reason Code Legend

Reason Code	*Description*
Q	Matrix Spike Upper Estimation
TR	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: - USACE Project: Shepley's Hill (SHL), Devens, MA

Data Qualifier Summary

Lab Reporting Batch ID: MC37155 **Laboratory: ACTD**

EDD Filename: MC37155aSEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Method Category: **GENCHEM**

Method: **300.0** ***Matrix:*** **Water**

Sample ID: **EFFLUENT** ***Collected:*** **3/5/2015 8:30:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
SULFATE AS SO4	3.4	J	0.50	LOD	10	LOQ	mg/L	J	TR

* denotes a non-reportable result

Project Name and Number: - USACE Project: SCMAW: Shepley's Hill (SHL), Devens, MA

Data Qualifier Summary

Lab Reporting Batch ID: MC37155 **Laboratory: ACTD**

EDD Filename: MC37155aSEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Reason Code Legend

Reason Code	*Description*
TR	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: - USACE Project: SCMAW: Shepley's Hill (SHL), Devens, MA

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC37155

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: MC37155 **Laboratory: ACTM**

EDD Filename: MC37155SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Method: **6020A**

Matrix: **Water**

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
EW-01MS (Total) EW-01MSD (Total) (EFFLUENT EW-01 EW-04)	ARSENIC	128	140	80.00-120.00	-	ARSENIC	J (all detects)

Project Name and Number: - USACE Project: Shepley's Hill (SHL), Devens, MA

Reporting Limit Outliers

Lab Reporting Batch ID: MC37155 **Laboratory: ACTM**

EDD Filename: MC37155SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Method: **353.2**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
EFFLUENT	NITROGEN, NITRATE-NITRITE	J	0.058	0.10	LOQ	mg/L	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: MC37155 **Laboratory: ACTD**

EDD Filename: MC37155aSEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Method: **300.0**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
EFFLUENT	SULFATE AS SO4	J	3.4	10	LOQ	mg/L	J (all detects)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

April 17, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed is the final validation report for the fraction listed below. This SDG was received on April 16, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #34092:

SDG #	Fraction
MC37916	Arsenic

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

ADR (Level II)

LDC #34092 (Sovereign Consulting, Inc., Foxborough, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	As (6020A)																																	
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC37916	04/16/15	05/07/15	1	0																																
Total	A/SM			1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Shaded cells indicate Level IV validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

Data Validation Report
Shepley's Hill

SDG: MC37916

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

April 17, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the April 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic by EPA SW 846 Method 6020A

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, matrix spike and matrix spike duplicate samples (MS/MSD), laboratory control samples (LCS), ICP serial dilutions, and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the ICP serial dilutions which were reviewed manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Laboratory Blanks

Laboratory blanks were performed at the required frequencies. No contaminant concentrations were detected in the laboratory blanks.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogate spikes were not required by the method.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Laboratory Duplicate Sample

The laboratory has indicated that there were no laboratory duplicate (DUP) analyses specified for the sample in this SDG, and therefore laboratory duplicate analyses were not performed.

VII. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
10-Apr-2015	EFFLUENT 4.10.15	MC37916-1	N	3010A	6020A	S2AVE
10-Apr-2015	EFFLUENT 4.10.15MS	MP24474-S1	MS	3010A	6020A	S2AVE
10-Apr-2015	EFFLUENT 4.10.15MSD	MP24474-S2	MSD	3010A	6020A	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC37916

Laboratory: ACTM

EDD Filename: MC37916SEDD_2a_1

eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly

No Data Review Qualifiers Applied.

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC37916

(No Outliers)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

May 18, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed is the final validation report for the fraction listed below. This SDG was received on May 15, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #34292:

SDG #	Fraction
MC38507	Arsenic

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

90 pages-SF

Attachment 1

ADR (Level II)

LDC #34292 (Sovereign Consulting, Inc., Foxborough, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	As (6020A)																																	
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC38507	05/15/15	6/08/15	1	0																																
Total	T/SM			1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Shaded cells indicate Level IV validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

L:\Sovereign\Shepleys Hill\34292ST.wpd

Data Validation Report
Shepley's Hill

SDG: MC38507

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

May 18, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the May 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic by EPA SW 846 Method 6020A

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, matrix spike and matrix spike duplicate samples (MS/MSD), laboratory control samples (LCS), ICP serial dilutions, and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the ICP serial dilutions which were reviewed manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Laboratory Blanks

Laboratory blanks were performed at the required frequencies. No contaminant concentrations were detected in the laboratory blanks.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogate spikes were not required by the method.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Laboratory Duplicate Sample

The laboratory has indicated that there were no laboratory duplicate (DUP) analyses specified for the sample in this SDG, and therefore laboratory duplicate analyses were not performed.

VII. ICP Serial Dilution

ICP serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
07-May-2015	EFFLUENT 5.7.15	MC38507-1	N	3010A	6020A	S2AVE
07-May-2015	EFFLUENT 5.7.15MS	MP24584-S1	MS	3010A	6020A	S2AVE
07-May-2015	EFFLUENT 5.7.15MSD	MP24584-S2	MSD	3010A	6020A	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC38507

Laboratory: ACTM

EDD Filename: MC38507SEDD_2a_1

eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly

No Data Review Qualifiers Applied.

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC38507

(No Outliers)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

June 23, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed is the final validation report for the fractions listed below. This SDG was received on June 19, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #34505:

SDG #	Fraction
MC39136	Metals, Wet Chemistry

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

301 pages-SF

Attachment 1

ADR (Level II)

LDC 34505 (Sovereign Consulting, Inc., Foxborough, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	As (6020A)		Ba,Mg Mn (6010C)		Fe, Mn (6010C)		Cl (4500-CL)		NO_2/ NO_3-N (353.2)		SO_4 (300.0)																							
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC39136	06/19/15	07/13/15	3	0	1	0	2	0	1	0	1	0	1	0																						
Total	A/SM			3	0	1	0	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9

Shaded cells indicate Level IV validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

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Data Validation Report
Shepley's Hill

SDG: MC39136

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

June 23, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the June 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic by EPA SW 846 Method 6020A
Metals by EPA SW 846 Method 6010C
Chloride by Standard Method 4500-CL
Nitrate/Nitrite as Nitrogen by EPA Method 353.2
Sulfate by EPA Method 300.0

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, matrix spike and matrix spike duplicate samples (MS/MSD), laboratory duplicate samples (DUP), laboratory control samples (LCS), ICP serial dilutions, and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the ICP serial dilutions which were reviewed manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Laboratory Blanks

Laboratory blanks were performed at the required frequencies. No contaminant concentrations were detected in the laboratory blanks.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogate spikes were not required by the methods.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Laboratory Duplicate Sample

Laboratory duplicates (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VII. ICP Serial Dilution

ICP serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
05-Jun-2015	EFFLUENTDUP	GN50843-D1	DUP	Gen Prep	SM 4500-CL C	S2AVE
05-Jun-2015	EFFLUENTMS	GN50843-S1	MS	Gen Prep	SM 4500-CL C	S2AVE
05-Jun-2015	EFFLUENT	MC39136-1	N	3010A	6010C	S2AVE
05-Jun-2015	EFFLUENT	MC39136-1	N	3010A	6020A	S2AVE
05-Jun-2015	EFFLUENT	MC39136-1	N	Gen Prep	353.2	S2AVE
05-Jun-2015	EFFLUENT	MC39136-1	N	Gen Prep	SM 4500-CL C	S2AVE
05-Jun-2015	EFFLUENT	MC39136-1A	N	Gen Prep	300.0	S2AVE
05-Jun-2015	EW-01	MC39136-2	N	3010A	6010C	S2AVE
05-Jun-2015	EW-01	MC39136-2	N	3010A	6020A	S2AVE
05-Jun-2015	EW-01MS	MP24700A-S1	MS	3010A	6020A	S2AVE
05-Jun-2015	EW-01MSD	MP24700A-S2	MSD	3010A	6020A	S2AVE
05-Jun-2015	EW-01MS	MP24700-S1	MS	3010A	6010C	S2AVE
05-Jun-2015	EW-01MSD	MP24700-S2	MSD	3010A	6010C	S2AVE
05-Jun-2015	EW-04	MC39136-3	N	3010A	6010C	S2AVE
05-Jun-2015	EW-04	MC39136-3	N	3010A	6020A	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC39136_A, MC39136

Laboratory: ACTO, ACTM

EDD Filename: MC39136_ASEDD_2a_1, MC39136SEDD_2a_1

eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly

No Data Review Qualifiers Applied.

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC39136

(No Outliers)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

July 16, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed is the final validation report for the fraction listed below. This SDG was received on July 16, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #34682:

SDG #	Fraction
MC39946	Arsenic

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

164 pages-SF

Attachment 1

ADR (Level II)

LDC 34682 (Sovereign Consulting, Inc., Foxborough, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	As (6020A)																																	
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC39946	07/16/15	08/06/15	1	0																																
Total	A/SM			1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Shaded cells indicate Level IV validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

L:\Sovereign\Shepleys Hill\34682ST.wpd

Data Validation Report
Shepley's Hill

SDG: MC39946

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

July 16, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the July 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic by EPA SW 846 Method 6020A

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, matrix spike and matrix spike duplicate samples (MS/MSD), laboratory control samples (LCS), ICP serial dilutions, and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the ICP serial dilutions which were reviewed manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Laboratory Blanks

Laboratory blanks were performed at the required frequencies. No contaminant concentrations were detected in the laboratory blanks.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogate spikes were not required by the method.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Laboratory Duplicate Sample

The laboratory has indicated that there were no laboratory duplicate (DUP) analyses specified for the sample in this SDG, and therefore laboratory duplicate analyses were not performed.

VII. ICP Serial Dilution

ICP serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
10-Jul-2015	EFFLUENT 7.10.15	MC39946-1	N	3010A	6020A	S2AVE
10-Jul-2015	EFFLUENT 7.10.15MS	MP24846-S1	MS	3010A	6020A	S2AVE
10-Jul-2015	EFFLUENT 7.10.15MSD	MP24846-S2	MSD	3010A	6020A	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC39946

Laboratory: ACTM

EDD Filename: MC39946SEDD_2a_1

eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly

No Data Review Qualifiers Applied.

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC39946

(No Outliers)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

August 18, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed is the final validation report for the fraction listed below. This SDG was received on August 17, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #34852:

SDG #	Fraction
MC40616	Arsenic

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

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Attachment 1

ADR (Stage 2A)

LDC 34852 (Sovereign Consulting, Inc.; Foxborough, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	As (6020A)																																	
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC40616	08/17/15	09/08/15	1	0																																
Total	T/SM			1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Shaded cells indicate Stage 4 validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

L:\Sovereign\Shepleys Hill\34852ST.wpd

Data Validation Report
Shepley's Hill

SDG: MC40616

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

August 18, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the August 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic by EPA SW 846 Method 6020A

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, matrix spike and matrix spike duplicate samples (MS/MSD), laboratory control samples (LCS), ICP serial dilutions, and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the ICP serial dilutions which were reviewed manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Laboratory Blanks

Laboratory blanks were performed at the required frequencies. No contaminant concentrations were detected in the laboratory blanks.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogate spikes were not required by the method.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Laboratory Duplicate Sample

The laboratory has indicated that there were no laboratory duplicate (DUP) analyses specified for the sample in this SDG, and therefore laboratory duplicate analyses were not performed.

VII. ICP Serial Dilution

ICP serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
10-Aug-2015	EFFLUENT 8.10.15	MC40616-1	N	3010A	6020A	S2AVE
10-Aug-2015	EFFLUENT 8.10.15MS	MP24976-S1	MS	3010A	6020A	S2AVE
10-Aug-2015	EFFLUENT 8.10.15MSD	MP24976-S2	MSD	3010A	6020A	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC40616

Laboratory: ACTM

EDD Filename: MC40616SEDD_2a_1

eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly

No Data Review Qualifiers Applied.

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC40616

(No Outliers)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

October 30, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on September 28, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #35083:

SDG #	Fraction
MC41326 MC41327	Volatiles, Semivolatiles, Pesticides and Polychlorinated Biphenyls, Hexane Extractable Materials, Methane and Ethane, Metals, Wet Chemistry

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

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Attachment 1

ADR (Stage 2A)

LDC 35083 (Sovereign Consulting, Inc., Foxborough, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (624)		VOA (8260C)		SVOA (625)		Pest/ PCBs (608)		Methane Ethane (RSK175)		As (6020A)		Metals (6010C/ 7470A)		Fe, Mn (6010C)		Cl (4500-CL)		NO_3-N (353.2)		SO_4 (300.0)		HEM (1664A)											
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC41326	9/28/15	10/19/15	1	0	-	-	1	0	1	0	-	-	1	0	1	0	-	-	1	0	1	0	1	0	1	0										
B	MC41327	9/28/15	10/19/15	-	-	2	0	-	-	-	-	2	0	2	0	-	-	2	0	-	-	-	-	-	-	-	-										
Total	A/SM			1	0	2	0	1	0	1	0	2	0	3	0	1	0	2	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	17

Shaded cells indicate Stage 4 validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

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Data Validation Report
Shepley's Hill

SDG: MC41326, MC41327

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

October 30, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the September 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010) and the US EPA CLPNFG for Organic Superfund Data Review (June 2008). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Volatile Organic Compounds (VOCs) by EPA Methods 624 and 8260C
Semivolatile Organic Compounds (SVOCs) by EPA Method 625
Pesticides and Polychlorinated Biphenyls (PCBs) by EPA Method 608
Hexane Extractable Materials (HEM) by EPA Method 1664A
Methane and Ethane by Method RSK-175
Metals by EPA SW 846 Methods 6010C and 6020A

Wet Chemistry
Chloride by Standard Method 4500 CL C-11
Nitrate as Nitrogen by EPA Method 353.2
Sulfate by EPA Method 300.0

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, matrix spike and matrix spike duplicate samples (MS/MSD), surrogates, laboratory duplicates (DUP), laboratory control samples and laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the ICP serial dilutions which were reviewed manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met with the exception of the reanalysis for pesticides. The associated results were qualified as non-detected estimated (UJ). The details regarding the qualification of data are provided in Enclosure I.

II. Laboratory Blanks

Laboratory blanks were performed at the required frequencies. No contaminant concentrations were detected in the method blanks.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogates were added to all samples as required by the methods. All surrogate recoveries (%R) were within QC limits.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for VOCs. The 2-chloroethyl vinyl ether and styrene results in sample Effluent were qualified as rejected (R) due to MS/MSD %Rs grossly outside QC limits (i.e., ≤ 0%). The details regarding the qualification of data are provided in Enclosure I.

VI. Laboratory Duplicate Sample

Laboratory duplicates (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VII. ICP Serial Dilution

ICP serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the LOQ as detected by the laboratory were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosure I.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to severe MS/MSD %R exceedances, the 2-chloroethyl vinyl ether and styrene results were rejected in one sample.

Due to holding time exceedances, data were qualified as estimated in one sample.

Due to results reported by the laboratory below the LOQ, data were qualified as estimated in three samples.

The quality control criteria reviewed, as discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation, all other results are considered valid and usable for all purposes.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
09-Sep-2015	EFFLUENTDUP	GN51743-D1	DUP	Gen Prep	SM 4500-CL C	S2AVE
09-Sep-2015	EFFLUENTMS	GN51743-S1	MS	Gen Prep	SM 4500-CL C	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1	N	3010A	6010C	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1	N	3010A	6020A	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1	N	7470A	7470A	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1	N	EPA 608	608-PCB	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1	N	EPA 608	608-PEST	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1	N	EPA 625	625	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1	N	Gen Prep	353.2	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1	N	Gen Prep	624	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1	N	Gen Prep	SM 4500-CL C	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1A	N	Gen Prep	1664A	S2AVE
09-Sep-2015	EFFLUENT	MC41326-1A	N	Gen Prep	300.0	S2AVE
09-Sep-2015	EFFLUENTMS	MC41326-1AMS	MS	Gen Prep	624	S2AVE
09-Sep-2015	EFFLUENTMSD	MC41326-1AMSD	MSD	Gen Prep	624	S2AVE
09-Sep-2015	EFFLUENTMS	MP25173-S1	MS	3010A	6020A	S2AVE
09-Sep-2015	EFFLUENTMSD	MP25173-S2	MSD	3010A	6020A	S2AVE
09-Sep-2015	EW-01	MC41327-1	N	3010A	6010C	S2AVE
09-Sep-2015	EW-01	MC41327-1	N	3010A	6020A	S2AVE
09-Sep-2015	EW-01	MC41327-1	N	5030B	8260C	S2AVE
09-Sep-2015	EW-01	MC41327-1	N	Gen Prep	RSK 175	S2AVE
09-Sep-2015	EW-01MS	MP25116A-S1	MS	3010A	6010C	S2AVE
09-Sep-2015	EW-01MSD	MP25116A-S2	MSD	3010A	6010C	S2AVE
09-Sep-2015	EW-01MS	MP25116-S1	MS	3010A	6020A	S2AVE
09-Sep-2015	EW-01MSD	MP25116-S2	MSD	3010A	6020A	S2AVE
09-Sep-2015	EW-04	MC41327-2	N	3010A	6010C	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
09-Sep-2015	EW-04	MC41327-2	N	3010A	6020A	S2AVE
09-Sep-2015	EW-04	MC41327-2	N	5030B	8260C	S2AVE
09-Sep-2015	EW-04	MC41327-2	N	Gen Prep	RSK 175	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC41326, MC41327 **Laboratory: ACTM**

EDD Filename: MC41326SEDD_2a_1, MC41327SEDD_2a_1 eQAPP Name: Sovereign_Shepley'sHillLandfillAnnual2015

SDG: MC41326

Method Category: SVOA
Method: 608-PEST **Matrix:** Water

Sample ID: EFFLUENT *Collected:* 9/9/2015 10:30:00 AM *Analysis Type:* Reanalysis-01/TOT/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CIS-CHLORDANE	0.010	U	0.010	LOD	0.051	LOQ	ug/L	UJ	StoE
TRANS-CHLORDANE	0.010	U	0.010	LOD	0.051	LOQ	ug/L	UJ	StoE
ENDRIN KETONE	0.010	U	0.010	LOD	0.051	LOQ	ug/L	UJ	StoE

Method Category: SVOA
Method: 625 **Matrix:** Water

Sample ID: EFFLUENT *Collected:* 9/9/2015 10:30:00 AM *Analysis Type:* Initial/TOT-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIETHYL PHTHALATE	0.52	J	0.51	LOD	5.1	LOQ	ug/L	J	TR

Method Category: VOA
Method: 624 **Matrix:** Water

Sample ID: EFFLUENT *Collected:* 9/9/2015 10:30:00 AM *Analysis Type:* Initial/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-CHLOROETHYL VINYL ETHER	2.0	U	2.0	LOD	5.0	LOQ	ug/L	R	Q
CHLOROFORM	0.41	J	0.25	LOD	1.0	LOQ	ug/L	J	TR
STYRENE	0.50	U	0.50	LOD	1.0	LOQ	ug/L	R	Q

SDG: MC41327

Method Category: VOA
Method: 8260C **Matrix:** Water

Sample ID: EW-01 *Collected:* 9/9/2015 11:00:00 AM *Analysis Type:* Initial/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROBENZENE	0.76	J	0.50	LOD	1.0	LOQ	ug/L	J	TR
1,4-DICHLOROBENZENE	0.93	J	0.50	LOD	1.0	LOQ	ug/L	J	TR

* denotes a non-reportable result

Project Name and Number: - USACE Project: Shepley's Hill (SHL), Devens, MA

Data Qualifier Summary

Lab Reporting Batch ID: MC41326, MC41327 **Laboratory: ACTM**

EDD Filename: MC41326SEDD_2a_1, MC41327SEDD_2a_1 eQAPP Name: Sovereign_Shepley'sHillLandfillAnnual2015

SDG: MC41327

Method Category: **VOA**

Method: **8260C** ***Matrix:*** **Water**

Sample ID: **EW-04** ***Collected:*** **9/9/2015 11:05:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
CHLOROBENZENE	0.51	J	0.50	LOD	1.0	LOQ	ug/L	J	TR
ETHYL ETHER	3.7	J	1.0	LOD	5.0	LOQ	ug/L	J	TR

* denotes a non-reportable result

Project Name and Number: - USACE Project: Shepley's Hill (SHL), Devens, MA

Data Qualifier Summary

Lab Reporting Batch ID: MC41326, MC41327 **Laboratory: ACTM**

EDD Filename: MC41326SEDD_2a_1, MC41327SEDD_2a_1 eQAPP Name: Sovereign_Shepley'sHillLandfillAnnual2015

Reason Code Legend

Reason Code	*Description*
Q	Matrix Spike Lower Rejection
S	Surrogate/Tracer Recovery Upper Estimation
StoE	Sampling to Extraction Estimation
TR	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: - USACE Project: Shepley's Hill (SHL), Devens, MA

Data Qualifier Summary

Lab Reporting Batch ID: MC41326 **Laboratory: ACTD**

EDD Filename: MC41326ASEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillAnnual2015**

Method Category: **GENCHEM**

Method: **300.0** ***Matrix:*** **Water**

Sample ID: **EFFLUENT** ***Collected:*** **9/9/2015 10:30:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
SULFATE AS SO4	3.7	J	0.50	LOD	10	LOQ	mg/L	J	TR

* denotes a non-reportable result

Project Name and Number: - USACE Project: SCMAW: Shepley's Hill (SHL), Devens, MA

Data Qualifier Summary

Lab Reporting Batch ID: MC41326 **Laboratory: ACTD**

EDD Filename: MC41326ASEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillAnnual2015**

Reason Code Legend

Reason Code	*Description*
TR	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: - USACE Project: SCMAW: Shepley's Hill (SHL), Devens, MA

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC41326

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: MC41326 **Laboratory: ACTM**
EDD Filename: MC41326SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillAnnual2015**

Method: 608-PEST **Preparation Method: Gen Prep**
Matrix: Water

Sample ID	Type	Actual	Criteria	Units	Flag
EFFLUENT	Sampling To Extraction	12.00	7.00	DAYS	J(all detects) UJ(all non-detects)

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: MC41326 **Laboratory: ACTM**

EDD Filename: MC41326SEDD_2a_1 **eQAPP Name:**

***Method:* 624**

***Matrix:* Water**

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
EFFLUENTMS EFFLUENTMSD (EFFLUENT)	2-CHLOROETHYL VINYL ETHER STYRENE	0 0	0 0	1.00-305.00 60.00-134.00	- -	2-CHLOROETHYL VINYL ETHER STYRENE	J (all detects) R (all non-detects)

Project Name and Number: - USACE Project: Shepley's Hill (SHL), Devens, MA

Reporting Limit Outliers

Lab Reporting Batch ID: MC41326 **Laboratory: ACTD**

EDD Filename: MC41326ASEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillAnnual2015**

Method: **300.0**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
EFFLUENT	SULFATE AS SO4	J	3.7	10	LOQ	mg/L	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: MC41326 **Laboratory: ACTM**

EDD Filename: MC41326SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillAnnual2015**

Method: **624**
Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
EFFLUENT	CHLOROFORM	J	0.41	1.0	LOQ	ug/L	J (all detects)

Method: **625**
Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
EFFLUENT	DIETHYL PHTHALATE	J	0.52	5.1	LOQ	ug/L	J (all detects)

Quality Control Outlier Reports

MC41327

Reporting Limit Outliers

Lab Reporting Batch ID: MC41327 **Laboratory: ACTM**

EDD Filename: MC41327SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillAnnual2015**

Method: **8260C**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
EW-01	1,4-DICHLOROBENZENE CHLOROBENZENE	J J	0.93 0.76	1.0 1.0	LOQ LOQ	ug/L ug/L	J (all detects)
EW-04	CHLOROBENZENE ETHYL ETHER	J J	0.51 3.7	1.0 5.0	LOQ LOQ	ug/L ug/L	J (all detects)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

October 16, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed is the final validation report for the fraction listed below. This SDG was received on October 13, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #35171:

SDG #	Fraction
MC41959	Arsenic

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

167 pages-SF

Attachment 1

ADR (Stage 2A)

LDC 35171 (Sovereign Consulting, Inc., Foxborough, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	As (6020A)																																	
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC41959	10/13/15	11/03/15	1	0																																
Total	A/SM			1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Shaded cells indicate Stage 4 validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

L:\Sovereign\Shepleys Hill\35171ST.wpd

Data Validation Report
Shepley's Hill

SDG: MC41959

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

October 14, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the October 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic by EPA SW 846 Method 6020A

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, matrix spike and matrix spike duplicate samples (MS/MSD), laboratory control samples (LCS), ICP serial dilutions, and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the ICP serial dilutions which were reviewed manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Laboratory Blanks

Laboratory blanks were performed at the required frequencies. No contaminant concentrations were detected in the laboratory blanks.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogate spikes were not required by the method.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Laboratory Duplicate Sample

The laboratory has indicated that there were no laboratory duplicate (DUP) analyses specified for the sample in this SDG, and therefore laboratory duplicate analyses were not performed.

VII. ICP Serial Dilution

ICP serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
06-Oct-2015	EFFLUENT 10.6.15	MC41959-1	N	3010A	6020A	S2AVE
06-Oct-2015	EFFLUENT 10.6.15MS	MP25258-S1	MS	3010A	6020A	S2AVE
06-Oct-2015	EFFLUENT 10.6.15MSD	MP25258-S2	MSD	3010A	6020A	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC41959

Laboratory: ACTM

EDD Filename: MC41959SEDD_2a_1

eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly

No Data Review Qualifiers Applied.

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC41959

(No Outliers)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

November 10, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed is the final validation report for the fraction listed below. This SDG was received on November 10, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #35357:

SDG #	Fraction
MC42604	Arsenic

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

88 pages-SF

Attachment 1

ADR (Stage 2A)

LDC 35357 (Sovereign Consulting, Inc., Foxborough, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	As (6020A)																																	
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC42604	11/10/15	12/03/15	1	0																																
Total	A/SM			1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Shaded cells indicate Stage 4 validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

L:\Sovereign\Shepleys Hill\35357ST.wpd

Data Validation Report
Shepley's Hill

SDG: MC42604

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

November 10, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the November 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic by EPA SW 846 Method 6020A

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, laboratory control samples (LCS), and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013). Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Laboratory Blanks

Laboratory blanks were performed as required by the method. No contaminant concentrations were detected in the laboratory blanks reviewed by the ADR software program with the exception of one blank for arsenic. The associated sample results were significantly greater than the concentrations found in the associated blanks (>5x) and were not qualified. The details are provided in Enclosure I.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogate spikes were not required by the method.

V. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed.

VI. Laboratory Duplicate Sample

The laboratory has indicated that there were no laboratory duplicate (DUP) analyses specified for the sample in this SDG, and therefore laboratory duplicate analyses were not performed.

VII. Serial Dilution

Serial dilution was not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
02-Nov-2015	EFFLUENT 11.2.15	MC42604-1	N	3010A	6020A	S2AVE
02-Nov-2015	EFFLUENT 11.2.15MS	MP25413-S1	MS	3010A	6020A	S2AVE
02-Nov-2015	EFFLUENT 11.2.15MSD	MP25413-S2	MSD	3010A	6020A	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC42604

Laboratory: ACTM

EDD Filename: MC42604SEDD_2a_1

eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly

No Data Review Qualifiers Applied.

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC42604

Method Blank Outlier Report

Lab Reporting Batch ID: MC42604 **Laboratory: ACTM**

EDD Filename: MC42604SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Method: **6020A**
Matrix: **Water**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MP25413-MB1	11/5/2015 5:39:00 PM	ARSENIC	0.80 ug/L	EFFLUENT 11.2.15

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Sovereign Consulting Inc.
16 Chestnut Street, Suite 520
Foxborough, MA 02035
ATTN: Mr. Steven Passafaro

December 31, 2015

SUBJECT: Shepley's Hill, Data Validation

Dear Mr. Passafaro,

Enclosed is the final validation report for the fractions listed below. This SDG was received on December 21, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #35593:

SDG #	Fraction
MC43288	Metals, Wet Chemistry

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts, March 2015
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

298 pages-SF

Attachment 1

ADR (Stage 2A)

LDC #35593 (Sovereign Consulting, Inc., Foxborough, MA / Shepley's Hill)

LDC	SDG#	DATE REC'D	(3) DATE DUE	As (6020A)		Metals (6010C)		Cl (4500-Cl)		NO_2/ NO_3-N (353.2)		SO_4 (300.0)																									
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	MC43288	12/21/15	01/13/16	3	0	3	0	1	0	1	0	1	0																								
Total	A/SM			3	0	3	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9

Shaded cells indicate Stage 4 validation (all other cells are ADR review). These sample counts do not include MS, MSD, or DUP's.

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Data Validation Report
Shepley's Hill

SDG: MC43288

Prepared for

Sovereign Consulting
16 Chestnut Street, Suite 520
Foxborough, MA 02035

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

December 30, 2015

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2A data validation results for samples collected during the December 2015 sampling period. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Shepley's Hill Landfill Treatment System O&M Services, Devens, Massachusetts (March 2015), and the US Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic by EPA SW 846 Method 6020A
Metals by EPA SW 846 Method 6010C
Chloride by Standard Method 4500-CL
Nitrate as Nitrogen and Nitrate/Nitrite as Nitrogen by EPA Method 353.2
Sulfate by EPA Method 300.0

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2A Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Stage 2A data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, matrix spike and matrix spike duplicate samples (MS/MSD), laboratory duplicate samples (DUP), laboratory control samples (LCS), ICP serial dilutions, and laboratory blanks.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the ICP serial dilutions which were reviewed manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

I. Sample Receipt and Technical Holding Time

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. Laboratory Blanks

Laboratory blanks were performed as required by the methods. No contaminant concentrations were detected in the laboratory blanks reviewed by the ADR software program with the exception of one blank for arsenic. The associated sample results were not detected or were significantly greater than the concentrations found in the blanks, therefore no data were qualified. The details are presented in Enclosure I.

III. Field Blank Samples

No field blanks were identified in this SDG.

IV. Surrogate Spikes

Surrogate spikes were not required by the methods.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Laboratory Duplicate Sample

Laboratory duplicates (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VII. ICP Serial Dilution

ICP serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Field Duplicate Samples

No field duplicates were identified in this SDG.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the LOQ as detected by the laboratory were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosure I.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported as detected below the LOQ, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Data flags are summarized and are presented as Attachment 2

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
07-Dec-2015	EFFLUENTDUP	GP19950-D1	DUP	Gen Prep	353.2	S2AVE
07-Dec-2015	EFFLUENTMS	GP19950-S1	MS	Gen Prep	353.2	S2AVE
07-Dec-2015	EFFLUENT	MC43288-1	N	3010A	6010C	S2AVE
07-Dec-2015	EFFLUENT	MC43288-1	N	3010A	6020A	S2AVE
07-Dec-2015	EFFLUENT	MC43288-1	N	Gen Prep	353.2	S2AVE
07-Dec-2015	EFFLUENT	MC43288-1	N	Gen Prep	SM 4500-CL C	S2AVE
07-Dec-2015	EFFLUENT	MC43288-1A	N	Gen Prep	300.0	S2AVE
07-Dec-2015	EW-01	MC43288-2	N	3010A	6010C	S2AVE
07-Dec-2015	EW-01	MC43288-2	N	3010A	6020A	S2AVE
07-Dec-2015	EW-01MS	MP25569A-S1	MS	3010A	6020A	S2AVE
07-Dec-2015	EW-01MSD	MP25569A-S2	MSD	3010A	6020A	S2AVE
07-Dec-2015	EW-01MS	MP25569-S1	MS	3010A	6010C	S2AVE
07-Dec-2015	EW-01MSD	MP25569-S2	MSD	3010A	6010C	S2AVE
07-Dec-2015	EW-04	MC43288-3	N	3010A	6010C	S2AVE
07-Dec-2015	EW-04	MC43288-3	N	3010A	6020A	S2AVE

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: MC43288 **Laboratory: ACTD**

EDD Filename: MC43288SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Method Category: **GENCHEM**

Method: **300.0** ***Matrix:*** **Water**

Sample ID: **EFFLUENT** ***Collected:*** **12/7/2015 9:30:00 AM** ***Analysis Type:*** **Initial/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
SULFATE AS SO4	6.5	J	0.50	LOD	10	LOQ	mg/L	J	TR

* denotes a non-reportable result

Project Name and Number: - USACE Project: SCMAW: Shepley's Hill (SHL), Devens, MA

Data Qualifier Summary

Lab Reporting Batch ID: MC43288 **Laboratory: ACTD**

EDD Filename: MC43288SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Reason Code Legend

Reason Code	*Description*
TR	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: - USACE Project: SCMAW: Shepley's Hill (SHL), Devens, MA

Data Qualifier Summary

Lab Reporting Batch ID: MC43288

Laboratory: ACTM

EDD Filename: MC43288SEDDa_2a_1

eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly

No Data Review Qualifiers Applied.

Enclosure I

Stage 2A ADR Outliers

Quality Control Outlier Reports

MC43288

Method Blank Outlier Report

Lab Reporting Batch ID: MC43288 **Laboratory: ACTM**

EDD Filename: MC43288SEDDa_2a_1_rev **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Method: **6020A**
Matrix: **Water**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MP25569A-MB1	12/10/2015 12:16:00 PM	ARSENIC	0.58 ug/L	EFFLUENT EW-01 EW-04

Reporting Limit Outliers

Lab Reporting Batch ID: MC43288 **Laboratory: ACTD**

EDD Filename: MC43288SEDD_2a_1 **eQAPP Name: Sovereign_Shepley'sHillLandfillQuarterly**

Method: **300.0**

Matrix: **Water**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
EFFLUENT	SULFATE AS SO4	J	6.5	10	LOQ	mg/L	J (all detects)

APPENDIX E (ON CD)

Groundwater Monitoring Field Forms

SPRING 2015

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 6/8/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: shm-10-04 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1.5" Depth to Water: 5.80
Material: PVC Depth to Bottom:
Screen Interval: 55-65

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 3208
Purge Start Time: 10:56 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
11:04 AM	325	5.86	11.04	660	0.23	7.00	78.8	0.23	clear
11:09 AM	325	5.86	10.99	695	0.24	6.62	82.4	0.18	clear
11:14 AM	325	5.86	10.93	705	0.37	6.30	85.9	0.15	clear
11:19 AM	325	5.86	10.91	707	0.29	6.14	89.0	0.18	clear
11:24 AM	325	5.86	10.89	708	0.26	6.12	90.7	0.14	clear
11:29 AM	325	5.86	10.89	710	0.24	6.14	96.9	0.17	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N DUPLICATE: Y N X MS/MSD: Y N X
FILTER SIZE: .45 µm

SAMPLED BY (PRINT): Erin Foley SAMPLER(S) SIGNATURES: SAMPLING START TIME: 11:30 AM SAMPLING END TIME: 11:35 AM

NOTES: field filter DOC and Dissolved AS/total metals

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: LTM Sites at Devens Date: 6/8/2015

Project Location: Ayer NIA Project #:

Personnel: Mykel Mendes

WELL IDENTIFICATION: SHM-10-08 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1.5" Depth to Water: 9.55

Material: PVC Depth to Bottom: 56.5

Screen Interval: 46-56

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N geopump 420

Purge Start Time: 11:15 AM Air Source: Tubing Diameter 0.375

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
11:20 AM	500	9.6	10.70	913	0.53	6.12	97.0	8.32	clear
11:25 AM	500	9.6	10.72	926	0.59	5.72	90.1	8.90	clear
11:30 AM	500	9.6	10.70	935	0.47	5.92	99.0	5.66	clear
11:35 AM	500	9.6	10.72	937	0.53	6.08	101.7	3.30	clear
11:40 AM	500	9.6	10.72	939	0.42	6.23	105.1	0.91	clear
11:45 AM	500	9.6	10.72	934	0.38	6.28	104.5	1.43	clear
11:50 AM	500	9.6	10.69	937	0.39	6.36	102.8	1.29	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Mykel Mendes

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 11:50 AM

SAMPLING END TIME: 11:56 AM

NOTES: YSI556 MPS 09F101283 water Chem data filtered DOC and metals

HACH 2100q 1504c040467 turbidity, dedicated tubing

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: LTM Sites at Devens Date: _____

Project Location: Ayer NIA Project #: _____

Personnel: Mykel Mendes

WELL IDENTIFICATION: SHM-13-06 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 17.11

Material: PVC Depth to Bottom: _____

Screen Interval: _____

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Polyethylene (Pump S/N geopump 420

Purge Start Time: 1:56 PM Air Source: _____ Tubing Diameter 0.375

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
2:00 PM	200	17.15	12.14	1028	0.48	7.21	-75.7	3.44	clear
2:05 PM	200	17.15	12.13	1021	0.21	7.05	-114.4	2.62	clear
2:10 PM	200	17.15	11.79	1005	0.25	7.04	-119.9	2.15	clear
2:15 PM	200	17.15	11.83	983	0.20	7.04	-126.3	2.34	clear
2:20 PM	200	17.15	11.77	916	0.21	7.03	-129.3	3.46	clear
2:27 PM	200	17.15	11.75	934	0.21	7.02	-129.8	2.40	clear
2:32 PM	200	17.15	11.75	924	0.18	7.00	-128.2	1.53	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: 0.45 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Mykel Mendes	[signature]	2:35 PM	2:45 PM

NOTES: _____

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: LTM Sites at Devens Date: 6/9/2015

Project Location: Ayer NIA Project #:

Personnel: Mykel Mendes

WELL IDENTIFICATION: SHM-10-03 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1.5" Depth to Water: 26.6

Material: PVC Depth to Bottom:

Screen Interval: 65-75

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N mp-10-1130

Purge Start Time: 10:33 AM Air Source: Nitrogen Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
10:45 AM	50	25.65	13.27	3515	1.48	6.51	124.1	16.6	clear
10:50 AM	50	25.55	13.00	3526	0.69	6.44	133.7	9.58	clear
10:55 AM	50	25.7	12.96	3501	0.51	6.27	146.5	7.35	clear
11:00 AM	50	25.7	13.04	3508	0.45	6.30	145.8	6.25	clear
11:05 AM	50	25.7	12.88	3504	0.43	6.34	145.1	5.65	clear
11:10 AM	50	25.7	12.46	3498	0.36	6.36	144.9	4.95	clear
11:20 AM	50	25.7	12.63	3480	0.32	6.41	140.3	3.34	clear
11:25 AM	50	25.71	12.61	3485	0.31	6.41	140.0	2.54	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Mykel Mendes

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 11:25 AM

SAMPLING END TIME: 11:50 AM

NOTES: used small 0.5 inch bladder, could only sustain 50 ml/min flow.
ysi556 mps 09J101596, hach 21006 1504c040467, filtered for metals and DOC only

MONITORING WELL SAMPLING LOG

Low Flow Sampling

PROJECT NAME: Fort Dennis	PROJECT LOCATION: SHL	DATE: 6/5/15	WELL ID: SHL-20
PROJECT NUMBER:	WELL DIAMETER: (inches) 4	DEPTH TO WATER: (feet) 18.06	DEPTH TO BOTTOM: (feet) 45.27
PID READING: (ppmv)			

PURGING DATA

TUBING DIAMETER (inches): 1/4	TUBING MATERIAL CODE: (see below)	PURGE PUMP TYPE: peristaltic	PUMP EQUIPMENT MODEL & SERIAL #s: 7580

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

GALLONS: LITERS:

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

1 GALLON = 3.785 LITERS

TOTAL VOLUME PURGED: GALLONS: 1.5 LITERS:

WELL SCREEN INTERVAL DEPTH (feet): 39.0-49.0	INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 44.0	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 44.0	PURGING INITIATED AT: 1444	PURGING ENDED AT: 1454

WATER LEVEL STABLIZATION DEPTH TO WATER WITH PUMP: (feet)

TIME INTERVAL (min)	FLOW RATE (mL/min)	PUMP SETTINGS	DEPTH TO WATER (feet) START	DEPTH TO WATER (feet) END	Water Level Stable (Yes or No)	VOLUME PURGED DURING INTERVAL (mL)
1444	100		18.06	18.06	Y	500
1449	100		18.06	18.06	Y	500
1454	100		18.06	18.06	Y	500

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TURBIDITY (NTU) (+/- 10%)or <5**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	TEMP (°C) (+/- 3%)**	SPECIFIC CONDUCTIVITY (µS/cm) (+/- 3%)**	ORP (mV) (+/- 10mV)**	COLOR (describe)	ODOR (describe)
909	100	18.02	10.23	3.01	6.54	12.69	479	-53.0	clear	none
904	↓	↓	9.73	1.85	6.55	12.60	518	-76.2	↓	↓
914	↓	↓	9.62	2.51	6.57	12.47	530	-84.3	↓	↓
919	↓	↓	9.57	1.07	6.57	12.61	531	-87.8	↓	↓
924	↓	↓	9.43	0.62	6.59	12.58	531	-86.4	↓	↓
929	↓	↓	9.39	0.52	6.59	12.66	529	-86.9	↓	↓
934	↓	↓	9.27	0.49	6.60	12.68	530	-86.7	↓	↓
939	↓	↓	9.24	0.47	6.61	12.69	530	-86.4	↓	↓

* every 5 or more minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

** EPA stabilization parameters from EPA/540/S-95/504 April 1998

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kevin C. Anderson	SAMPLER(S) SIGNATURES: [signature]	SAMPLING INITIATED AT: 904	SAMPLING ENDED AT: 945

PUMP OR TUBING DEPTH IN WELL (feet): 44.0	SAMPLE PUMP FLOW RATE (mL per minute): 100	FIELD PARAMETER MONITORING EQUIPMENT MODEL & SERIAL #s: YSI 556MPS 14F100295

FIELD DECONTAMINATION: (Y) N

FIELD-FILTERED: (Y) N FILTER SIZE: ___ µm Filtration Equipment Type: .45

DUPLICATE: Y (N)

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

WELL CONDITION CHECKLIST (circle appropriate item(s), cross out if not applicable)

Type: Flush Mount / (Stand Pipe) General Condition: (Good) / Needs Repair Well Caps: (Good) / Broken / None Lock: (Good) / Broken / None

Evidence of Rain Water Between Steel & PVC? Y / (N) Is Well Plumb?: (Y) / N PVC Riser: (Good) / Damaged / None

Evendence of Ponding Around Well? Y / (N) Concrete Collar: (Good) / Cracked / Leaking / None

REMARKS:

MONITORING WELL SAMPLING LOG

Low Flow Sampling

PROJECT NAME: Ford Devens	PROJECT LOCATION: SHL	DATE: 6/5/15	WELL ID: SHM-11-02
PROJECT NUMBER:	WELL DIAMETER (inches): 4	DEPTH TO WATER (feet): 23.03	DEPTH TO BOTTOM (feet): 68.77
			PID READING (ppmv):

PURGING DATA

TUBING DIAMETER (inches): 1/4	TUBING MATERIAL CODE: (see below)	PURGE PUMP TYPE: geotech	PUMP EQUIPMENT MODEL & SERIAL #s: 7580

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

GALLONS: | LITERS:

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

1 GALLON = 3.785 LITERS

WELL SCREEN INTERVAL DEPTH (feet): 52.0-66.0	INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 60'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 60'	PURGING INITIATED AT: 1050	PURGING ENDED AT: 1100	TOTAL VOLUME PURGED: GALLONS: 1.5 LITERS:

WATER LEVEL STABLIZATION | DEPTH TO WATER WITH PUMP: (feet)

TIME INTERVAL (min)	FLOW RATE (mL/min)	PUMP SETTINGS	DEPTH TO WATER (feet) START	DEPTH TO WATER (feet) END	Water Level Stable (Yes or No)	VOLUME PURGED DURING INTERVAL (mL)
1055	100		23.01	23.02	N	500
1100	105		23.02	23.03	N	500

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TURBIDITY (NTU) (+/- 10%)or <5**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	TEMP (°C) (+/- 3%)**	SPECIFIC CONDUCTIVITY (µS/cm) (+/- 3%)**	ORP (mV) (+/- 10mV)**	COLOR (describe)	ODOR (describe)
1105	100	23.05	15.7	0.13	7.49	15.53	231	-203.7	clear	None
1110	100	23.09	12.1	0.16	7.14	16.39	230	-197.6		
1115	100	23.13	11.7	0.20	7.43	17.38	230	-196.9		
1120	100	23.14	9.2	0.18	7.39	17.13	231	-197.8		
1125	100	23.17	8.9	0.17	7.38	17.09	232	-198.1		
1130	100	23.18	8.6	0.16	7.37	17.05	232	-198.3		
1135	100	23.19	8.4	0.14	7.36	17.03	232	-196.7		
1140	100	23.21	8.5	0.13	7.35	17.08	232	-195.4		

* every 5 or more minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

** EPA stabilization parameters from EPA/540/S-95/504 April 1998

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kevin L. Anderson	SAMPLER(S) SIGNATURES: [signature]	SAMPLING INITIATED AT: 1055	SAMPLING ENDED AT: 1140
PUMP OR TUBING DEPTH IN WELL (feet): 60'	SAMPLE PUMP FLOW RATE (mL per minute): 100	FIELD PARAMETER MONITORING EQUIPMENT MODEL & SERIAL #s: YSI 556 MPS 14F100295	
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: (Y) N Filtration Equipment Type:	FILTER SIZE: ____ µm .45	DUPLICATE: Y (N)

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

WELL CONDITION CHECKLIST (circle appropriate item(s), cross out if not applicable)

Type: Flush Mount / (Stand Pipe) General Condition: (Good) / Needs Repair Well Caps: (Good) / Broken / None Lock: (Good) / Broken / None

Evidence of Rain Water Between Steel & PVC? Y / (N) Is Well Plumb? (Y) / N PVC Riser: (Good) / Damaged / None

Evendence of Ponding Around Welll? Y / (N) Concrete Collar: (Good) / Cracked / Leaking / None

REMARKS:

MONITORING WELL SAMPLING LOG

Low Flow Sampling

PROJECT NAME: Fort Devens	PROJECT LOCATION: SHL	DATE: 6/5/15	WELL ID: SHM-96-5B
PROJECT NUMBER:	WELL DIAMETER: (inches) 4	DEPTH TO WATER: (feet) 6.68	DEPTH TO BOTTOM: (feet) 92.57
			PID READING: (ppmv)

PURGING DATA

TUBING DIAMETER (inches): 1/4	TUBING MATERIAL CODE: (see below)	PURGE PUMP TYPE: geotech	PUMP EQUIPMENT MODEL & SERIAL #s: 7580

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

GALLONS: LITERS:

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

1 GALLON = 3.785 LITERS

WELL SCREEN INTERVAL DEPTH (feet): 80→90	INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 85	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 85	PURGING INITIATED AT: 1319	PURGING ENDED AT: 1329	TOTAL VOLUME PURGED: GALLONS: 1.5 LITERS:

WATER LEVEL STABLIZATION DEPTH TO WATER WITH PUMP: (feet)

TIME INTERVAL (min)	FLOW RATE (mL/min)	PUMP SETTINGS	DEPTH TO WATER (feet) START	DEPTH TO WATER (feet) END	Water Level Stable (Yes or No)	VOLUME PURGED DURING INTERVAL (mL)
1324	100		1319	1324		500
1329	100		1324	1329		500

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TURBIDITY (NTU) (+/- 10%)or <5**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	TEMP (°C) (+/- 3%)**	SPECIFIC CONDUCTIVITY (µS/cm) (+/- 3%)**	ORP (mV) (+/- 10mV)**	COLOR (describe)	ODOR (describe)
1334	100	6.68	4.23	7.11	7.08	13.95	590	-70.6	Clear	None
1339	↓	↓	4.19	2.52	6.69	13.89	593	-60.7	↓	↓
1344			4.16	2.43	6.66	13.87	609	-58.1		
1349			4.09	1.73	6.63	13.99	608	-58.0		
1354			4.07	1.65	6.60	[illegible]	610	-57.6		
1359			4.04	1.52	6.59	14.[illegible]	611	-56.1		
1404			4.01	1.47	6.57	14.27	613	-55.9		
1409			4.03	1.36	6.54	14.27	618	-56.8		

* every 5 or more minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

** EPA stabilization parameters from EPA/540/S-95/504 April 1996

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kevin L. Anderson	SAMPLER(S) SIGNATURES: [signature]	SAMPLING INITIATED AT: 1334	SAMPLING ENDED AT: 1415
PUMP OR TUBING DEPTH IN WELL (feet): 85	SAMPLE PUMP FLOW RATE (mL per minute): 100	FIELD PARAMETER MONITORING EQUIPMENT MODEL & SERIAL #s: YSI 556 MPS 14F100295	

FIELD DECONTAMINATION: (Y) N

FIELD-FILTERED: (Y) N FILTER SIZE: ____ µm

Filtration Equipment Type: .45

DUPLICATE: Y (N)

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

WELL CONDITION CHECKLIST (circle appropriate item(s), cross out if not applicable)

Type: Flush Mount / (Stand Pipe) General Condition: (Good) / Needs Repair Well Caps: (Good) / Broken / None Lock: (Good) / Broken / None

Evidence of Rain Water Between Steel & PVC? Y / (N) Is Well Plumb? (Y) / N PVC Riser: (Good) / Damaged / None

Evendence of Ponding Around Well? Y / (N) Concrete Collar: (Good) / Cracked / Leaking / None

REMARKS:

MONITORING WELL SAMPLING LOG

Low Flow Sampling

PROJECT NAME: SHL, Fort Devens	PROJECT LOCATION: SHL	DATE: 6/8/15	WELL ID: SHM-93-22B
PROJECT NUMBER:	WELL DIAMETER: (inches) 4	DEPTH TO WATER (feet) 7.87	DEPTH TO BOTTOM (feet) 92.07
PID READING: (ppmv)			

PURGING DATA

TUBING DIAMETER (inches): 1/4	TUBING MATERIAL CODE: (see below)	PURGE PUMP TYPE: geotech	PUMP EQUIPMENT MODEL & SERIAL #s: 7580

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

GALLONS: LITERS:

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

1 GALLON = 3.785 LITERS

WELL SCREEN INTERVAL DEPTH (feet): 82.3→92.3	INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 87'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 87'	PURGING INITIATED AT: 1055	PURGING ENDED AT: 1105	TOTAL VOLUME PURGED: GALLONS: 1.5 LITERS:

WATER LEVEL STABLIZATION DEPTH TO WATER WITH PUMP: (feet)

TIME INTERVAL (min)	FLOW RATE (mL/min)	PUMP SETTINGS	DEPTH TO WATER (feet) START	DEPTH TO WATER (feet) END	Water Level Stable (Yes or No)	VOLUME PURGED DURING INTERVAL (mL)
1055	100		7.87		Y	500
1105	100		7.87			500

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TURBIDITY (NTU) (+/- 10%)or <5**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	TEMP (°C) (+/- 3%)**	SPECIFIC CONDUCTIVITY (µS/cm) (+/- 3%)**	ORP (mV) (+/- 10mV)**	COLOR (describe)	ODOR (describe)
1100	100	7.87	43.9	1.39	6.53	9.41	641	-45.2	Slight Brown	none
1115			37.8	1.34	6.48	9.82	638	-48.0	slight Brown	
1120			32.6	1.29	6.47	9.52	638	-45.9	Slight Brown	
1125			27.1	1.30	6.47	9.46	638	-44.6	Slight Brown	
1130			13.2	0.80	6.46	9.49	637	-45.7	clear	
1135			9.89	0.71	6.44	9.56	637	-48.1		
1140			9.73	0.69	6.43	9.52	632	-48.4		
1145			9.68	0.67	6.41	9.49	630	-49.0		
1150			9.60	0.65	6.39	9.54	628	-49.3		

* every 5 or more minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

** EPA stabilization parameters from EPA/540/S-95/504 April 1996

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kevin L Anderson	SAMPLER(S) SIGNATURES: [signature]	SAMPLING INITIATED AT: 1110	SAMPLING ENDED AT: 1155
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute): 100	FIELD PARAMETER MONITORING EQUIPMENT MODEL & SERIAL #s: YSI 556 MPS 14F100295	
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: (Y) N Filtration Equipment Type:	FILTER SIZE: ____ µm .45	DUPLICATE: Y (N)

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

WELL CONDITION CHECKLIST (circle appropriate item(s), cross out if not applicable)

Type: Flush Mount / (Stand Pipe) General Condition: (Good) / Needs Repair Well Caps: (Good) / Broken / None Lock: (Good) / Broken / None

Evidence of Rain Water Between Steel & PVC? Y / (N) Is Well Plumb? (Y) / N PVC Riser: (Good) / Damaged / None

Evendence of Ponding Around Welll? Y / (N) Concrete Collar: (Good) / Cracked / Leaking / None

REMARKS:

MONITORING WELL SAMPLING LOG

Low Flow Sampling

PROJECT NAME: Fort Devens	PROJECT LOCATION: SHL	DATE: 6/8/15	WELL ID: SHM-05-41C
PROJECT NUMBER:	WELL DIAMETER (inches): 2	DEPTH TO WATER (feet): 11.18	DEPTH TO BOTTOM (feet): 88.38
PID READING (ppmv):			

PURGING DATA

TUBING DIAMETER (inches): 1/4	TUBING MATERIAL CODE: (see below)	PURGE PUMP TYPE: geotech	PUMP EQUIPMENT MODEL & SERIAL #s: 7580

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

GALLONS: | LITERS:

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

1 GALLON = 3.785 LITERS

WELL SCREEN INTERVAL DEPTH (feet): 88.0-93.0	INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 88'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 88'	PURGING INITIATED AT: 1250	PURGING ENDED AT: 1300	TOTAL VOLUME PURGED: GALLONS: 1.5 LITERS:

WATER LEVEL STABLIZATION | DEPTH TO WATER WITH PUMP: (feet)

TIME INTERVAL (min)	FLOW RATE (mL/min)	PUMP SETTINGS	DEPTH TO WATER (feet) START	DEPTH TO WATER (feet) END	Water Level Stable (Yes or No)	VOLUME PURGED DURING INTERVAL (mL)
1255	100		11.18	11.18		500
1300	100		11.18	11.18		500

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TURBIDITY (NTU) (+/- 10%)or <5**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	TEMP (°C) (+/- 3%)**	SPECIFIC CONDUCTIVITY (µS/cm) (+/- 3%)**	ORP (mV) (+/- 10mV)**	COLOR (describe)	ODOR (describe)
1305	100	11.18	5.41	6.48	7.31	12.61	912	-151.9	clear	none
1310	↓	↓	5.07	2.09	7.21	12.37	869	-141.2	↓	↓
1315			4.97	1.55	7.12	12.26	858	-139.3		
1320			4.73	1.12	7.09	12.21	842	-141.6		
1325			4.69	0.56	7.06	12.19	831	-137.2		
1330			4.67	0.53	7.04	12.14	827	-135.1		
1335			4.61	0.51	7.03	12.11	826	-133.7		
1340			4.59	0.49	7.02	12.08	825	-131.7		

* every 5 or more minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

** EPA stabilization parameters from EPA/540/S-95/504 April 1996

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kevin L. Anderson	SAMPLER(S) SIGNATURES: Kevin L. Anderson	SAMPLING INITIATED AT: 1305	SAMPLING ENDED AT: 1345
PUMP OR TUBING DEPTH IN WELL (feet): 88	SAMPLE PUMP FLOW RATE (mL per minute): 100	FIELD PARAMETER MONITORING EQUIPMENT MODEL & SERIAL #s: YSI 556 MPS 14F100295	

FIELD DECONTAMINATION: (Y) N | FIELD-FILTERED: (Y) N | FILTER SIZE: ____ µm | Filtration Equipment Type: 0.45 | DUPLICATE: Y (N)

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

WELL CONDITION CHECKLIST (circle appropriate item(s), cross out if not applicable)

Type: (Flush Mount) / Stand Pipe General Condition: (Good) / Needs Repair Well Caps: (Good) / Broken / None Lock: (Good) / Broken / None

Evidence of Rain Water Between Steel & PVC? Y / (N) Is Well Plumb?: (Y) / N PVC Riser: (Good) / Damaged / None

Evendence of Ponding Around Well? Y / (N) Concrete Collar: (Good) / Cracked / Leaking / None

REMARKS:

MONITORING WELL SAMPLING LOG

Low Flow Sampling

PROJECT NAME: Fort Devens	PROJECT LOCATION: SHL	DATE: 6/8/15	WELL ID: SHM-05-41B
PROJECT NUMBER:	WELL DIAMETER: (inches) 2	DEPTH TO WATER: (feet) 10.98	DEPTH TO BOTTOM: (feet) 63.72
			PID READING: (ppmv)

PURGING DATA

TUBING DIAMETER (inches): 1/4	TUBING MATERIAL CODE: (see below)	PURGE PUMP TYPE: Geotech	PUMP EQUIPMENT MODEL & SERIAL #s: 7580

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

GALLONS: LITERS:

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

1 GALLON = 3.785 LITERS

TOTAL VOLUME PURGED: GALLONS: 1.5 LITERS:

WELL SCREEN INTERVAL DEPTH (feet): 62.0 → 64.0	INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 63.0	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 63.0	PURGING INITIATED AT: 1353	PURGING ENDED AT: 1403

WATER LEVEL STABLIZATION DEPTH TO WATER WITH PUMP: (feet)

TIME INTERVAL (min)	FLOW RATE (mL/min)	PUMP SETTINGS	DEPTH TO WATER (feet) START	DEPTH TO WATER (feet) END	Water Level Stable (Yes or No)	VOLUME PURGED DURING INTERVAL (mL)
1358	100		10.98	10.98	Y	500
1403	100		10.98	10.98		500

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TURBIDITY (NTU) (+/- 10%)or <5**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	TEMP (°C) (+/- 3%)**	SPECIFIC CONDUCTIVITY (µS/cm) (+/- 3%)**	ORP (mV) (+/- 10mV)**	COLOR (describe)	ODOR (describe)
1408	100	10.98	58.5	0.33	6.76	12.82	442	15.3	FP flakes	none
1413	↓	↓	41.6	0.53	6.66	13.07	421	-37.6	Some FP	↓
1418			37.2	0.64	6.62	13.22	416	-54.4	Some FP	
1423			37.7	0.39	6.64	13.29	366	-82.1	Some FP	
1428			29.6	0.21	6.63	13.31	337	-92.6	Some FP	
1433			13.2	0.18	6.63	13.33	328	-96.8	Some FP	
1438			8.2	0.14	6.65	13.31	319	-100.3	clear	
1443			7.3	0.09	6.67	13.29	317	-101.2	clear	
1448			7.1	0.08	6.68	13.27	316	-103.1	clear	
1453	↓	↓	6.9	0.09	6.67	13.29	315	-104.1	clear	↓

* every 5 or more minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

** EPA stabilization parameters from EPA/540/S-95/504 April 1996

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Kevin Anderson	SAMPLER(S) SIGNATURES: [signature]	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 1500
PUMP OR TUBING DEPTH IN WELL (feet): 63.0	SAMPLE PUMP FLOW RATE (mL per minute): 100	FIELD PARAMETER MONITORING EQUIPMENT MODEL & SERIAL #s: YSI 556 MPS ~~Hydrolab~~ 14F100295	

FIELD DECONTAMINATION: (Y) N

FIELD-FILTERED: (Y) N FILTER SIZE: ____ µm Filtration Equipment Type: .45

DUPLICATE: Y (N)

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

WELL CONDITION CHECKLIST (circle appropriate item(s), cross out if not applicable)

Type: (Flush Mount) / Stand Pipe General Condition: (Good) / Needs Repair Well Caps: (Good) / Broken / None Lock: (Good) / Broken / None

Evidence of Rain Water Between Steel & PVC? Y / (N) Is Well Plumb?: (Y) / N PVC Riser: (Good) / Damaged / None

Evendence of Ponding Around Well? Y / (N) Concrete Collar: (Good) / Cracked / Leaking / None

REMARKS:

MONITORING WELL SAMPLING LOG

Low Flow Sampling

PROJECT NAME: Ft. Devens	PROJECT LOCATION: Shepley's Hill	DATE: 6/8/15	WELL ID: SHM-13-08
PROJECT NUMBER:	WELL DIAMETER: (inches) 2"	DEPTH TO WATER: (feet)	DEPTH TO BOTTOM: (feet)	PID READING: (ppmv) 0.0

PURGING DATA

TUBING DIAMETER (inches): N/A	TUBING MATERIAL CODE: (see below) PE	PURGE PUMP TYPE: peristaltic	PUMP EQUIPMENT MODEL & SERIAL #s: peristaltic geopump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

GALLONS: | LITERS:

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

1 GALLON = 3.785 LITERS | TOTAL VOLUME PURGED:

WELL SCREEN INTERVAL DEPTH (feet): 55-65'	INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 55'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 55'	PURGING INITIATED AT: 1130	PURGING ENDED AT: 1225	GALLONS: LITERS: ~5.5

WATER LEVEL STABLIZATION | DEPTH TO WATER WITH PUMP: (feet)

TIME INTERVAL (min)	FLOW RATE (mL/min)	PUMP SETTINGS	DEPTH TO WATER (feet) START	END	Water Level Stable (Yes or No)	VOLUME PURGED DURING INTERVAL (mL)

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TURBIDITY (NTU) (+/- 10%)or <5**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	TEMP (°C) (+/- 3%)**	SPECIFIC CONDUCTIVITY (µS/cm) (+/- 3%)**	ORP (mV) (+/- 10mV)**	COLOR (describe)	ODOR (describe)
1135	100	21.09	13.03	3.63	6.88	15.10	375	-66.3	clear	none
1140	100	21.08	24.08	1.16	5.76	14.74	378	-50.0	clear-orange floating	none
1145	100	21.08	10.46	1.01	6.05	14.48	375	-57.2	clear	none
1150	100	21.08	6.39	1.00	6.17	14.39	374	-55.2	clear	none
1200	100	21.08	7.42	1.05	6.25	14.42	374	-60.2	↓	↓
1205	100	21.08	6.90	0.92	6.36	14.77	374	-65.5	↓	↓
1210	110	21.08	6.66	0.84	6.71	15.49	376	-86.7	↓	↓
1215	110	21.08	6.20	0.85	6.72	14.16	376	-87.0	↓	none
1220	110	21.08	6.15	0.83	6.75	14.17	376	-87.2	clear	none
1225	110	21.08	6.10	0.83	6.76	14.12	376	-88.1	clear	none

* every 5 or more minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

** EPA stabilization parameters from EPA/540/S-95/504 April 1996

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Stacey Lee	SAMPLER(S) SIGNATURES: Stacey Lee	SAMPLING INITIATED AT: 1225	SAMPLING ENDED AT: 1240

PUMP OR TUBING DEPTH IN WELL (feet): | SAMPLE PUMP FLOW RATE (mL per minute): | FIELD PARAMETER MONITORING EQUIPMENT MODEL & SERIAL #s:

FIELD DECONTAMINATION: Y N | FIELD-FILTERED: Y N FILTER SIZE: ____ µm Filtration Equipment Type: | DUPLICATE: (Y) N

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

WELL CONDITION CHECKLIST (circle appropriate item(s), cross out if not applicable)

Type: (Flush Mount) / Stand Pipe General Condition: Good / Needs Repair Well Caps: (Good) / Broken / None Lock: Good / Broken / (None)

Evidence of Rain Water Between Steel & PVC? Y / (N) Is Well Plumb?: (Y) N PVC Riser: Good / Damaged / None

Evendence of Ponding Around Welll? Y / (N) Concrete Collar: (Good) / Cracked / Leaking / None

REMARKS: SHM-13-08-060815 MS/MSD collected DUP-060815 collected 6/8/15 0000

MONITORING WELL SAMPLING LOG

Low Flow Sampling

PROJECT NAME: Ft. Devens - Shepley's	PROJECT LOCATION:	DATE: 6/4/15	WELL ID: SHL-11
PROJECT NUMBER:	WELL DIAMETER: (inches) 2"	DEPTH TO WATER: (feet) 18.20	DEPTH TO BOTTOM: (feet) 29.68	PID READING: (ppmv) 0.0

PURGING DATA

TUBING DIAMETER (inches): 0.5	TUBING MATERIAL CODE: (see below)	PURGE PUMP TYPE: Peristaltic	PUMP EQUIPMENT MODEL & SERIAL #s: geopump R9760

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

GALLONS: LITERS:

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

1 GALLON = 3.785 LITERS

WELL SCREEN INTERVAL DEPTH (feet):	INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1455	PURGING ENDED AT: 1555	TOTAL VOLUME PURGED: GALLONS: ~2.0 LITERS: ~6.0

WATER LEVEL STABLIZATION DEPTH TO WATER WITH PUMP: (feet)

TIME INTERVAL (min)	FLOW RATE (mL/min)	PUMP SETTINGS	DEPTH TO WATER (feet) START	DEPTH TO WATER (feet) END	Water Level Stable (Yes or No)	VOLUME PURGED DURING INTERVAL (mL)

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TURBIDITY (NTU) (+/- 10%)or <5**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	TEMP (°C) (+/- 3%)**	SPECIFIC CONDUCTIVITY (µS/cm) (+/- 3%)**	ORP (mV) (+/- 10mV)**	COLOR (describe)	ODOR (describe)
1500	100	18.40	4.69	1.36	6.82	12.00	675	-110.4	slight sediment	none
1505	100	18.41	12.00	0.91	6.86	12.02	674	-116.0	clear	none
1510	100	18.41	14.00	0.73	6.90	11.81	676	-127.1	clear	none
1515	100	18.41	12.20	0.59	6.91	11.80	675	-128.5	clear	none
1520	100	18.42	12.56	0.51	6.91	11.78	674	-125.4	clear	none
1525	100	18.42	13.10	0.43	6.96	11.72	675	-121.6	clear	none
1530	100	18.42	13.90	0.42	6.96	11.69	675	-127.0	silt	none
1535	100	18.42	12.10	0.36	7.00	11.66	677	-131.5	silt	none
1540	100	18.42	13.23	0.34	6.99	11.66	676	-132.5	silt	none
1545	100	18.42	11.25	0.32	7.00	11.69	675	-133.5	silt	none
1550	100	18.42	11.30	0.33	7.00	11.65	676	-133.0	silt	none
1555	100	18.42	11.38	0.31	7.01	11.64	676	-134.2	silt	none

* every 5 or more minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

** EPA stabilization parameters from EPA/540/S-95/504 April 1996

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Stacey Lee HRS	SAMPLER(S) SIGNATURES: Stacey Lee	SAMPLING INITIATED AT: 1555	SAMPLING ENDED AT: 1610
PUMP OR TUBING DEPTH IN WELL (feet): 29'	SAMPLE PUMP FLOW RATE (mL per minute): 100	FIELD PARAMETER MONITORING EQUIPMENT MODEL & SERIAL #s:	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE 0.45 µm	DUPLICATE: Y N

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

WELL CONDITION CHECKLIST (circle appropriate item(s), cross out if not applicable)

Type: Flush Mount / (Stand Pipe) General Condition: (Good) / Needs Repair Well Caps: (Good) / Broken / None Lock: (Good) / Broken / None

Evidence of Rain Water Between Steel & PVC? Y / (N) Is Well Plumb?: (Y) / N PVC Riser: (Good) / Damaged / None

Evendence of Ponding Around Welll? Y / (N) Concrete Collar: (Good) / Cracked / Leaking / None

REMARKS:

MONITORING WELL SAMPLING LOG

Low Flow Sampling

PROJECT NAME: Ft. Devens	PROJECT LOCATION: Shepley's Hill	DATE: 6/9/15	WELL ID: SHM-10-05A
PROJECT NUMBER:	WELL DIAMETER: (inches) 1.5"	DEPTH TO WATER: (feet) 25.60	DEPTH TO BOTTOM: (feet) / PID READING: (ppmv)

PURGING DATA

TUBING DIAMETER (inches): 1/4	TUBING MATERIAL CODE: (see below) PE	PURGE PUMP TYPE: Peristaltic	PUMP EQUIPMENT MODEL & SERIAL #s: Peristaltic 7580

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY — GALLONS: — LITERS:

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 — 1 GALLON = 3.785 LITERS — TOTAL VOLUME PURGED:

WELL SCREEN INTERVAL DEPTH (feet):	INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	GALLONS: / LITERS:

WATER LEVEL STABLIZATION — DEPTH TO WATER WITH PUMP: (feet)

TIME INTERVAL (min)	FLOW RATE (mL/min)	PUMP SETTINGS	DEPTH TO WATER (feet) START	DEPTH TO WATER (feet) END	Water Level Stable (Yes or No)	VOLUME PURGED DURING INTERVAL (mL)

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TURBIDITY (NTU) (+/- 10%)or <5**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	TEMP (°C) (+/- 3%)**	SPECIFIC CONDUCTIVITY (µS/cm) (+/- 3%)**	ORP (mV) (+/- 10mV)**	COLOR (describe) -	ODOR (describe) -
1020	100	25.21	10.63	6.32	4.12	14.09	317	343.4	clear	none
1025	100	25.21	9.77	3.07	3.79	14.31	229	342.2	clear	none
1030	100	25.20	1.39	2.11	4.74	13.89	211	302.8	clear	none
1040	100	25.20	1.46	1.74	4.87	13.92	209	298.1		
1045	100	25.20	1.37	1.68	5.72	13.95	209	214.2		
1050	100	25.20	1.32	1.52	5.87	13.99	209	199.2		
1055	100	25.20	1.30	1.42	6.07	13.98	207	209.4		
1100	100	25.20	1.28	1.40	6.05	13.98	207	209.8		
1105	100	25.20	1.26	1.36	6.10	13.99	207	208.2		

* every 5 or more minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

** EPA stabilization parameters from EPA/540/S-95/504 April 1996

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT:	SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet): — SAMPLE PUMP FLOW RATE (mL per minute): — FIELD PARAMETER MONITORING EQUIPMENT MODEL & SERIAL #s: YSI 556 08H101440 Lamotte 2020we 3146 1513

FIELD DECONTAMINATION: Y N — FIELD-FILTERED: Y N FILTER SIZE: ____ µm — Filtration Equipment Type: — DUPLICATE: Y N

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

WELL CONDITION CHECKLIST (circle appropriate item(s), cross out if not applicable)

Type: Flush Mount / Stand Pipe — General Condition: Good / Needs Repair — Well Caps: Good / Broken / None — Lock: Good / Broken / None

Evidence of Rain Water Between Steel & PVC? Y / N — Is Well Plumb?: Y / N — PVC Riser: Good / Damaged / None

Evendence of Ponding Around Welll? Y / N — Concrete Collar: Good / Cracked / Leaking / None

REMARKS:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: LTM Sites at Devens Date: 6/8/2015

Project Location: Ayer/SHL Project #:

Personnel: Samantha Landry

WELL IDENTIFICATION: SHL-12 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			
Concrete Pad Intact			
PVC Casing Intact			
Well Gripper Present			
Bolts Present (Pad Wells)			
Locked (Stickup Wells)			

Photograph

Well Information

Diameter: 2" Depth to Water: 21.61

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Teflon-lined P Pump S/N

Purge Start Time: 10:30 AM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:35 AM	325	21.61	10.73	316	2.23	4.21	309.6	26.5	clear
10:40 AM		21.61	10.63	308	2.27	4.24	295.0	21.1	clear
10:45 AM		21.61	10.47	286	2.42	4.95	248.6	20.0	clear
10:50 AM		21.61	10.47	287	2.41	5.00	246.0	20.6	clear
10:55 AM		21.61	10.48	285	2.52	5.33	224.5	19.5	clear
11:00 AM		21.61	10.44	286	2.49	5.39	228.9	19.1	clear
11:05 AM		21.61	10.38	287	2.53	5.42	226.5	19.5	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N **DUPLICATE:** Y N **MS/MSD:** Y N

FILTER SIZE: _____ µm

SAMPLED BY (PRINT): Samantha Landry **SAMPLER(S) SIGNATURES:** **SAMPLING START TIME:** 11:10 AM **SAMPLING END TIME:**

NOTES:

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Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: LTM Sites at Devens Date: 6/8/2015

Project Location: Ayer/SHL Project #:

Personnel: Samantha Landry

WELL IDENTIFICATION: SHL-15 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			
Concrete Pad Intact			
PVC Casing Intact			
Well Gripper Present			
Bolts Present (Pad Wells)			
Locked (Stickup Wells)			

Photograph

Well Information

Diameter: 4" Depth to Water: 17.81

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N

Purge Start Time: 12:50 PM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
12:55 PM	400	17.81	10.51	393	0.72	5.63	-133.0	23.9	clear
1:00 PM		17.81	10.53	390	0.50	5.67	-135.8	25.8	clear
1:05 PM		17.81	10.48	391	0.48	5.74	-142.2	19.8	clear
1:10 PM		17.81	10.40	391	0.56	5.77	-145.0	30.16	clear
1:15 PM		17.81	10.33	393	0.39	5.79	-148.4	28.5	clear
1:20 PM		17.81	10.23	393	0.39	5.81	-150.9	25.9	clear
1:25 PM		17.81	10.27	394	0.38	5.82	-151.4	24.5	clear
1:30 PM		17.81	10.22	392	0.24	5.82	-151.5	23.8	

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N **DUPLICATE:** Y N **MS/MSD:** Y N

FILTER SIZE: _____ µm

SAMPLED BY (PRINT): Samantha Landry **SAMPLER(S) SIGNATURES:** **SAMPLING START TIME:** 1:30 PM **SAMPLING END TIME:**

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: LTM Sites at Devens Date: 6/9/2015

Project Location: Ayer/SHL Project #:

Personnel: Samantha Landry

WELL IDENTIFICATION: SHL-23 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			
Concrete Pad Intact			
PVC Casing Intact			
Well Gripper Present			
Bolts Present (Pad Wells)			
Locked (Stickup Wells)			

Photograph

Well Information

Diameter: 4" Depth to Water: 28.58

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N

Purge Start Time: 12:00 PM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
12:05 PM	400	28.54	9.60	27	10.82	5.42	120.2	5.95	clear
12:10 PM			9.58	27	10.50	5.35	124.6	4.66	clear
12:15 PM			9.56	27	10.55	5.35	122.3	3.68	clear
12:20 PM			9.44	27	8.55	5.35	123.6	2.99	clear
12:25 PM			9.54	26	8.60	5.34	124.5	2.43	clear
12:30 PM			9.57	27	8.66	5.29	126.5	4.71	clear
12:35 PM			9.54	27	8.56	5.26	132.4	2.55	clear
12:40 PM			9.59	26	8.59	5.22	134.6	3.25	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N **DUPLICATE:** Y N **MS/MSD:** Y N

FILTER SIZE: _____ µm

SAMPLED BY (PRINT): Samantha Landry **SAMPLER(S) SIGNATURES:** **SAMPLING START TIME:** 12:40 PM **SAMPLING END TIME:**

NOTES:

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Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: LTM Sites at Devens
Date: 6/9/2015
Project Location: Ayer/SHL
Project #:
Personnel: Samantha Landry

WELL IDENTIFICATION: SHL-24
Headspace (PID)

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			
Concrete Pad Intact			
PVC Casing Intact			
Well Gripper Present			
Bolts Present (Pad Wells)			
Locked (Stickup Wells)			

Photograph

Well Information

Diameter: 4"
Depth to Water: 15.24
Material: PVC
Depth to Bottom:
Screen Interval: 110-120

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump
1 Well Volume (gal):
Tubing Type Polyethylene (
Pump S/N
Purge Start Time: 9:45 AM
Air Source: Nitrogen
Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
9:50 AM	250	15.25	13.25	248	3.49	7.77	3.6	7.51	clear
9:55 AM			12.90	250	2.17	7.50	-0.7	5.84	clear
10:00 AM			12.85	250	2.17	7.49	-1.0	1.67	clear
10:05 AM			12.78	251	2.14	7.43	-3.6	1.51	clear
10:10 AM			12.78	251	2.11	7.42	-3.8	1.88	clear
10:15 AM			12.68	250	2.03	7.36	-6.6	2.00	clear
10:20 AM			12.66	251	2.03	7.35	-6.6	1.54	clear
10:25 AM			12.66	252	1.97	7.28	-6.3	2.07	clear
10:30 AM			12.64	252	2.00	7.33	-6.9	2.05	clear
10:35 AM			12.64	252	2.02	7.31	-6.2	2.09	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N	DUPLICATE: Y N	MS/MSD: Y N
FILTER SIZE: _____ µm		

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Samantha Landry		10:35 AM	

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 6/9/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: shm-07-03 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			X
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 19.72
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N
Purge Start Time: 11:54 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
11:59 AM	150	20.25	13.17	639	8.36	5.94	152.7	40.2	cloudy
12:04 PM	150	20.25	12.78	621	8.19	5.88	147.3	31.0	cloudy
12:09 PM	150	20.25	12.59	598	7.96	5.83	142.8	19.6	cloudy
12:14 PM	150	20.25	12.55	596	7.98	5.81	144.5	16.7	cloudy
12:19 PM	150	20.25	12.58	597	7.82	5.79	142.7	15.0	clear
12:24 PM	150	20.25	12.59	597	7.82	5.78	140.7	12.6	clear
12:29 PM	150	20.25	12.59	599	7.67	5.78	134.9	11.28	clear
12:34 PM	150	20.25	12.58	601	7.68	5.77	133.6	9.40	clear
12:39 PM	150	20.25	12.54	602	7.65	5.77	131.6	7.73	clear
12:44 PM	150	20.25	12.57	599	7.60	5.76	135.4	7.34	clear
12:49 PM	150	20.25	12.59	601	7.55	5.75	136.7	7.34	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X			X			X	

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		12:49 PM	

NOTES: field filtered DOC and Diss As / total metals

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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: LTM Sites at Devens Date: 6/8/2015

Project Location: Ayer/SHL Project #:

Personnel: Samantha Landry

WELL IDENTIFICATION: SHM-07-05X **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			
Concrete Pad Intact			
PVC Casing Intact			
Well Gripper Present			
Bolts Present (Pad Wells)			
Locked (Stickup Wells)			

Photograph

Well Information

Diameter: 2" Depth to Water: 14.52

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N

Purge Start Time: 3:00 PM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
3:05 PM	400	14.52	13.81	461	6.48	7.34	16.0	9.70	clear
3:10 PM		14.52	13.77	461	6.50	7.33	16.9	8.4	clear
3:15 PM		14.52	13.76	460	6.48	7.44	32.8	6.44	clear
3:20 PM		14.52	13.79	460	6.52	7.44	35.1	6.20	clear
3:25 PM		14.52	13.69	459	6.60	7.42	36.0	4.81	clear
3:30 PM		14.52	13.74	461	6.49	7.43	37.0	4.1	clear
3:35 PM		14.52	13.70	460	6.47	7.41	37.9	3.05	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N **DUPLICATE:** Y N **MS/MSD:** Y N

FILTER SIZE: _____ µm

SAMPLED BY (PRINT): Samantha Landry **SAMPLER(S) SIGNATURES:** **SAMPLING START TIME:** 3:35 PM **SAMPLING END TIME:**

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: LTM Sites at Devens Date: 6/9/2015

Project Location: Ayer NIA Project #:

Personnel: Mykel Mendes

WELL IDENTIFICATION: SHM-10-01 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1.5" Depth to Water: 3.94

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N geopump 420

Purge Start Time: 12:40 PM Air Source: Nitrogen Tubing Diameter 0.375

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
12:45 PM	500	4.0	10.87	292	5.58	6.06	166.4	3.53	clear
12:50 PM	500	4.0	10.89	296	4.54	4.33	229.2	2.31	clear
12:55 PM	500	4.0	10.89	303	3.34	5.53	140.1	1.63	clear
1:00 PM	500	4.0	10.85	304	3.21	5.61	130.7	0.83	clear
1:05 PM	500	4.0	10.90	306	2.41	5.86	111.2	0.63	clear
1:10 PM	500	4.0	10.98	307	2.04	5.93	107.1	0.29	clear
1:15 PM	500	4.0	10.94	308	1.76	6.00	103	0.71	clear
1:20 PM	500	4.0	10.97	310	1.44	6.04	101.3	0.91	clear
1:25 PM	500	4.0	10.83	309	1.19	6.07	99.2	0.28	clear
1:30 PM	500	4.0	10.96	310	1.03	6.08	98.0	0.50	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y	N	DUPLICATE: Y	N	MS/MSD: Y	N
FILTER SIZE: 0.45 µm	X		X		X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Mykel Mendes	Mykel Mendes	1:30 PM	1:41 PM

NOTES: ysi556 mps 09J101596; filtered only for metals and DOC

hach 2100q 1504c040467: Dup1 collected

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill
Date: 6/8/2015
Project Location: Ayer/SHL
Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: shm-13-03
Headspace (PID)

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2"
Depth to Water: 5.4
Material: PVC
Depth to Bottom:
Screen Interval: 42-52

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump
1 Well Volume (gal):
Tubing Type Polyethylene (
Pump S/N 3208
Purge Start Time: 1:11 PM
Air Source:
Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
1:16 PM	225	5.45	14.06	397	0.40	6.74	-73.6	33.9	cloudy
1:21 PM	225	5.45	13.54	324	0.22	6.64	73.6	22.3	cloudy
1:26 PM	225	5.45	13.38	319	0.23	6.54	-72.7	6.09	clear
1:31 PM	225	5.45	13.33	361	0.33	6.49	-74.7	5.54	clear
1:36 PM	225	5.45	13.18	400	0.29	6.48	-72.2	5.82	clear
1:41 PM	225	5.45	13.06	490	0.21	6.49	-75.6	5.86	clear
1:46 PM	225	5.45	13.16	623	0.19	6.44	-75.3	5.77	clear
1:51 PM	225	5.45	13.10	656	0.22	6.46	-72.9	4.05	clear
1:56 PM	225	5.45	13.15	671	0.25	6.48	-71.3	3.98	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .25 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		1:57 PM	2:05 PM

NOTES: field filter DOC and Dissolved AS/total metals. Property owner fixed well after tree fell on it
property owner said a tree came down, snapped riser, knocked over pad and steel casing over the. winter.

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 6/9/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: shm-13-04 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			X
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 18.9
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 3208
Purge Start Time: 9:47 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
9:54 AM	250	18.9	11.59	746	3.29	7.01	-16.6	72.3	cloudy
9:59 AM	250	18.9	11.69	733	2.72	6.41	49.8	37.4	cloudy
10:04 AM	250	18.9	11.65	712	2.37	6.15	35.4	33.0	cloudy
10:09 AM	250	18.9	11.86	703	2.26	6.07	37.0	18.1	clear
10:14 AM	250	18.9	11.63	698	2.23	6.00	36.9	22.5	clear
10:19 AM	250	18.9	11.57	693	2.14	5.96	38.8	6.18	clear
10:24 AM	250	18.9	11.57	688	2.05	5.92	37.6	4.96	clear
10:28 AM	250	18.9	11.55	685	2.04	5.90	38.1	3.32	clear
10:34 AM	250	18.9	11.55	680	2.01	5.89	41.1	2.68	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N	DUPLICATE: Y N	MS/MSD: Y N
FILTER SIZE: _____ µm X	X	X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		10:40 AM	

NOTES: field filter DOC and Dissolved AS / total metals

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 6/8/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: shm-13-07 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			X
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 18.55
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 3208
Purge Start Time: 2:35 PM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
2:40 PM	225	18.55	13.22	688	0.67	7.00	-60.9	89.0	turbid
2:45 PM	225	18.55	12.67	688	0.48	6.88	-59.5	56.1	turbid
2:50 PM	225	18.55	12.58	636	0.29	6.83	-55.0	40.7	turbid
2:55 PM	225	18.55	12.64	601	0.23	6.81	-55.7	31.6	turbid
3:00 PM	255	18.55	12.44	582	0.19	6.81	-57.0	25.9	clear
3:05 PM	255	18.55	12.66	570	0.23	6.81	-58.8	26.7	clear
3:10 PM	255	18.55	12.73	565	0.19	6.82	-60.7	24.8	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** .25 µm
DUPLICATE: Y N X
MS/MSD: Y N X

SAMPLED BY (PRINT): Erin Foley
SAMPLER(S) SIGNATURES:
SAMPLING START TIME: 3:11 PM
SAMPLING END TIME: 3:15 PM

NOTES: field filtered DOC and Diss As/total metals

FALL 2015

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/27/2015

Project Location: Ayer/SHL Project #:

Personnel: Erin Foley

WELL IDENTIFICATION: SHM-10-03 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)			

Photograph

Well Information

Diameter: 2" Depth to Water: 3.25

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: 1 Well Volume (gal): Tubing Type Pump S/N

Purge Start Time: 1:20 PM Air Source: Tubing Diameter

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
1:25 PM	300	3.26	11.36	185	8.00	6.30	59.8	1.72	clear
1:30 PM	300	3.26	11.14	185	8.09	6.23	66.2	1.14	clear
1:35 PM	300	3.26	11.09	186	8.11	6.17	84.5	0.65	clear
1:40 PM	300	3.26	10.96	194	7.92	6.11	98.7	0.64	clear
1:45 PM	300	3.26	10.94	197	7.90	6.13	99.6	0.63	clear
1:50 PM	300	3.26	10.93	198	7.92	6.13	99.9	0.61	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** .45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Erin Foley

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 1:50 PM

SAMPLING END TIME: 1:55 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/26/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: EPA-PZ-2012-4A **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)		X	
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 1" Depth to Water: 16.25

Material: PVC Depth to Bottom: _____

Screen Interval: 20-25

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N 420

Purge Start Time: 10:39 AM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
10:44 AM	150	16.25	12.96	770	0.44	6.49	-34.0	3.45	clear
10:49 AM	150	16.25	12.87	771	0.43	6.45	-33.2	1.80	clear
10:54 AM	150	16.25	12.85	770	0.40	6.45	-33.1	1.36	clear
10:59 AM	150	16.25	12.88	771	0.37	6.45	-33.0	0.69	clear
11:03 AM	150	16.25	12.94	769	0.35	6.43	-33.1	1.02	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N

FILTER SIZE: 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Julie Godsoe

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 11:10 AM

SAMPLING END TIME:

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/26/2015

Project Location: Project #:

Personnel: Julie Godsoe

WELL IDENTIFICATION: EPA-PZ-2012-4B-FAL15 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 1" Depth to Water: 16.10

Material: PVC Depth to Bottom: 75

Screen Interval: 70-75

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Teflon-lined P Pump S/N 420

Purge Start Time: 9:40 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
9:49 AM	150	16.35	11.83	515	0.88	6.81	-110.6	7.71	clear
9:53 AM	150	16.35	11.8	514	0.73	6.70	-111.1	24.0	cloudy
9:57 AM	150	16.35	11.72	516	0.54	6.65	-114.1	10.4	clear
10:03 AM	150	16.35	11.7	516	0.53	6.64	-114.2	14.7	clear
10:09 AM	150	16.35	11.68	517	0.50	6.65	-115.8	14.8	clear
10:13 AM	150	16.35	11.71	515	0.45	6.68	-119.2	14.1	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **DUPLICATE:** Y N X **MS/MSD:** Y N X

FILTER SIZE: .45 µm

SAMPLED BY (PRINT): Julie Godsoe **SAMPLER(S) SIGNATURES:** **SAMPLING START TIME:** 10:20 AM **SAMPLING END TIME:**

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/26/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: EPA-PZ-2012-6A-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 1" Depth to Water: 24.07

Material: PVC Depth to Bottom: _____

Screen Interval: _____

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N 420

Purge Start Time: 1:38 PM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
1:45 PM	150	24.07	8.75	265	9.11	6.85	20.8	40.8	cloudy
1:51 PM	150	24.07	8.73	277	8.82	6.78	23.8	40.1	cloudy
1:57 PM	150	24.07	8.63	285	8.64	6.61	32.7	28.7	clear
2:02 PM	150	24.07	8.86	287	8.48	6.58	35.1	15.1	clear
2:07 PM	150	24.07	8.40	291	8.41	6.63	34.2	12.0	clear
2:12 PM	150	24.07	8.80	289	8.43	6.64	35.2	8.53	clear
2:17 PM	150	24.07	8.76	289	8.50	6.64	37.2	5.19	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N X

FILTER SIZE: .45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Julie Godsoe

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 2:30 PM

SAMPLING END TIME:

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/26/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: EPA-PZ-2012-6B-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 1" Depth to Water: 23.97

Material: PVC Depth to Bottom: _____

Screen Interval: _____

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N 420

Purge Start Time: 12:42 PM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
12:45 PM	175	23.97	8.94	87	2.68	6.54	46.6	8.72	clear
12:49 PM	175	23.97	8.78	86	2.02	6.36	55.0	3.19	clear
12:54 PM	175	23.97	8.84	85	0.93	6.43	46.9	6.40	clear
12:58 PM	175	23.97	8.91	86	0.95	6.38	47.7	8.47	clear
1:02 PM	175	23.97	9.00	88	0.86	6.37	44.3	5.91	clear
1:07 PM	175	23.97	8.68	93	0.86	6.40	37.9	10.7	clear
1:11 PM	175	23.97	8.64	99	0.78	6.35	33.5	15.5	cloudy
1:15 PM	175	23.97	8.63	102	0.74	6.31	10.3	2.81	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N

FILTER SIZE: 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Julie Godsoe

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 1:17 PM

SAMPLING END TIME:

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/28/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHP-05-46B-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 2" Depth to Water: 17.53

Material: PVC Depth to Bottom: 25

Screen Interval: 20-25

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N G6357U

Purge Start Time: 9:05 AM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
9:11 AM	125	17.54	11.01	187	6.5	5.53	20.4	2.88	clear
9:15 AM	125	17.54	10.63	186	3.86	5.44	35.6	4.02	clear
9:20 AM	125	17.55	10.58	186	2.64	5.41	40.7	1.50	clear
9:25 AM	125	17.55	10.54	186	2.54	5.41	40.8	1.98	clear
9:29 AM	125	17.55	10.64	188	2.51	5.40	40.5	4.45	clear
9:34 AM	125	14.55	10.66	191	2.46	5.41	41.1	3.87	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N

FILTER SIZE: .45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Julie Godsoe

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 9:40 AM

SAMPLING END TIME: 9:46 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/28/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHP-05-46A-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 2" Depth to Water: 16.72

Material: PVC Depth to Bottom: 75

Screen Interval: 65-75

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N G6357U

Purge Start Time: 9:56 AM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
10:00 AM	200	16.72	10.24	152	21.77	6.27	-45.4	6.35	clear
10:04 AM	200	16.74	10.4	139	9.85	6.27	-43.3	5.54	clear
10:09 AM	200	16.74	10.32	137	3.25	6.27	-41.8	5.61	clear
10:15 AM	200	16.74	10.77	137	2.41	6.29	-42.3	7.30	clear
10:20 AM	200	16.74	10.73	137	1.38	6.29	-42.2	6.5	clear
10:25 AM	200	16.74	10.83	138	1.61	6.29	-42.1	4.16	clear
10:30 AM	200	16.74	10.89	138	1.36	6.29	-42.4	4.7	clear
10:35 AM	200	16.74	10.93	138	1.31	6.29	-42.4	3.76	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X			X			X	

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Julie Godsoe		10:40 AM	10:47 AM

NOTES: _____

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/28/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHP-05-45B-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 2" Depth to Water: 19.27

Material: PVC Depth to Bottom: 75

Screen Interval: 65-75

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N G6357U

Purge Start Time: 11:15 AM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
11:20 AM	175	19.23	11.36	494	9.34	7.10	2.2	18.5	cloudy
11:25 AM	175	19.23	11.66	494	7.16	7.12	6.6	16.0	cloudy
11:30 AM	175	19.23	11.66	494	7.12	7.11	6.9	10.3	clear
11:35 AM	175	19.23	11.70	454	6.77	7.13	8.9	8.71	clear
11:40 AM	175	19.23	11.97	494	6.61	7.13	12.2	9.07	clear
11:45 AM	175	19.23	12.02	494	6.59	7.13	13.0	7.73	clear
11:50 AM	175	19.23	12.26	494	6.45	7.12	12.4	7.4	clear
11:55 AM	175	19.23	12.26	493	6.39	7.11	9.6	7.24	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N

FILTER SIZE: 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Julie Godsoe

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 12:00 PM

SAMPLING END TIME:

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/28/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHP-05-45A-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 2" Depth to Water: 18.5

Material: PVC Depth to Bottom: 25

Screen Interval: 20-25

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N G6357U

Purge Start Time: 12:15 PM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
12:20 PM	125	18.53	13.45	177	4.70	6.52	-67.0	8.72	clear
12:25 PM	125	18.53	13.21	180	3.91	6.44	-73.1	7.28	clear
12:30 PM	125	18.53	13.04	239	1.88	6.36	-71.3	6.86	clear
12:35 PM	125	18.53	12.92	246	1.32	6.35	-75.2	6.35	clear
12:33 PM	125	18.53	12.87	246	1.23	6.35	-75.7	2.92	clear
12:37 PM	125	18.53	12.86	247	1.19	6.35	-75.9	2.31	clear
12:43 PM	125	18.53	12.82	247	1.06	6.35	-78.0	1.86	clear
12:50 PM	125	18.53	12.83	247	1.04	6.35	-78.3	1.48	clear
12:54 PM	125	18.53	12.82	247	1.01	6.35	-78.7	1.57	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: 0.45 µm	X			X			X	

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Julie Godsoe		1:00 PM	1:07 PM

NOTES: _____

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/29/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHM-05-40X-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 15.08

Material: PVC Depth to Bottom: 34

Screen Interval: 32-34

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N G6357U

Purge Start Time: 9:34 AM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
9:40 AM	175	15.08	11.70	284	25.52	6.89	-114.2	40.6	cloudy
9:45 AM	125	15.1	11.65	416	10.55	6.65	-135.4	24.0	cloudy
9:50 AM	125	15.1	11.98	434	9.38	6.69	-142.7	15.3	clear
9:55 AM	125	15.1	11.83	439	8.00	6.69	-144.2	12.3	clear
10:00 AM	125	15.1	11.9	441	10.74	6.70	-145.4	9.15	clear
10:05 AM	125	15.1	11.79	443	7.85	6.71	-146.9	6.72	clear
10:10 AM	125	15.1	11.65	446	5.04	6.71	-147.0	9.19	clear
10:15 AM	125	15.1	11.70	443	4.81	6.71	-147.0	5.56	clear
10:20 AM	125	15.11	11.72	445	4.13	6.71	-144.8	5.92	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N
FILTER SIZE: 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Julie Godsoe

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 10:22 AM

SAMPLING END TIME: 10:25 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/27/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: N1P1 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present		X	
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information
Diameter: 1" Depth to Water: 14.5
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Teflon-lined P Pump S/N
Purge Start Time: 9:52 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
9:57 AM	150	14.5	14.33	328	1.01	6.43	12.9	1.93	clear
10:02 AM	150	14.5	14.11	329	0.71	6.19	26.5	2.82	clear
10:07 AM	150	14.5	13.91	331	0.67	6.09	31.4	1.02	clear
10:12 AM	150	14.5	13.47	334	0.45	6.07	53.6	0.68	clear
10:17 AM	150	14.5	13.39	336	0.43	6.16	53.1	0.63	clear
10:22 AM	150	14.5	13.34	435	0.40	6.49	33.2	0.62	clear
10:27 AM	150	14.5	13.37	460	0.37	6.55	28.7	0.58	clear
10:32 AM	150	14.5	13.36	469	0.36	6.56	26.0	0.56	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** .45 µm
DUPLICATE: Y N X
MS/MSD: Y N X

SAMPLED BY (PRINT): Erin Foley
SAMPLER(S) SIGNATURES:
SAMPLING START TIME: 10:32 AM
SAMPLING END TIME: 10:40 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/26/2015

Project Location: Ayer/SHL Project #:

Personnel: Erin Foley Dylan Bush

WELL IDENTIFICATION: N1P2 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present		X	
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1" Depth to Water: 13.40

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Teflon-lined P Pump S/N 418

Purge Start Time: 1:28 PM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
1:33 PM	100	13.5	15.00	207	5.47	6.38	1.6	13.8	clear
1:38 PM	100	13.5	14.47	330	1.67	6.52	-15.1	5.06	clear
1:43 PM	100	13.5	14.21	340	1.26	6.62	-24.3	2.08	clear
1:48 PM	100	13.5	14.09	354	0.84	6.67	-34.6	1.34	clear
1:53 PM	108	13.5	13.97	358	0.70	6.71	-39.2	0.87	clear
2:00 PM	100	13.5	13.91	359	0.57	6.72	-42.2	0.83	clear
2:05 PM	100	13.5	13.91	360	0.55	6.72	-42.9	0.75	clear
2:10 PM	100	13.5	13.86	360	0.51	6.72	-43.7	0.65	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Dylan Bush

SAMPLER(S) SIGNATURES: DHB

SAMPLING START TIME:

SAMPLING END TIME:

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/27/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: N1P3 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present		X	
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1" Depth to Water: 12.81
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Teflon-lined P Pump S/N
Purge Start Time: 10:53 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:58 AM	250	12.81	16.13	344	0.96	6.30	-16.2	5.05	clear
11:03 AM	250	12.81	15.83	346	0.66	6.27	-18.9	1.89	clear
11:08 AM	250	12.81	16.02	345	0.56	6.26	-20.3	1.64	clear
11:13 AM	250	12.81	16.15	346	0.58	6.26	-21.9	1.71	clear
11:18 AM	250	12.81	16.18	347	0.36	6.24	-22.2	1.23	clear
11:23 AM	250	12.81	16.15	347	0.34	6.24	-22.2	1.15	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N	DUPLICATE: Y N	MS/MSD: Y N
FILTER SIZE: .45 µm X	X	X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		11:23 AM	11:29 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/23/2015
Project Location: Ayer/SHL Project #:
Personnel: Dylan Bush

WELL IDENTIFICATION: n7-p1 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present		X	
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1" Depth to Water: 32.40
Material: PVC Depth to Bottom: 71.42
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): 1.6 Tubing Type Polyethylene (Pump S/N 10214
Purge Start Time: 10:05 AM Air Source: Nitrogen Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:15 AM	100	32.40	11.89	236	1.31	6.60	-48.9	6.01	clear
10:25 AM	100	32.40	11.34	234	0.76	6.30	-48.6	7.09	clear
10:35 AM	100	32.40	11.38	234	0.67	6.21	-48.3	5.96	clear
10:45 AM	100	32.40	11.36	230	0.55	6.21	-51.7	2.21	clear
10:55 AM	100	32.40	11.31	229	0.48	6.28	-56.4	3.02	clear
11:00 AM	100	32.40	11.11	230	0.47	6.28	-56.9	1.41	clear
11:05 AM	100	32.40	11.05	232	0.41	6.28	-57.2	1.11	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** 0.45 µm
DUPLICATE: Y N X
MS/MSD: Y N X

SAMPLED BY (PRINT): Dylan Bush
SAMPLER(S) SIGNATURES: DH B
SAMPLING START TIME: 11:05 AM
SAMPLING END TIME: 11:18 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/22/2015
Project Location: Ayer/SHL Project #:
Personnel: Dylan Bush

WELL IDENTIFICATION: n7-p2 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1" Depth to Water: 32.52
Material: PVC Depth to Bottom: 38.07
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): 0.10 Tubing Type Polyethylene (Pump S/N 10214
Purge Start Time: 2:30 PM Air Source: Nitrogen Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
2:40 PM	100	32.89	17.19	267	1.04	6.26	-75.3	104	clear
2:50 PM	100	32.89	16.66	262	0.71	6.31	-80.4	47.7	clear
3:00 PM	100	32.89	16.34	262	0.42	6.31	-83.7	13.7	clear
3:05 PM	100	32.89	16.07	261	0.36	6.33	-86.0	6.06	clear
3:10 PM	100	32.89	16.10	260	0.34	6.34	-87.5	3.65	clear
3:15 PM	100	32.89	16.02	260	0.31	6.35	-88.1	3.49	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** 0.45 µm
DUPLICATE: Y N X
MS/MSD: Y N X

SAMPLED BY (PRINT): Dylan Bush
SAMPLER(S) SIGNATURES: DH B
SAMPLING START TIME: 3:15 PM
SAMPLING END TIME: 3:30 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/23/2015

Project Location: Ayer/SHL Project #:

Personnel: Raquel Vella

WELL IDENTIFICATION: SHL 20 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 4" Depth to Water: 18.6

Material: PVC Depth to Bottom: 49

Screen Interval: 39-49

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 420

Purge Start Time: 10:33 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:40 AM	200	18.61	10.96	335	1.17	6.31	-8.1	24.8	clear
10:50 AM	200	18.61	11.16	348	0.52	6.19	-2.5	21.4	clear
11:00 AM	200	18.61	10.82	558	0.46	6.29	-59.2	22.2	clear
11:10 AM	200	18.61	10.82	592	0.48	6.38	-98.8	14.3	clear
11:20 AM	200	18.61	10.64	597	0.49	6.40	-107.3	8.89	clear
11:30 AM	200	18.61	10.86	604	0.53	6.45	-116.4	4.45	clear
11:40 AM	200	18.61	10.77	605	0.54	6.44	-116.1	4.48	clear
11:50 AM	200	18.61	10.78	606	0.57	6.46	-119.0	7.31	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** .45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Raquel Vella

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 11:50 AM

SAMPLING END TIME: 11:57 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/22/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHL3 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 29.1
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N
Purge Start Time: 10:23 AM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:28 AM	200	29.35	12.95	111	5.05	6.45	179.5	24.6	turbid
10:33 AM	200	29.35	12.75	113	4.62	5.75	167.2	5.53	clear
10:38 AM	200	29.35	12.69	115	4.55	5.64	149.5	3.41	clear
10:43 AM	200	29.35	12.70	115	4.52	5.62	141.9	2.37	clear
10:48 AM	200	29.35	12.71	115	4.53	5.64	138.2	1.88	clear
10:53 AM	200	29.35	12.72	115	4.54	5.66	133.4	1.14	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X			X			X	

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley	[signature]	10:53 AM	10:00 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/27/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHL-4-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 2" Depth to Water: 9.82

Material: PVC Depth to Bottom: _____

Screen Interval: _____

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N 418

Purge Start Time: _____ Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
10:58 AM	100	9.8	12.57	166	7.88	6.55	8.1	9999	cloudy
11:03 AM	100	10.2	12.75	174	2.27	6.39	9.1	9999	cloudy
11:07 AM	100	10.2	12.90	183	1.33	6.26	10.1	9999	cloudy
11:11 AM	100	10.3	12.85	186	1.16	6.24	10.4	7.80	clear
11:17 AM	100	10.3	12.86	192	0.83	6.19	7.3	4.75	clear
11:22 AM	100	10.4	12.92	191	0.77	6.17	6.8	3.87	clear
11:27 AM	100	10.4	12.96	189	0.82	6.15	6.2	3.70	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: 0.45 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Julie Godsoe		11:30 AM	11:34 AM

NOTES: VERY IRON RICH WATER, CAUSED ERROR IN TURBIDITY METER. CLEARED AFTER SVERAL MINS OF PURGING.

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/22/2015

Project Location: Ayer/SHL Project #:

Personnel: Dylan Bush

WELL IDENTIFICATION: shl-10 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 30.61

Material: PVC Depth to Bottom: 38.56

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): 1.3 Tubing Type Polyethylene (Pump S/N 10251

Purge Start Time: 10:14 AM Air Source: Nitrogen Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
10:24 AM	150	30.77	11.12	101	7.56	6.69	61.5	14.5	clear
10:34 AM	150	30.78	11.21	91	7.62	6.65	71.9	7.17	clear
10:44 AM	150	30.78	11.24	88	7.65	6.62	78.5	4.45	clear
10:54 AM	150	30.78	11.26	86	7.66	6.60	83.7	2.77	clear
11:00 AM	150	30.78	11.28	84	7.74	6.59	86.6	1.53	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: 0.45 µm	X			X				X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Dylan Bush	DHB	11:00 AM	11:09 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/23/2015

Project Location: Ayer/SHL Project #:

Personnel: Raquel Vella

WELL IDENTIFICATION: SHL 11 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 18.11

Material: PVC Depth to Bottom: 27

Screen Interval: 12-27

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 420

Purge Start Time: 12:29 PM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
12:35 PM	200	18.11	11.50	621	0.76	6.25	-60.2	17.9	clear
12:45 PM	200	18.11	11.52	629	0.53	6.27	-71.2	12.9	clear
12:55 PM	200	18.12	11.51	630	0.65	6.28	-77.2	10.4	clear
1:05 PM	200	18.12	11.49	628	0.68	6.29	-78.5	10.5	clear
1:20 PM	200	18.11	11.6	623	1.07	6.3	-80.8	15.0	clear
1:30 PM	200	18.12	11.58	629	1.03	6.31	-79.8	9.15	clear
1:40 PM	200	18.12	11.56	629	1.1	6.32	-78.9	8.18	clear
1:50 PM	200	18.11	11.59	628	1.12	6.31	-78.5	7.64	clear
2:00 PM	200	18.12	11.52	630	1.12	6.32	-78.4	8.17	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Raquel Vella		2:00 PM	2:10 PM

NOTES: battery to pump dies at approx 110pm. had to get new battery to resume pumping, which is why there is a time gap in data collection

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/27/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHL18-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 4" Depth to Water: 18.20

Material: PVC Depth to Bottom: _____

Screen Interval: _____

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N 418

Purge Start Time: 2:02 PM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
2:05 PM	200	19.2	11.61	125	10.92	7.11	-8.1	5.06	clear
2:09 PM	200	19.3	11.63	119	10.81	6.93	2.5	1.58	clear
2:13 PM	150	19.3	11.68	111	10.61	6.80	6.9	1.79	clear
2:18 PM	150	19.3	1176	107	10.56	6.85	7.5	1.78	clear
2:22 PM	150	19.3	11.75	105	10.54	6.84	8.4	2.35	clear
2:26 PM	150	19.3	11.70	104	10.51	6.84	8.9	1.46	clear
2:30 PM	150	19.3	11.72	101	10.58	6.83	10.1	1.99	clear
2:34 PM	150	19.3	11.75	99	10.48	6.82	11.4	1.25	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: 0.45 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Julie Godsoe	[signature]	2:35 PM	

NOTES: _____

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/27/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHL-19-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 4" Depth to Water: 22.95

Material: PVC Depth to Bottom: _____

Screen Interval: _____

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N 418

Purge Start Time: 9:31 AM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
9:37 AM	200	22.95	10.24	184	2.88	7.58	-85.2	9999	cloudy
9:42 AM	200	22.95	10.22	186	2.70	7.50	-85.2	9999	cloudy
9:49 AM	200	22.95	10.40	191	2.19	7.19	-80	9999	cloudy
9:53 AM	200	22.95	10.88	185	1.79	6.29	-75.5	168	cloudy
10:00 AM	200	22.95	10.95	179	0.80	6.21	-58.2	111	cloudy
10:05 AM	200	22.95	10.91	175	0.79	6.2	-58.0	108	cloudy
10:10 AM	200	22.95	10.97	174	0.77	6.19	-57.4	65.0	cloudy
10:15 AM	200	22.95	11.07	168	0.66	6.14	-52.4	62.6	cloudy
10:19 AM	200	22.95	11.05	168	0.61	6.14	-51.6	53.0	cloudy
10:22 AM	200	22.95	11.05	167	0.59	6.14	-50.8	49.9	cloudy
10:26 AM	200	22.95	11.08	167	0.59	6.13	-50.2	50.7	cloudy

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N _____ **FILTER SIZE:** 0.45 µm

DUPLICATE: Y _____ N X

MS/MSD: Y _____ N X

SAMPLED BY (PRINT): Julie Godsoe

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 10:27 AM

SAMPLING END TIME: 10:32 AM

NOTES: Very iron rich, causing turbidity reading to not read.

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/21/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHL-21 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 4" Depth to Water: 46.7
Material: PVC Depth to Bottom:
Screen Interval: 42-52

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N
Purge Start Time: 1:14 PM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
1:19 PM	300	46.7	10.52	82	5.86	6.28	92.0	8.61	clear
1:24 PM	300	46.7	10.42	78	4.37	6.20	105.2	5.95	clear
1:29 PM	300	46.7	10.32	75	2.38	6.39	111.4	4.92	clear
1:34 PM	300	46.7	10.33	76	2.31	6.39	111.8	4.89	clear
1:49 PM	300	46.7	10.30	74	2.30	6.40	113.8	3.95	clear
1:44 PM	300	46.7	10.31	74	2.31	6.41	114.3	3.45	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** .45 µm
DUPLICATE: Y N X
MS/MSD: Y N X

SAMPLED BY (PRINT): Erin Foley
SAMPLER(S) SIGNATURES: E F
SAMPLING START TIME: 1:45 PM
SAMPLING END TIME: 1:51 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/21/2015

Project Location: Ayer/SHL Project #:

Personnel: Dylan Bush

WELL IDENTIFICATION: shl-23 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 2" Depth to Water: 30.71

Material: PVC Depth to Bottom: 35.37

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): 0.75 Tubing Type Polyethylene (Pump S/N 10251

Purge Start Time: 12:30 PM Air Source: Nitrogen Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
12:40 PM	200	30.80	10.81	25	11.29	4.43	167.9	3.59	clear
12:50 PM	200	30.84	10.79	25	10.27	4.71	160.2	2.26	clear
1:00 PM	200	30.85	10.77	25	10.05	4.70	162.7	1.46	clear
1:10 PM	200	30.86	10.70	24	10.09	4.70	165.7	1.06	clear
1:20 PM	200	30.86	10.56	24	10.09	4.78	165.1	1.06	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y X N

SAMPLED BY (PRINT): Dylan Bush

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 1:20 PM

SAMPLING END TIME: 1:35 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/27/2015

Project Location: Ayer/SHL Project #:

Personnel: Dylan Bush

WELL IDENTIFICATION: shl-24 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 4" Depth to Water: 16.94

Material: PVC Depth to Bottom: 120.5

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): 66.3 Tubing Type Polyethylene (Pump S/N g6357u

Purge Start Time: 1:55 PM Air Source: Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
2:05 PM	100	17.42	13.35	204	9.48	7.14	33.5	1.04	clear
2:15 PM	100	17.82	13.26	204	9.25	7.19	37.9	0.59	clear
2:25 PM	100	18.06	13.29	204	8.97	7.22	40.1	0.33	clear
2:35 PM	100	18.24	13.40	204	9.12	7.26	40.7	0.35	clear
2:45 PM	100	18.43	13.28	204	8.92	7.28	42.9	0.32	clear
2:50 PM	100	18.49	13.29	204	9.00	7.29	43.6	0.30	clear
2:55 PM	100	18.56	13.21	204	9.01	7.31	43.8	0.30	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y [X] N [ ] **FILTER SIZE:** 0.45 µm

DUPLICATE: Y [ ] N [X]

MS/MSD: Y [ ] N [X]

SAMPLED BY (PRINT): Dylan Bush

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 2:55 PM

SAMPLING END TIME: 3:05 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/29/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHM-05-39A-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 12.124

Material: PVC Depth to Bottom: 39

Screen Interval: 37-39

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N G6357U

Purge Start Time: 10:40 AM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:45 AM	150	12.4	14.11	173	8.52	6.58	-16.6	32.3	turbid
10:50 AM	150	12.4	13.92	175	5.1	6.52	0.7	13.2	clear
10:55 AM	150	12.4	13.81	173	4.78	6.51	5.1	9.17	clear
11:00 AM	150	12.4	13.76	175	4.35	6.51	7.8	5.97	clear
11:05 AM	150	12.4	13.58	175	3.42	6.48	14.6	4.17	clear
11:10 AM	150	12.4	13.42	174	3.39	6.48	15.8	4.01	clear
11:15 AM	150	12.4	13.39	175	3.35	6.47	16.5	5.62	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N X

FILTER SIZE: 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Julie Godsoe

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 11:15 AM

SAMPLING END TIME: 11:22 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/29/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHM-05-38B-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)		X	
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 15.05

Material: PVC Depth to Bottom: 68

Screen Interval: 66-68

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N G6357U

Purge Start Time: 11:30 AM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
11:41 AM	200	15.05	12.8	1525	5.51	6.56	-128.1	15.4	clear
11:45 AM	200	15.05	13.15	1549	4.82	6.64	-141.5	15.7	clear
11:49 AM	200	15.06	12.97	1602	4.02	6.72	-155.3	18.0	clear
11:53 AM	200	15.06	13.52	1614	2.97	6.76	-163.0	15.8	clear
11:58 AM	200	15.06	13.37	1676	2.44	6.81	-167.2	13.6	clear
12:03 PM	200	15.06	13.60	1666	2.78	6.82	-168.6	12.3	clear
12:08 PM	150	15.07	13.69	1689	2.72	6.83	-168.3	4.78	clear
12:13 PM	150	15.07	13.67	1695	2.68	6.84	-167.4	6.70	clear
12:17 PM	150	15.07	13.71	1705	2.78	6.83	-163.8	5.11	clear
12:21 PM	150	15.07	13.75	1712	2.81	6.82	-160.8	5.44	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: 0.45 µm	X			X			X	

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Julie Godsoe		12:24 PM	12:29 PM

NOTES: _____

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/22/2015

Project Location: Ayer/SHL Project #:

Personnel: Erin Foley

WELL IDENTIFICATION: SHM-10-06 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1.5" Depth to Water: 20.35

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N

Purge Start Time: 1:35 PM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
1:40 PM	275	20.45	10.88	542	1.44	6.82	-96.9	14.6	cloudy
1:45 PM	275	20.45	11.02	536	0.72	6.57	-102.2	5.26	clear
1:50 PM	275	20.45	10.94	536	0.50	6.54	-109.7	4.73	clear
1:55 PM	275	20.45	10.92	535	0.51	6.61	-115.8	4.21	clear
2:00 PM	275	20.45	10.95	535	0.47	6.63	-119.5	3.88	clear
2:05 PM	275	20.45	10.98	535	0.41	6.65	-123.5	3.00	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X			X			X	

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		2:05 PM	2:13 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill
Date: 10/21/2015
Project Location: Ayer/SHL
Project #:
Personnel: Dylan Bush

WELL IDENTIFICATION: shm-10-06a
Headspace (PID)

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1.5"
Depth to Water: 35.72
Material: PVC
Depth to Bottom: 89.09
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump
1 Well Volume (gal): 3.2
Tubing Type: Polyethylene (
Pump S/N: 10278
Purge Start Time: 10:50 AM
Air Source: Nitrogen
Tubing Diameter: 0.25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:00 AM	100	35.60	11.33	66	1.58	6.57	80.8	9.27	clear
11:05 AM	100	35.60	11.27	65	1.07	6.54	77.8	7.59	clear
11:10 AM	100	35.60	11.29	65	0.90	6.57	72.5	8.43	clear
11:15 AM	100	35.60	11.36	65	0.73	6.65	64.3	6.53	clear
11:20 AM	100	35.60	11.43	65	0.67	6.69	59.5	6.53	clear
11:25 AM	100	35.60	11.47	65	0.59	6.78	53.1	6.39	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N
FILTER SIZE: 0.45 µm
DUPLICATE: Y N X
MS/MSD: Y N X

SAMPLED BY (PRINT): Dylan Bush
SAMPLER(S) SIGNATURES: DHB
SAMPLING START TIME: 11:25 AM
SAMPLING END TIME: 11:38 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/22/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHM-10-07 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 27.94
Material: PVC Depth to Bottom:
Screen Interval: 40-50

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N
Purge Start Time: 12:08 PM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
12:13 PM	225	28.04	15.84	426	2.09	6.73	-87.5	20.6	cloudy
12:18 PM	225	28.05	12.34	445	1.14	6.60	-99.6	13.4	cloudy
12:23 PM	225	28.05	12.32	445	0.85	6.53	-103.7	7.84	clear
12:28 PM	225	28.05	12.30	452	0.52	6.62	-116.5	7.41	clear
12:33 PM	225	28.05	12.29	452	0.54	6.63	-117.2	7.23	clear
12:38 PM	225	28.05	12.29	453	0.48	6.61	-117.1	7.21	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X			X			X	

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		12:38 PM	12:43 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill
Date: 10/23/2015
Project Location: Ayer/SHL
Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHM-10-10
Headspace (PID)

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2"
Depth to Water: 10.9
Material: PVC
Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump
1 Well Volume (gal):
Tubing Type: Polyethylene (
Pump S/N: 418
Purge Start Time: 10:22 AM
Air Source:
Tubing Diameter: .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:27 AM	325	10.9	11.81	581	5.90	6.64	-18.7	1.03	clear
10:32 AM	325	10.9	11.76	551	5.84	6.43	1.1	1.08	clear
10:37 AM	325	10.9	11.74	557	5.29	6.52	5.4	1.19	clear
10:42 AM	325	10.9	11.74	560	5.00	6.52	6.6	1.07	clear
10:47 AM	325	10.9	11.71	559	4.62	6.52	10.5	1.01	clear
10:52 AM	325	10.9	11.73	562	4.61	6.53	13.0	0.98	clear
10:57 AM	325	10.9	11.72	561	4.59	6.53	16.5	0.91	clear
11:02 AM	325	10.9	11.73	561	4.59	6.53	17.2	0.89	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X			X			X	

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley	[signature]	11:02 AM	11:08 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/21/2015
Project Location: Ayer/SHL Project #:
Personnel: Raquel Vella

WELL IDENTIFICATION: SHM-10-11 **Headspace (PID)** 0.0

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 40
Material: PVC Depth to Bottom: 60
Screen Interval: 50-60

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): 3.2 Tubing Type Polyethylene (Pump S/N 11421
Purge Start Time: 10:43 AM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:53 AM	250	41.0	11.15	345	0.39	5.98	-7.2	6.21	clear
10:58 AM	250	41.52	11.15	345	0.32	5.95	-11.4	3.3	clear
11:03 AM	250	41.53	11.17	346	0.33	5.96	-13.5	3.59	clear
11:08 AM	250	41.55	11.18	347	0.36	5.97	-16.0	2.16	clear
11:13 AM	250	41.56	11.2	347	0.37	5.99	-18.1	1.65	clear
11:18 AM	250	41.56	11.23	348	0.40	6.01	-19.9	1.54	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Raquel Vella		11:20 AM	11:25 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/21/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHM10-12 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 34.9
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N
Purge Start Time: 10:37 AM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:42 AM	300	34.9	10.71	484	0.97	6.19	-37.1	1.43	clear
10:47 AM	300	34.9	10.70	476	0.98	6.15	-35.1	0.68	clear
10:52 AM	300	34.9	10.71	462	0.95	6.09	-30.1	0.47	clear
10:57 AM	300	34.9	10.70	451	0.37	6.09	-27.5	0.55	clear
11:02 AM	300	34.9	10.69	450	0.35	6.09	-27.5	0.42	clear
11:07 AM	300	34.9	10.70	452	0.33	6.09	-27.1	0.38	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N X **FILTER SIZE:** .46 µm
DUPLICATE: Y X N X
MS/MSD: Y N

SAMPLED BY (PRINT): Erin Foley
SAMPLER(S) SIGNATURES:
SAMPLING START TIME: 11:07 AM
SAMPLING END TIME: 11:30 AM

NOTES: DUP TIME 1125

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Federal Projects EPA SOP
Low Flow Sampling Log
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/22/2015

Project Location: Ayer/SHL Project #:

Personnel: Raquel Vella

WELL IDENTIFICATION: SHM-10-13 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 26.9

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 418

Purge Start Time: 1:44 PM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
1:50 PM	200	26.91	13.48	626	0.58	6.32	61.0	3.39	clear
1:55 PM	200	26.91	13.29	628	0.49	6.37	60.7	3.08	clear
2:00 PM	200	26.91	13.24	628	0.32	6.43	61.5	3.51	clear
2:05 PM	200	26.91	13.26	628	0.31	6.44	61.6	3.98	clear
2:10 PM	200	26.91	13.10	628	0.31	6.47	63.6	3.22	clear
2:15 PM	200	26.91	13.09	629	0.29	6.47	62.7	3.50	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Raquel Vella		2:15 PM	2:22 PM

NOTES:

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Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/22/2015

Project Location: Ayer/SHL Project #:

Personnel: Raquel Vella

WELL IDENTIFICATION: SHM-10-14 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water:

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N geopump 418

Purge Start Time: 10:45 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
10:50 AM	175	21.31	12.63	346	0.44	6.32	-17.4	13.9	clear
10:55 AM	175	21.32	12.62	347	0.30	6.25	-17.2	10.1	clear
11:00 AM	175	21.31	12.57	348	0.27	6.22	-17.5	10.4	clear
11:05 AM	175	21.32	12.57	352	0.27	6.20	-17.9	7.47	clear
11:10 AM	175	21.32	12.5	366	0.31	6.19	-20.5	7.74	clear
11:15 AM	175	21.31	12.4	383	0.35	6.20	-25.1	5.77	clear
11:20 AM	175	21.32	12.37	408	0.37	6.21	-29.8	5.72	clear
11:25 AM	175	21.32	12.25	418	0.37	6.22	-30.2	3.68	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** .45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Raquel Vella

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 11:25 AM

SAMPLING END TIME: 11:35 AM

NOTES: something is obstructing MW at approx 25ft. (tubing?). attempted to remove - unsuccessful.

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/23/2015

Project Location: Ayer/SHL Project #:

Personnel: Raquel Vella

WELL IDENTIFICATION: SHM-0-15 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present		X	
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 25.55

Material: PVC Depth to Bottom: 55

Screen Interval: 45-55

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 420

Purge Start Time: 9:29 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
9:35 AM	200	25.56	10.99	537	1.00	6.58	39.2	2.84	clear
9:40 AM	200	25.56	11.06	535	0.78	6.56	24.9	3.66	clear
9:45 AM	200	25.56	11.07	535	0.74	6.54	22.2	2.54	clear
9:50 AM	200	25.56	11.08	528	0.72	6.50	-18.9	2.43	clear
9:55 AM	200	25.56	11.04	498	0.77	6.34	-54.8	1.11	clear
10:00 AM	200	25.56	11.06	492	0.76	6.25	-60.1	1.05	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Raquel Vella	RV	10:05 AM	10:11 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: _____ Date: 10/27/2015

Project Location: _____ Project #: _____

Personnel: Julie Godsoe

WELL IDENTIFICATION: SHM-11-02-FAL15 **Headspace (PID)** _____

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure		X	
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)		X	

Photograph

Well Information

Diameter: 4" Depth to Water: 22.96

Material: PVC Depth to Bottom: _____

Screen Interval: _____

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): _____ Tubing Type Teflon-lined P Pump S/N 418

Purge Start Time: 12:47 PM Air Source: _____ Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
12:55 PM	175	23.0	11.99	245	1.56	7.01	-44.4	18.9	clear
12:00 PM	125	23.0	12.09	246	1.19	6.97	-82.8	12.8	clear
1:05 PM	125	23.0	12.10	246	1.01	6.97	-105.3	14.6	clear
1:10 PM	125	23.0	12.15	246	0.84	7.00	-129.0	14.5	clear
1:15 PM	125	23.0	12.22	246	0.68	7.04	-152.3	15.7	clear
1:20 PM	125	23.2	12.27	246	0.65	7.02	-169.3	14.1	clear
1:25 PM	125	23.2	12.37	247	0.56	7.15	-210	15.7	clear
1:30 PM	125	23.2	12.48	247	0.46	7.17	-217.5	14.8	clear
1:35 PM	125	23.2	12.47	247	0.45	7.19	-224.3	17.0	clear
1:40 PM	125	23.2	12.30	247	0.40	7.21	-232.6	13.0	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N
FILTER SIZE: 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Julie Godsoe

SAMPLER(S) SIGNATURES:

SAMPLING START TIME: 1:42 PM

SAMPLING END TIME:

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/27/2015

Project Location: Ayer/SHL Project #:

Personnel: Erin Foley

WELL IDENTIFICATION: SHM-11-06 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 20.35

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N

Purge Start Time: 2:35 PM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
2:40 PM	250	20.5	11.51	378	1.78	6.60	95.9	8.58	clear
2:45 PM	250	20.5	11.50	390	1.19	6.55	53.0	3.36	clear
2:50 PM	250	20.5	11.33	492	0.69	6.60	-122.1	3.47	clear
2:55 PM	250	20.5	11.38	491	0.70	6.63	-126.0	1.01	clear
3:00 PM	250	20.5	11.37	492	0.65	6.62	-127.7	0.98	clear
3:05 PM	250	20.5	11.35	492	0.65	6.62	-131.2	0.74	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N	DUPLICATE: Y N	MS/MSD: Y N
FILTER SIZE: .45 µm X	X	X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		3:05 PM	3:20 PM

NOTES:

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Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/23/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHM-13-02 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 13.06
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 418
Purge Start Time: 1:45 PM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
1:50 PM	225	13.06	11.03	302	0.51	6.86	-8.0	1.35	clear
1:55 PM	225	13.06	11.06	302	0.49	6.85	-5.8	1.29	clear
2:00 PM	225	13.06	11.03	302	0.42	6.85	-2.0	1.25	clear
2:05 PM	225	13.06	11.05	301	0.31	6.84	3.3	1.05	clear
2:10 PM	225	13.06	11.03	302	0.27	6.84	4.4	0.97	clear
2:15 PM	225	13.06	11.04	302	0.26	6.83	4.9	0.96	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .46 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		2:15 PM	2:20 PM

NOTES:

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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/23/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHM-13-03 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 5.71
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 418
Purge Start Time: 9:35 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
9:40 AM	250	5.71	12.76	467	0.68	6.44	-93.2	3.53	clear
9:45 AM	250	5.71	12.66	471	0.46	6.43	-91.4	3.04	clear
9:50 AM	250	5.71	12.63	472	0.43	6.43	-91.4	2.12	clear
9:55 AM	250	5.71	12.61	472	0.41	6.44	-91.4	1.36	clear
10:00 AM	250	5.71	12.60	472	0.32	6.43	-91.4	0.91	clear
10:05 AM	250	5.71	12.60	473	0.29	6.43	-91.4	0.81	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N	DUPLICATE: Y N	MS/MSD: Y N
FILTER SIZE: .45 µm X	X	X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		10:05 AM	10:10 AM

NOTES:

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Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/28/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHM-13-04 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			X
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 19.45
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 420
Purge Start Time: 10:32 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:37 AM	300	19.45	11.63	694	3.47	6.63	-26.4	134	turbid
10:42 AM	300	19.45	11.96	660	2.81	6.53	-22.1	36.3	turbid
10:47 AM	300	19.46	11.99	650	2.60	6.51	-21.4	21.2	turbid
10:52 AM	300	19.46	11.95	606	2.04	6.46	-19.5	10.5	clear
10:57 AM	300	19.46	11.96	608	1.99	6.46	-19.5	8.9	clear
11:02 AM	300	19.46	11.95	600	1.80	6.44	-19.0	6.16	clear
11:07 AM	300	19.46	11.94	598	1.80	6.44	-19.1	4.12	clear
11:12 AM	300	19.46	11.93	595	1.81	6.43	-19.3	3.49	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N	DUPLICATE: Y N	MS/MSD: Y N
FILTER SIZE: .45 µm X	X	X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		11:12 AM	11:18 AM

NOTES:

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Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/28/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHM-13-05 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			X
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 16.6
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 420
Purge Start Time: 11:50 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
11:55 AM	250	17.04	11.50	331	1.31	7.05	-17.6	2.89	clear
12:00 PM	250	17.05	11.30	355	0.70	7.13	-56.3	1.09	clear
12:05 PM	250	17.05	11.29	404	0.53	7.14	-82.1	1.10	clear
12:10 PM	250	17.05	11.21	635	0.50	7.02	-95.9	0.92	clear
12:15 PM	250	17.05	11.21	679	0.47	6.97	-94.2	0.79	clear
12:20 PM	250	17.05	11.20	682	0.40	6.95	-94.0	0.77	clear
12:25 PM	250	17.05	11.19	688	0.39	6.94	-94.1	0.74	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N X	DUPLICATE: Y X N X	MS/MSD: Y X N X	
FILTER SIZE: .45 µm			
SAMPLED BY (PRINT): Erin Foley	SAMPLER(S) SIGNATURES:	SAMPLING START TIME: 12:25 PM	SAMPLING END TIME: 12:30 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/23/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHM-13-07 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			X
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 19.3
Material: PVC Depth to Bottom:
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 418
Purge Start Time: 11:52 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
11:57 AM	175	19.35	12.44	385	0.62	6.85	-121.5	50.1	turbid
12:02 PM	175	19.35	12.44	381	0.58	6.85	-123.3	41.3	turbid
12:07 PM	175	19.35	12.36	368	0.32	6.87	-130.8	25.3	turbid
12:12 PM	175	19.35	12.35	368	0.28	6.88	-133.7	20.1	turbid
12:17 PM	175	19.35	12.35	364	0.20	6.89	-141.1	10.2	clear
12:22 PM	175	19.35	12.36	365	0.21	6.90	-141.8	8.13	clear
12:27 PM	175	19.35	12.36	365	0.18	6.89	-140.8	6.74	clear
12:32 PM	175	19.35	12.36	366	0.17	6.88	-140.2	4.83	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N	DUPLICATE: Y N	MS/MSD: Y N
FILTER SIZE: .45 µm X	X	X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		12:32 PM	12:38 PM

NOTES:

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Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/28/2015

Project Location: Ayer/SHL Project #:

Personnel: Erin Foley

WELL IDENTIFICATION: SHM-13-08 **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure			X
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)	X		
Locked (Stickup Wells)			X

Photograph

Well Information

Diameter: 2" Depth to Water: 20.5

Material: PVC Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N

Purge Start Time: 9:22 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
9:27 AM	400	20.5	11.38	609	1.10	6.50	-123.9	6.25	clear
9:32 AM	400	20.5	11.42	615	0.89	6.45	-129.9	3.49	clear
9:37 AM	400	20.5	11.30	721	0.67	6.43	-137.4	3.28	clear
9:42 AM	400	20.5	11.33	728	0.62	6.42	-138.2	3.26	clear
9:47 AM	400	20.5	11.33	733	0.62	6.46	-141.5	3.25	clear
9:52 AM	400	20.5	11.30	7.28	0.47	6.46	-148.0	3.21	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N	DUPLICATE: Y N	MS/MSD: Y N
FILTER SIZE: .45 µm X	X	X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley	[signature]	9:52 AM	

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/22/2015
Project Location: Ayer/SHL Project #:
Personnel: Dylan Bush

WELL IDENTIFICATION: shm-93-10c **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 4" Depth to Water: 29.50
Material: PVC Depth to Bottom: 56.80
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): 17.5 Tubing Type Polyethylene (Pump S/N 20961
Purge Start Time: 12:20 PM Air Source: Nitrogen Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
12:30 PM	150	29.79	12.17	341	2.81	7.67	61.7	0.92	clear
12:40 PM	150	29.91	12.41	341	2.45	7.68	55.5	0.79	clear
12:50 PM	150	29.99	12.41	341	2.37	7.68	48.2	0.48	clear
12:55 PM	150	30.02	12.36	342	2.38	7.69	44.9	0.49	clear
1:00 PM	150	30.04	12.21	342	2.38	7.69	43.3	0.48	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N X **FILTER SIZE:** 0.45 µm
DUPLICATE: Y N X
MS/MSD: Y N X

SAMPLED BY (PRINT): Dylan Bush
SAMPLER(S) SIGNATURES: DHB
SAMPLING START TIME: 1:00 PM
SAMPLING END TIME: 1:09 PM

NOTES:

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Federal Projects EPA SOP
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FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/28/2015
Project Location: Ayer/SHL Project #:
Personnel: Dylan Bush

WELL IDENTIFICATION: shm-99-32x **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 10.57
Material: PVC Depth to Bottom: 84.10
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): 11.8 Tubing Type Polyethylene (Pump S/N 418
Purge Start Time: 12:15 PM Air Source: Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
12:25 PM	100	10.58	11.69	412	4.04	6.41	-45.8	269	turbid
12:35 PM	100	10.58	11.55	417	1.91	6.46	-60.0	131	turbid
12:45 PM	100	10.58	11.44	422	1.57	6.52	-67.9	47.5	clear
12:55 PM	100	10.58	11.44	422	1.42	6.54	-71.7	36.7	clear
1:00 PM	100	10.58	11.43	426	1.38	6.55	-72.8	39.0	clear
1:05 PM	100	10.58	11.42	427	1.30	6.55	-73.9	39.7	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** 0.45 µm
DUPLICATE: Y N X
MS/MSD: Y N X

SAMPLED BY (PRINT): Dylan Bush
SAMPLER(S) SIGNATURES: DHB
SAMPLING START TIME: 1:05 PM
SAMPLING END TIME: 1:15 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/27/2015

Project Location: Ayer/SHL Project #:

Personnel: Dylan Bush

WELL IDENTIFICATION: shp-01-36x **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact			X
Well Gripper Present			X
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1" Depth to Water: 6.31

Material: Iron Pipe Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N g6357u

Purge Start Time: 9:45 AM Air Source: Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
9:55 AM	100	6.35	11.64	325	3.90	6.31	50.3	5.67	clear
10:05 AM	100	6.35	11.91	327	1.99	6.22	37.3	2.74	clear
10:15 AM	100	6.35	11.73	328	1.66	6.18	31.6	1.37	clear
10:20 AM	100	6.35	11.86	328	1.40	6.15	29.3	0.65	clear
10:25 AM	100	6.35	11.86	329	1.42	6.12	27.7	0.63	clear
10:30 AM	100	6.35	11.81	329	1.40	6.12	27.2	0.91	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** 0.45 µm

DUPLICATE: Y N X

MS/MSD: Y N X

SAMPLED BY (PRINT): Dylan Bush

SAMPLER(S) SIGNATURES: DKB

SAMPLING START TIME: 10:30 AM

SAMPLING END TIME: 10:38 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/27/2015

Project Location: Ayer/SHL Project #:

Personnel: Dylan Bush

WELL IDENTIFICATION: shp-01-37x **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact			X
Well Gripper Present			X
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1" Depth to Water: 4.90

Material: Iron Pipe Depth to Bottom:

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N g6357u

Purge Start Time: 11:00 AM Air Source: Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
11:10 AM	100	4.99	11.13	329	4.05	6.69	-8.9	14.0	clear
11:20 AM	100	4.99	11.33	326	3.46	6.47	-6.5	3.05	clear
11:30 AM	100	4.99	11.41	325	3.19	6.35	-2.5	1.85	clear
11:40 AM	100	4.99	11.70	324	3.06	6.30	-0.3	1.17	clear
11:45 AM	100	4.99	11.71	325	3.02	6.30	0.7	0.88	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: 0.45 µm	X			X			X	

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Dylan Bush	DHB	11:45 AM	11:55 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/28/2015
Project Location: Ayer/SHL Project #:
Personnel: Dylan Bush

WELL IDENTIFICATION: shp-95-27x **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 1" Depth to Water: 17.23
Material: PVC Depth to Bottom: 42.62
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): 1.0 Tubing Type Polyethylene (Pump S/N 418
Purge Start Time: 9:20 AM Air Source: Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
9:30 AM	100	17.30	10.19	33	9.82	6.07	75.6	3.20	clear
9:40 AM	100	17.30	10.25	82	2.53	6.03	-8.8	0.73	clear
9:50 AM	100	17.30	10.16	153	1.58	5.88	-21.4	0.69	clear
10:00 AM	100	17.30	10.40	171	1.31	5.87	-26.6	0.57	clear
10:10 AM	100	17.30	10.40	177	1.18	5.84	-28.9	0.64	clear
10:15 AM	100	17.30	10.58	178	1.15	5.85	-30.0	0.52	clear
10:20 AM	100	17.30	10.59	179	1.13	5.89	-33.5	0.56	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y X N **FILTER SIZE:** 0.45 µm
DUPLICATE: Y N X
MS/MSD: Y N X

SAMPLED BY (PRINT): Dylan Bush
SAMPLER(S) SIGNATURES: DJB
SAMPLING START TIME: 10:20 AM
SAMPLING END TIME: 10:28 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/22/2015

Project Location: Ayer/SHL Project #:

Personnel: Raquel Vella

WELL IDENTIFICATION: SHP-99-29X **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 24.93

Material: PVC Depth to Bottom: 30.75

Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 418

Purge Start Time: 12:26 PM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
12:31 PM	200	25.1	12.49	247	0.41	5.69	43.3	29.3	clear
12:36 PM	200	25.11	12.42	246	0.36	5.72	36.9	16.0	clear
12:46 PM	200	25.12	12.37	247	0.36	5.75	29.0	8.85	clear
12:51 PM	200	25.12	12.54	244	0.33	5.75	25.6	7.05	clear
12:56 PM	200	25.12	12.46	244	0.35	5.74	26	4.72	clear
1:03 PM	200	25.12	12.31	243	0.35	5.73	27.3	3.35	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X			X				X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Raquel Vella		1:05 PM	1:12 PM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/29/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHP-99-31A **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 3.27
Material: PVC Depth to Bottom: 15.85
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N
Purge Start Time: 9:48 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
9:53 AM	325	3.4	13.16	273	0.83	6.25	11.4	130	turbid
9:58 AM	325	3.42	13.07	274	0.85	6.00	10.8	11.6	clear
10:03 AM	325	3.42	13.06	269	0.98	5.73	12.9	12.4	clear
10:08 AM	325	3.43	13.06	269	0.90	5.57	16.6	8.17	clear
10:13 AM	325	3.43	13.07	270	0.74	5.53	17.6	7.62	clear
10:18 AM	325	3.43	13.07	270	0.68	5.50	18.6	7.18	clear
10:23 AM	325	3.43	13.07	270	0.59	5.48	19.4	5.28	clear
10:28 AM	325	3.43	13.07	271	0.48	5.48	20.5	4.44	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y N	DUPLICATE: Y N	MS/MSD: Y N
FILTER SIZE: .45 µm X	X	X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		10:28 AM	10:35 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/29/2015
Project Location: Ayer/SHL Project #:
Personnel: Erin Foley

WELL IDENTIFICATION: SHP99-31B **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact			X
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 4.6
Material: PVC Depth to Bottom: 61.8
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 418
Purge Start Time: 10:45 AM Air Source: Tubing Diameter .25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:50 AM	250	4.61	11.29	154	0.84	5.82	7.7	3.8	clear
10:55 AM	250	4.61	11.16	155	0.42	5.61	3.3	2.03	clear
11:00 AM	250	4.61	11.07	154	0.43	5.69	-5.0	1.98	clear
11:05 AM	250	4.61	11.05	155	0.35	5.74	-14.1	0.93	clear
11:10 AM	250	4.61	11.05	155	0.34	5.78	-17.5	1.05	clear
11:15 AM	250	4.61	11.04	156	0.28	5.81	-23.4	0.84	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y	N	DUPLICATE: Y	N	MS/MSD: Y	N
FILTER SIZE: .45 µm	X		X		X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Erin Foley		11:15 AM	11:21 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/29/2015
Project Location: Ayer/SHL Project #:
Personnel: Dylan Bush

WELL IDENTIFICATION: shp-99-31c **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present	X		
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water: 4.85
Material: PVC Depth to Bottom: 80.7
Screen Interval:

SAMPLING TYPE, TUBING DETAILS

Purging Method: Peristaltic pump 1 Well Volume (gal): 12.1 Tubing Type Polyethylene (Pump S/N 420
Purge Start Time: 10:35 AM Air Source: Tubing Diameter 0.25

STABILIZATION PARAMETERS

TIME (min)*	FLOW RATE (mL/min) (100-500 mL/min)**	DEPTH TO WATER (feet) (+/- 0.3')**	TEMP (°C) (+/- 3%)**	SPECIFIC COND (µS/cm) (+/- 3%)**	DISSOLVED OXYGEN (mg/L) (+/- 10%)or <0.5**	pH (+/- 0.1)**	ORP (mV) (+/- 10mV)**	TURBIDITY (NTU) (+/- 10%)or <5**	COLOR/ CLARITY -
10:45 AM	100	4.94	13.71	707	3.20	6.48	-41.8	9.31	clear
10:55 AM	100	4.95	13.60	694	2.11	6.51	-54.0	7.92	clear
11:05 AM	100	4.95	13.37	679	1.85	6.56	-63.7	6.81	clear
11:15 AM	100	4.95	13.38	675	1.62	6.59	-69.1	7.62	clear
11:20 AM	100	4.95	13.50	669	1.42	6.60	-71.4	8.07	clear
11:25 AM	100	4.95	13.45	665	1.34	6.61	-73.2	8.45	clear
11:30 AM	100	4.95	13.39	663	1.31	6.62	-73.9	8.32	clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED: Y [X] N [ ]
FILTER SIZE: 0.45 µm
DUPLICATE: Y [ ] N [X]
MS/MSD: Y [ ] N [X]

SAMPLED BY (PRINT): Dylan Bush
SAMPLER(S) SIGNATURES: DHB
SAMPLING START TIME: 11:30 AM
SAMPLING END TIME: 11:38 AM

NOTES:

Sovereign Consulting Inc.

Federal Projects EPA SOP
Low Flow Sampling Log
v.24 Sept 2014

FEDERAL SOP MONITORING WELL LOW FLOW SAMPLING LOG

Project Name: Shepley's Hill Date: 10/21/2015
Project Location: Ayer/SHL Project #:
Personnel: Raquel Vella

WELL IDENTIFICATION: SHP-99-35X **Headspace (PID)**

WELL INTEGRITY

	YES	NO	N/A
Protective Casing Secure	X		
Concrete Pad Intact	X		
PVC Casing Intact	X		
Well Gripper Present		X	
Bolts Present (Pad Wells)			X
Locked (Stickup Wells)	X		

Photograph

Well Information

Diameter: 2" Depth to Water:
Material: PVC Depth to Bottom:
Screen Interval: 30.2-40.2

SAMPLING TYPE, TUBING DETAILS

Purging Method: Bladder pump 1 Well Volume (gal): Tubing Type Polyethylene (Pump S/N 10388
Purge Start Time: 12:09 PM Air Source: Nitrogen Tubing Diameter .25

STABILIZATION PARAMETERS

TIME	FLOW RATE (mL/min)	DEPTH TO WATER (feet)	TEMP (°C)	SPECIFIC COND (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH	ORP (mV)	TURBIDITY (NTU)	COLOR/ CLARITY
(min)*	(100-500 mL/min)**	(+/- 0.3')**	(+/- 3%)**	(+/- 3%)**	(+/- 10%)or <0.5**	(+/- 0.1)**	(+/- 10mV)**	(+/- 10%)or <5**	-
12:18 PM	200	39.10	13.03	719	0.50	6.67	-36.1	20.8	clear
12:25 PM	200		13.07	723	0.52	6.75	-40.7		clear

* every 5 to 10 minutes, depending on volume of flow-through cell, from EPA Region 1 Low-Flow SOP version 3: 1-19-2010

SAMPLING DETAILS

FIELD-FILTERED:	Y	N	DUPLICATE:	Y	N	MS/MSD:	Y	N
FILTER SIZE: .45 µm	X				X			X

SAMPLED BY (PRINT):	SAMPLER(S) SIGNATURES:	SAMPLING START TIME:	SAMPLING END TIME:
Raquel Vella		1:00 PM	1:07 PM

NOTES: well went dry during 2nd ysi reading. will wait for recharge and then sample.
DTW at time of sample 40.0. well ran dry at last sample. all samples taken

Location _____ Date 10/21/15

Project / Client Devens

655 arrived onsite
1600 Departed site

- picked up keys, departed for Sudbury annex white pond Rd, Stowe, MA.
- Mowing crew allset, returned to Devens via west trail / road (automated gate)

Setup on SHL-5 3-13 fbo screen

Time	DTW	Do	ORP	Turb	Spec	ph	Temp
1225	6.83	0.64	60.7	2.58	175	6.00	12.64
1230	6.83	0.79	52.6	2.50	169	6.15	12.77
1235	6.83	0.88	41.3	1.43	168	6.20	12.80
1240	6.83	0.90	39.7	0.50	170	6.20	12.85
1245	6.83	0.90	39.5	0.47	171	6.23	12.87
1250	6.83	0.91	39.3	0.45	172	6.23	12.90
1255	6.83	0.93	38.9	0.44	170	6.24	12.93

collected sample @ 1300
completed @ 1310

7.34 B 80-90

Location _____ Date _____

Project / Client _____

Setup on SHM-96-5C Screen 50-60'

Time	DTW	Do	ORP	Turb	Spec	ph	Temp
1320	7.34	1.11	-28.0	20.3	665	6.76	12.11
1325	7.34	1.11	-34.6	19.7	660	6.96	12.09
1330	7.34	1.12	-37.4	18.3	658	6.99	12.08
1335	7.34	0.98	-41.4	17.4	641	7.01	12.10
1340	7.34	0.94	-34.9	17.7	640	7.03	12.09
1345	7.34	0.91	-33.7	18.0	637	7.02	12.13

collected sample @ 1350
completed @ 1400

Setup on SHM-96-5B

Time	DTW	Do	ORP	Turb	Spec	ph	Temp
1415	7.91	2.84	-28.8	5.07	525	7.20	14.49
1420	7.91	0.99	-21.6	0.87	530	7.27	12.99
1425	7.91	0.87	-15.2	0.27	537	7.30	12.95
1430	7.91	0.70	-16.9	0.20	538	7.37	13.09
1435	7.91	0.61	-18.6	0.19	540	7.40	13.14
1440	7.91	0.60	-18.3	0.17	541	7.42	13.18

collected sample @ 1445
completed @ 1455

Location

Date 10/22/15

Project / Client Devens

50's

735 arrived onsite
1615 departed site

- Calibrated equipment
- Prepared all glassware for site
- Set up on SFL-13

Time	DTW	DO	ORP	Turb	Spec	ph	Temp
1400	6.57	0.66	21.6	4.08	466	6.04	17.95
1405	6.57	0.37	41.5	3.24	368	5.46	17.89
1410	6.57	0.38	39.2	2.09	353	5.34	17.84
1415	6.57	0.43	39.3	0.37	346	5.33	17.81
1420	6.57	0.43	37.1	0.30	342	5.32	17.82
1425	6.57	0.41	28.6	0.27	340	5.30	17.82
1430	6.57	0.40	28.9	0.25	339	5.31	17.83
1435	6.57	0.41	28.8	0.26	338	5.32	17.82

Collected sample @ 1440

Location

Date 10/23/15

Project / Client Devens

735 arrived onsite
1530 departed site

(@100.1) Set up on SHM-93-22B 82.3-92.3

Time	DTW	DO	ORP	Turb	Spec	ph	Temp
835	8.78	1.06	21.7	20.7	488	5.26	9.33
840	8.78	1.05	19.9	21.7	483	5.27	9.30
845	8.78	1.05	19.4	22.5	484	5.24	9.24
850	8.78	0.79	15.6	21.0	483	5.27	9.23
855	8.78	0.68	12.8	17.9	481	5.23	9.15
900	8.78	0.47	5.2	12.10	480	5.27	9.11
905	8.78	0.41	3.4	10.84	479	5.26	9.10
910	8.78	0.40	3.2	10.77	477	5.27	9.16
915	8.78	0.41	2.9	10.57	478	5.28	9.14
920	8.78	0.41	2.7	10.60	475	5.27	9.13

Collected sample @ 925

Project / Client

Q150-1 • Setup on SHM-93-22C 124.3 – 134.3

Time	DTW	DO	ORP	Turb	Spec	ph	Temp
955	10.42	1.47	-78.9	2.91	368	6.16	10.36
1000	10.63	0.71	-91.7	1.00	386	6.39	10.73
1005	10.89	0.43	-102.5	0.31	385	6.42	10.85
1010	11.42	0.35	-116.3	0.33	387	6.69	10.80
1015	11.71	0.31	-120.7	0.30	385	6.69	10.67
1020	11.92	0.32	-123.6	0.29	385	6.76	10.52
1025	12.09	0.31	-126.9	0.29	384	6.77	10.53
1030	12.22	0.30	-127.1	0.30	384	6.78	10.57

collected sample @ 1035

Q59-01

DO	ORP	Turb	Spec	ph	Temp
5.76	33.9	0.11	316	6.58	11.36

collected @ 1230

Project / Client Dewars

735 arrival onsite

~~900~~ 1600 departed site

☆ collected gear, explained 25 ml / 1L swap

Setup on SHL-22

Time	DTW	DO	ORP	Turb	Spec	ph	Temp
940	9.21	2.96	26.3	0.23	484	6.54	9.51
945	9.21	0.78	11.1	0.19	540	6.20	9.74
950	9.21	0.81	3.2	0.17	550	6.14	9.71
955	9.21	0.60	1.7	0.17	553	6.14	9.70
1000	9.21	0.46	0.9	0.18	554	6.04	9.77
1005	9.21	0.45	0.2	0.18	556	6.02	9.76
1010	9.21	0.44	0.3	0.19	557	6.03	9.78

Collected sample @ 1015

Location _____ Date 10/27/15

Project / Client Devens

30's

735 arrived onsite
1600 departed site
Calibrated gpr

Setup on SHL-8S

Time	DTW	DO	ORP	Turb	Spec	ph	Temp
40	8.83	3.81	83.4	0.34	67	5.68	9.48
45	8.97	2.93	108.4	0.29	66	5.47	9.36
50	8.97	2.63	104.7	0.30	66	5.47	9.37
55	8.97	2.41	100.5	0.31	66	5.46	9.35
000	8.97	2.39	101.3	0.27	65	5.46	9.37
005	8.97	2.36	101.1	0.29	65	5.47	9.36

collected sample @ 1010
DUP-6 collected @ 1025

Location _____ Date _____

Project / Client _____

Setup on SHL-8D

Time	DTW	DO	ORP	Turb	Spec	ph	Temp
1120	8.32	1.02	101.2	3.59	67	5.34	9.69
1125	8.32	0.57	82.4	3.45	68	5.33	9.78
1130	8.32	0.62	74.5	0.42	68	5.37	9.84
1135	8.32	0.48	65.3	0.40	67	5.35	9.90
1140	8.32	0.35	55.4	0.37	68	5.37	9.95
1145	8.32	0.37	52.1	0.36	68	5.40	9.97
1150	8.32	0.36	51.0	0.35	68	5.41	9.93
1155	8.32	0.35	49.2	0.32	69	5.42	9.94

collected sample @ 1200

SHP-05-47 A
well ran dry during purge, will allow recharge and collect filtered data

Collected sample @ 1240

sample still cloudy despite field filter.
will not submit

Project / Client

Setup on SHM-05-47B

Time	DTW	DO	ORP	Turb	Spec	ph	Temp
1300	3.63	3.81	107.5	52.1	282	5.69	12.80
1305	3.64	0.79	89.7	52.4	286	5.69	12.73
1310	3.67	0.57	73.4	52.3	288	5.68	12.87
1315	3.67	0.54	68.1	39.7	288	5.69	12.79
1320	3.67	0.42	65.9	34.1	288	5.68	12.74
1325	3.67	0.39	63.2	27.8	287	5.66	12.76
1330	3.67	0.35	61.2	26.9	287	5.67	12.76
1335	3.67	0.34	61.1	26.8	286	5.67	12.75

collected sample @ 1340

Project / Client Devens

735 | gravel onsite
departet site
calibrated geqr

Setup on SHM-05-42A

Time	DTW	DO	ORP	Turb	Spec	ph	Temp
925	6.23	2.74	109.2	1.35	63	5.31	9.61
930	6.23	1.80	120.1	0.23	65	5.35	9.43
935	6.23	1.39	115.3	0.21	73	5.34	9.41
940	6.23	1.12	110.6	0.19	74	5.28	9.39
945	6.23	0.99	105.9	0.20	76	5.31	9.39
950	6.23	0.94	104.2	0.21	75	5.33	9.38
955	6.23	0.91	103.7	0.20	76	5.33	9.41

collected sample @ 1000

Location _____ Date 10/28/15

Project / Client _____

Setup on SHM-05-42B

Time	DTW	DO	ORP	Turb	Spec	pH	Temp
1025	6.23	0.67	9.8	0.26	381	6.11	9.58
1030	6.23	0.55	2.6	0.24	382	6.23	9.59
1035	6.23	0.50	-4.4	0.23	385	6.28	9.66
1040	6.23	0.46	-8.8	0.22	386	6.33	9.70
1045	6.23	0.42	-10.4	0.20	388	6.32	9.72
1050	6.23	0.41	-11.2	0.21	389	6.33	9.73

Collected sample @ 1055

Setup on SHM-10-16

Time	DTW	DO	ORP	Turb	Spec	pH	Temp
1120	8.93	2.92	-18.6	0.87	354	6.93	10.11
1125	8.93	2.74	-16.6	0.36	354	6.99	10.09
1130	8.93	2.67	-13.6	0.34	353	7.01	10.09
1135	8.93	2.65	-13.3	0.32	354	7.03	10.01
1140	8.93	2.63	-13.1	0.31	354	7.02	10.11

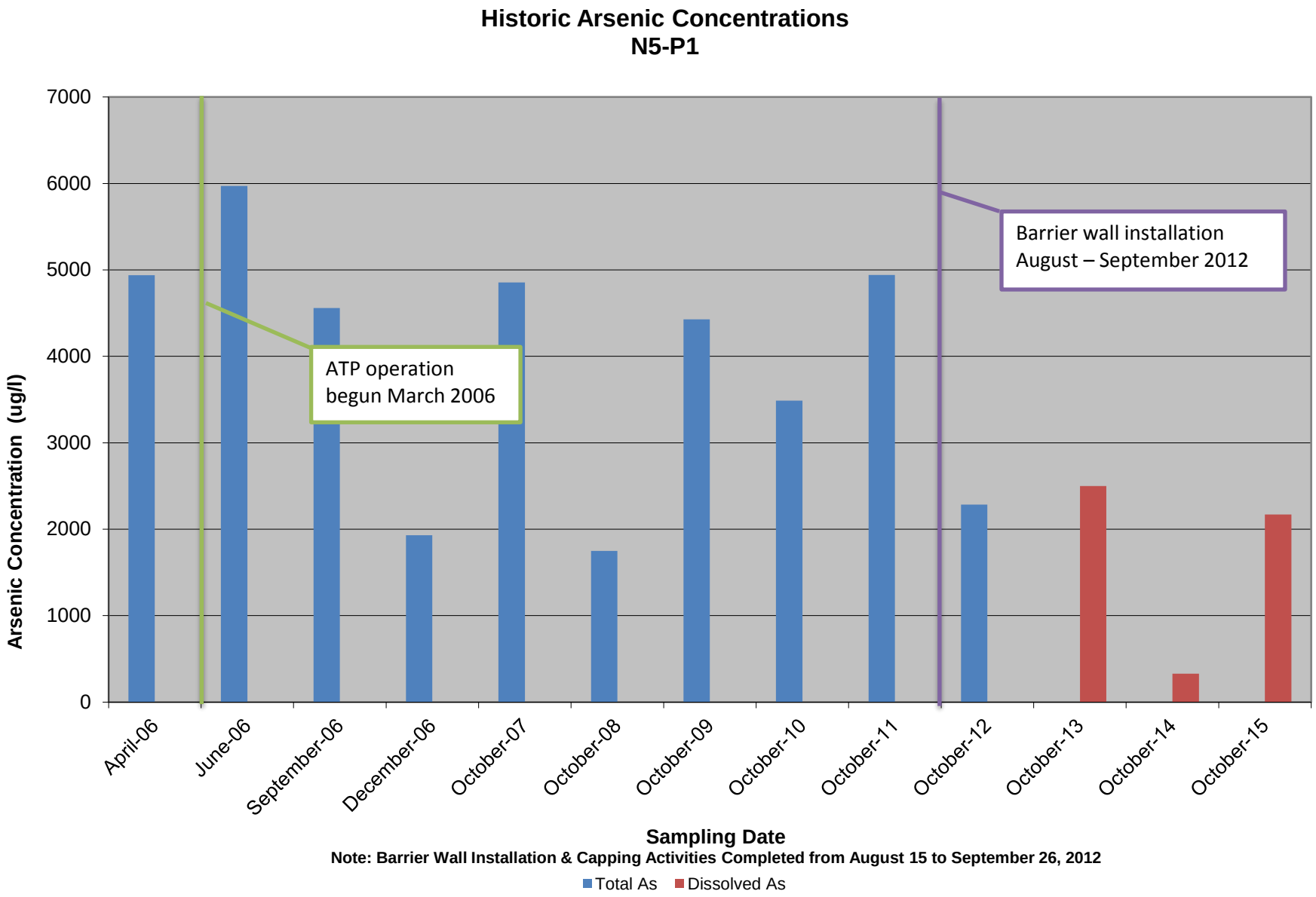
Collected sample @ 1145

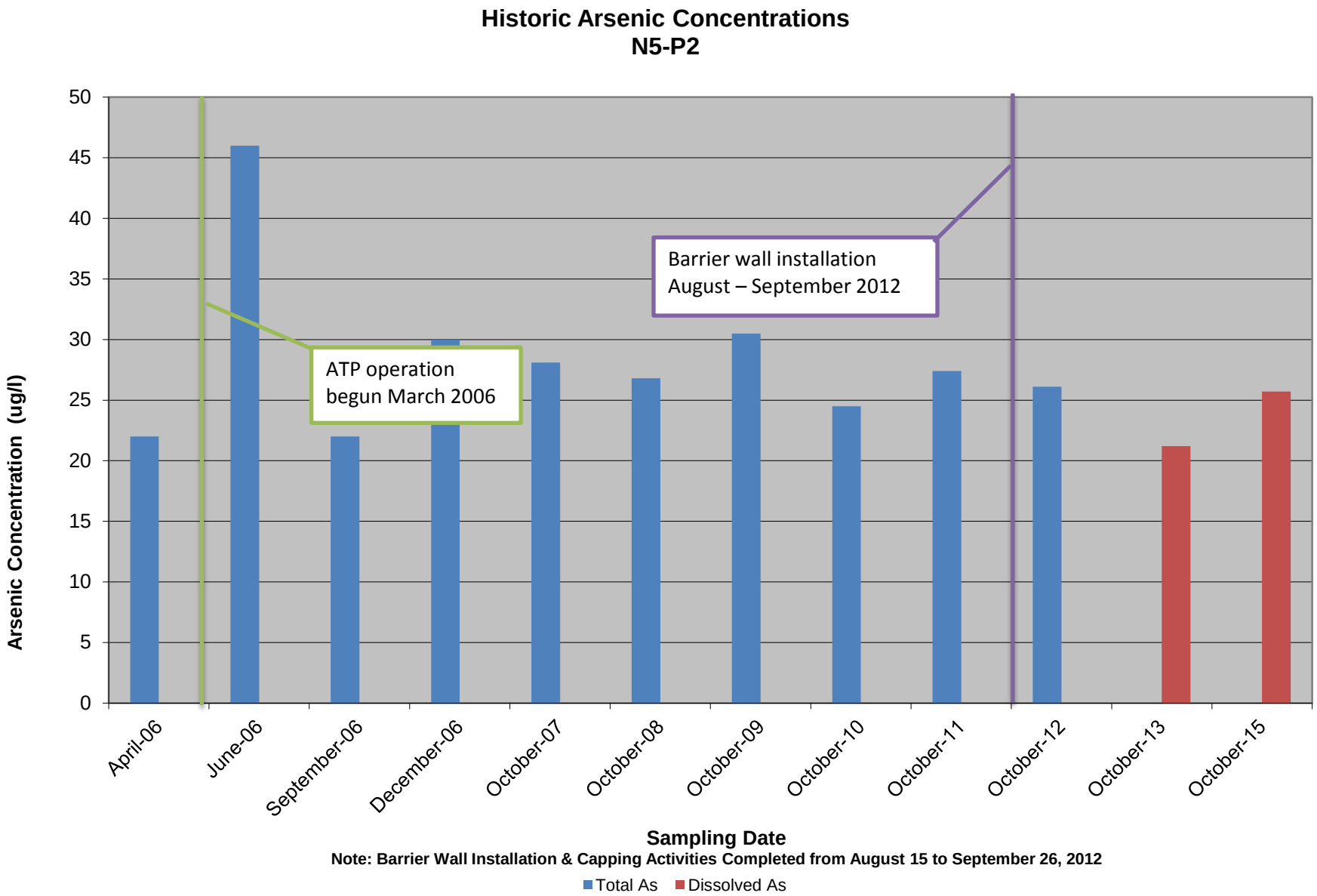
Location _____ Date _____

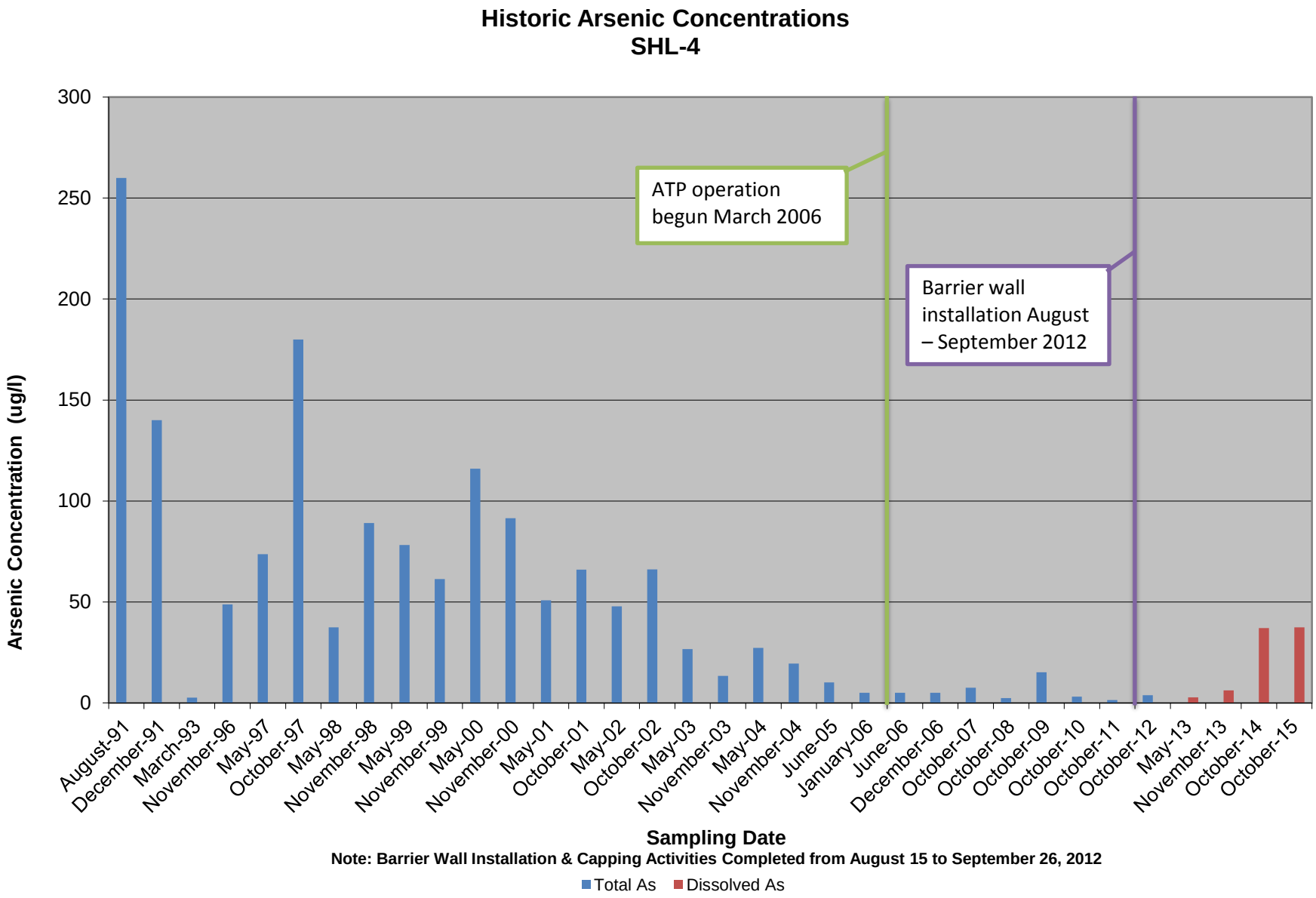
Project / Client _____

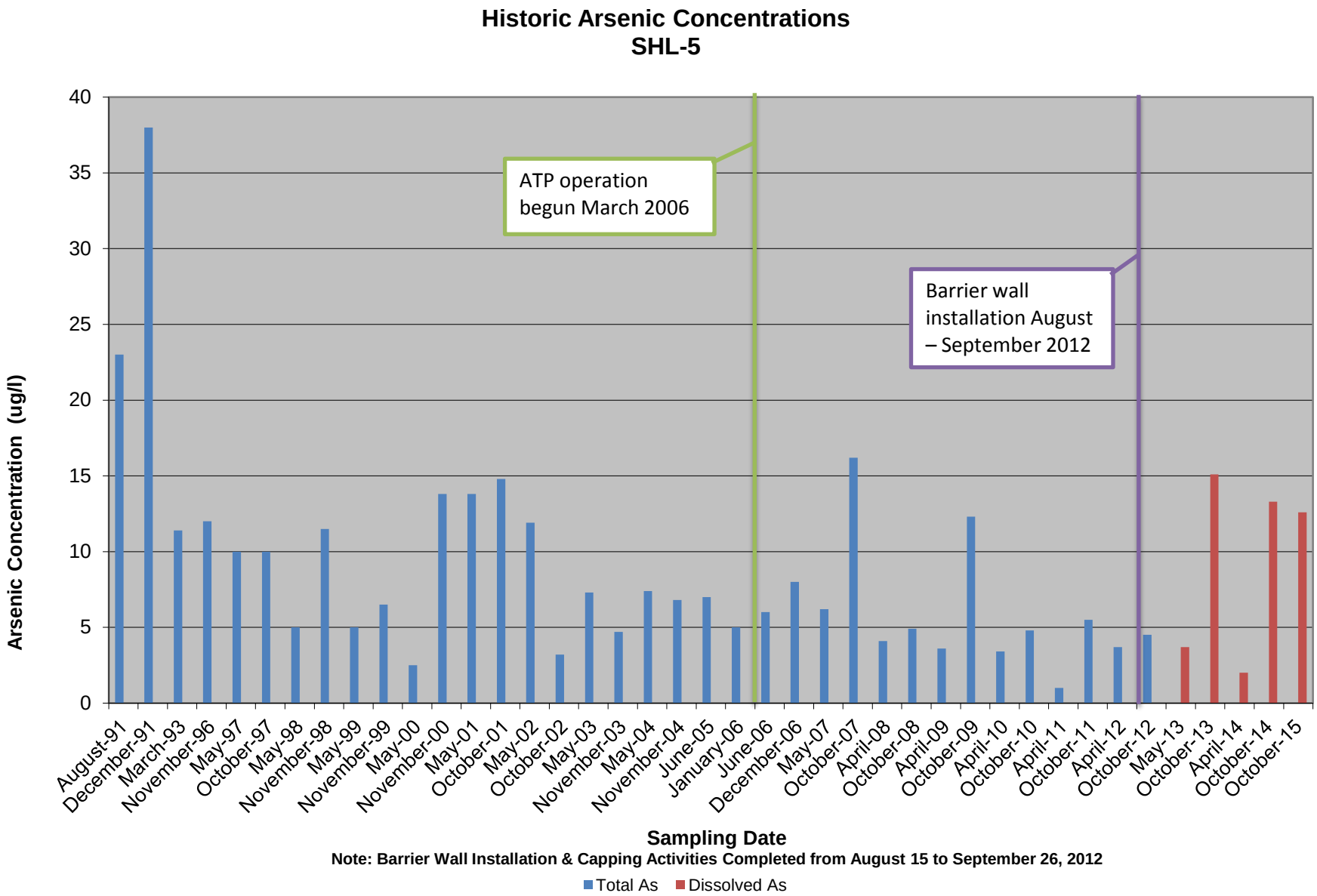
APPENDIX F

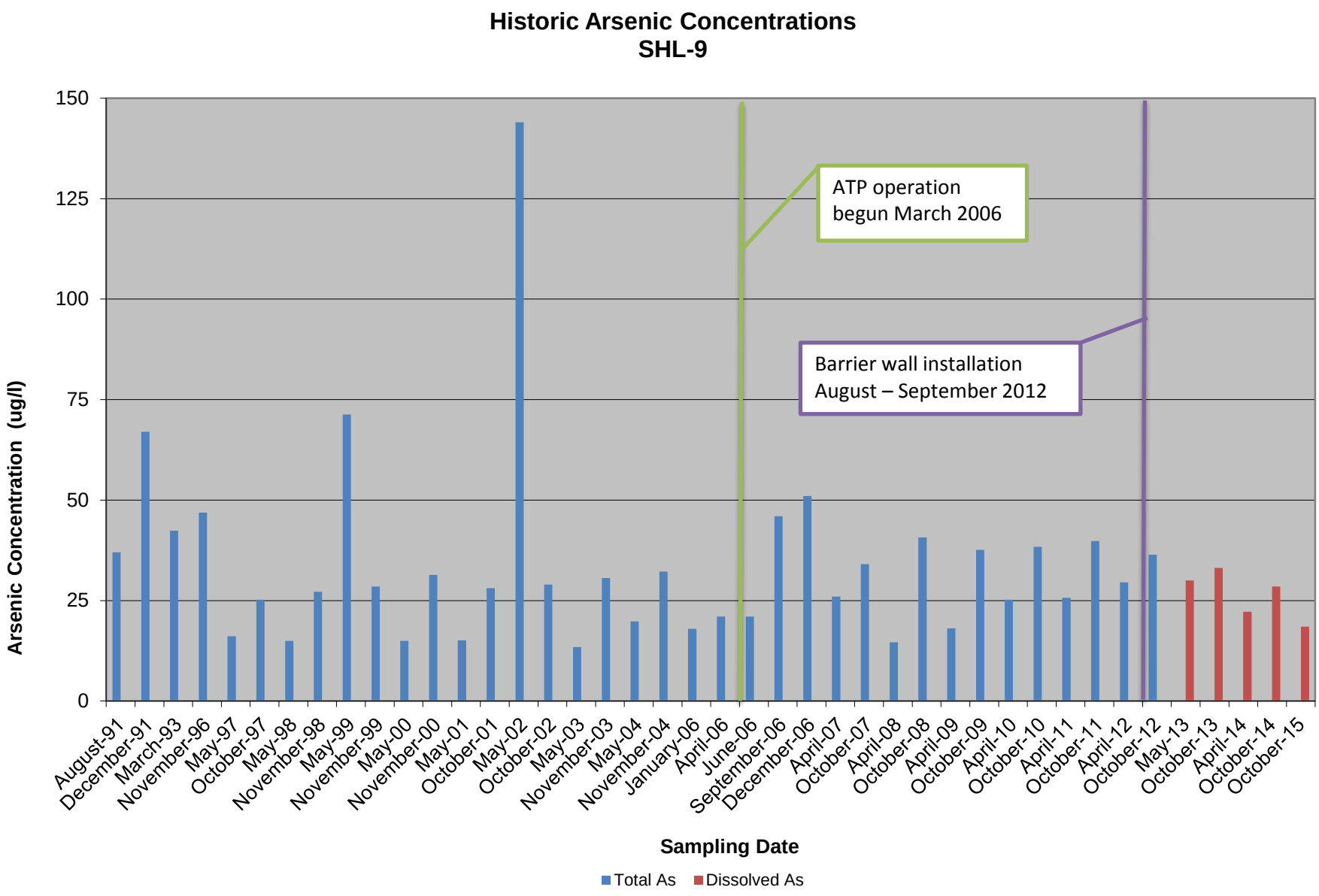
Arsenic Concentration Charts

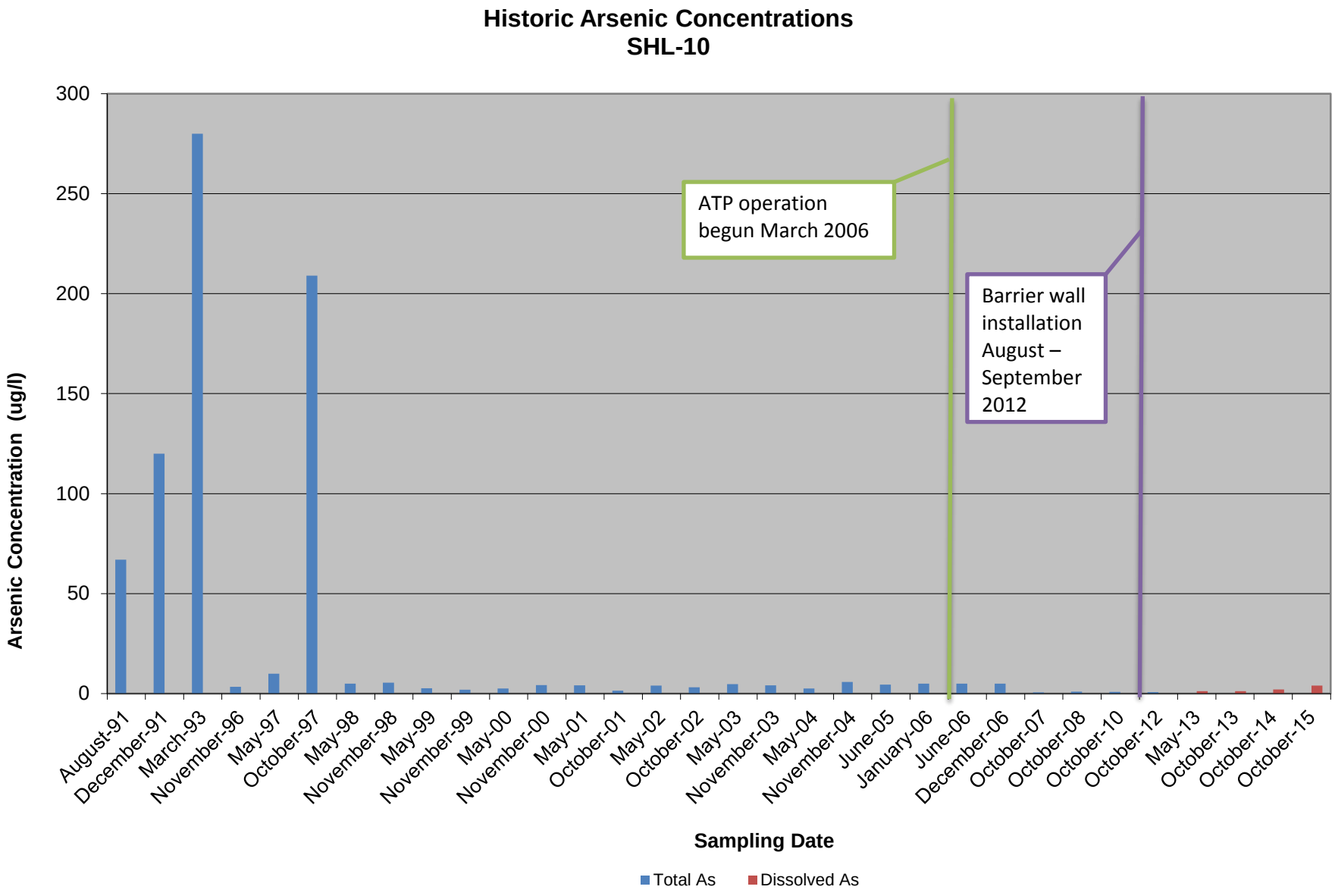

Historic Arsenic Concentrations
N5-P1
Arsenic Concentration (ug/l)
7000
6000
5000
4000
3000
2000
1000
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

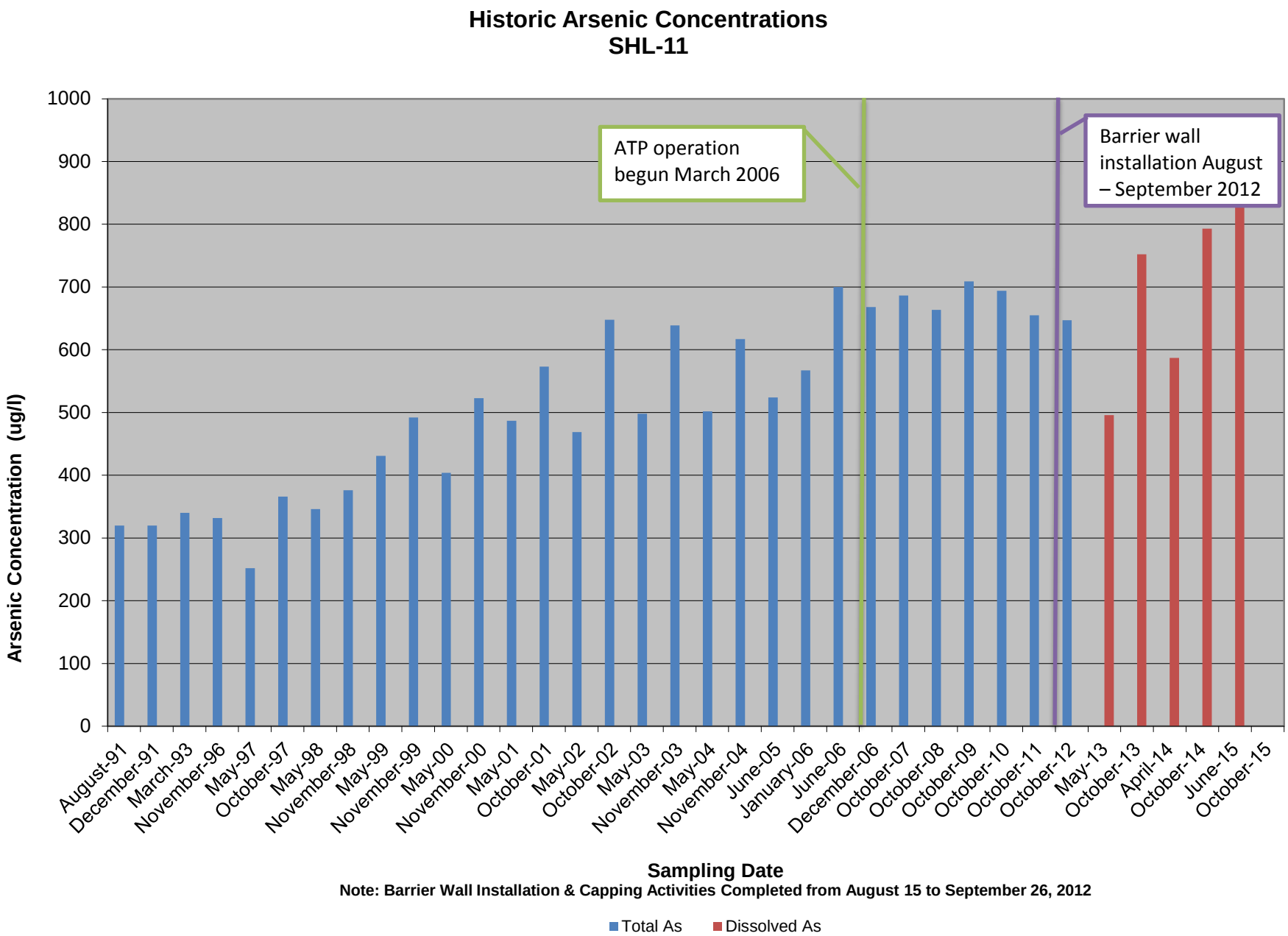

Historic Arsenic Concentrations
N5-P2
Arsenic Concentration (ug/l)
50
45
40
35
30
25
20
15
10
5
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

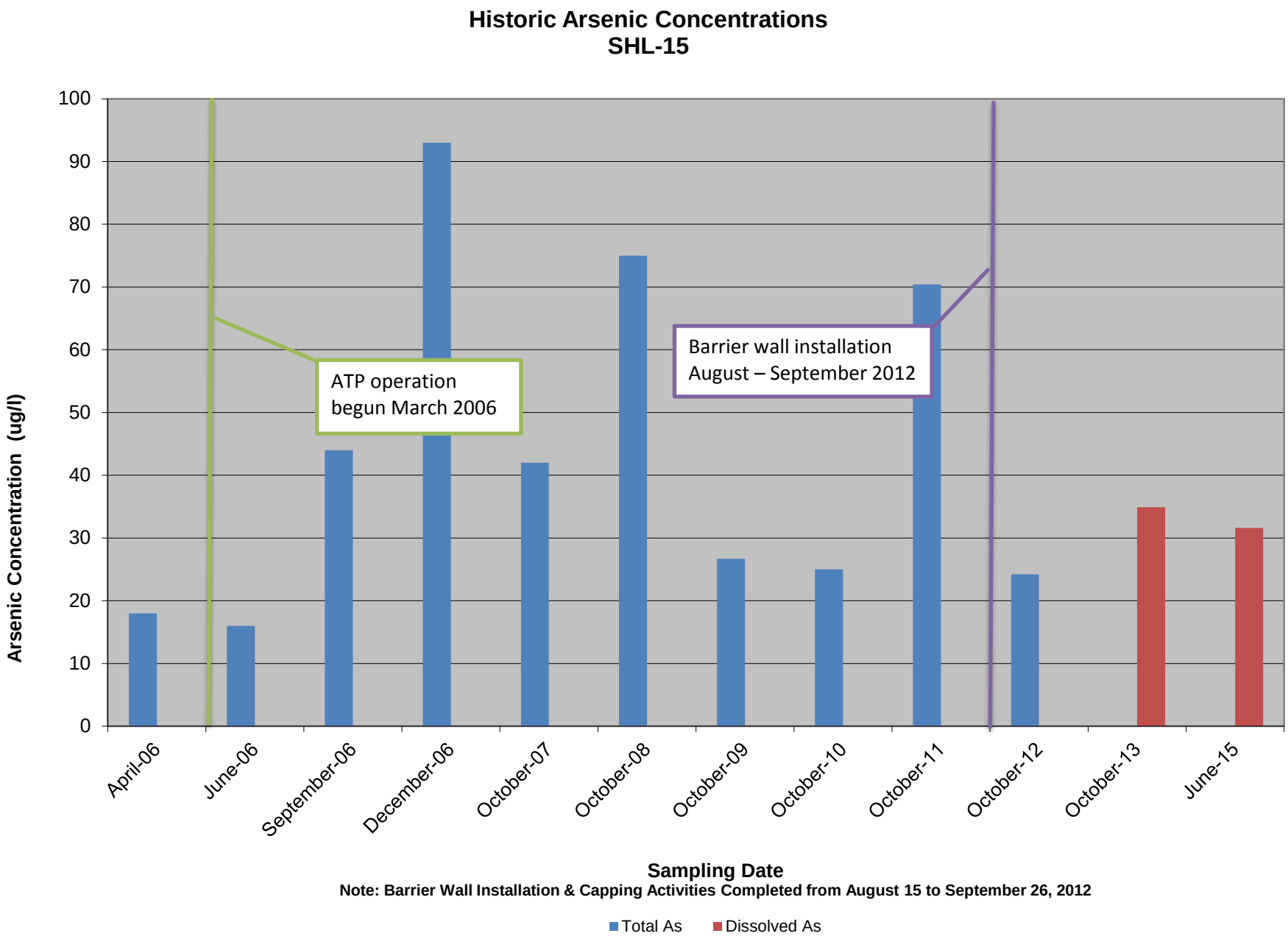

Historic Arsenic Concentrations
SHL-4
Arsenic Concentration (ug/l)
300
250
200
150
100
50
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
August-91
December-91
March-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
June-05
January-06
June-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
May-13
November-13
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

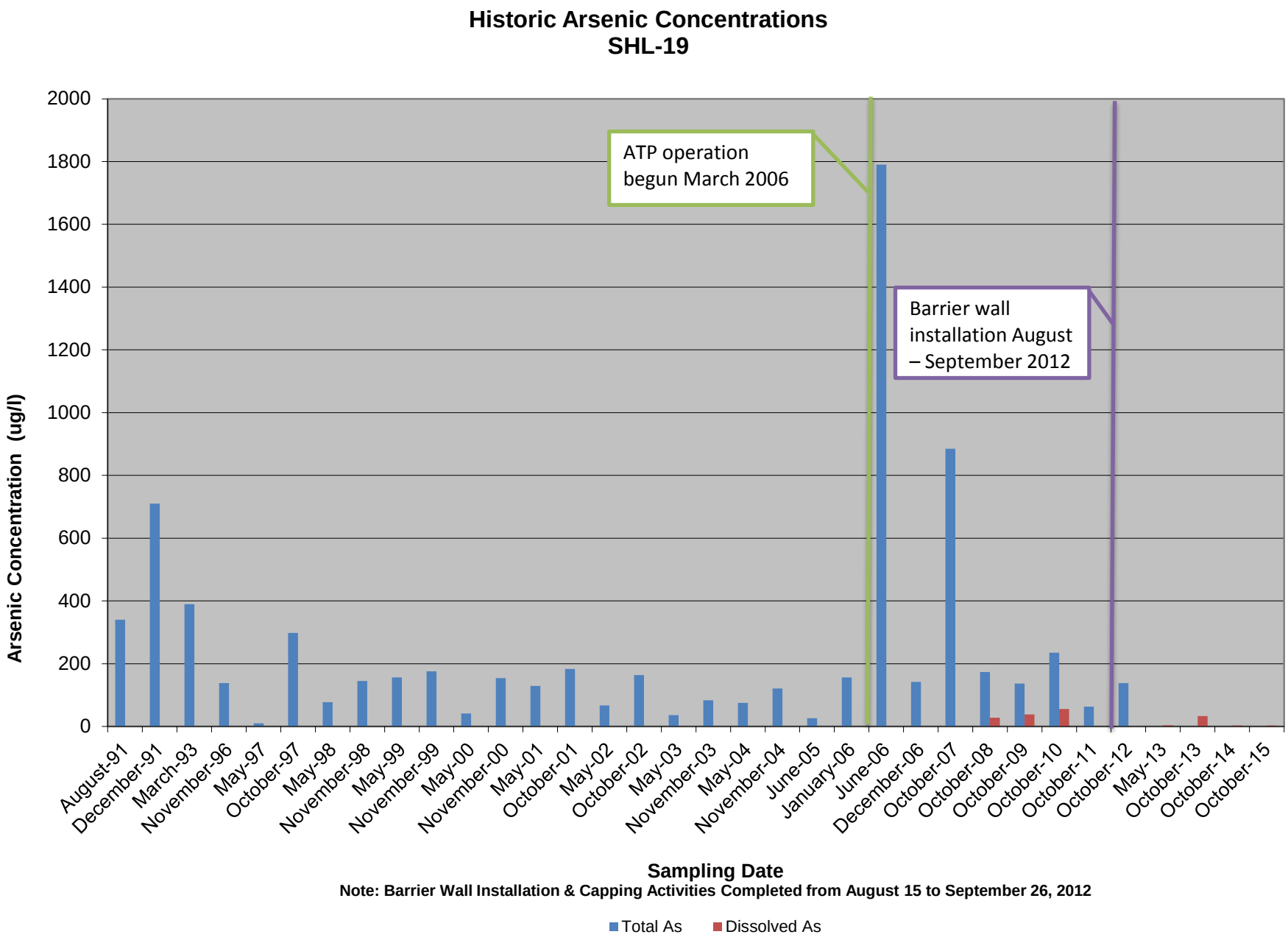

Historic Arsenic Concentrations
SHL-5
Arsenic Concentration (ug/l)
40
35
30
25
20
15
10
5
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
August-91
December-91
March-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
June-05
January-06
June-06
December-06
May-07
October-07
April-08
October-08
April-09
October-09
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

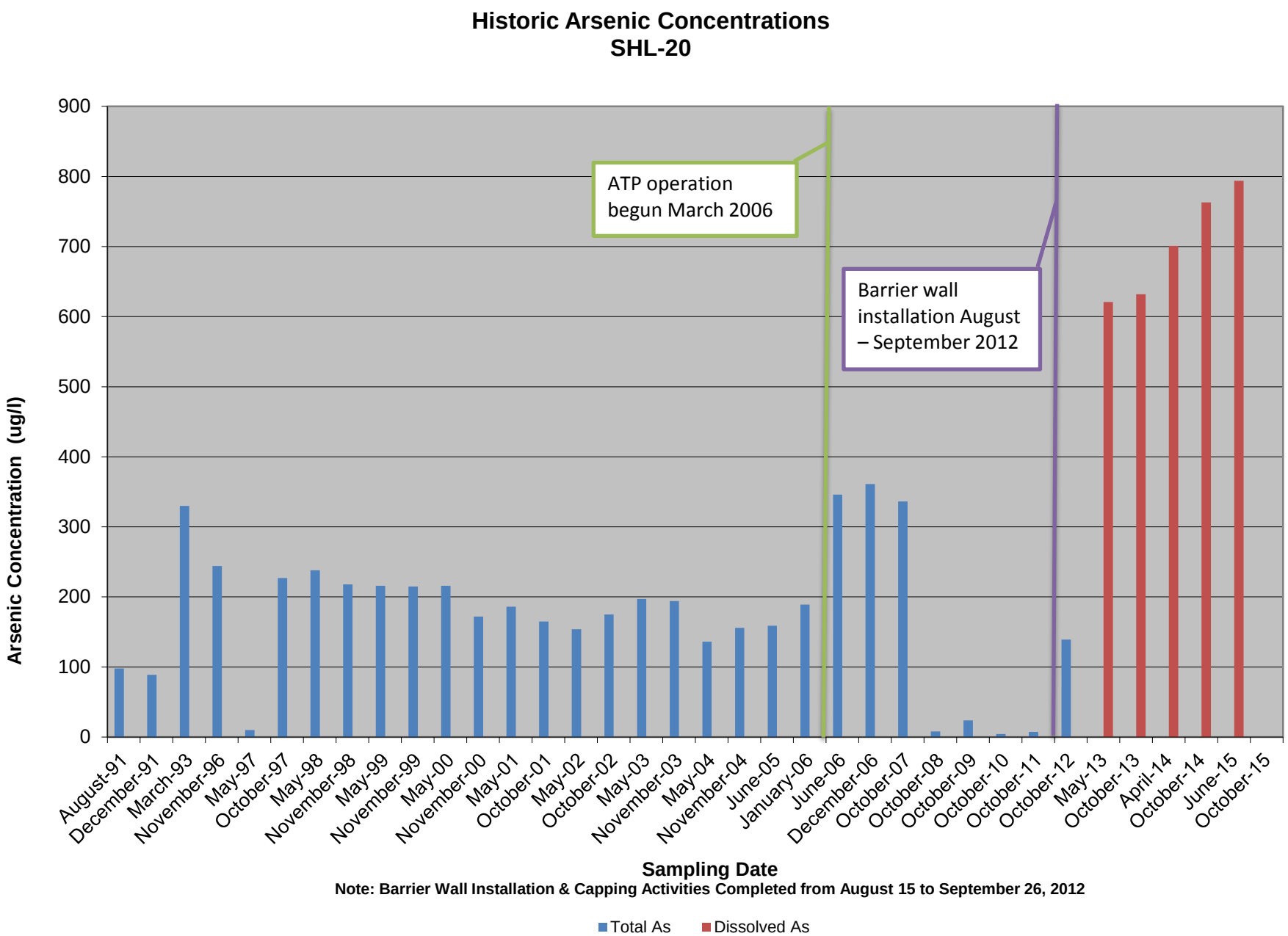

Historic Arsenic Concentrations
SHL-9
Arsenic Concentration (ug/l)
150
125
100
75
50
25
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
August-91
December-91
March-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
January-06
April-06
June-06
September-06
December-06
April-07
October-07
April-08
October-08
April-09
October-09
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
October-15
Sampling Date
Total As
Dissolved As

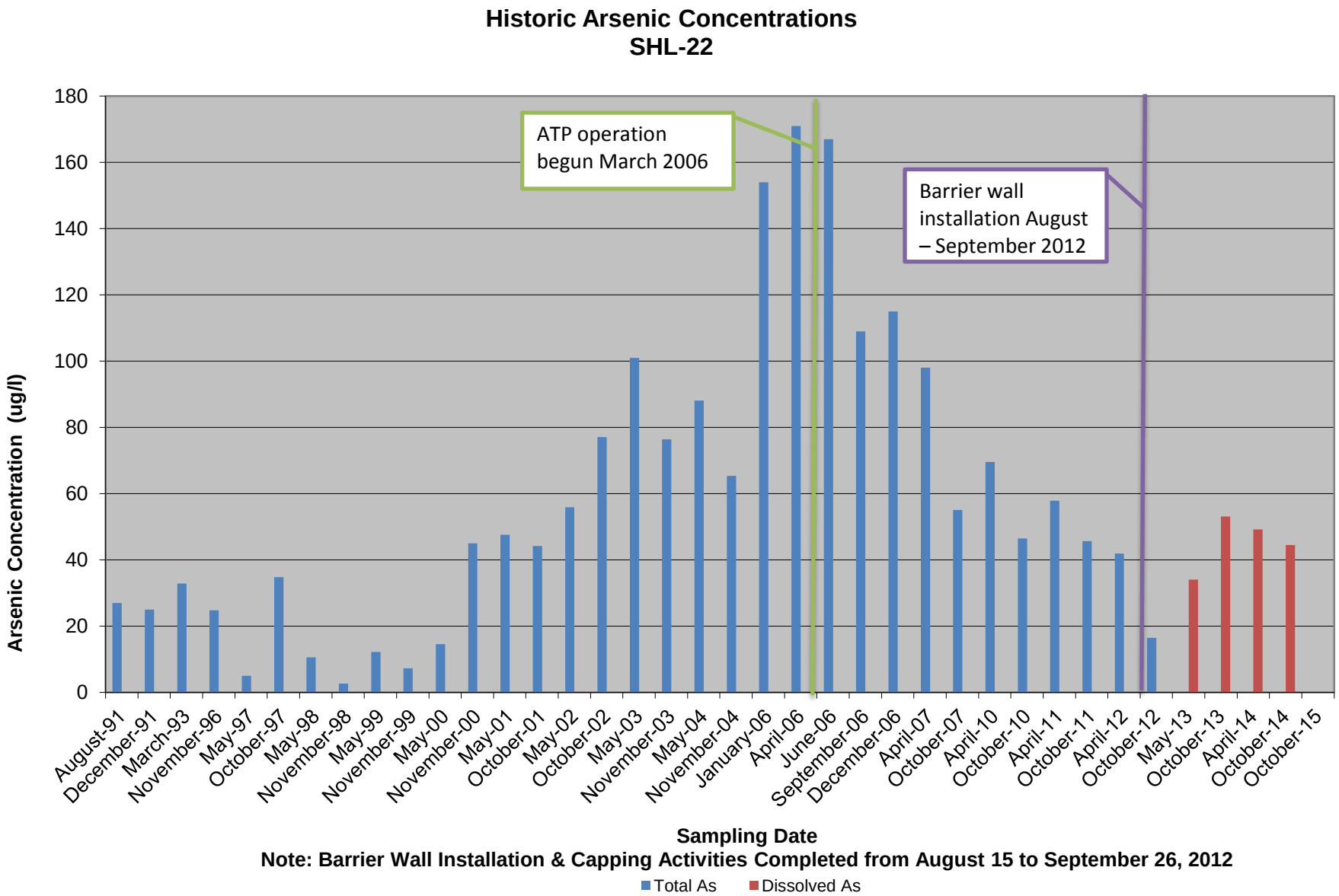

Historic Arsenic Concentrations
SHL-10
Arsenic Concentration (ug/l)
300
250
200
150
100
50
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
August-91
December-91
March-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
June-05
January-06
June-06
December-06
October-07
October-08
October-10
October-12
May-13
October-13
October-14
October-15
Sampling Date
Total As
Dissolved As

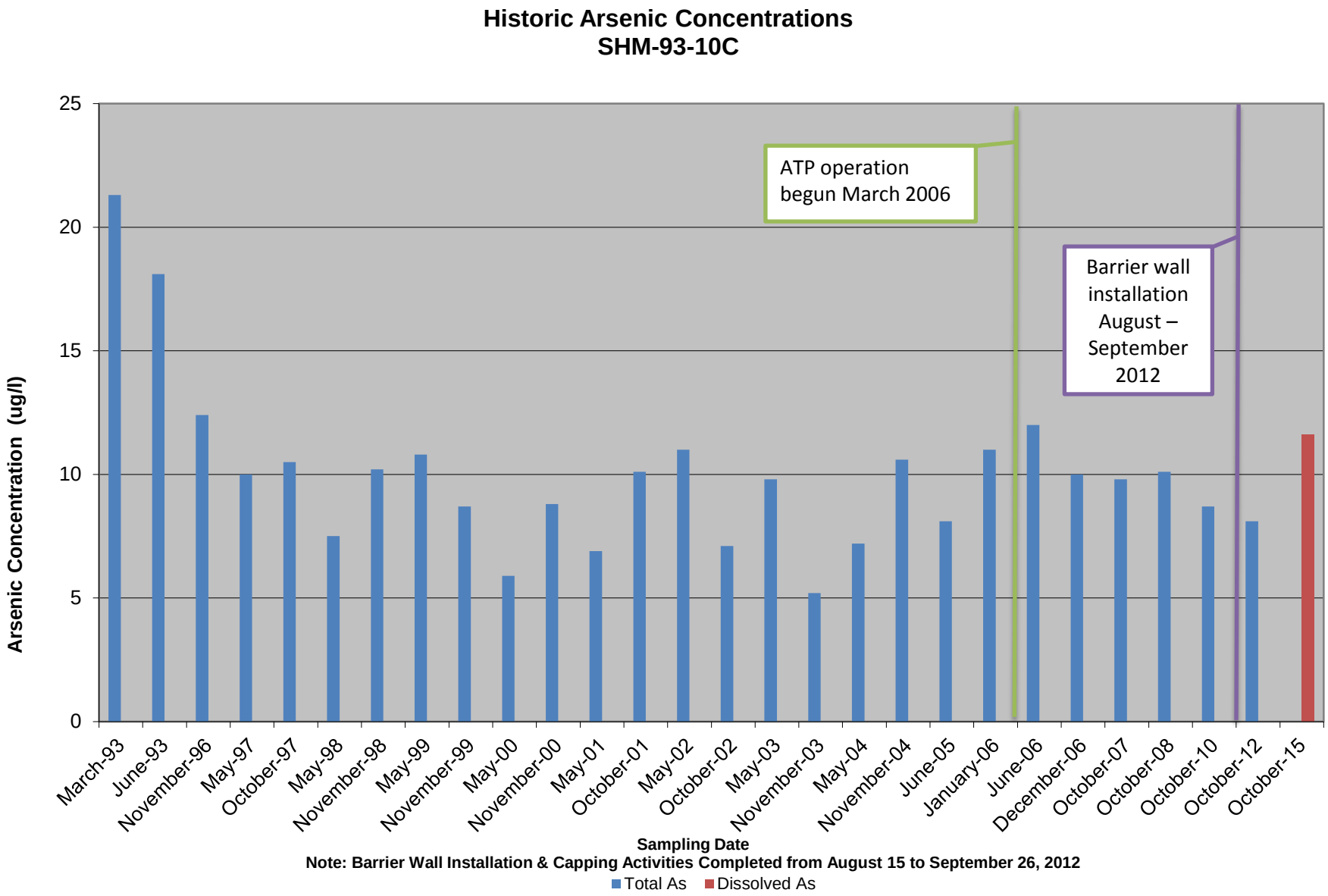

Historic Arsenic Concentrations
SHL-11
Arsenic Concentration (ug/l)
1000
900
800
700
600
500
400
300
200
100
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
August-91
December-91
March-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
June-05
January-06
June-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
May-13
October-13
April-14
October-14
June-15
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

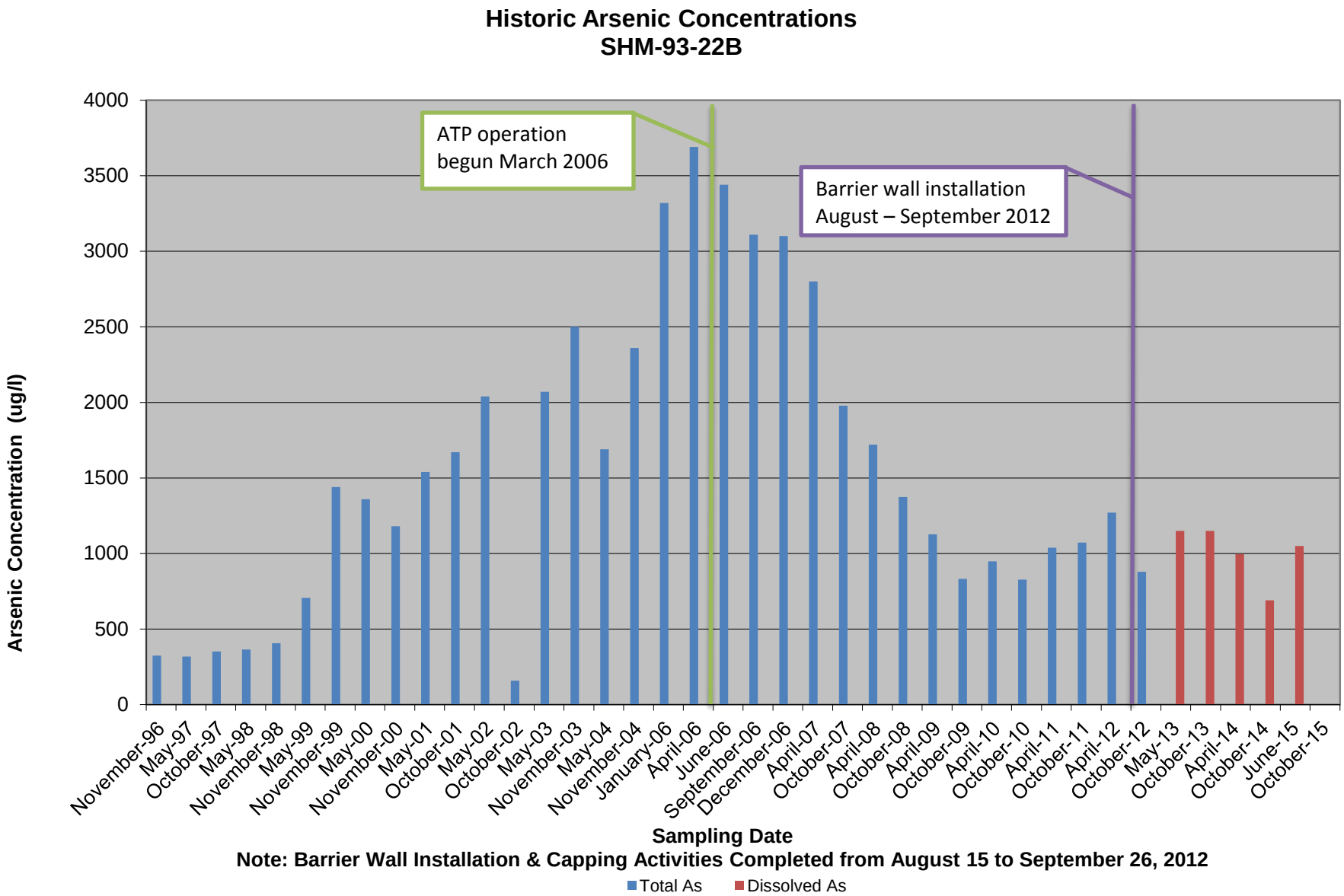

Historic Arsenic Concentrations
SHL-15
Arsenic Concentration (ug/l)
100
90
80
70
60
50
40
30
20
10
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
June-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

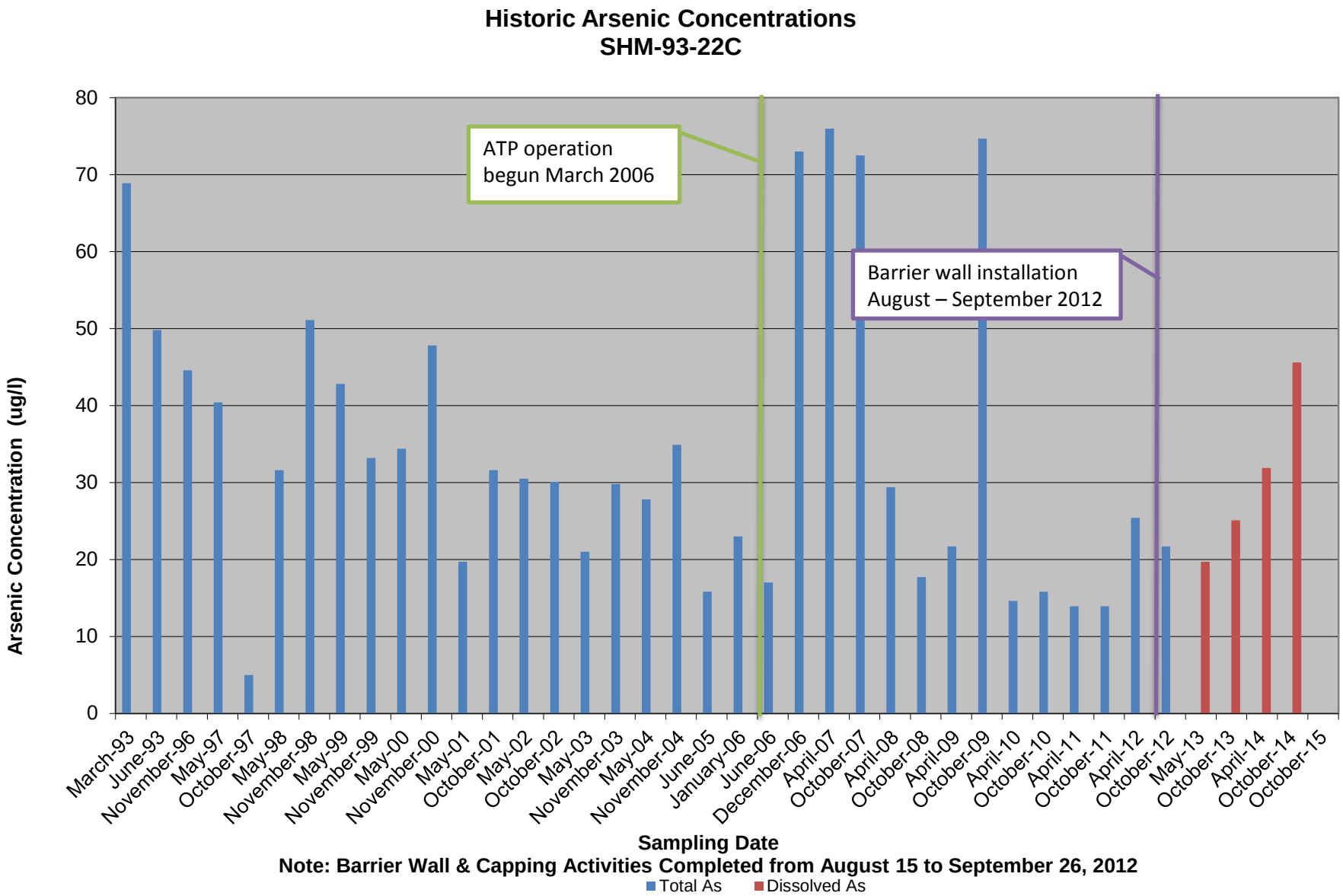

Historic Arsenic Concentrations
SHL-19
Arsenic Concentration (ug/l)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
August-91
December-91
March-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
June-05
January-06
June-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
May-13
October-13
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

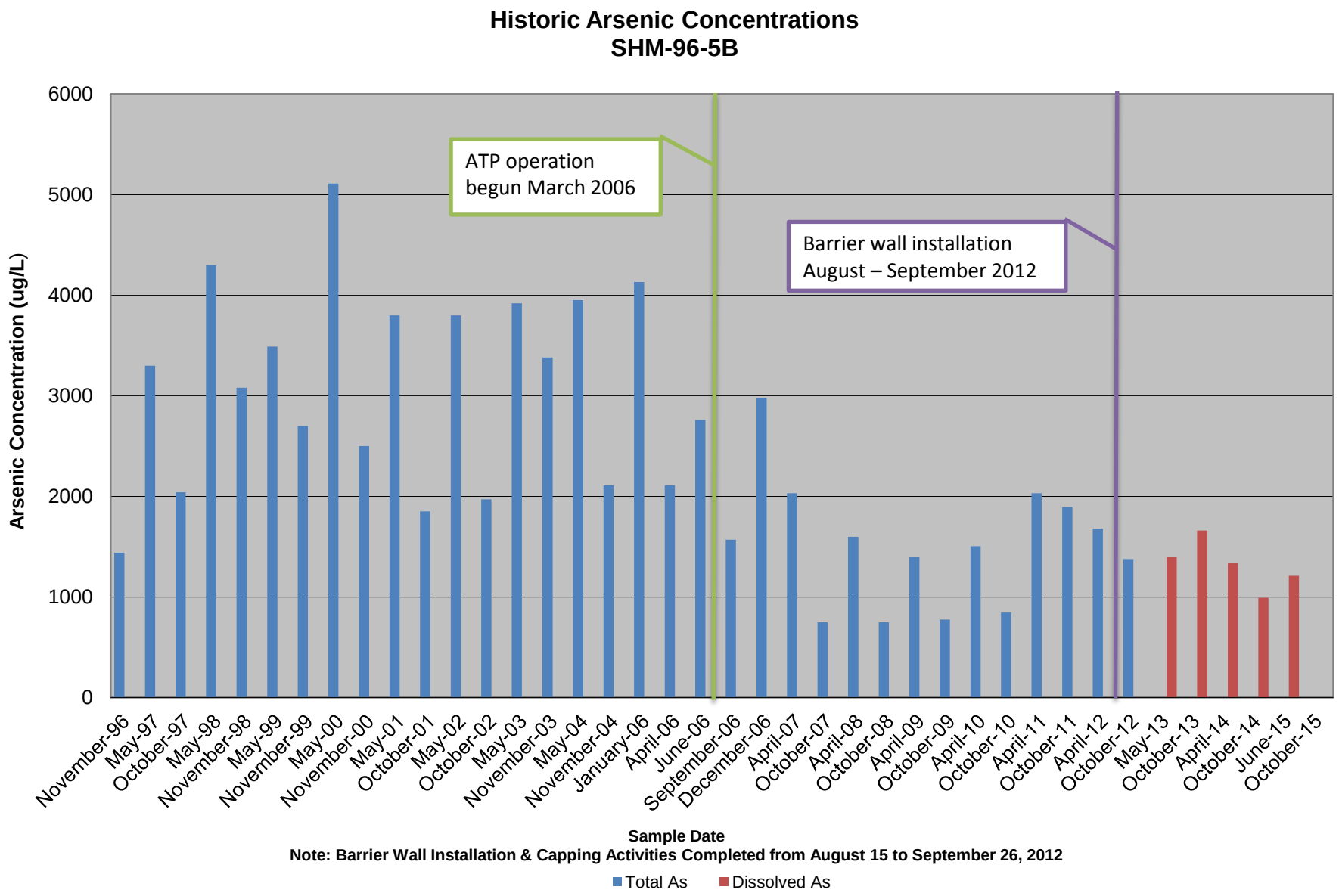

Historic Arsenic Concentrations
SHL-20
Arsenic Concentration (ug/l)
900
800
700
600
500
400
300
200
100
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
August-91
December-91
March-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
June-05
January-06
June-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
May-13
October-13
April-14
October-14
June-15
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

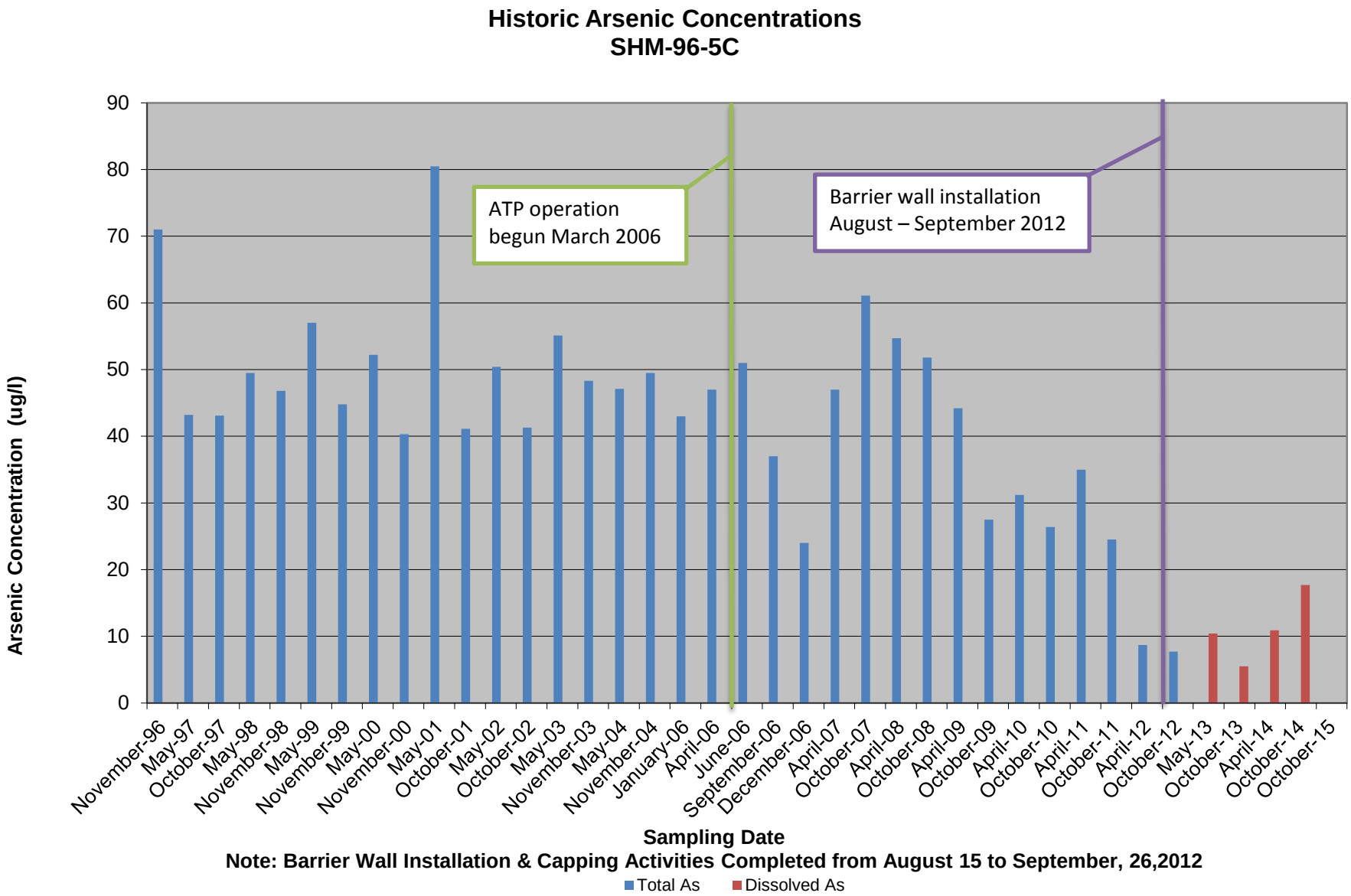

Historic Arsenic Concentrations
SHL-22
ATP operation begun March 2006
Barrier wall installation August – September 2012
Arsenic Concentration (ug/l)
180
160
140
120
100
80
60
40
20
0
August-91
December-91
March-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
January-06
April-06
June-06
September-06
December-06
April-07
October-07
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As


Historic Arsenic Concentrations
SHM-93-10C
Arsenic Concentration (ug/l)
25
20
15
10
5
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
March-93
June-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
June-05
January-06
June-06
December-06
October-07
October-08
October-10
October-12
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

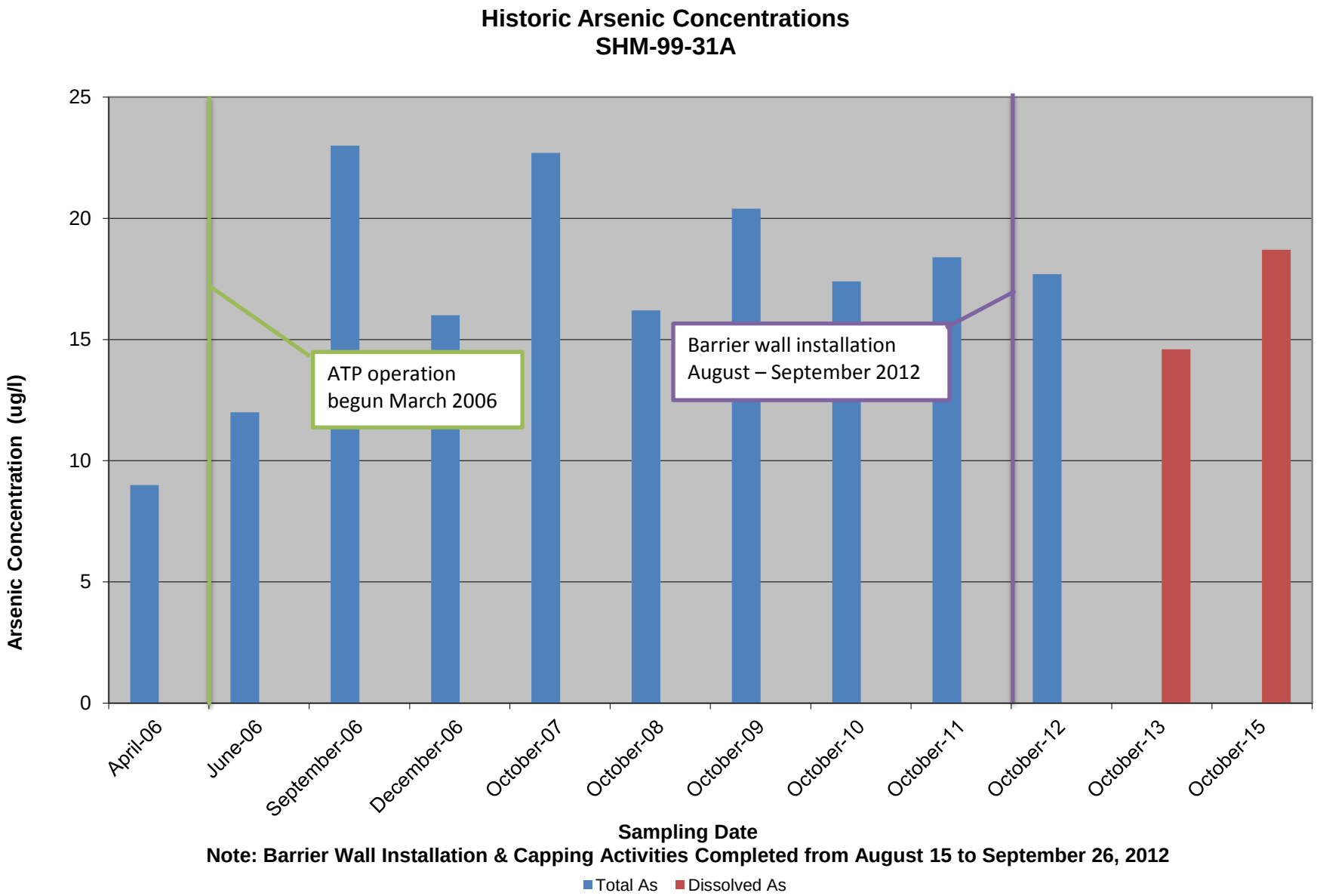

Historic Arsenic Concentrations
SHM-93-22B
ATP operation begun March 2006
Barrier wall installation August – September 2012
Arsenic Concentration (ug/l)
4000
3500
3000
2500
2000
1500
1000
500
0
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
January-06
April-06
June-06
September-06
December-06
April-07
October-07
April-08
October-08
April-09
October-09
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
June-15
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

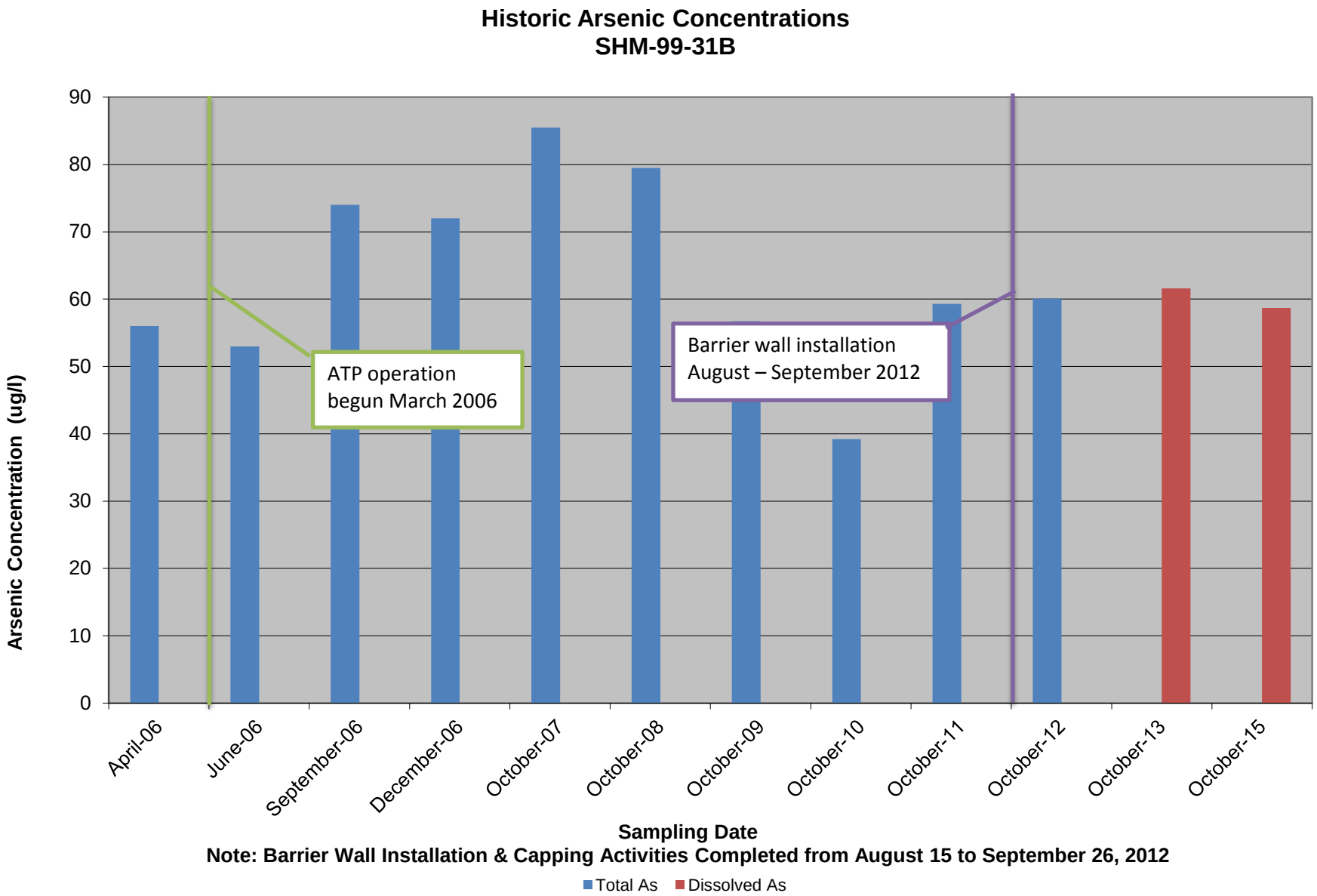

Historic Arsenic Concentrations
SHM-93-22C
Arsenic Concentration (ug/l)
80
70
60
50
40
30
20
10
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
March-93
June-93
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
June-05
January-06
June-06
December-06
April-07
October-07
April-08
October-08
April-09
October-09
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
October-15
Sampling Date
Note: Barrier Wall & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

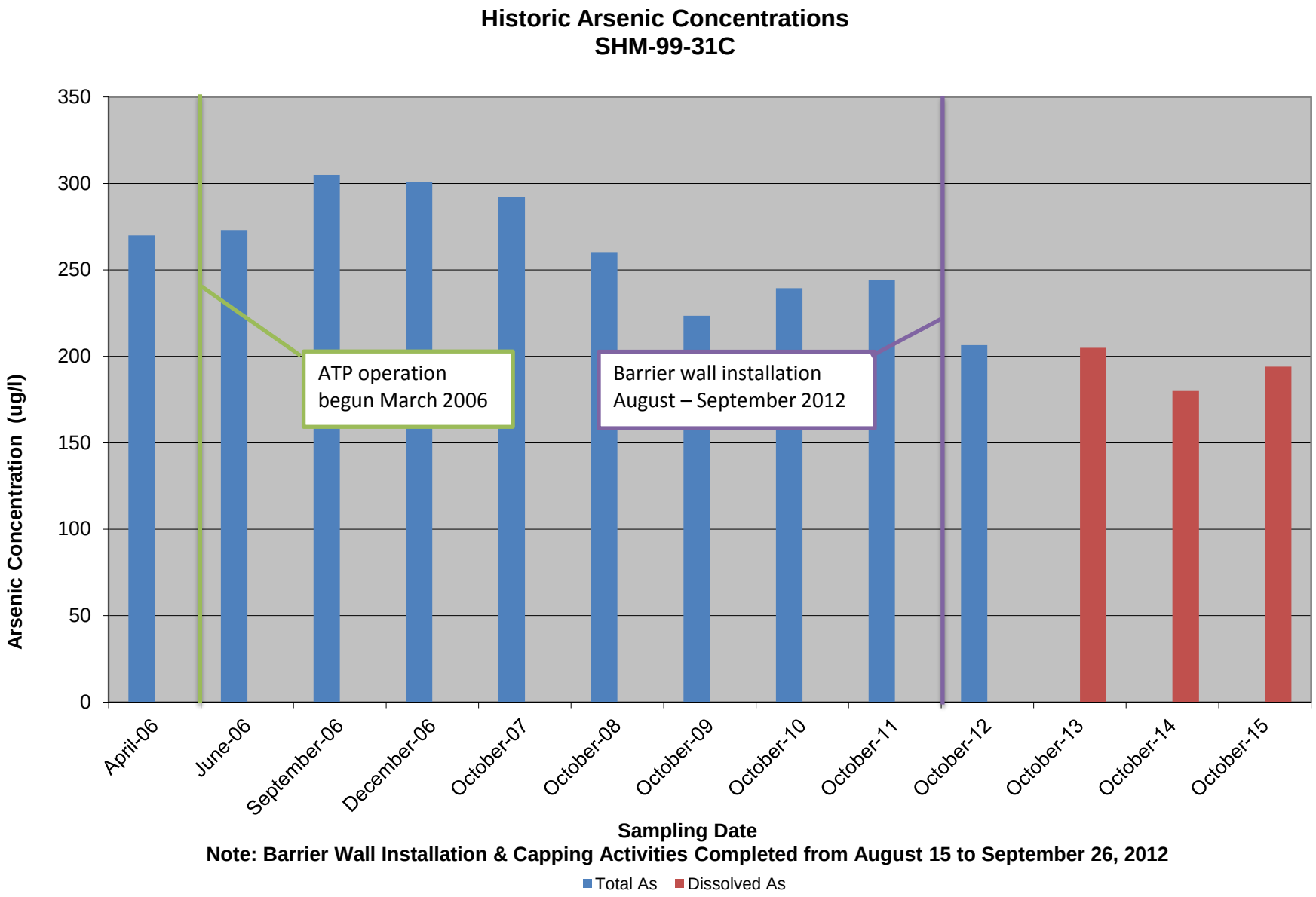

Historic Arsenic Concentrations
SHM-96-5B
Arsenic Concentration (ug/L)
6000
5000
4000
3000
2000
1000
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
November-96
May-97
October-97
May-98
November-98
May-99
November-99
May-00
November-00
May-01
October-01
May-02
October-02
May-03
November-03
May-04
November-04
January-06
April-06
June-06
September-06
December-06
April-07
October-07
April-08
October-08
April-09
October-09
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
June-15
October-15
Sample Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

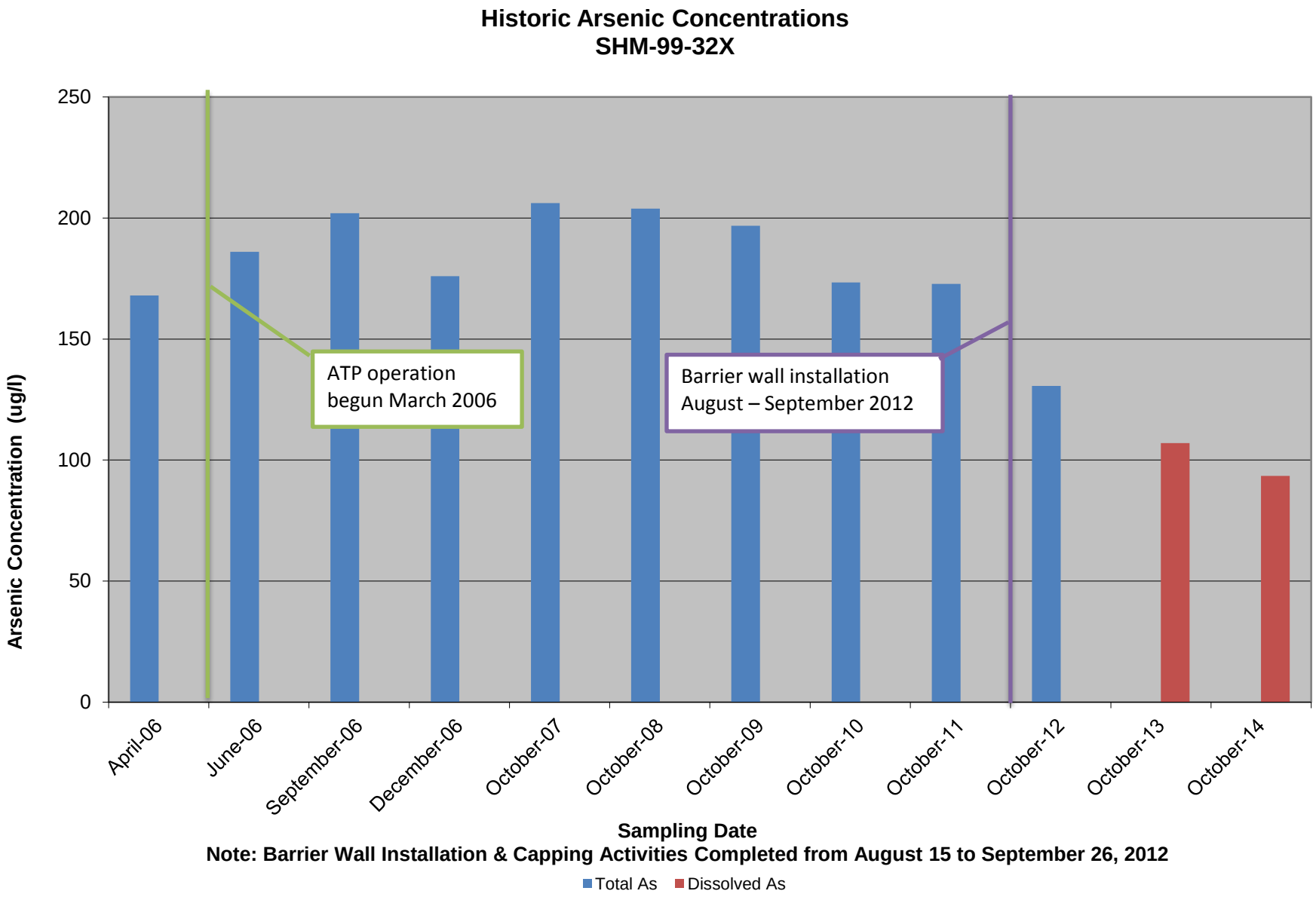


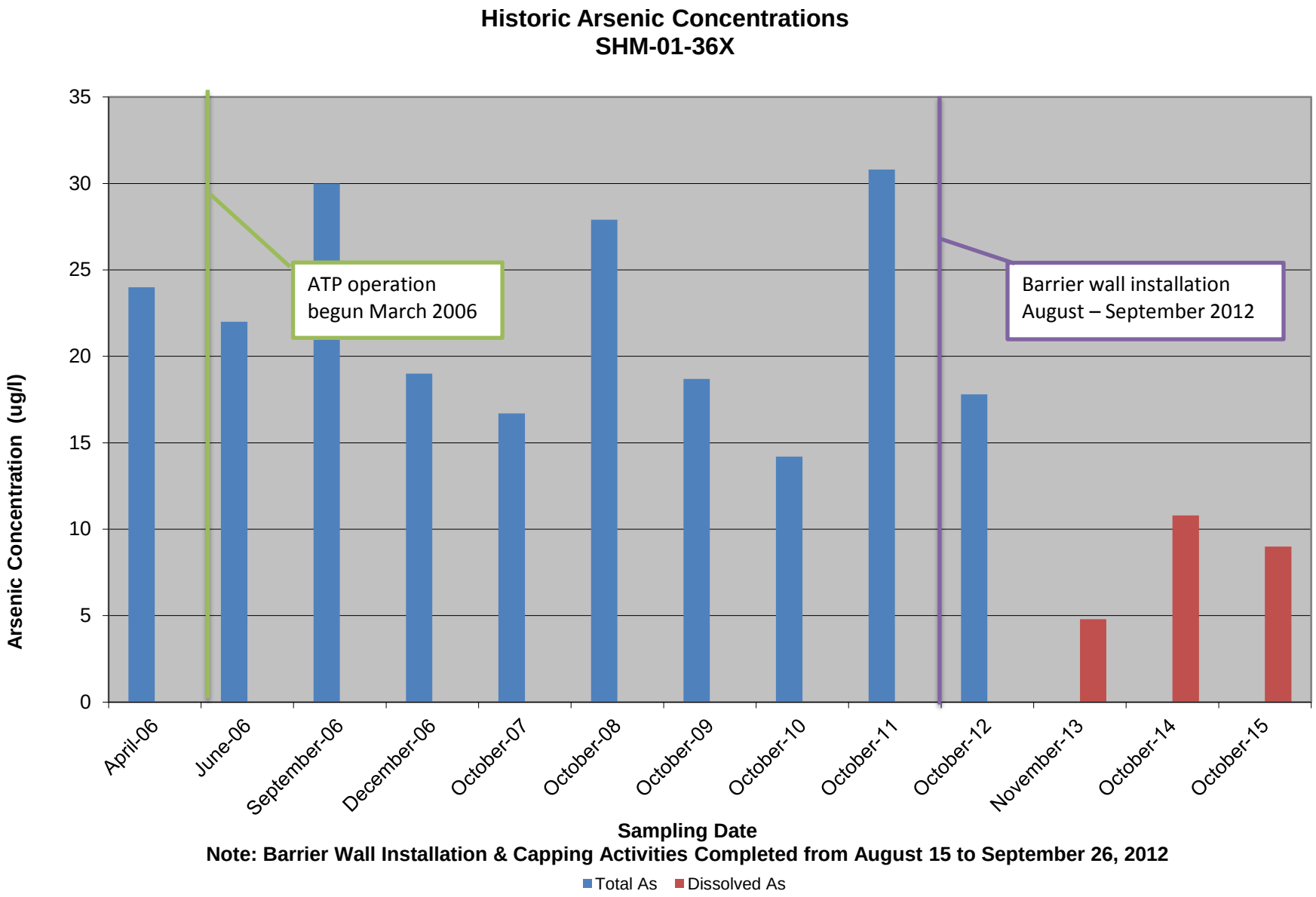
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September, 26,2012

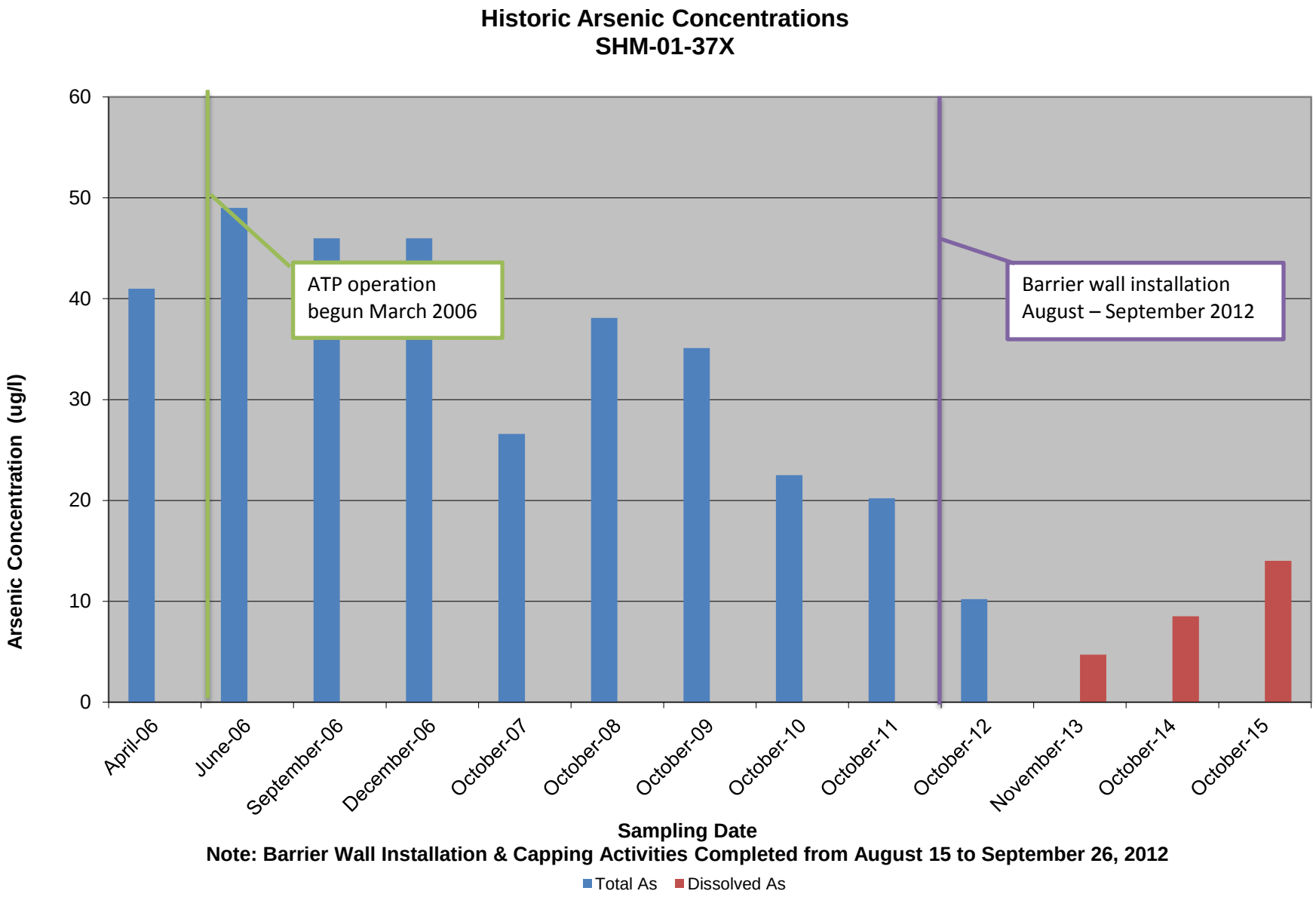

Historic Arsenic Concentrations
SHM-99-31A
Arsenic Concentration (ug/l)
25
20
15
10
5
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

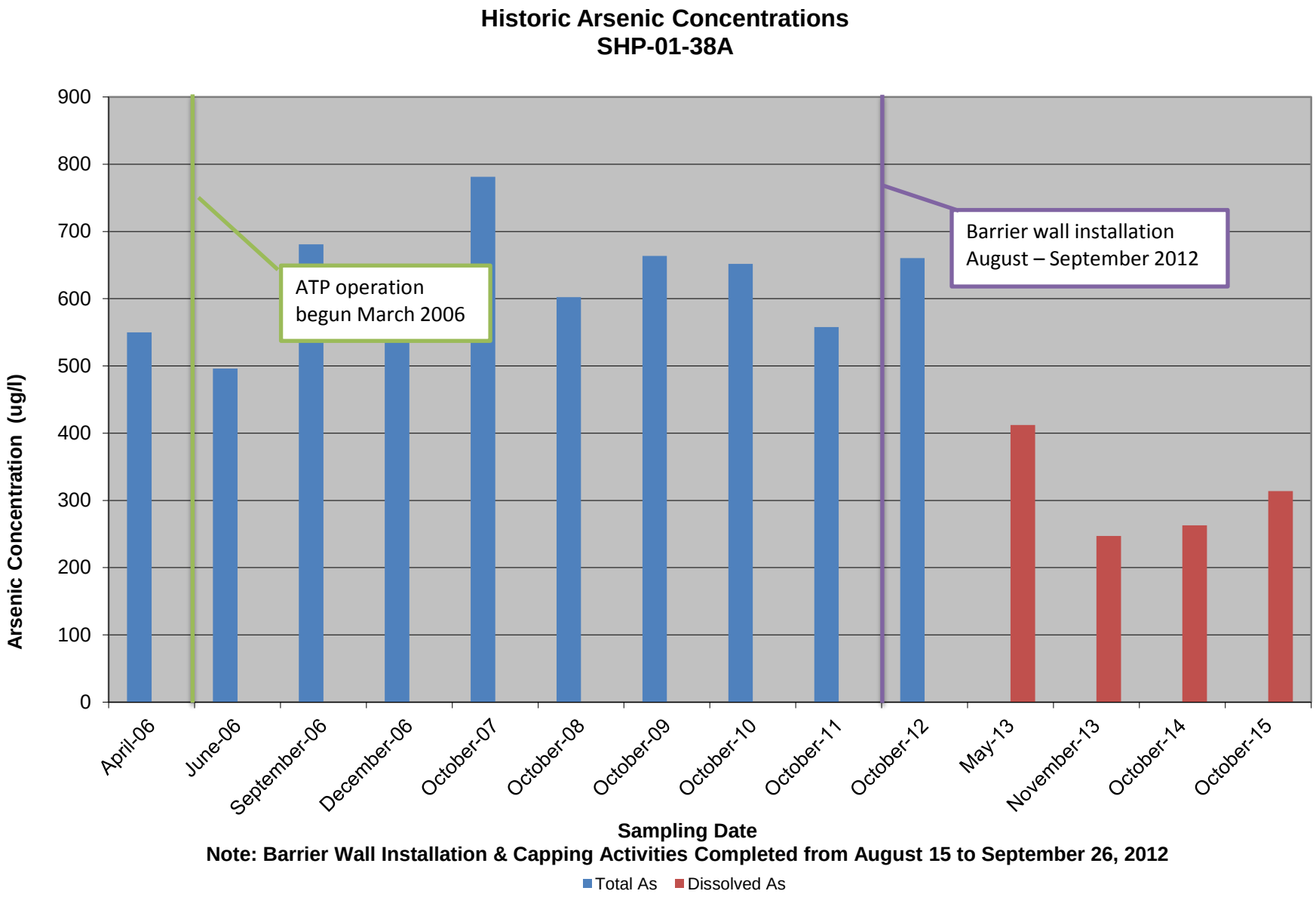

Historic Arsenic Concentrations
SHM-99-31B
Arsenic Concentration (ug/l)
90
80
70
60
50
40
30
20
10
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

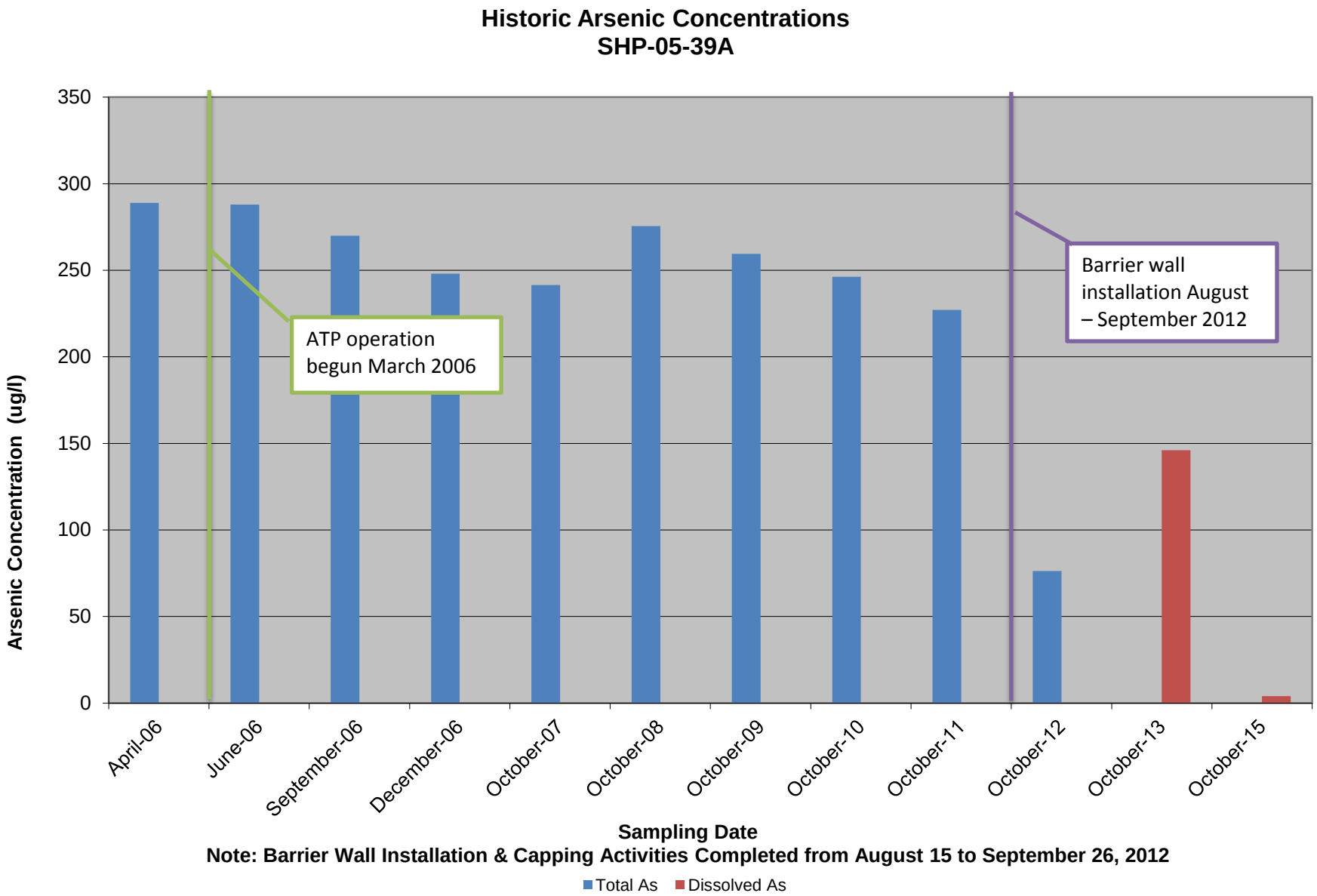

Historic Arsenic Concentrations
SHM-99-31C
Arsenic Concentration (ug/l)
350
300
250
200
150
100
50
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

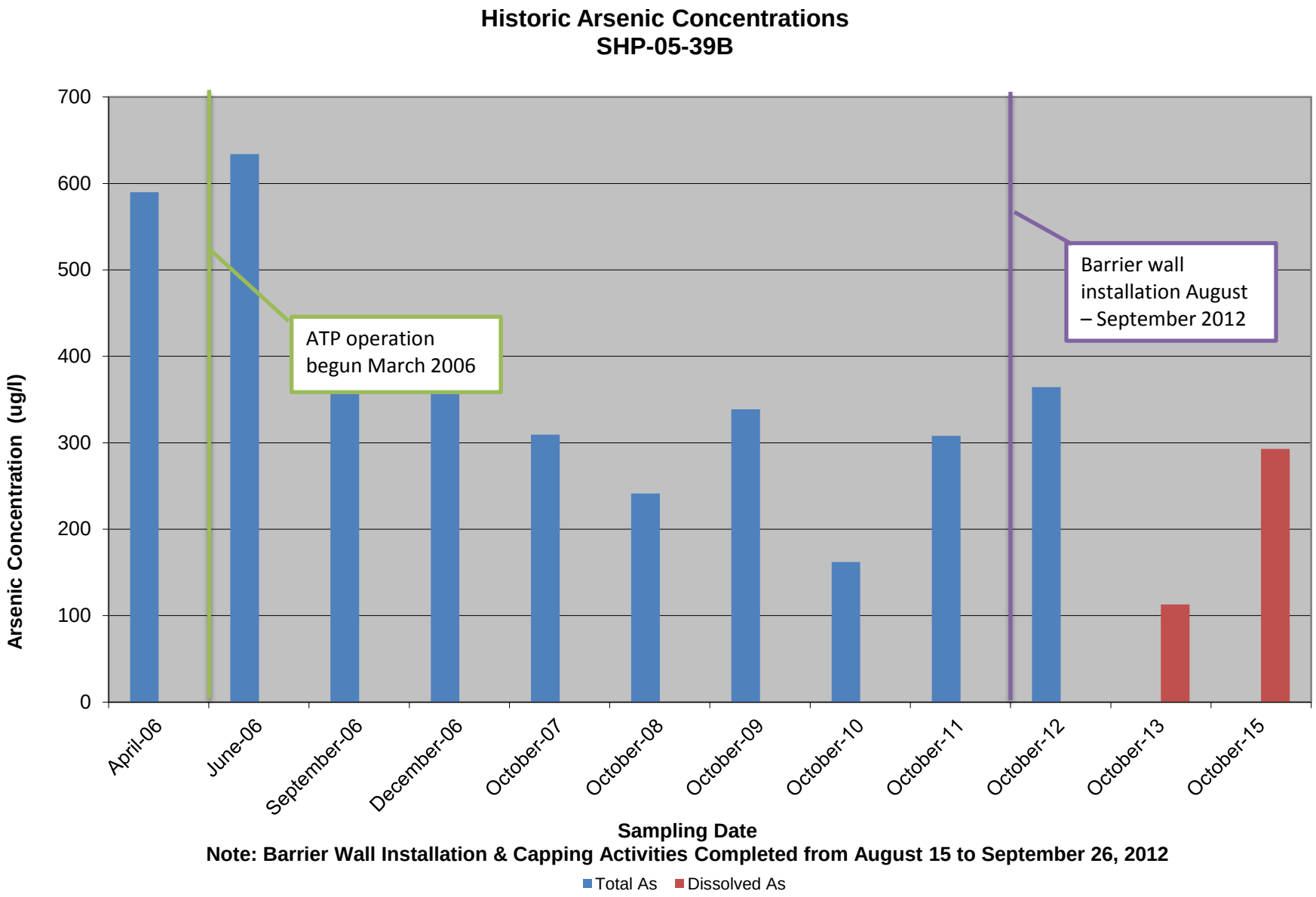

Historic Arsenic Concentrations
SHM-99-32X
Arsenic Concentration (ug/l)
250
200
150
100
50
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
October-14
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

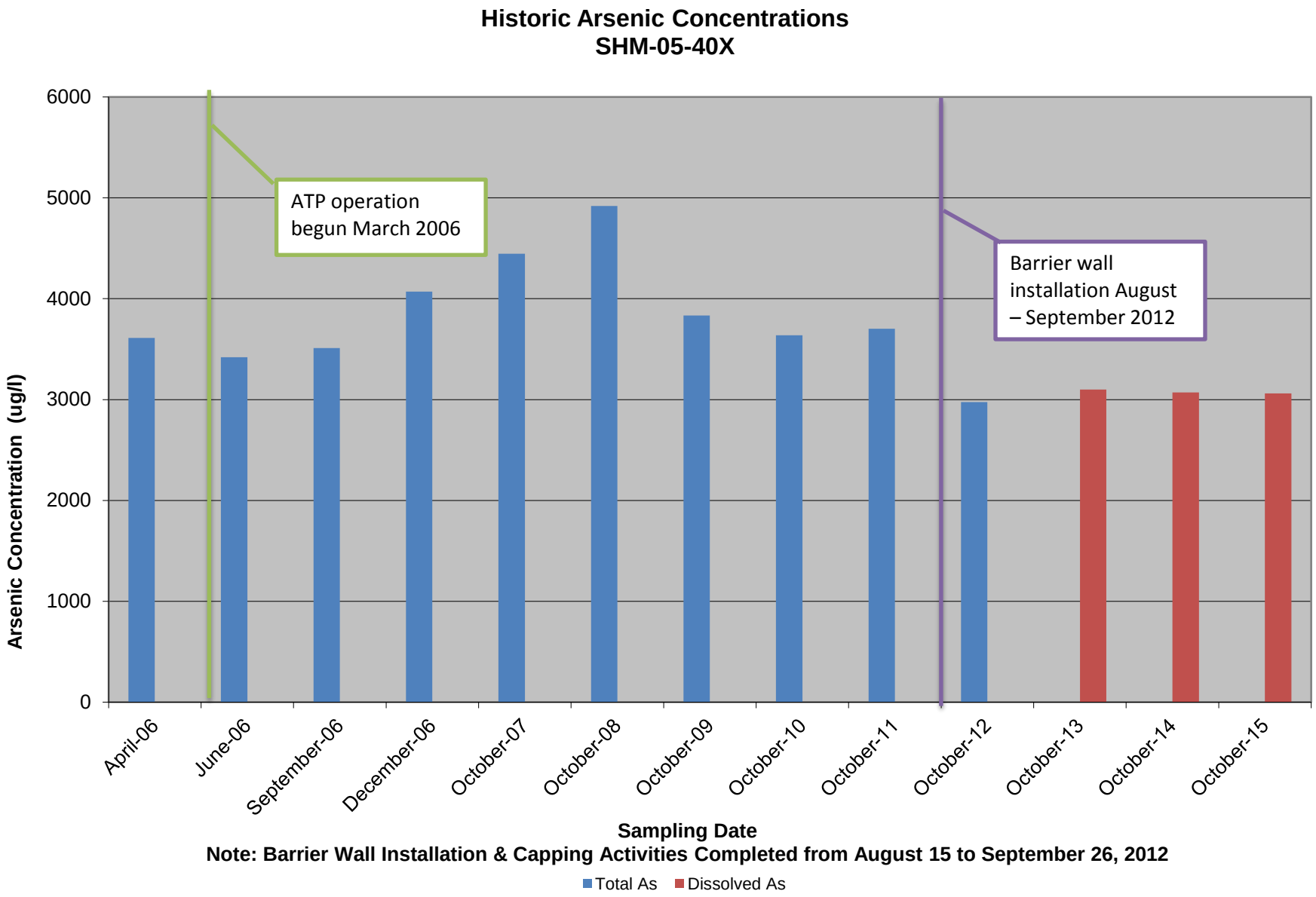

Historic Arsenic Concentrations
SHM-01-36X
Arsenic Concentration (ug/l)
35
30
25
20
15
10
5
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
November-13
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

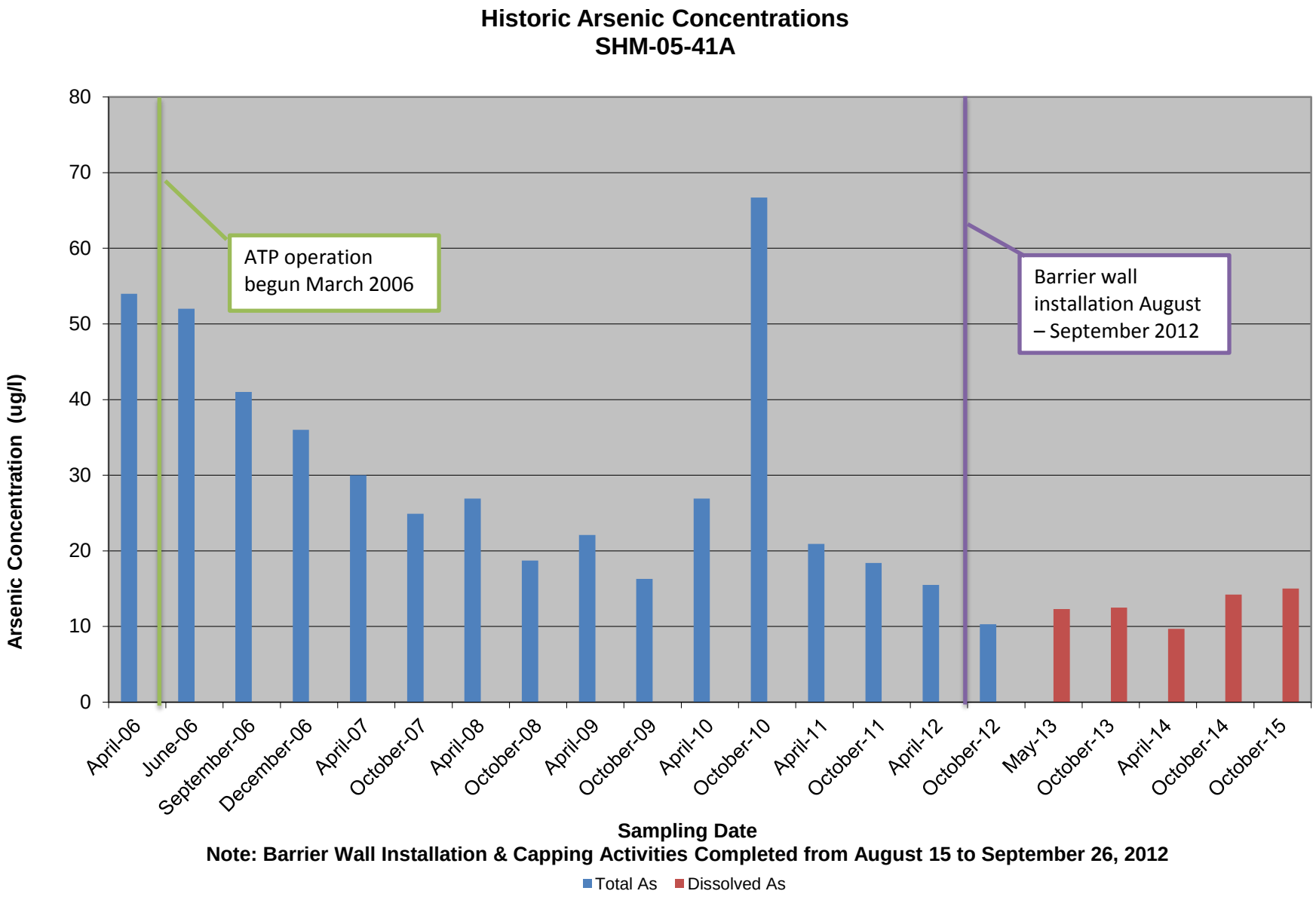

Historic Arsenic Concentrations
SHM-01-37X
Arsenic Concentration (ug/l)
60
50
40
30
20
10
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
November-13
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

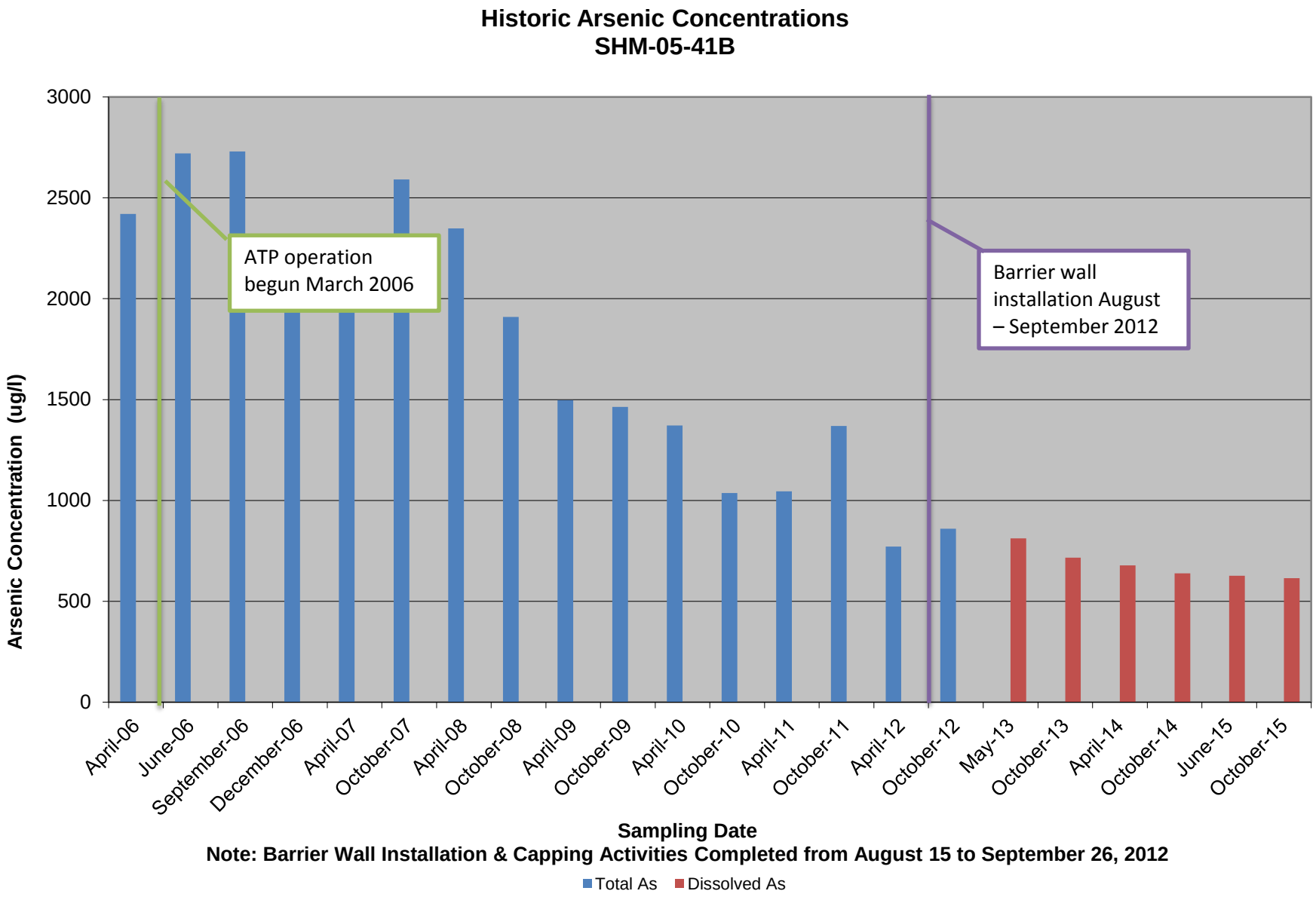

Historic Arsenic Concentrations
SHP-01-38A
Arsenic Concentration (ug/l)
900
800
700
600
500
400
300
200
100
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
May-13
November-13
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

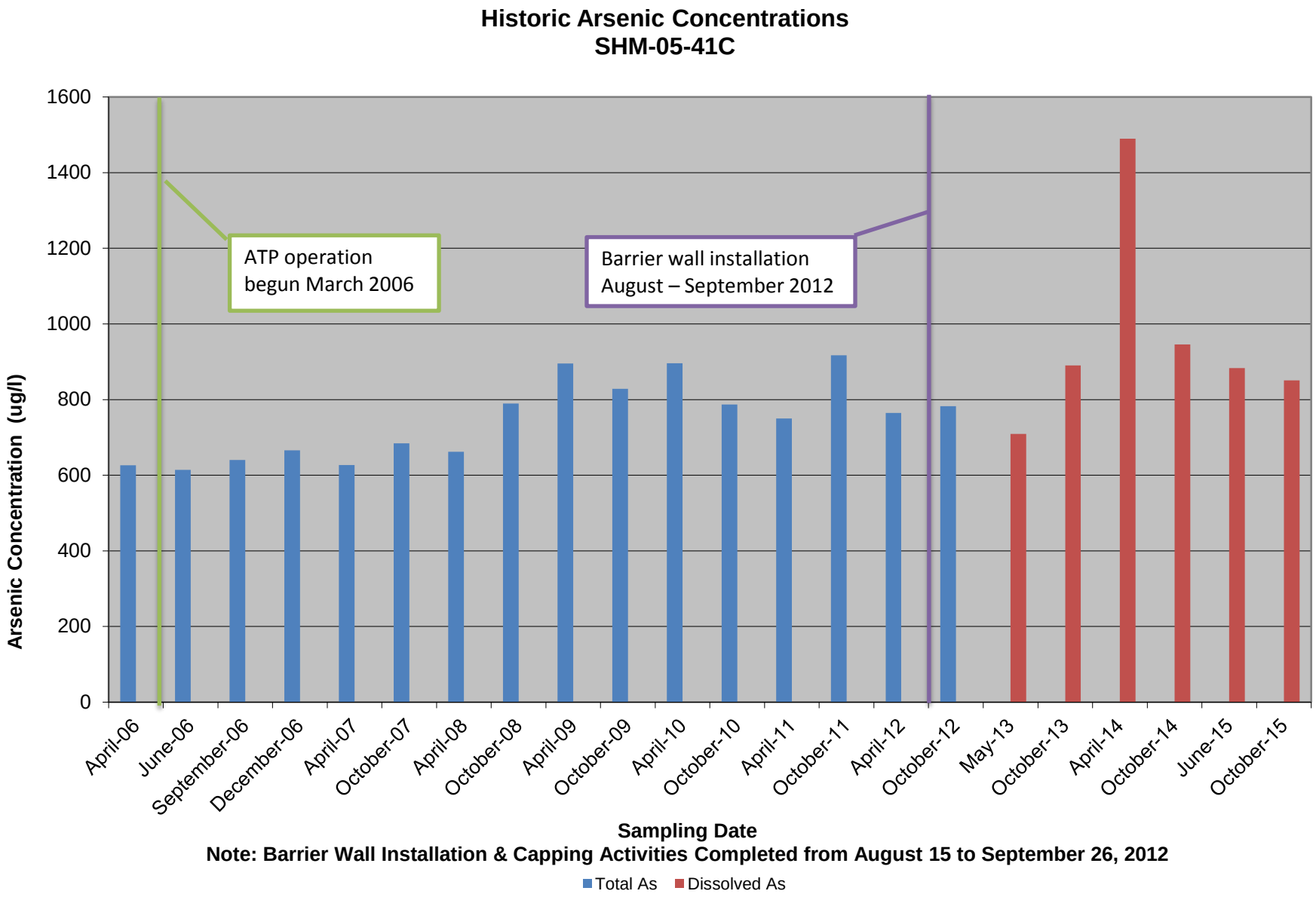

Historic Arsenic Concentrations
SHP-05-39A
Arsenic Concentration (ug/l)
350
300
250
200
150
100
50
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

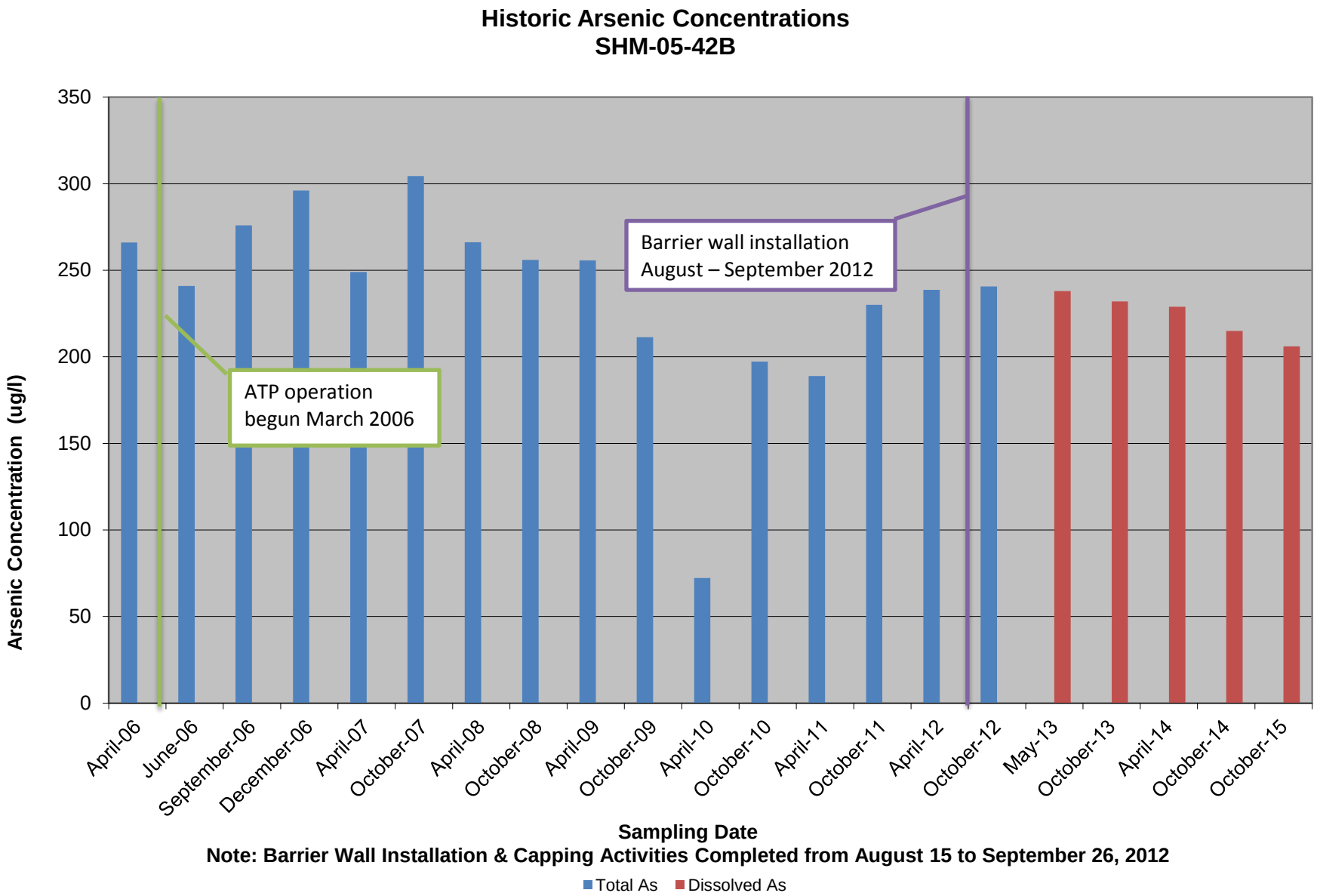

Historic Arsenic Concentrations
SHP-05-39B
Arsenic Concentration (ug/l)
700
600
500
400
300
200
100
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As


Historic Arsenic Concentrations
SHM-05-40X
6000
5000
4000
3000
2000
1000
0
Arsenic Concentration (ug/l)
ATP operation begun March 2006
Barrier wall installation August – September 2012
April-06
June-06
September-06
December-06
October-07
October-08
October-09
October-10
October-11
October-12
October-13
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As


Historic Arsenic Concentrations
SHM-05-41A
Arsenic Concentration (ug/l)
80
70
60
50
40
30
20
10
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
April-06
June-06
September-06
December-06
April-07
October-07
April-08
October-08
April-09
October-09
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

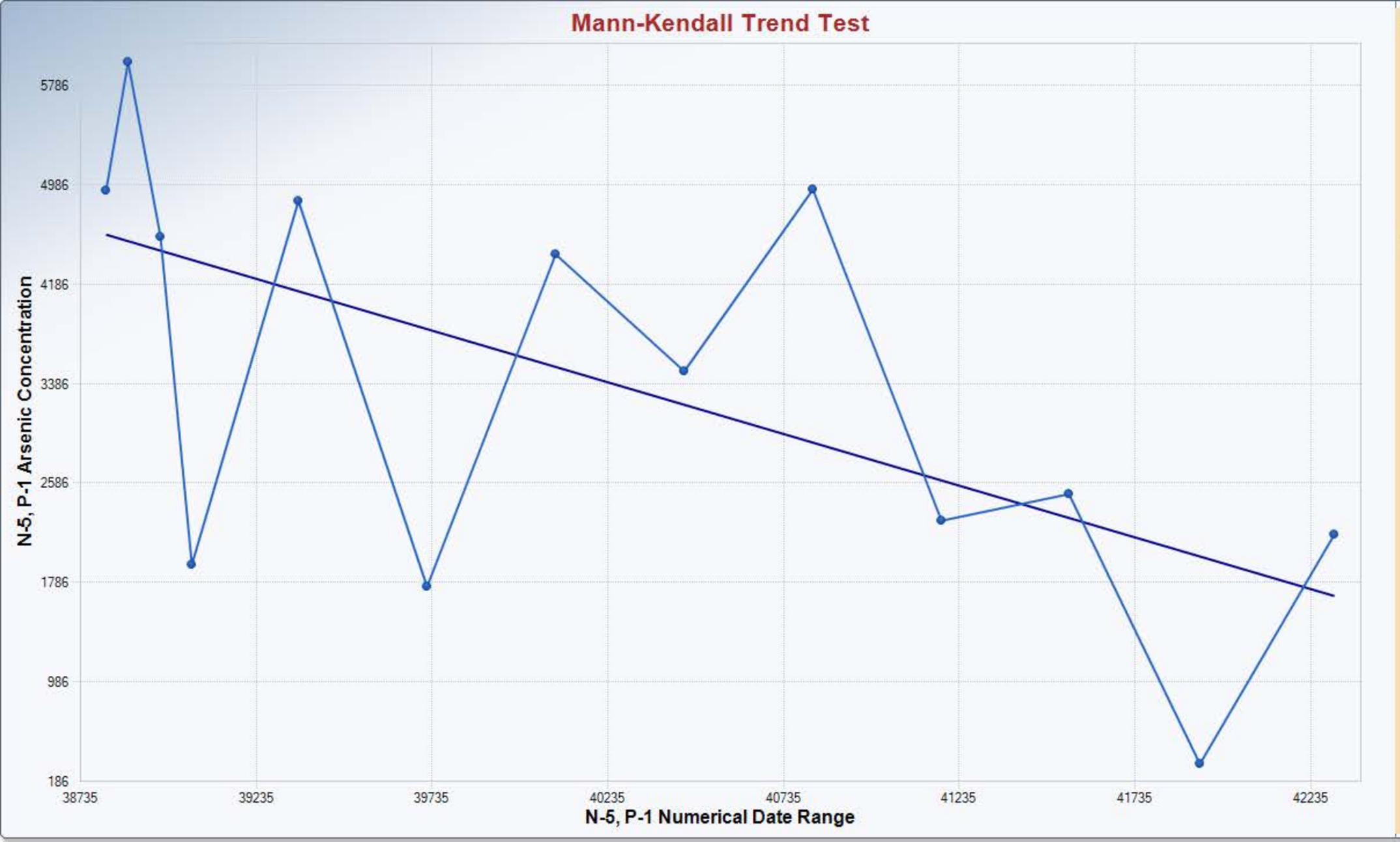

Historic Arsenic Concentrations
SHM-05-41B
Arsenic Concentration (ug/l)
3000
2500
2000
1500
1000
500
0
ATP operation begun March 2006
Barrier wall installation August – September 2012
April-06
June-06
September-06
December-06
April-07
October-07
April-08
October-08
April-09
October-09
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
June-15
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As


Historic Arsenic Concentrations
SHM-05-41C
Arsenic Concentration (ug/l)
1600
1400
1200
1000
800
600
400
200
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
April-07
October-07
April-08
October-08
April-09
October-09
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
June-15
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As


Historic Arsenic Concentrations
SHM-05-42B
Arsenic Concentration (ug/l)
350
300
250
200
150
100
50
0
ATP operation
begun March 2006
Barrier wall installation
August – September 2012
April-06
June-06
September-06
December-06
April-07
October-07
April-08
October-08
April-09
October-09
April-10
October-10
April-11
October-11
April-12
October-12
May-13
October-13
April-14
October-14
October-15
Sampling Date
Note: Barrier Wall Installation & Capping Activities Completed from August 15 to September 26, 2012
Total As
Dissolved As

APPENDIX G

ProUCL Outputs



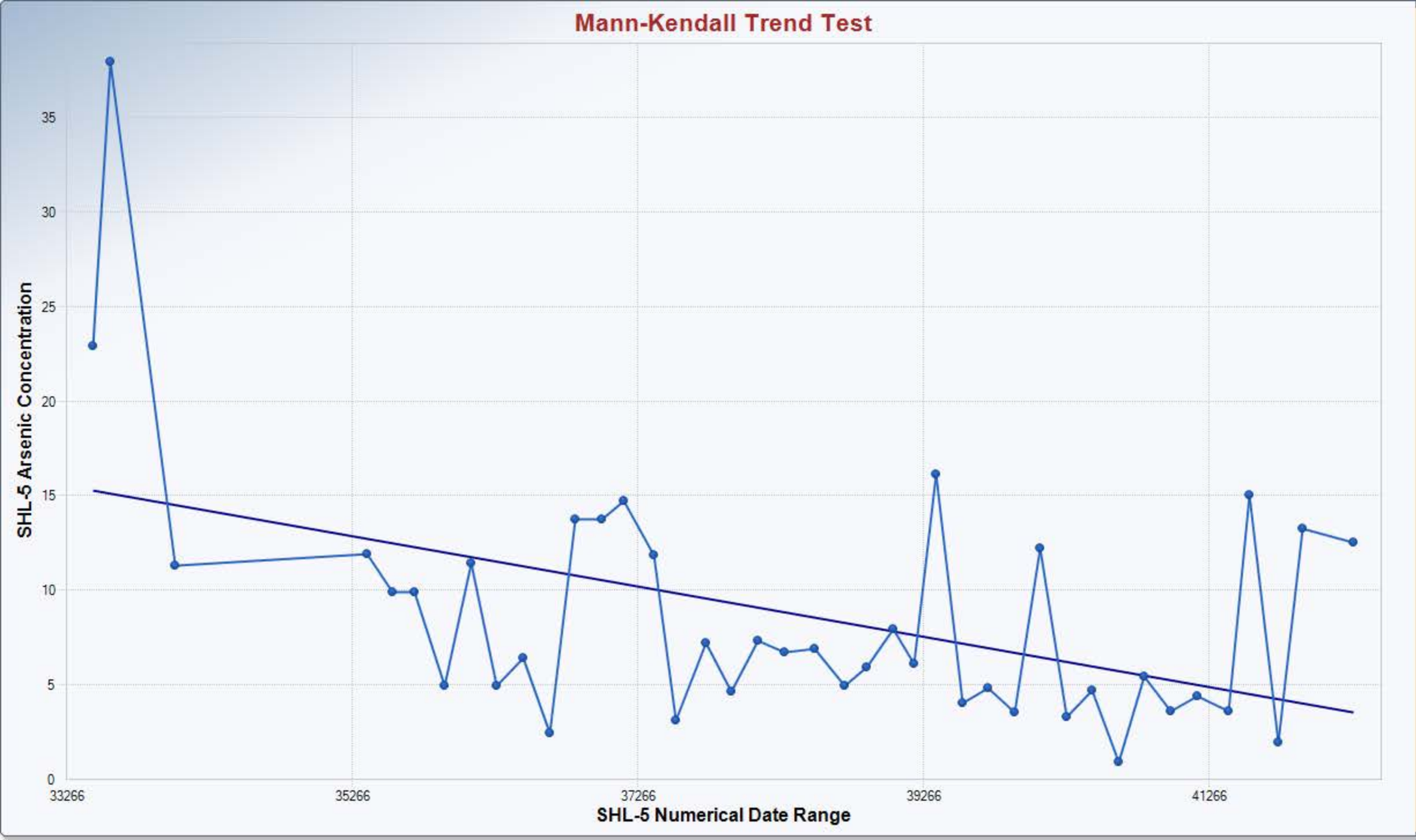
Mann-Kendall Trend Analysis

n	13
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	16.3911
Standardized Value of S	-2.0133
M-K Test Value (S)	-34
Tabulated p-value	0.0210
Approximate p-value	0.0220

OLS Regression Line (Blue)

OLS Regression Slope	-0.8328
OLS Regression Intercept	36,903.7614

Statistically significant evidence of a decreasing trend at the specified level of significance.



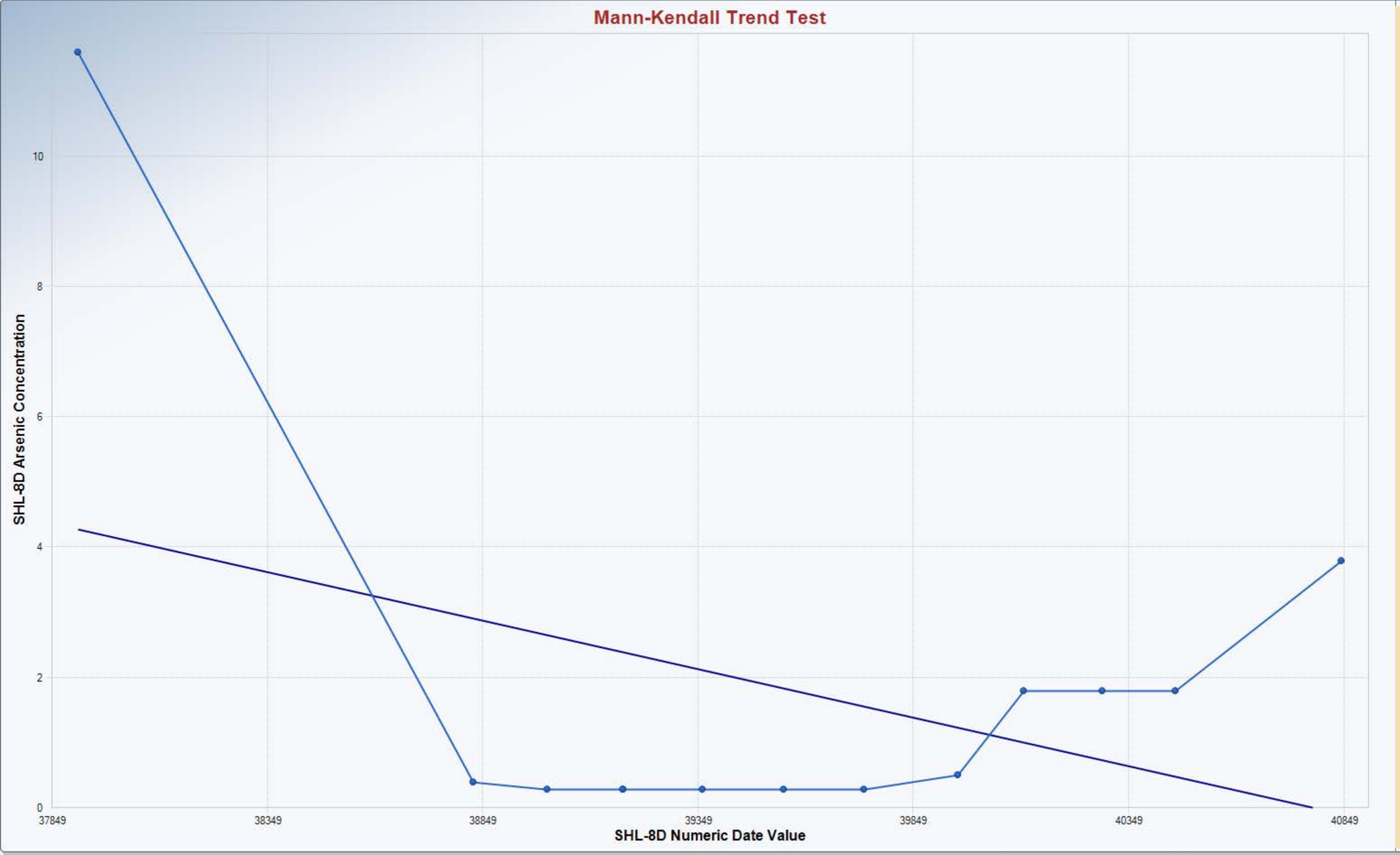
Mann-Kendall Trend Analysis

n	41
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	88.9944
Standardized Value of S	-2.5957
M-K Test Value (S)	-232
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0047

OLS Regression Line (Blue)

OLS Regression Slope	-0.0013
OLS Regression Intercept	59.6218

Statistically significant evidence of a decreasing trend at the specified level of significance.



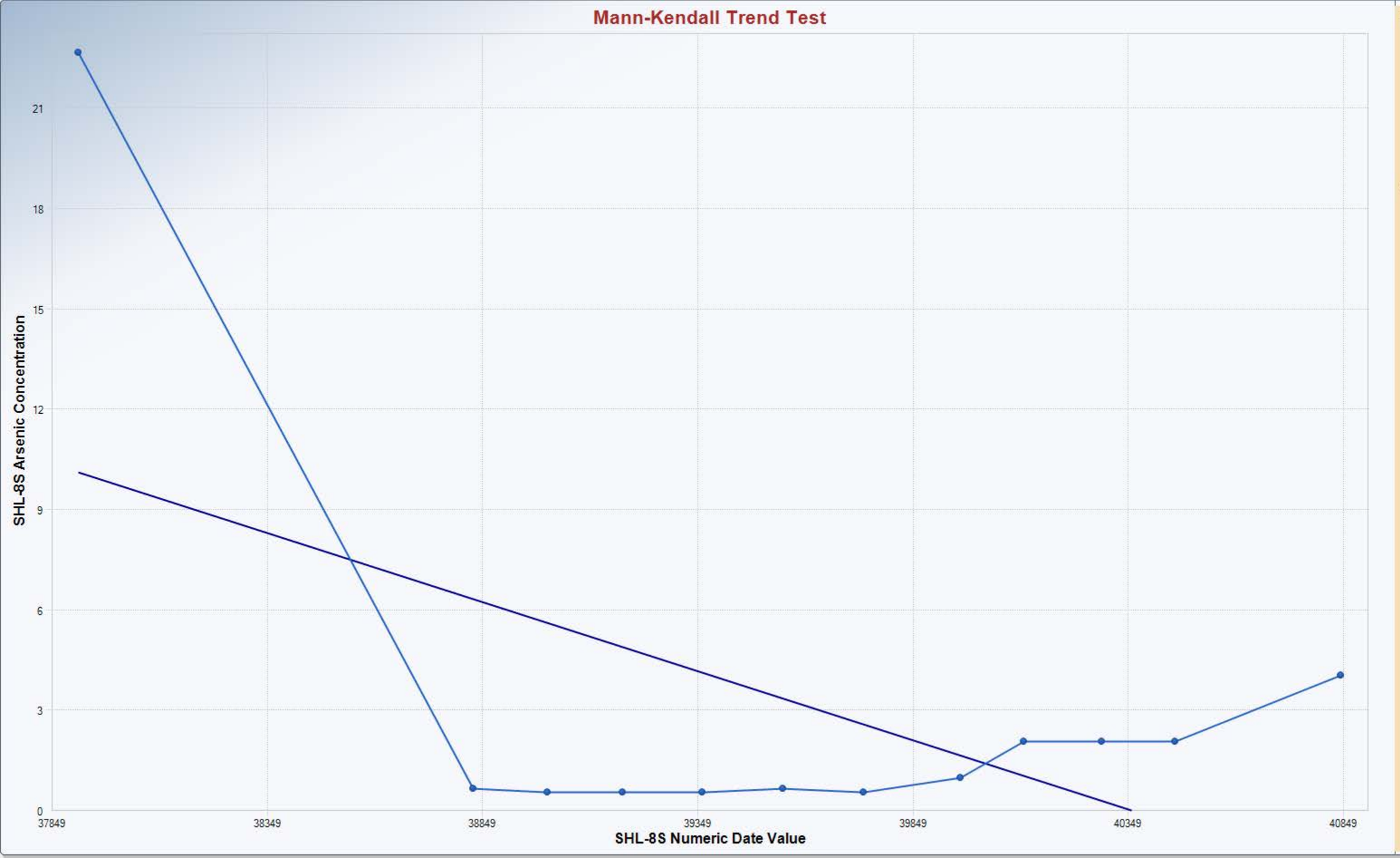
Mann-Kendall Trend Analysis

n	13
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	15.3840
Standardized Value of S	1.4951
M-K Test Value (S)	24
Tabulated p-value	0.0820
Approximate p-value	0.0674

OLS Regression Line (Blue)

OLS Regression Slope	-0.0015
OLS Regression Intercept	61.1823

Insufficient statistical evidence of a significant trend at the specified level of significance.



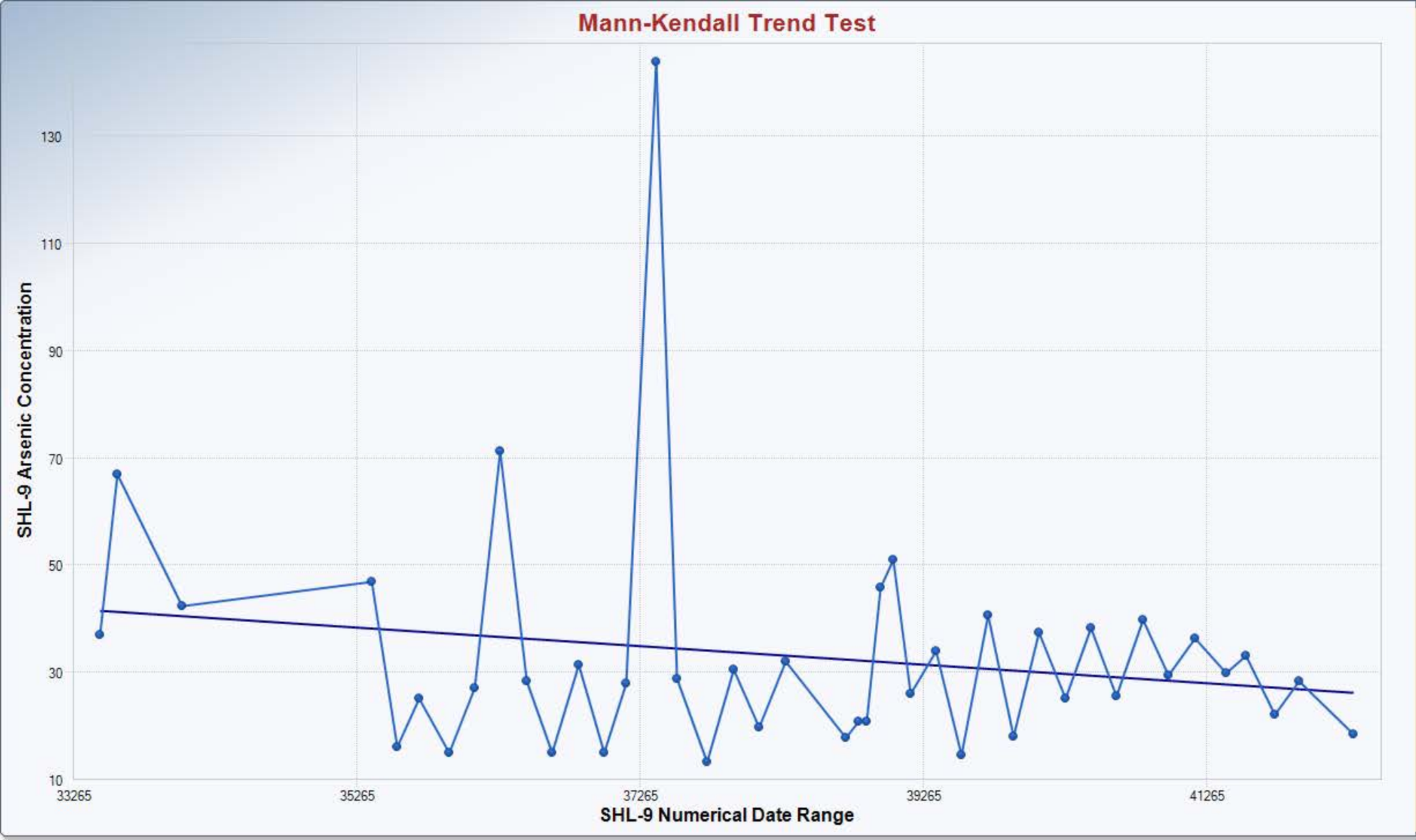
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.1185
Standardized Value of S	1.6291
M-K Test Value (S)	24
Tabulated p-value	0.0580
Approximate p-value	0.0516

OLS Regression Line (Blue)

OLS Regression Slope	-0.0041
OLS Regression Intercept	167.0365

Insufficient statistical evidence of a significant trend at the specified level of significance.



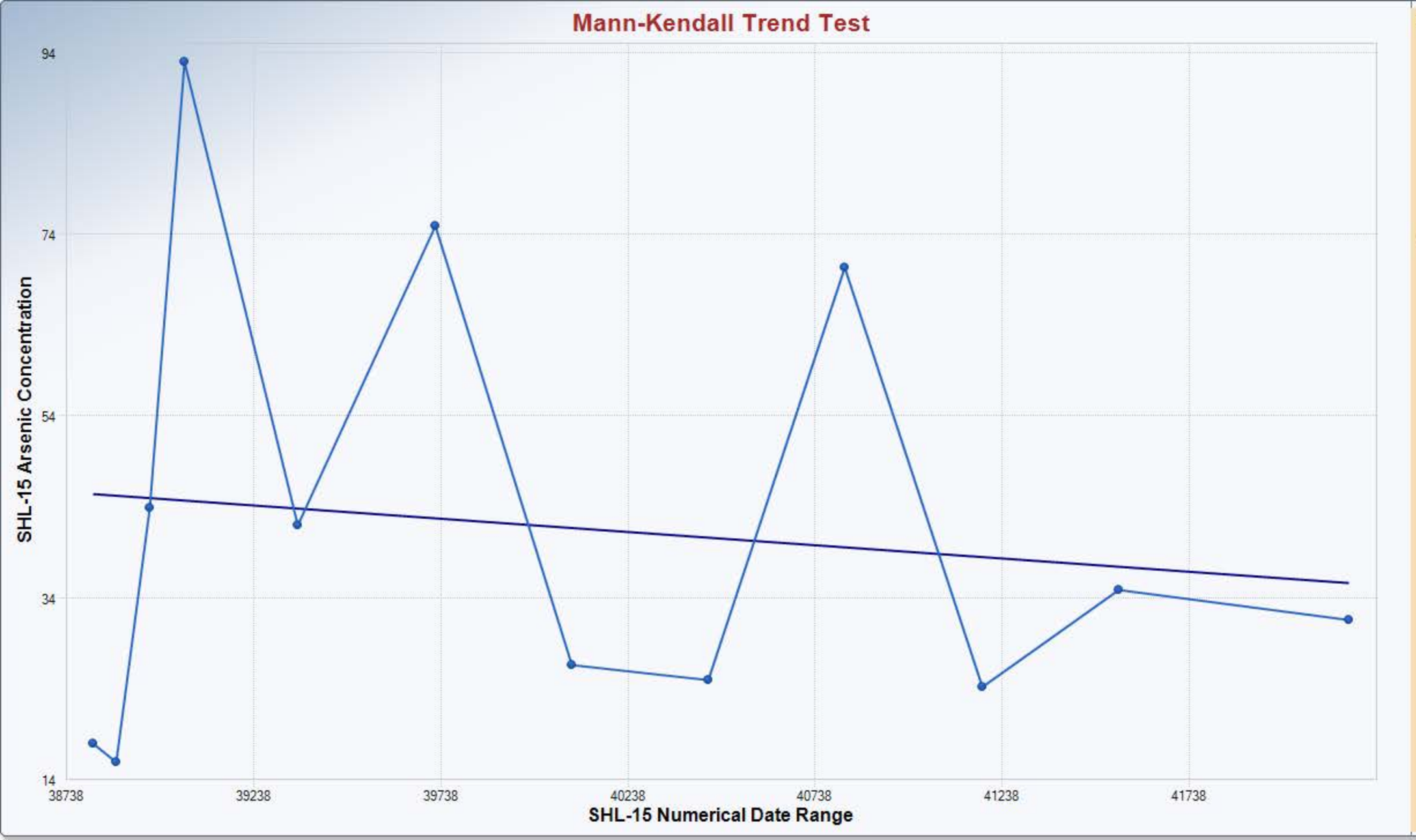
Mann-Kendall Trend Analysis

n	42
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	92.2515
Standardized Value of S	-0.1734
M-K Test Value (S)	-17
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.4312

OLS Regression Line (Blue)

OLS Regression Slope	-0.0017
OLS Regression Intercept	99.1124

Insufficient statistical evidence of a significant trend at the specified level of significance.



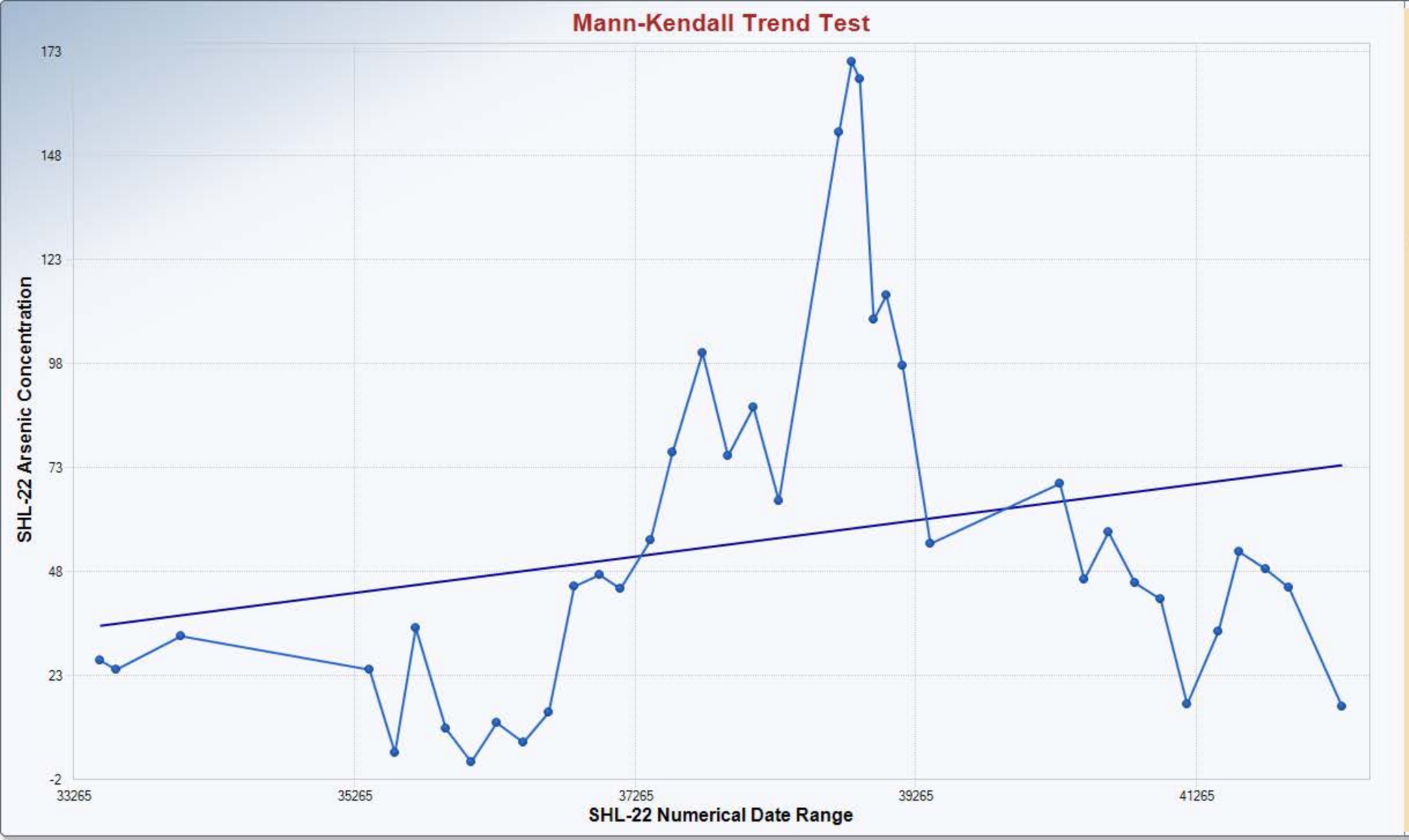
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.5831
Standardized Value of S	
M-K Test Value (S)	0
Tabulated p-value	0.5270
Approximate p-value	

OLS Regression Line (Blue)

OLS Regression Slope	-0.0029
OLS Regression Intercept	157.4222

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	38
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	79.5424
Standardized Value of S	1.8858
M-K Test Value (S)	151
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.0297

OLS Regression Line (Blue)

OLS Regression Slope	0.0043
OLS Regression Intercept	-109.4694

Statistically significant evidence of an increasing trend at the specified level of significance.

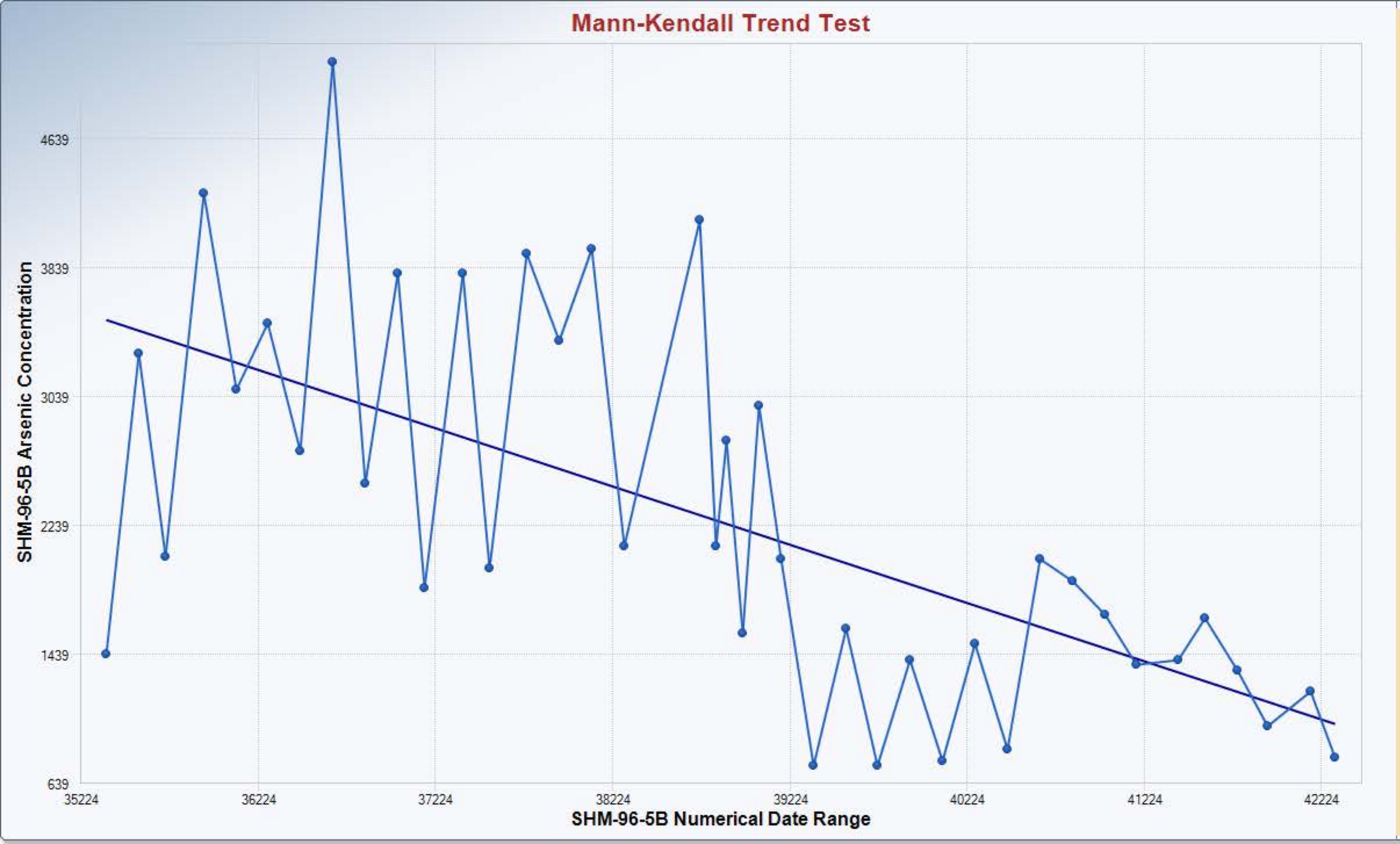
Mann-Kendall Trend Analysis

n	6
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	5.2281
Standardized Value of S	1.3389
M-K Test Value (S)	8
Tabulated p-value	0.0680
Approximate p-value	0.0903

OLS Regression Line (Blue)

OLS Regression Slope	0.0010
OLS Regression Intercept	-37.2167

Insufficient statistical evidence of a significant trend at the specified level of significance.



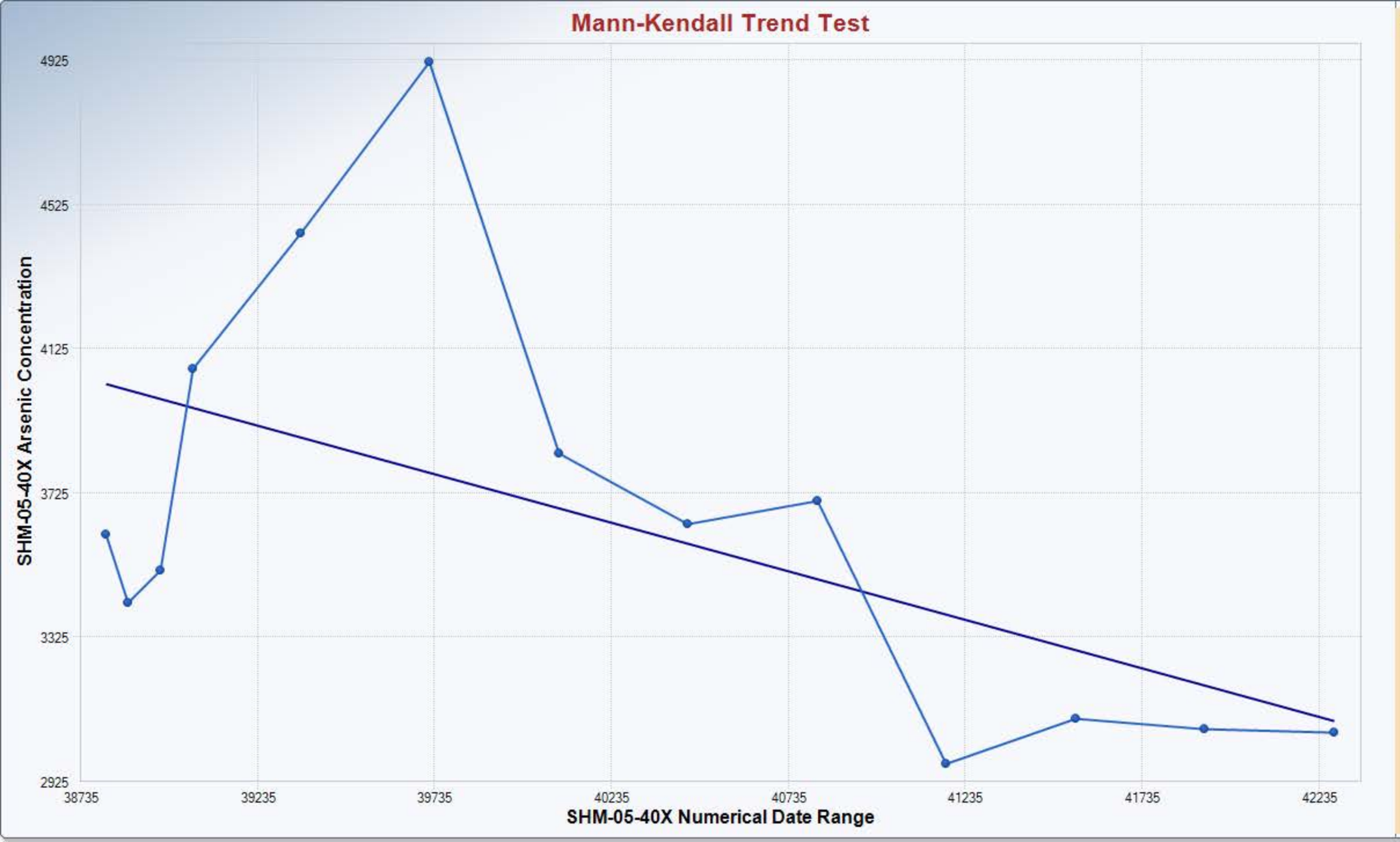
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.8118
Standardized Value of S	-4.4050
M-K Test Value (S)	-379
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.3620
OLS Regression Intercept	16,318.1516

Statistically significant evidence of a decreasing trend at the specified level of significance.



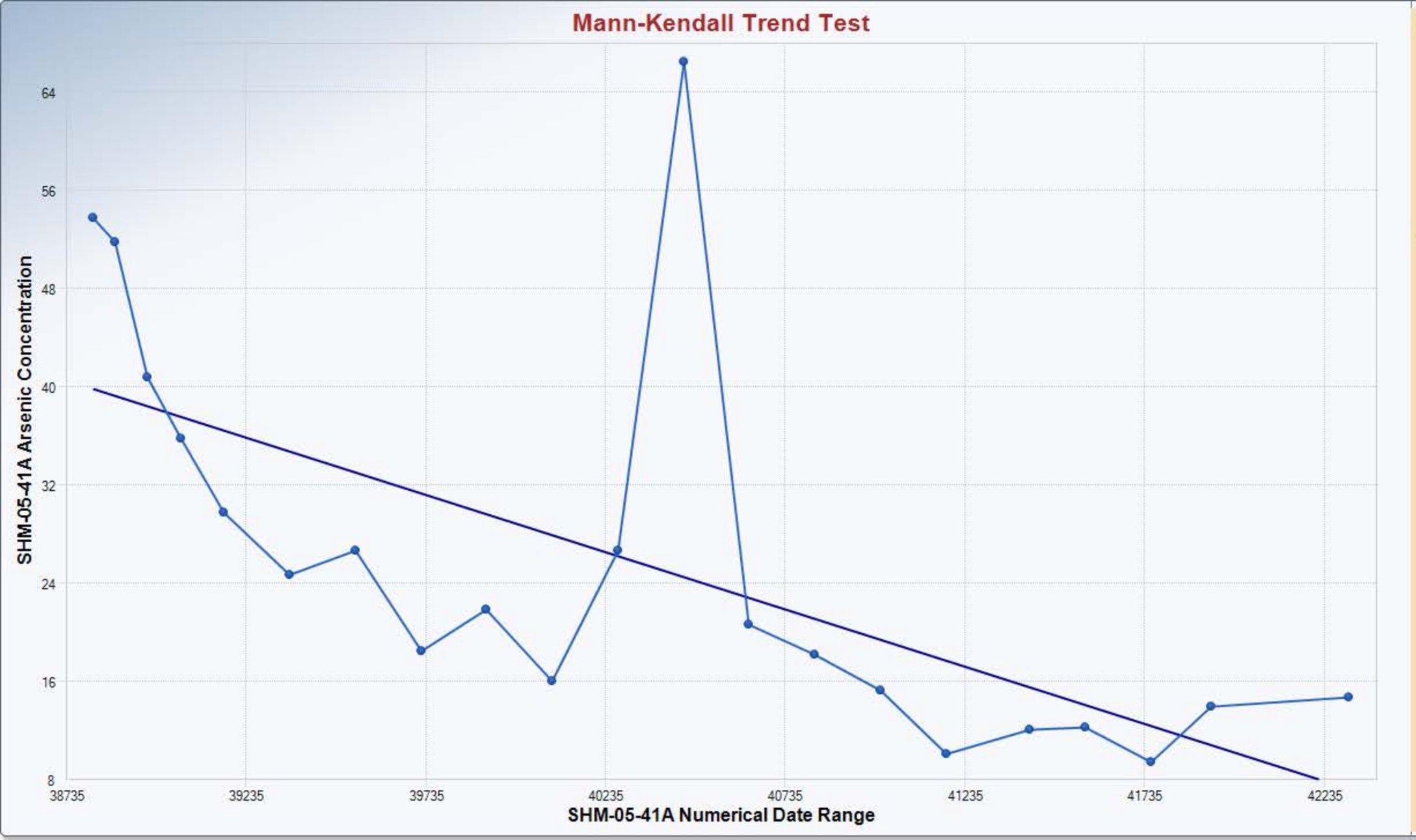
Mann-Kendall Trend Analysis

n	13
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	16.3911
Standardized Value of S	-1.5252
M-K Test Value (S)	-26
Tabulated p-value	0.0640
Approximate p-value	0.0636

OLS Regression Line (Blue)

OLS Regression Slope	-0.2691
OLS Regression Intercept	14,468.8797

Insufficient statistical evidence of a significant trend at the specified level of significance.



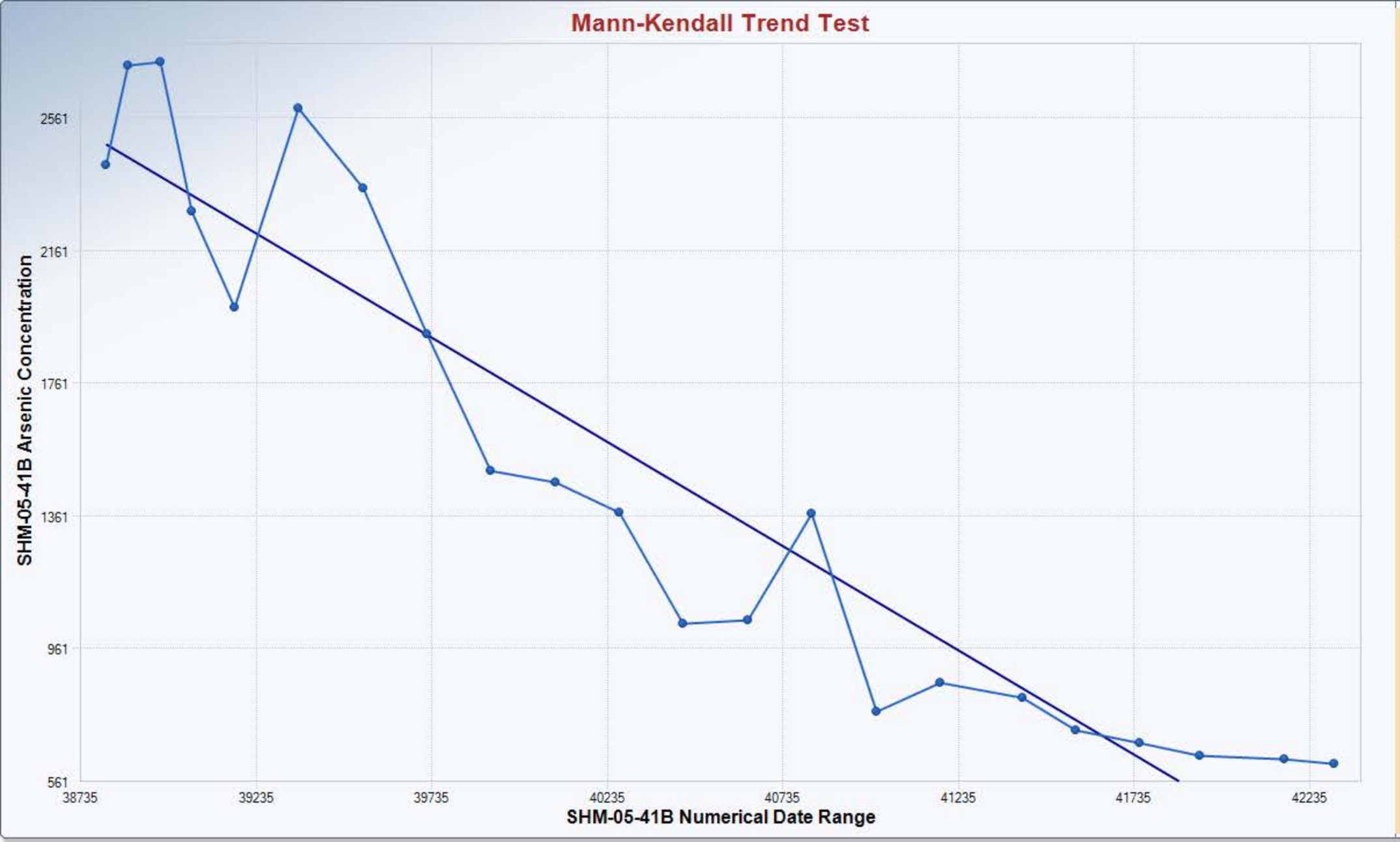
Mann-Kendall Trend Analysis

n	21
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	33.1009
Standardized Value of S	-4.3503
M-K Test Value (S)	-145
Tabulated p-value	0.0000
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0093
OLS Regression Intercept	402.5757

Statistically significant evidence of a decreasing trend at the specified level of significance.



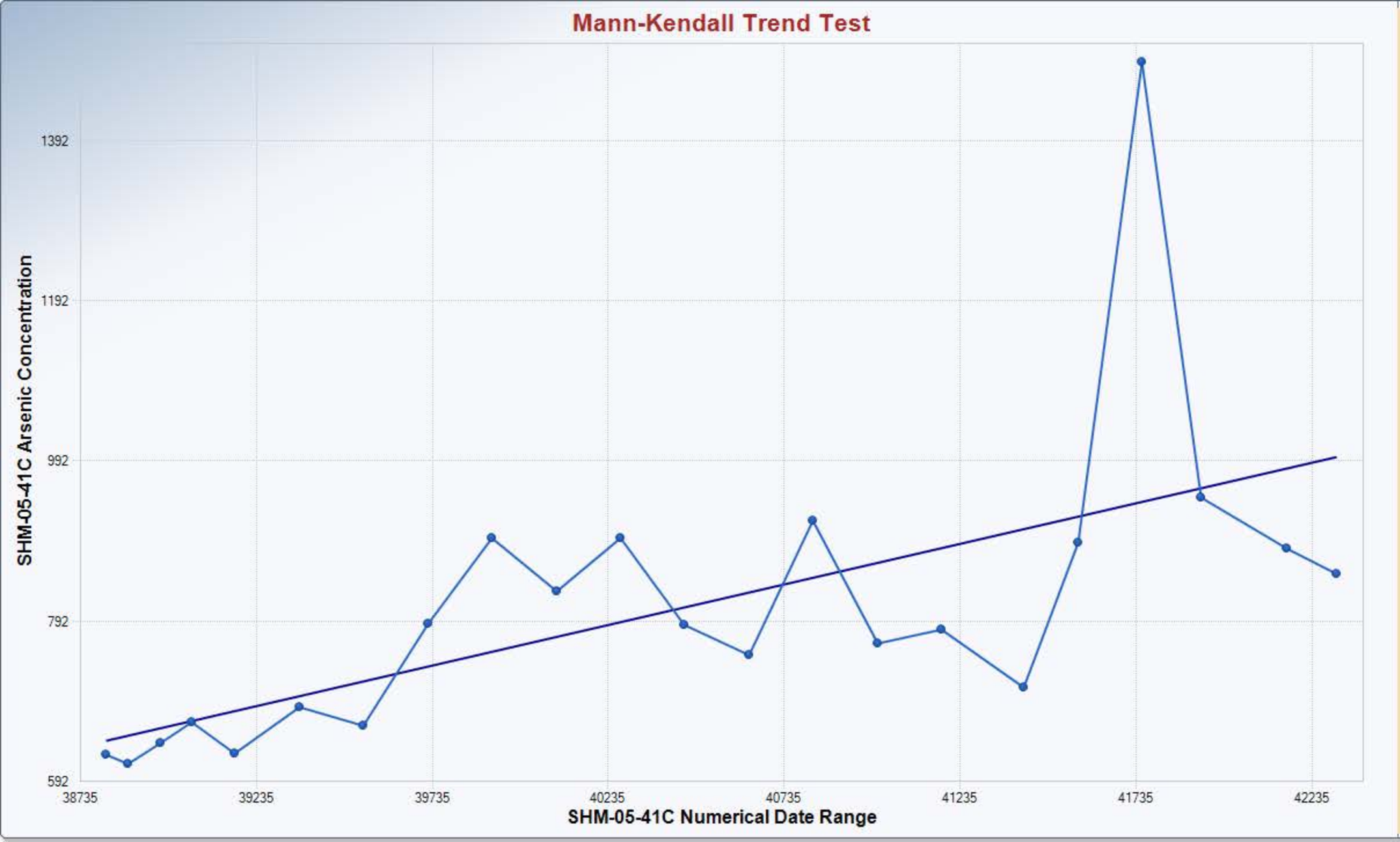
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4636
Standardized Value of S	-5.7524
M-K Test Value (S)	-205
Tabulated p-value	0.0000
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.6298
OLS Regression Intercept	26,926.3870

Statistically significant evidence of a decreasing trend at the specified level of significance.



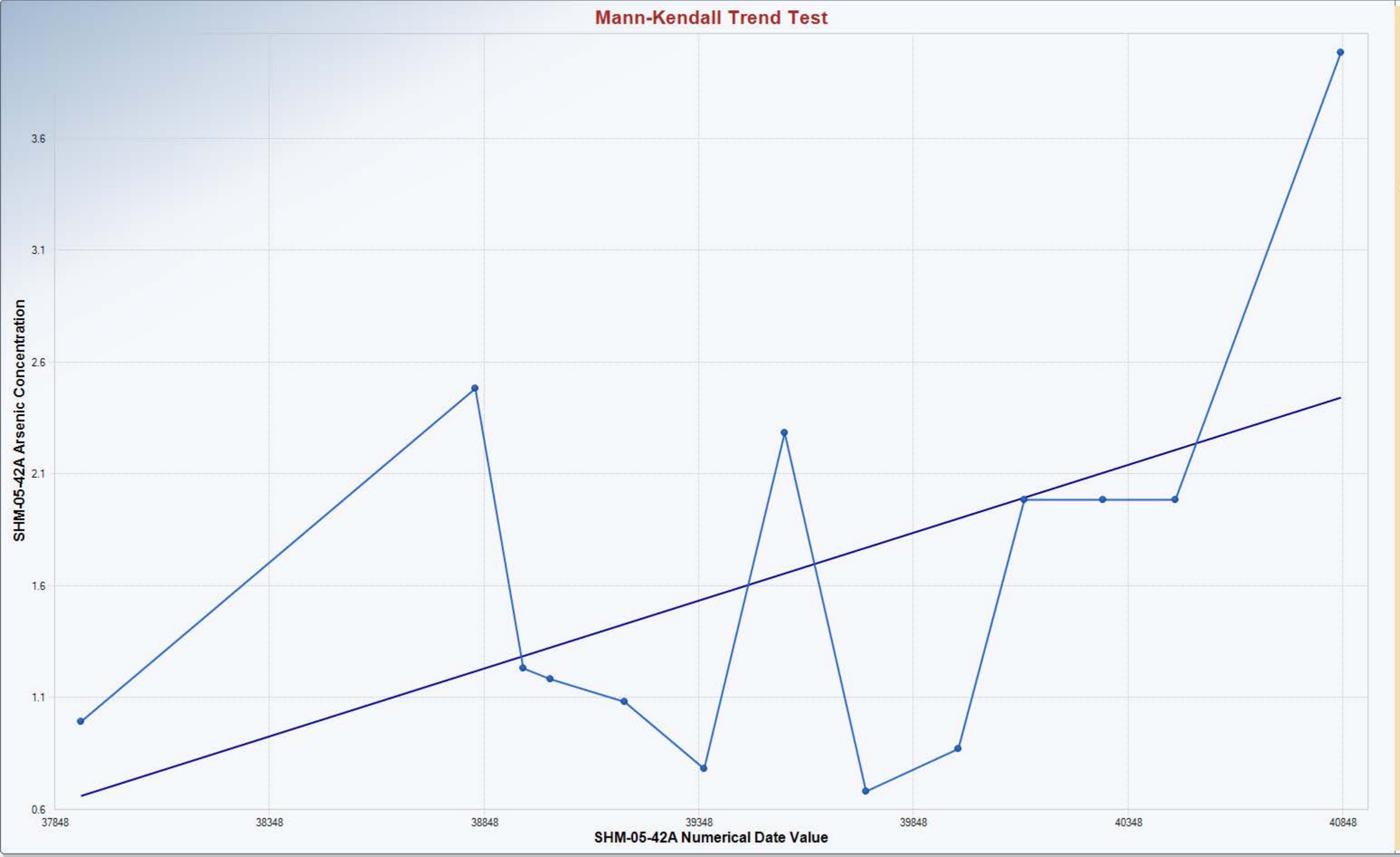
Mann-Kendall Trend Analysis

n	22
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	35.4636
Standardized Value of S	3.4965
M-K Test Value (S)	125
Tabulated p-value	0.0000
Approximate p-value	0.0002

OLS Regression Line (Blue)

OLS Regression Slope	0.1012
OLS Regression Intercept	-3,286.0875

Statistically significant evidence of an increasing trend at the specified level of significance.



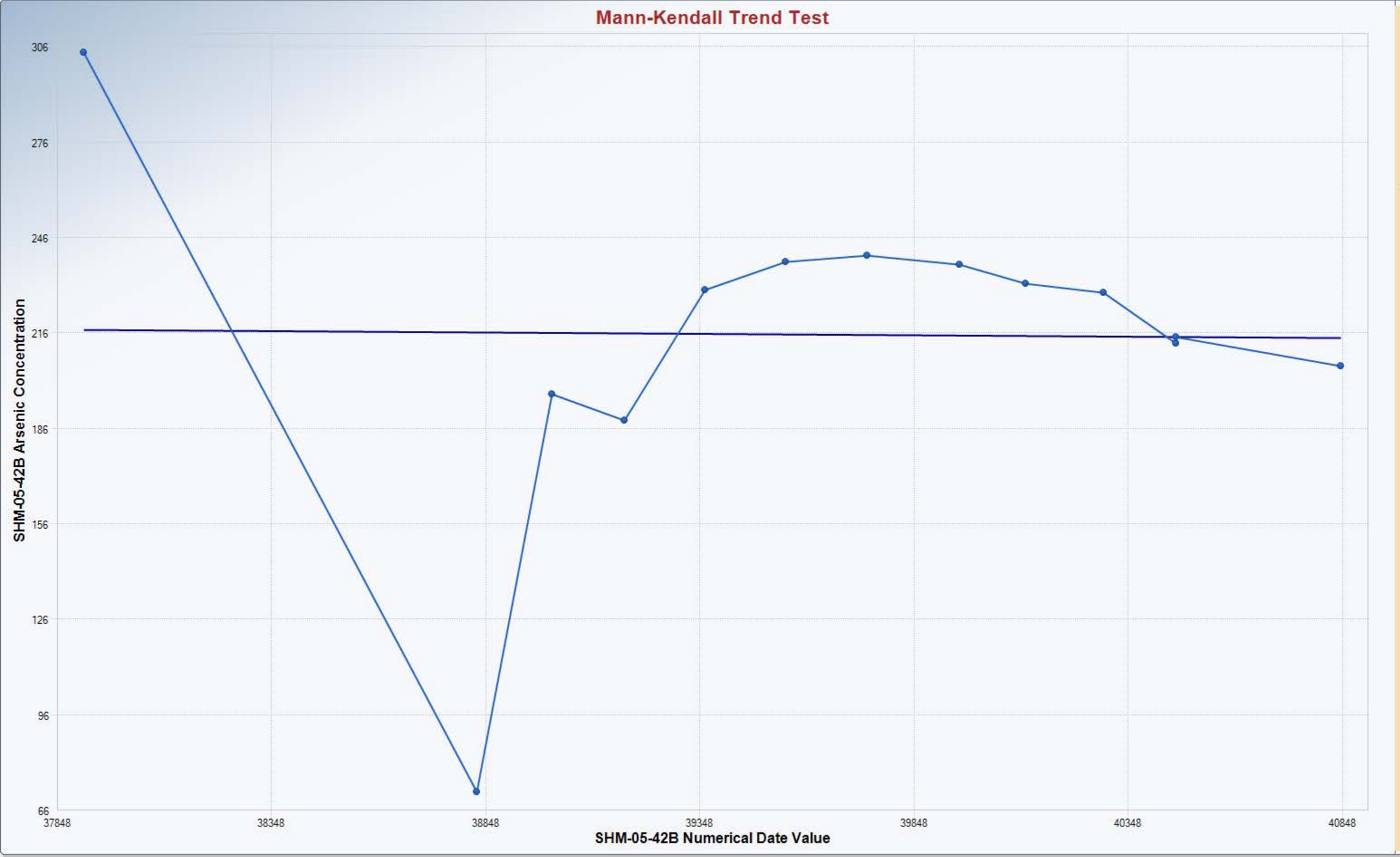
Mann-Kendall Trend Analysis

n	13
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	16.2788
Standardized Value of S	0.7372
M-K Test Value (S)	13
Tabulated p-value	0.2550
Approximate p-value	0.2305

OLS Regression Line (Blue)

OLS Regression Slope	0.0006
OLS Regression Intercept	-22.3107

Insufficient statistical evidence of a significant trend at the specified level of significance.



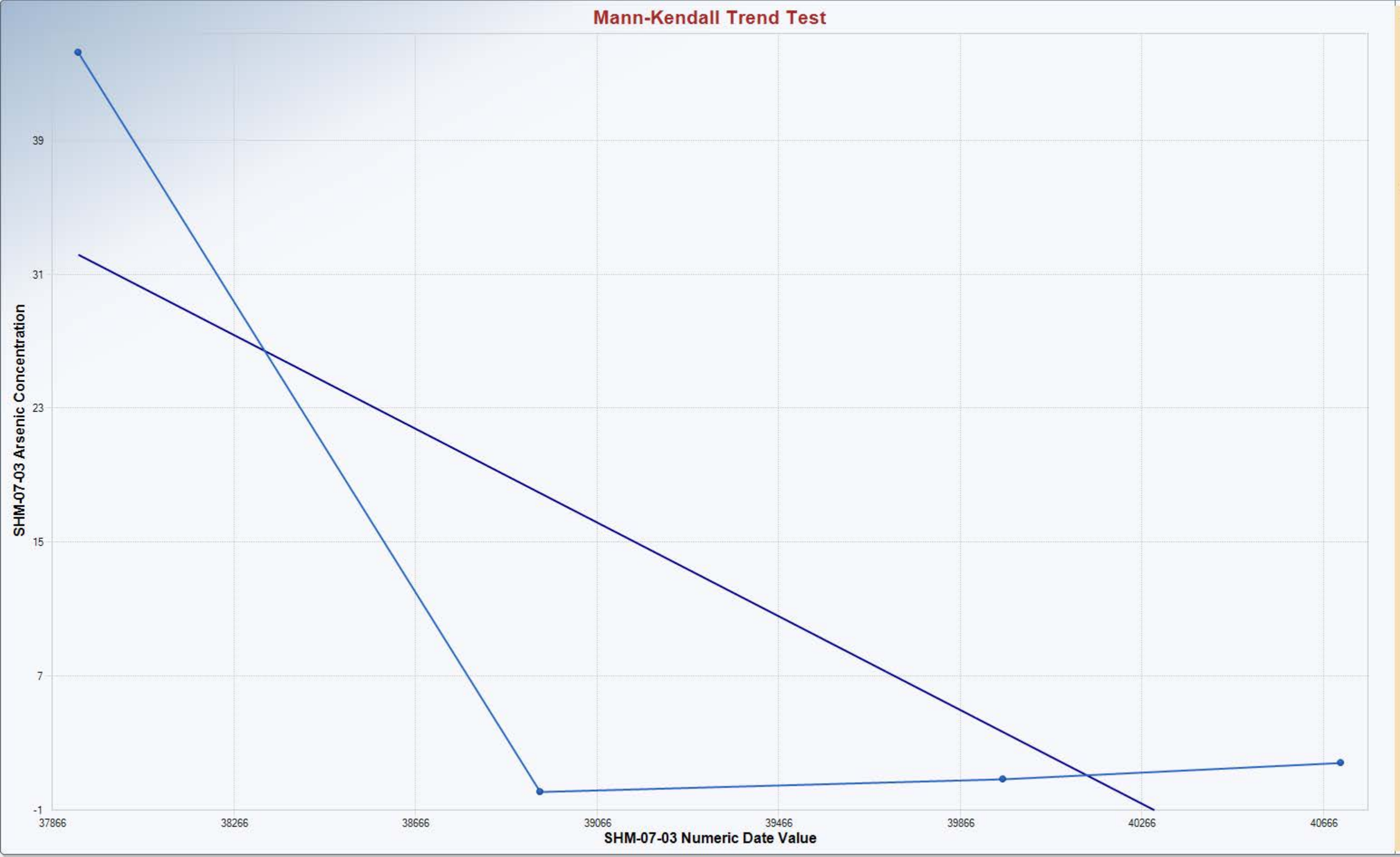
Mann-Kendall Trend Analysis

n	13
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	16.3911
Standardized Value of S	-0.4271
M-K Test Value (S)	-8
Tabulated p-value	0.3380
Approximate p-value	0.3347

OLS Regression Line (Blue)

OLS Regression Slope	-0.0009
OLS Regression Intercept	253.2533

Insufficient statistical evidence of a significant trend at the specified level of significance.



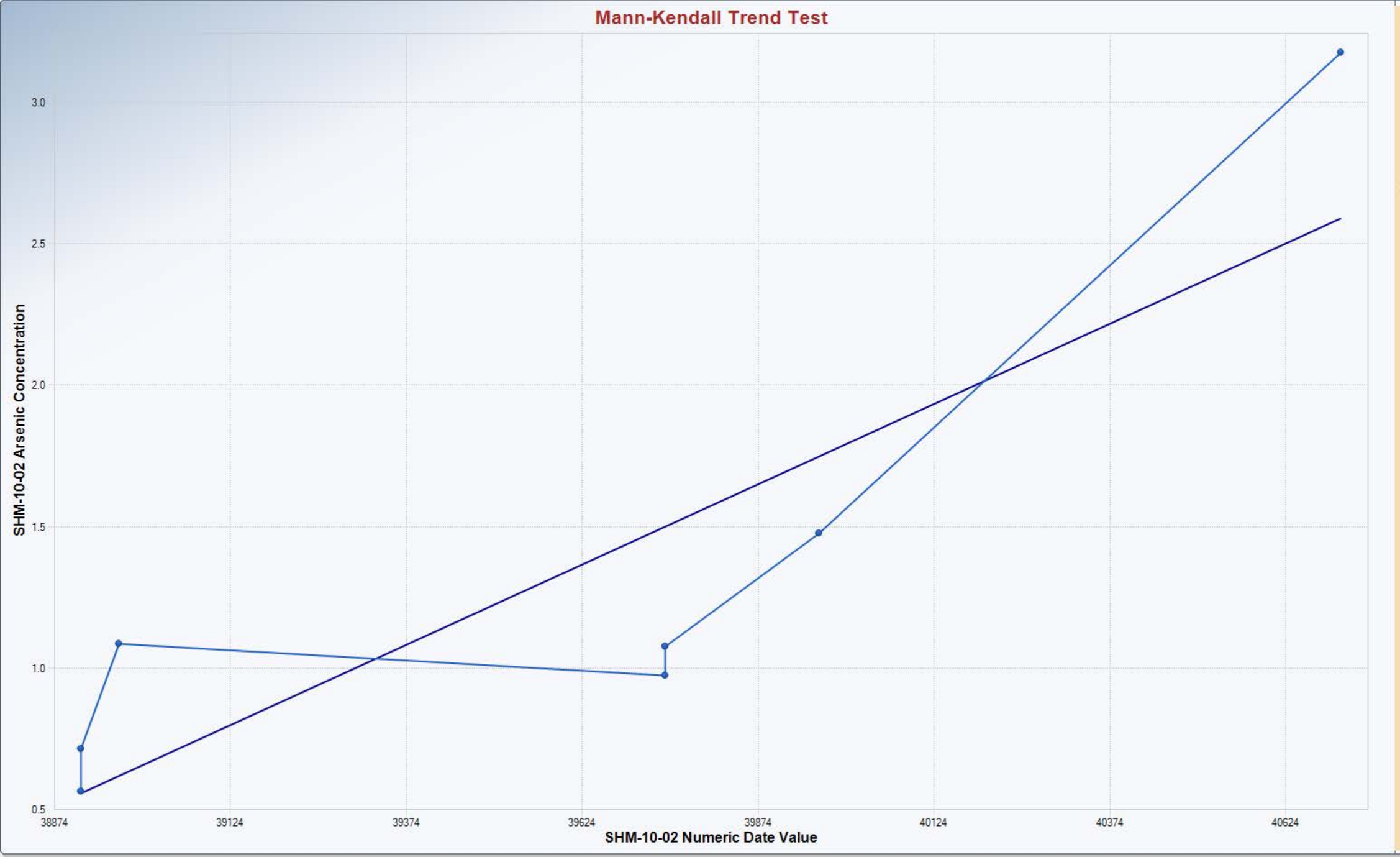
Mann-Kendall Trend Analysis

n	4
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	2.9439
Standardized Value of S	
M-K Test Value (S)	0
Tabulated p-value	0.6250
Approximate p-value	

OLS Regression Line (Blue)

OLS Regression Slope	-0.0140
OLS Regression Intercept	563.5169

Insufficient statistical evidence of a significant trend at the specified level of significance.



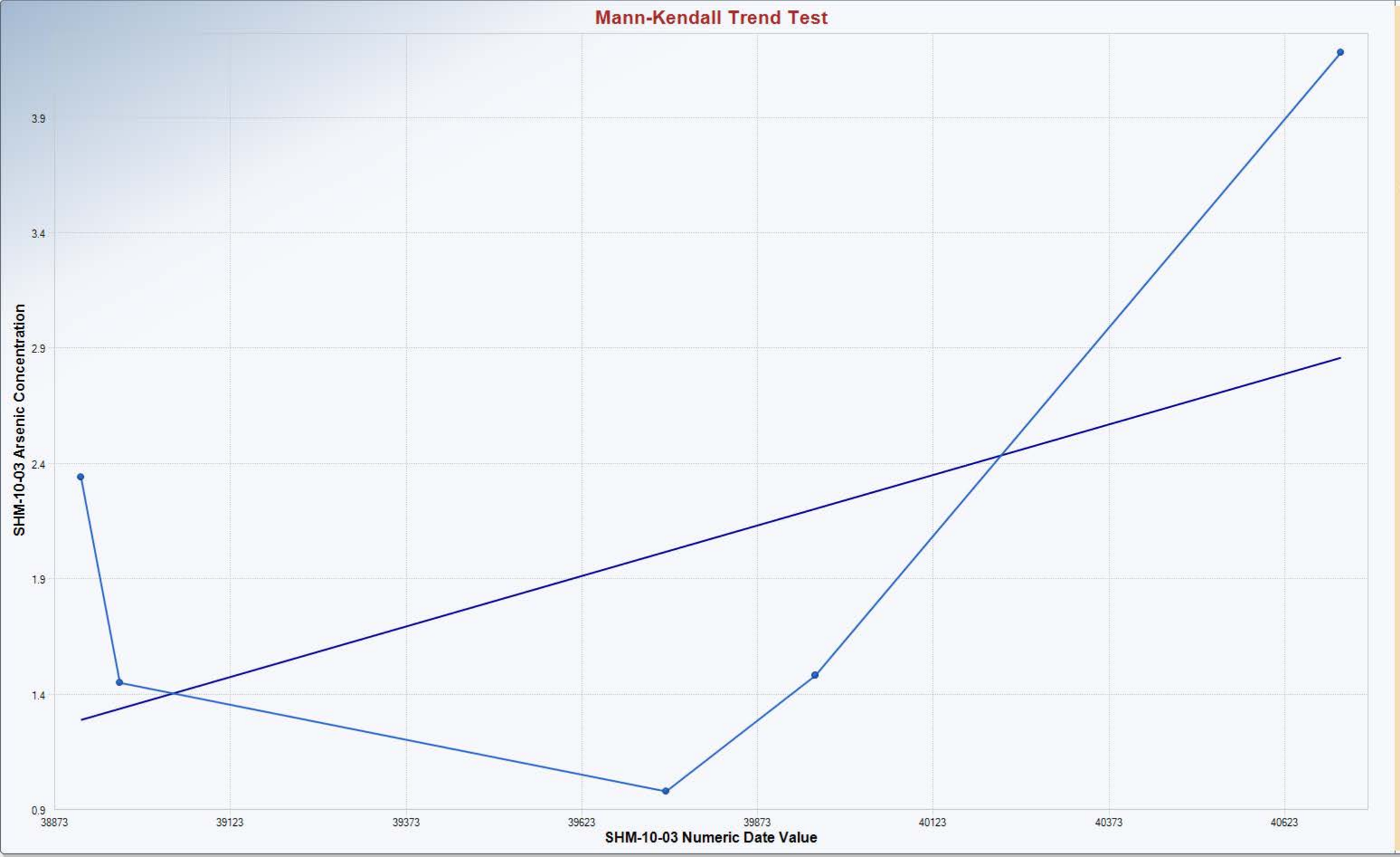
Mann-Kendall Trend Analysis

n	7
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	6.6583
Standardized Value of S	2.4030
M-K Test Value (S)	17
Tabulated p-value	0.0050
Approximate p-value	0.0081

OLS Regression Line (Blue)

OLS Regression Slope	0.0011
OLS Regression Intercept	-43.6262

Statistically significant evidence of an increasing trend at the specified level of significance.



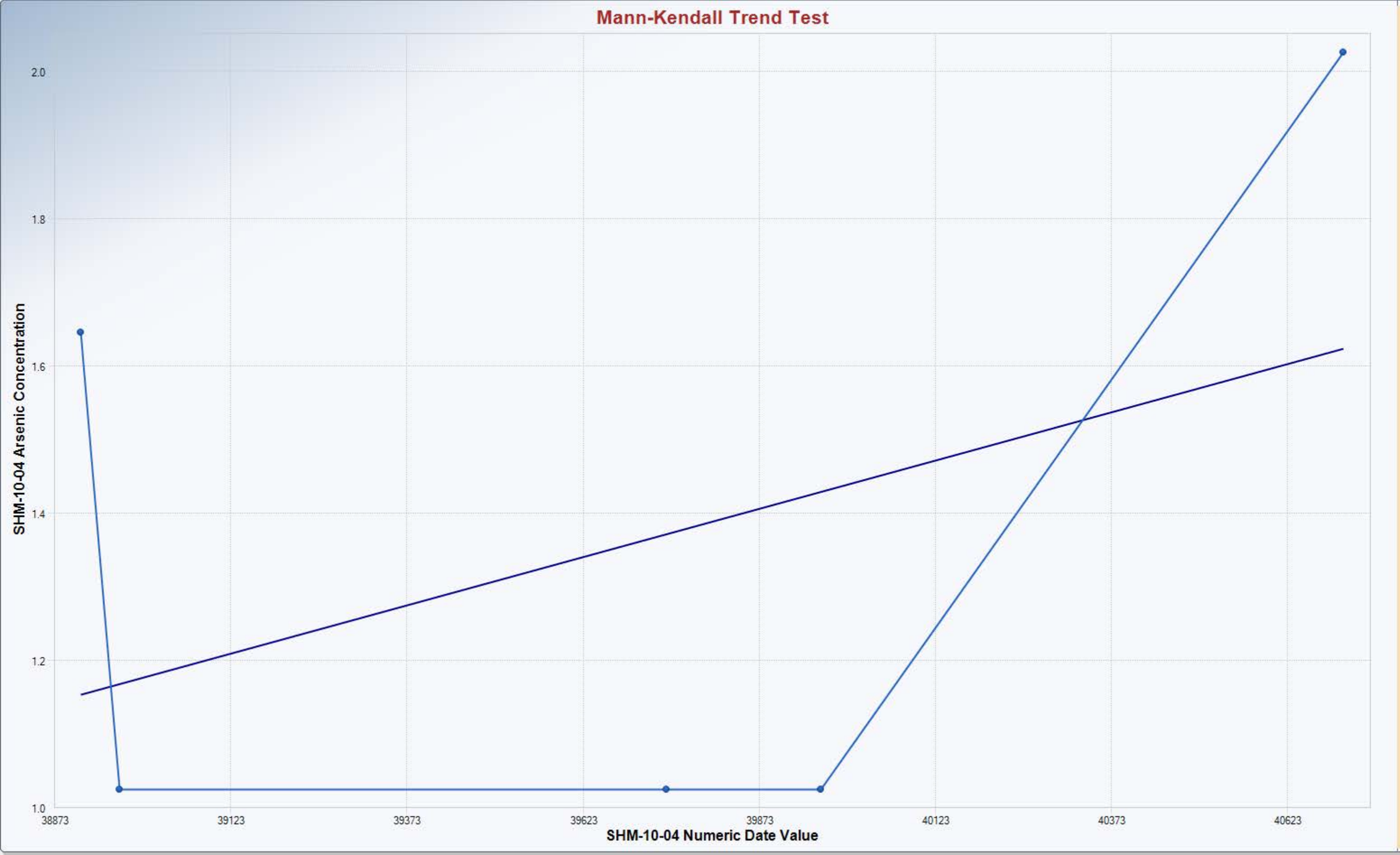
Mann-Kendall Trend Analysis

n	6
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	5.2281
Standardized Value of S	0.5738
M-K Test Value (S)	4
Tabulated p-value	0.2350
Approximate p-value	0.2830

OLS Regression Line (Blue)

OLS Regression Slope	0.0009
OLS Regression Intercept	-32.7359

Insufficient statistical evidence of a significant trend at the specified level of significance.



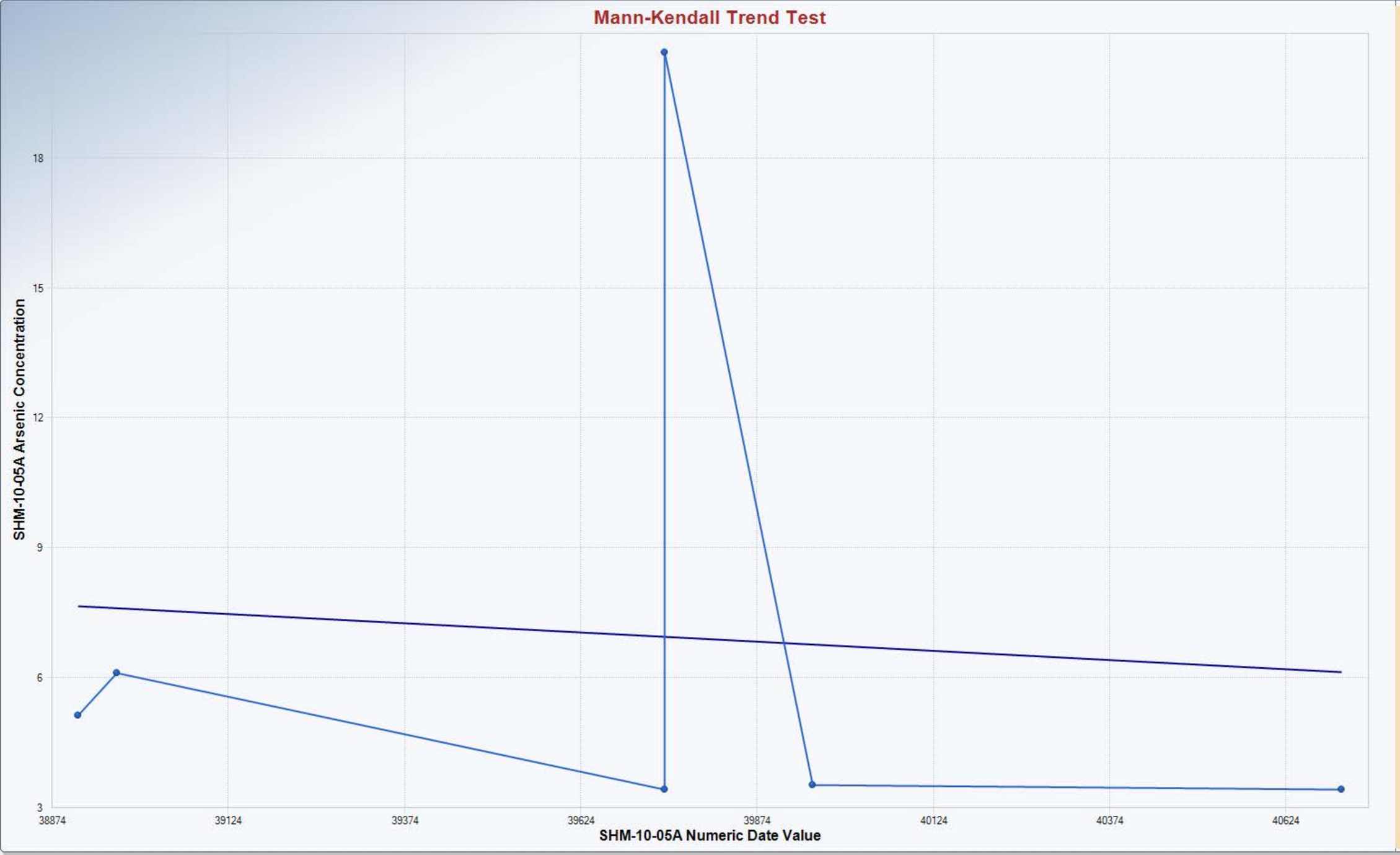
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	3.6056
Standardized Value of S	0.0000
M-K Test Value (S)	1
Tabulated p-value	0.5920
Approximate p-value	0.5000

OLS Regression Line (Blue)

OLS Regression Slope	0.0003
OLS Regression Intercept	-9.0718

Insufficient statistical evidence of a significant trend at the specified level of significance.



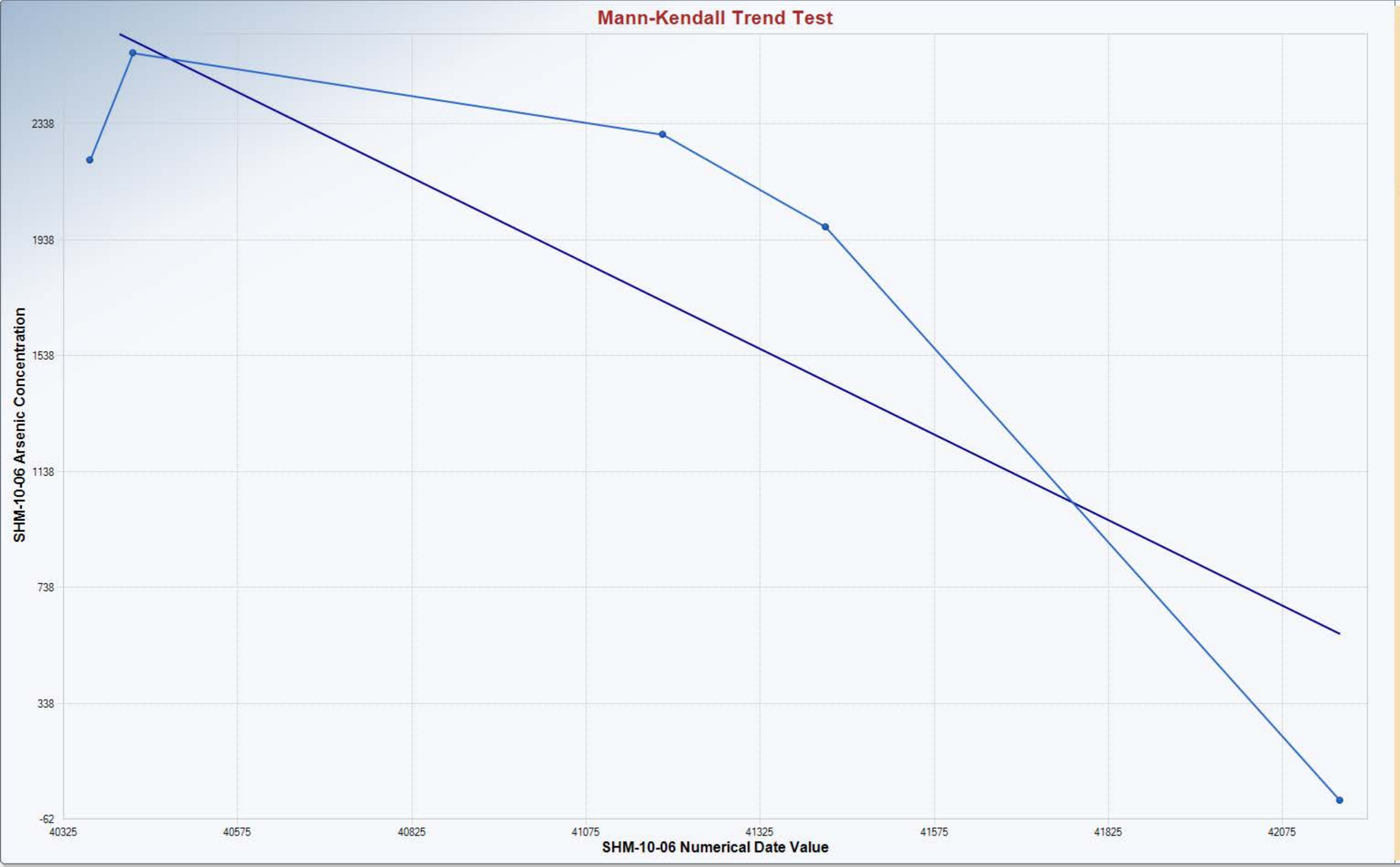
Mann-Kendall Trend Analysis

n	6
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	5.2281
Standardized Value of S	-0.5738
M-K Test Value (S)	-4
Tabulated p-value	0.2350
Approximate p-value	0.2830

OLS Regression Line (Blue)

OLS Regression Slope	-0.0009
OLS Regression Intercept	40.3668

Insufficient statistical evidence of a significant trend at the specified level of significance.



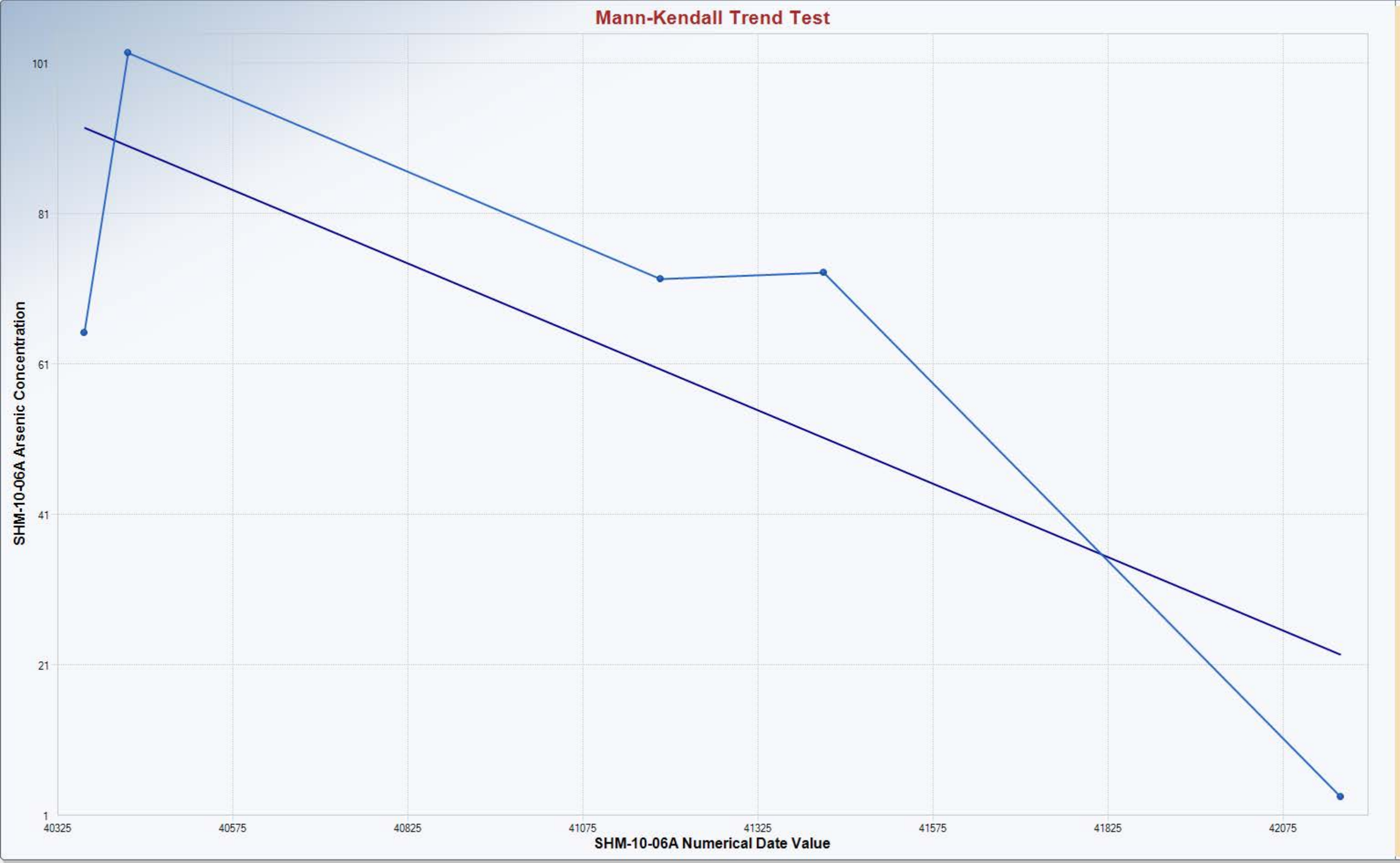
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	4.0825
Standardized Value of S	-1.2247
M-K Test Value (S)	-6
Tabulated p-value	0.1170
Approximate p-value	0.1103

OLS Regression Line (Blue)

OLS Regression Slope	-1.1816
OLS Regression Intercept	50,391.8307

Insufficient statistical evidence of a significant trend at the specified level of significance.



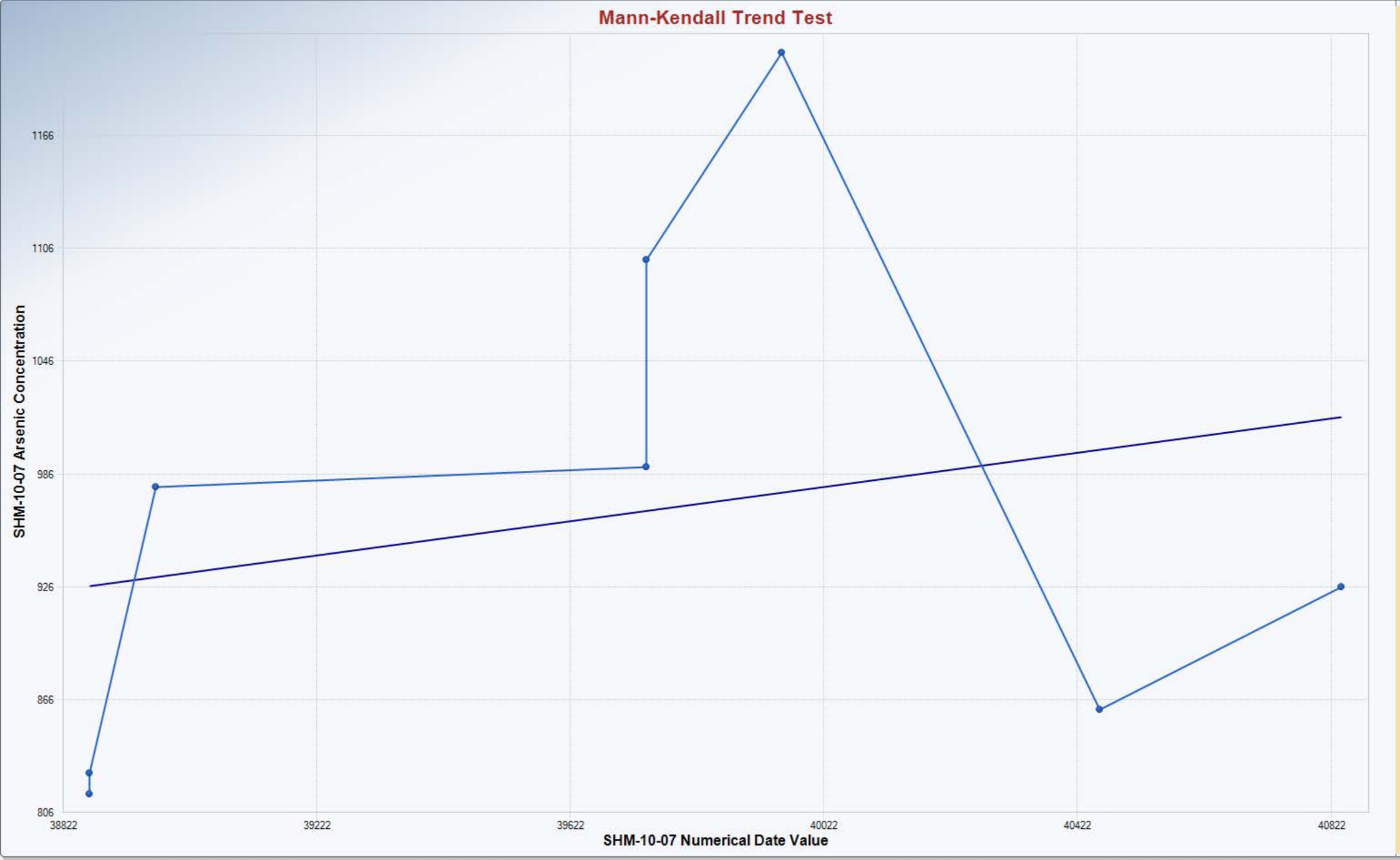
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	4.0825
Standardized Value of S	-0.2449
M-K Test Value (S)	-2
Tabulated p-value	0.4080
Approximate p-value	0.4032

OLS Regression Line (Blue)

OLS Regression Slope	-0.0391
OLS Regression Intercept	1,669.4473

Insufficient statistical evidence of a significant trend at the specified level of significance.



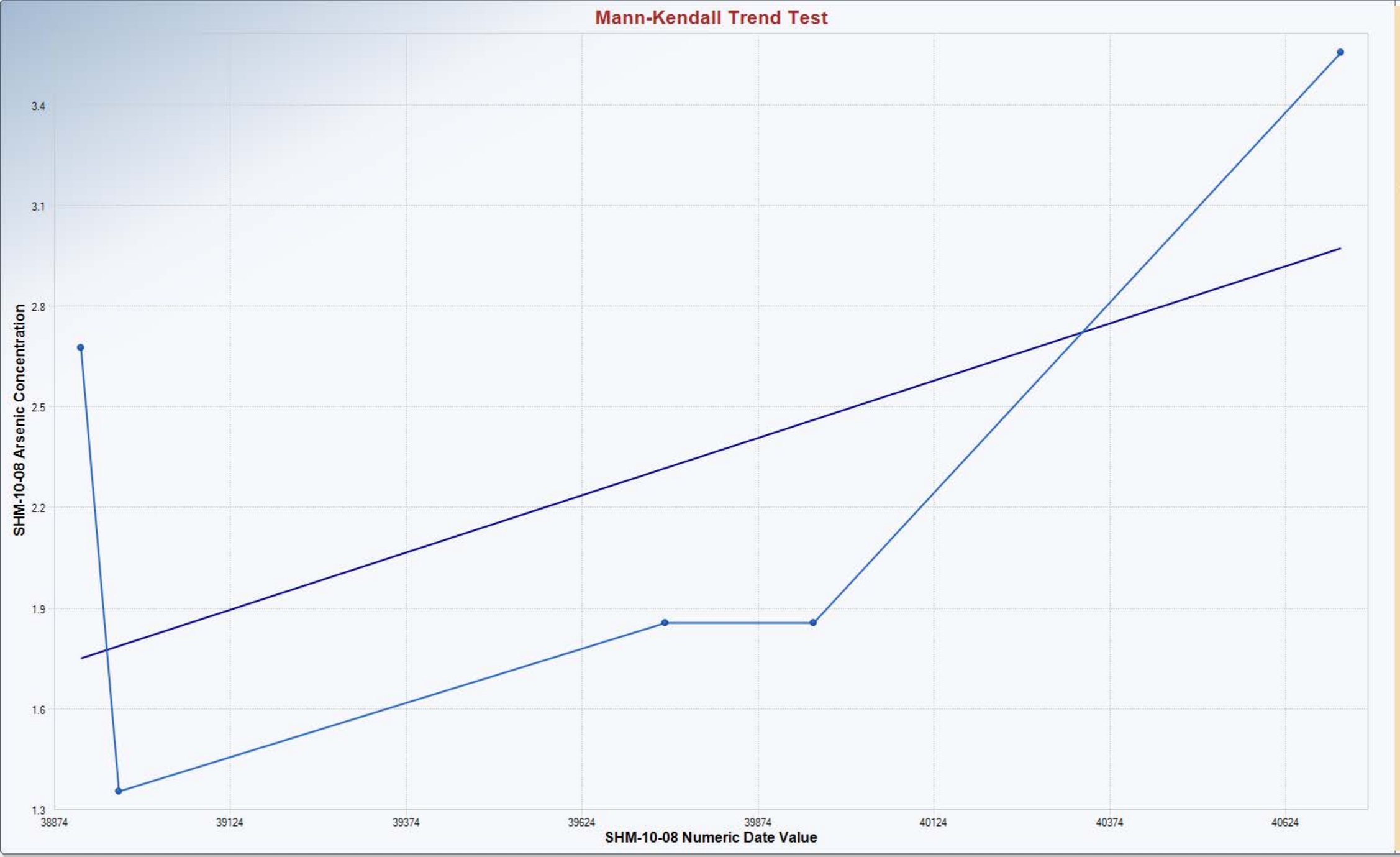
Mann-Kendall Trend Analysis

n	8
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	8.0829
Standardized Value of S	1.3609
M-K Test Value (S)	12
Tabulated p-value	0.0890
Approximate p-value	0.0868

OLS Regression Line (Blue)

OLS Regression Slope	0.0454
OLS Regression Intercept	-839.0665

Insufficient statistical evidence of a significant trend at the specified level of significance.



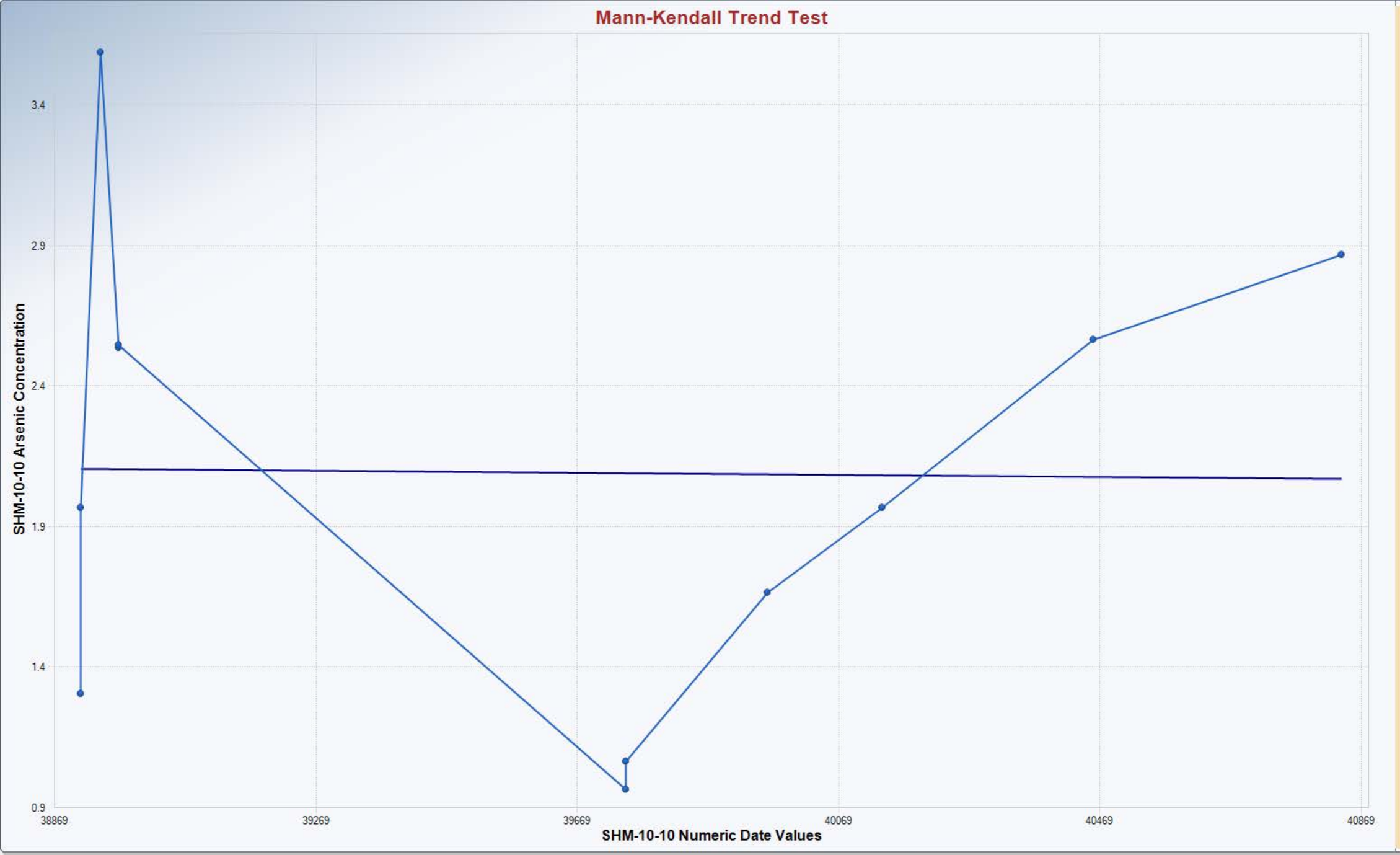
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	3.9581
Standardized Value of S	0.5053
M-K Test Value (S)	3
Tabulated p-value	0.4080
Approximate p-value	0.3067

OLS Regression Line (Blue)

OLS Regression Slope	0.0007
OLS Regression Intercept	-24.7683

Insufficient statistical evidence of a significant trend at the specified level of significance.



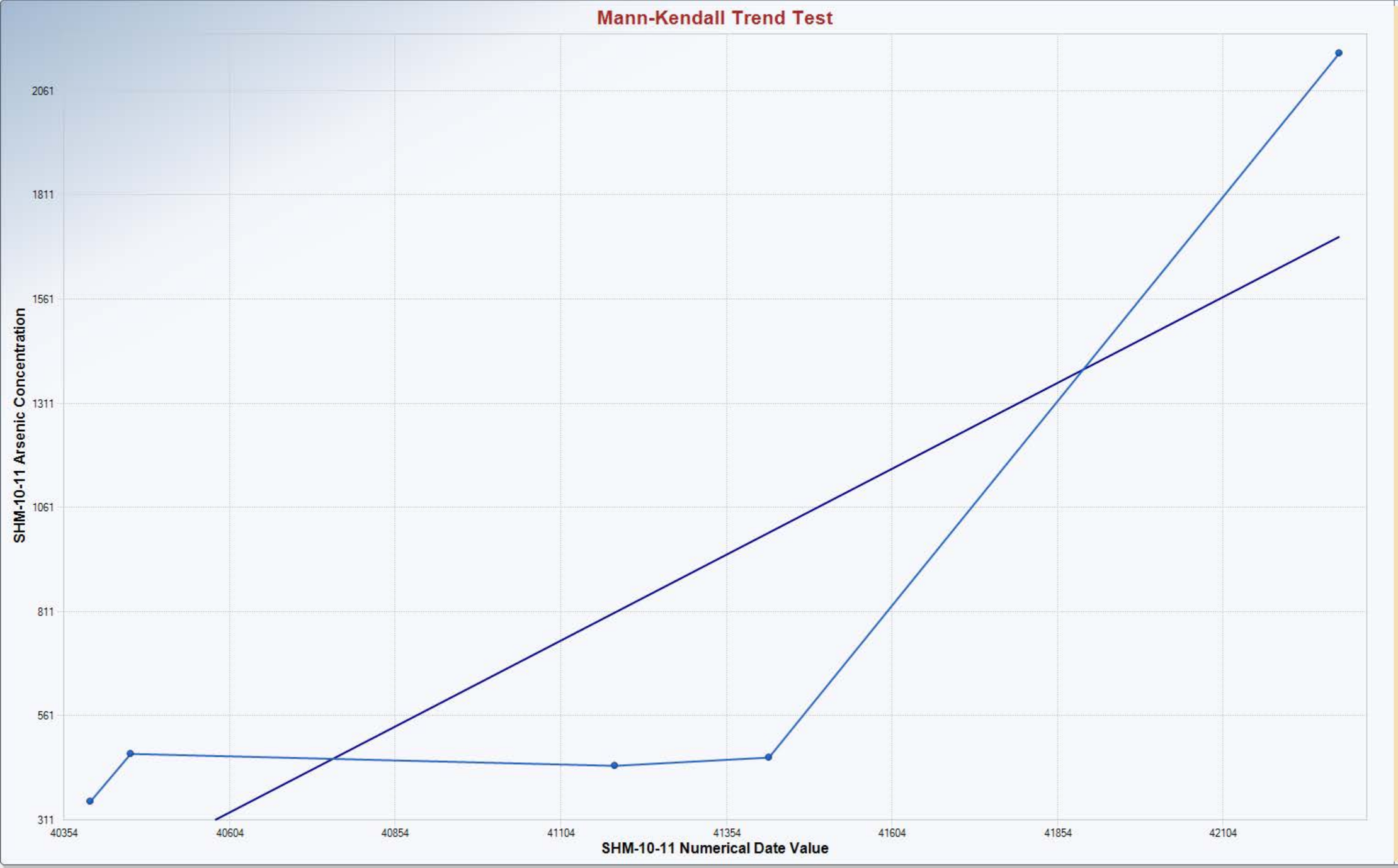
Mann-Kendall Trend Analysis

n	11
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	12.8062
Standardized Value of S	0.8590
M-K Test Value (S)	12
Tabulated p-value	0.1790
Approximate p-value	0.1952

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	2.8499

Insufficient statistical evidence of a significant trend at the specified level of significance.



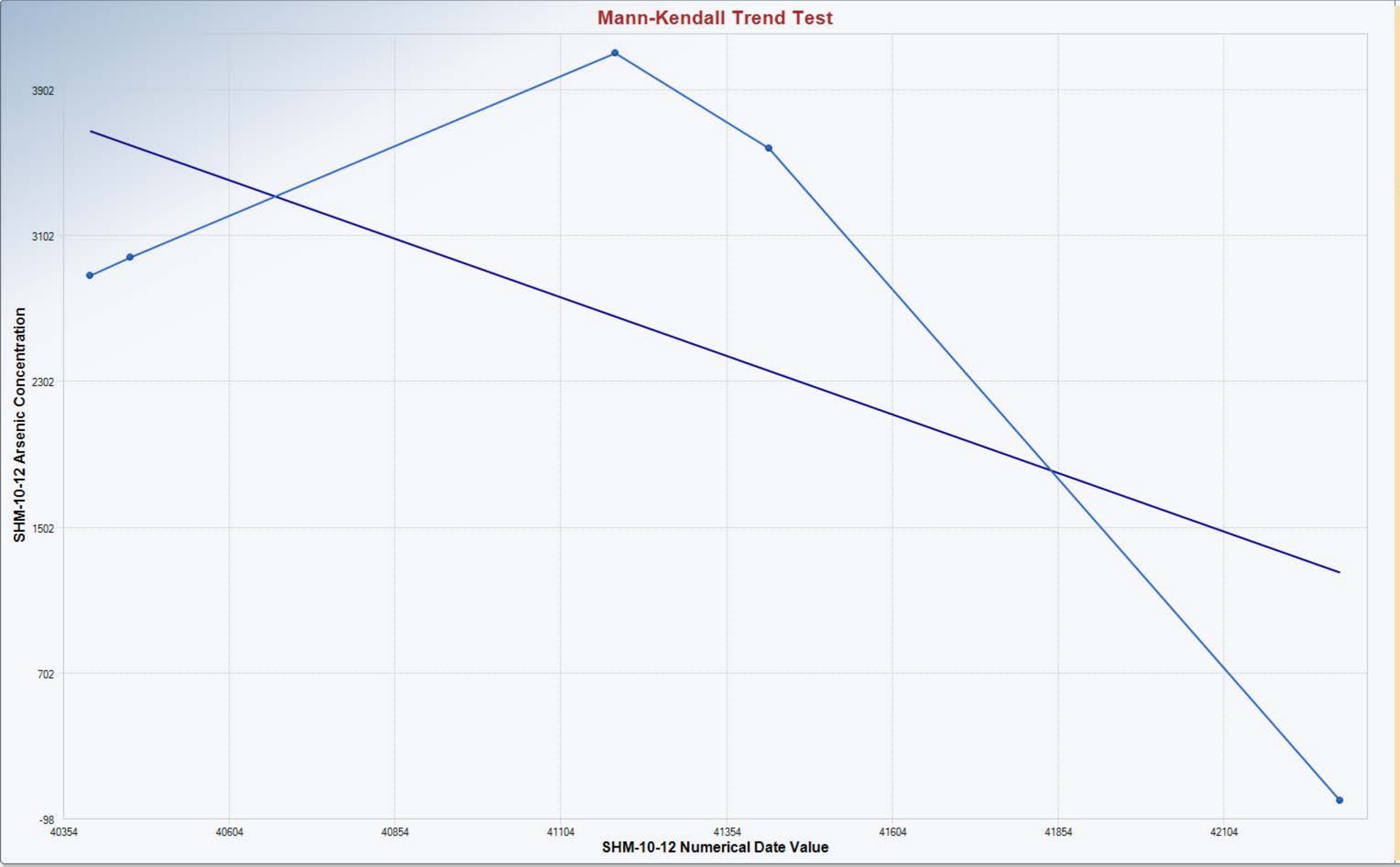
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	4.0825
Standardized Value of S	1.2247
M-K Test Value (S)	6
Tabulated p-value	0.1170
Approximate p-value	0.1103

OLS Regression Line (Blue)

OLS Regression Slope	0.8256
OLS Regression Intercept	-33,196.8650

Insufficient statistical evidence of a significant trend at the specified level of significance.



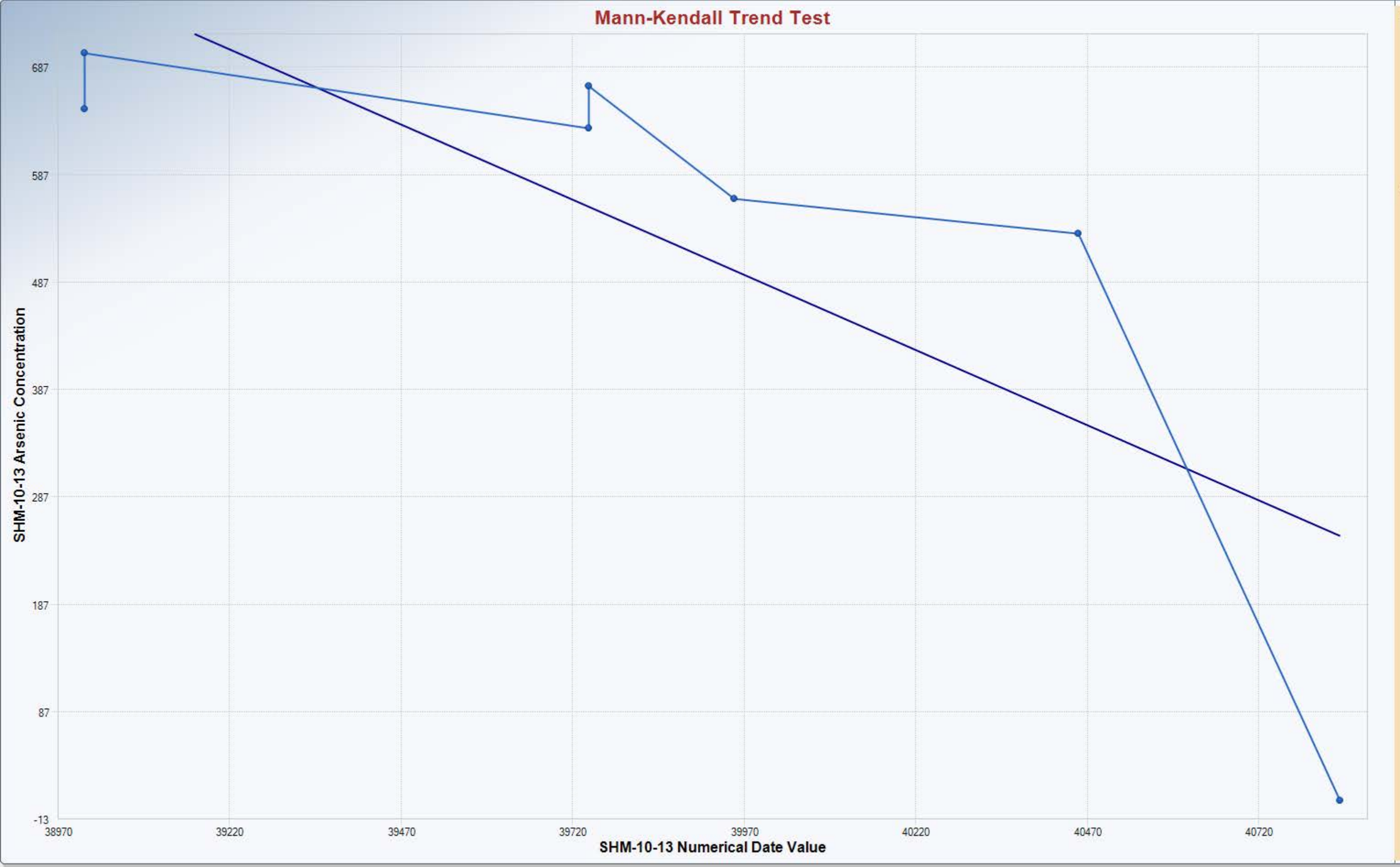
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	4.0825
Standardized Value of S	
M-K Test Value (S)	0
Tabulated p-value	0.5920
Approximate p-value	

OLS Regression Line (Blue)

OLS Regression Slope	-1.2847
OLS Regression Intercept	55,571.9739

Insufficient statistical evidence of a significant trend at the specified level of significance.



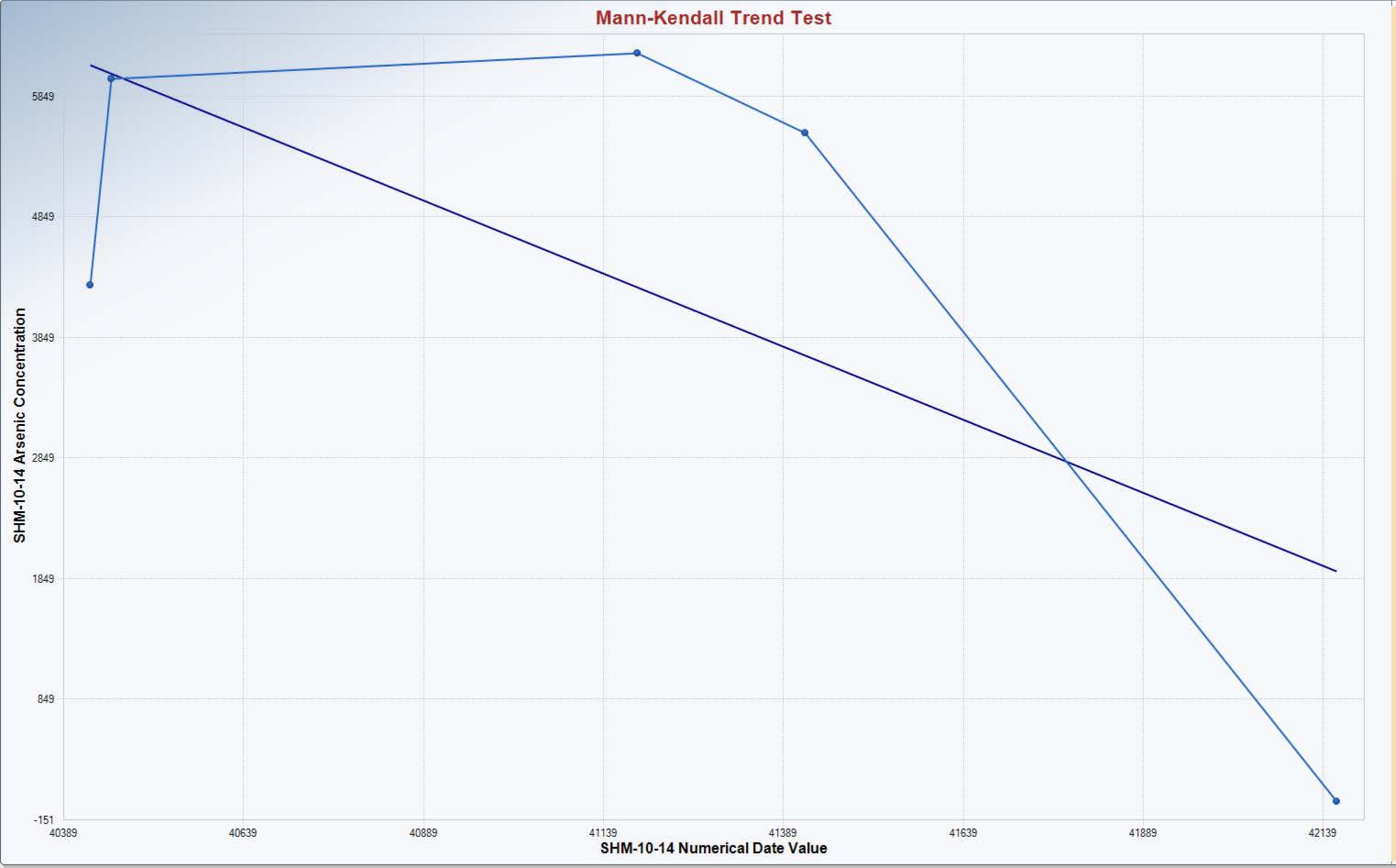
Mann-Kendall Trend Analysis

n	7
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	6.6583
Standardized Value of S	-2.1026
M-K Test Value (S)	-15
Tabulated p-value	0.0150
Approximate p-value	0.0177

OLS Regression Line (Blue)

OLS Regression Slope	-0.2800
OLS Regression Intercept	11,684.6892

Statistically significant evidence of a decreasing trend at the specified level of significance.



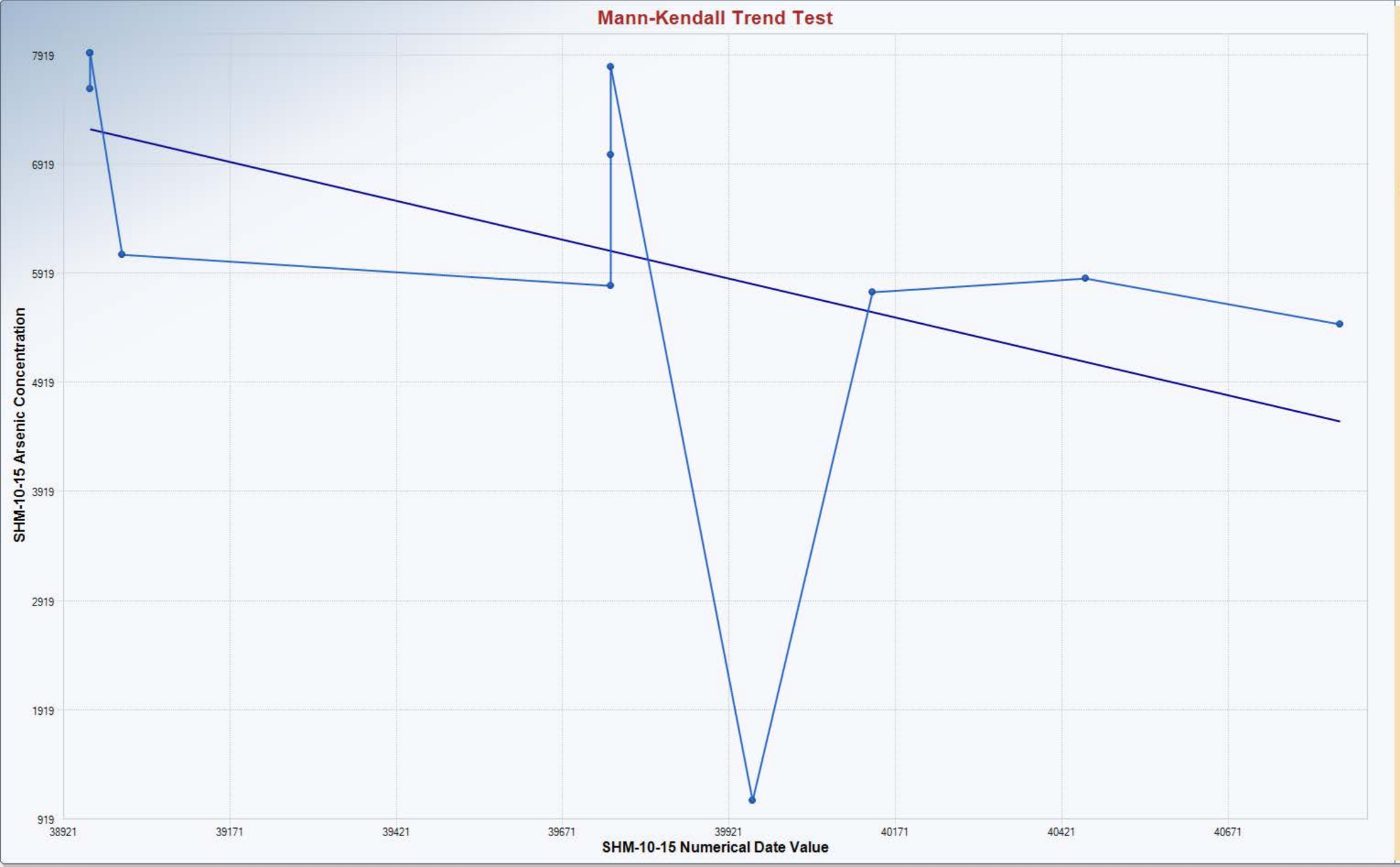
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	4.0825
Standardized Value of S	-0.2449
M-K Test Value (S)	-2
Tabulated p-value	0.4080
Approximate p-value	0.4032

OLS Regression Line (Blue)

OLS Regression Slope	-2.4226
OLS Regression Intercept	104,038.9796

Insufficient statistical evidence of a significant trend at the specified level of significance.



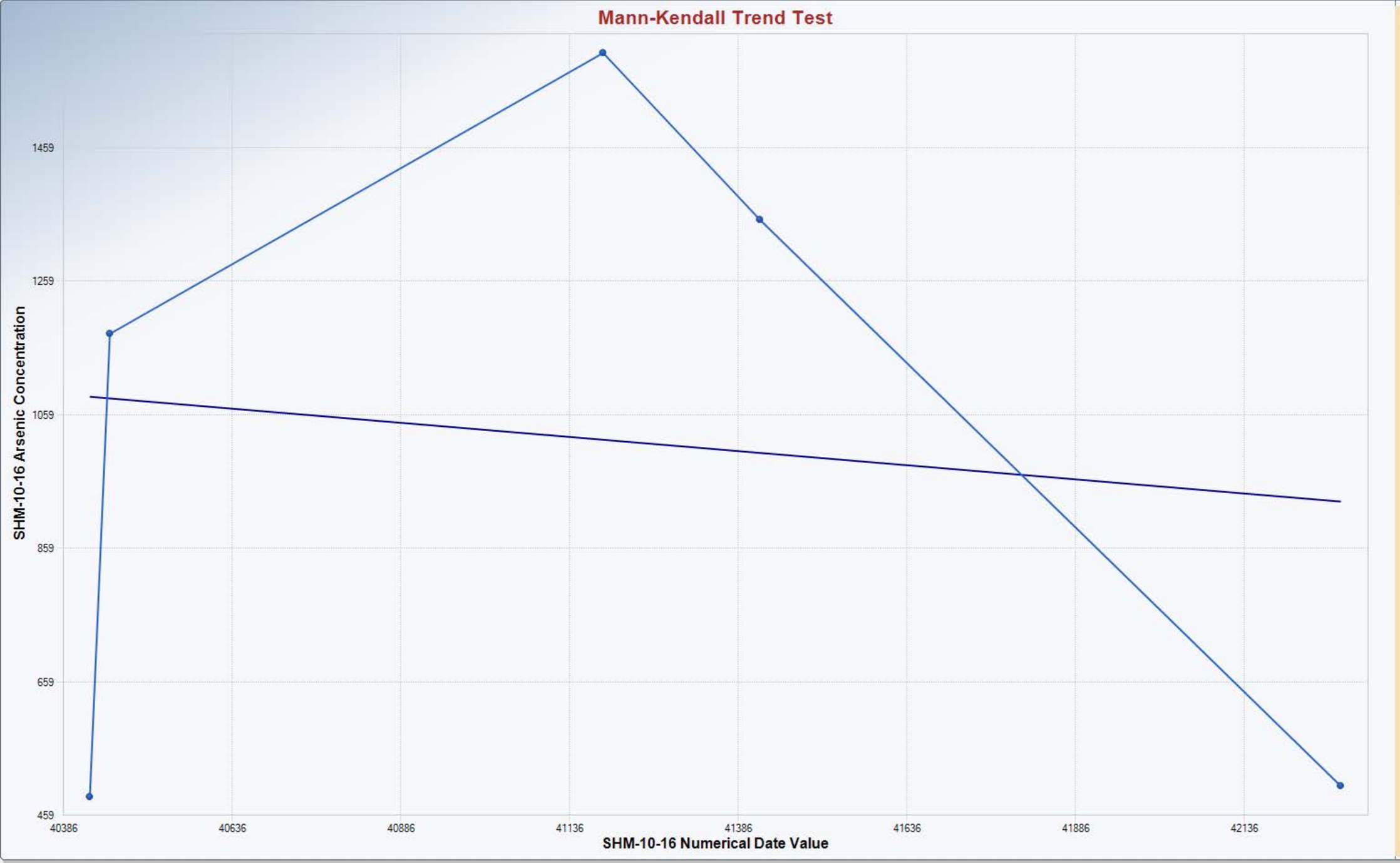
Mann-Kendall Trend Analysis

n	11
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	12.8062
Standardized Value of S	-2.1083
M-K Test Value (S)	-28
Tabulated p-value	0.0130
Approximate p-value	0.0175

OLS Regression Line (Blue)

OLS Regression Slope	-1.4245
OLS Regression Intercept	62,739.9835

Statistically significant evidence of a decreasing trend at the specified level of significance.



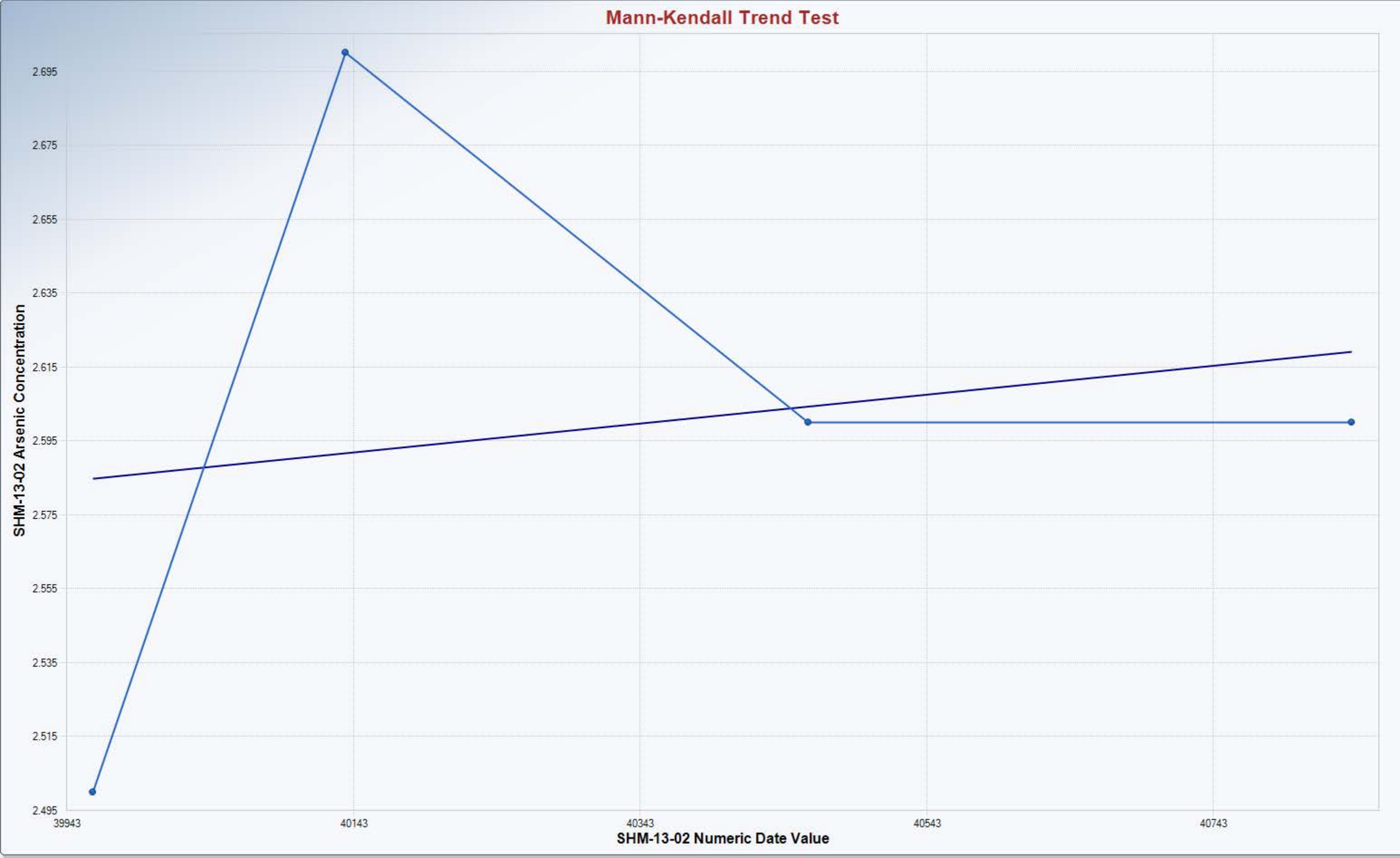
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	4.0825
Standardized Value of S	0.2449
M-K Test Value (S)	2
Tabulated p-value	0.4080
Approximate p-value	0.4032

OLS Regression Line (Blue)

OLS Regression Slope	-0.0845
OLS Regression Intercept	4,502.2276

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	4
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	2.7689
Standardized Value of S	0.0000
M-K Test Value (S)	1
Tabulated p-value	0.6250
Approximate p-value	0.5000

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	1.0145

Insufficient statistical evidence of a significant trend at the specified level of significance.

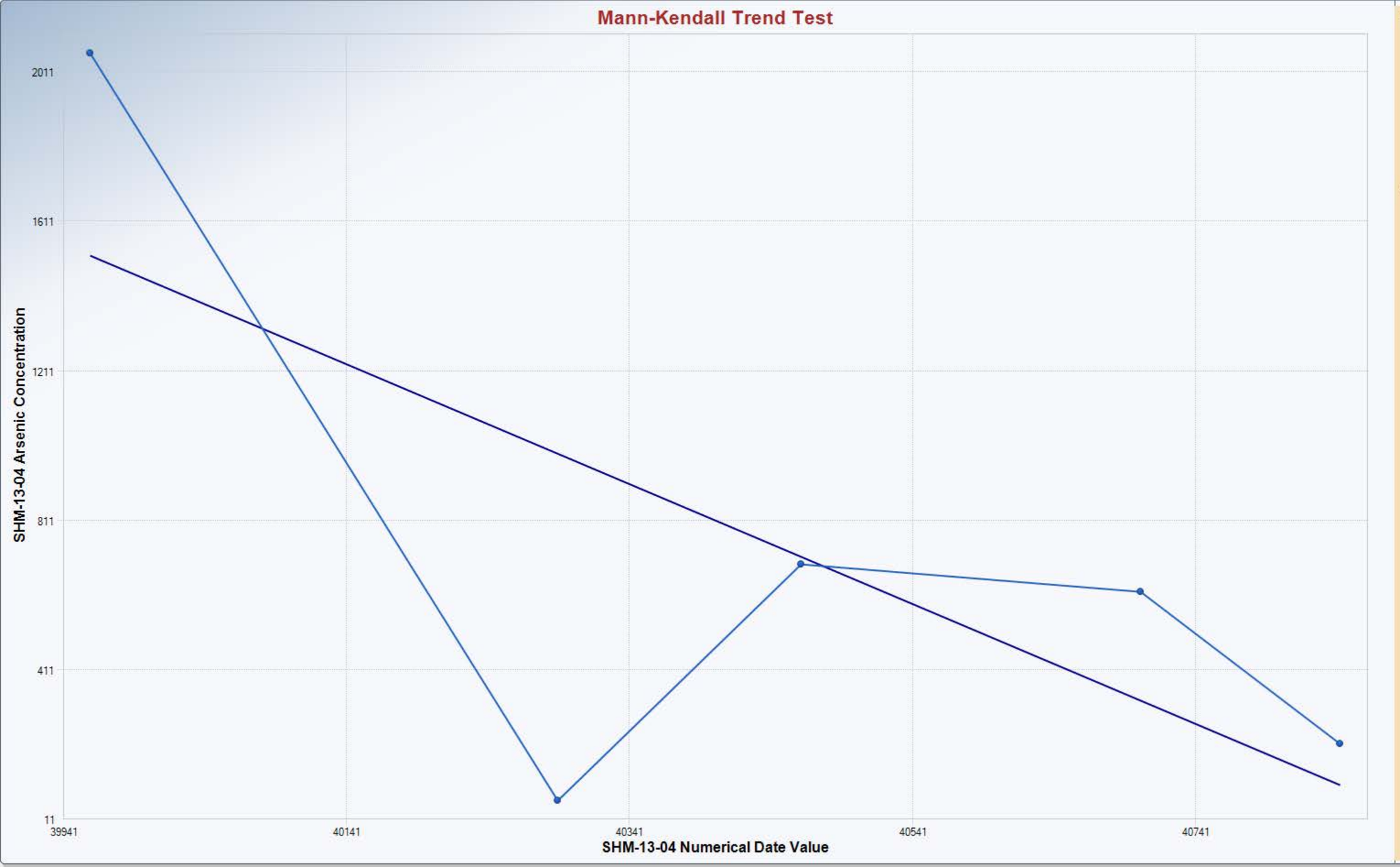
Mann-Kendall Trend Analysis

n	7
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	6.6583
Standardized Value of S	-2.7034
M-K Test Value (S)	-19
Tabulated p-value	0.0010
Approximate p-value	0.0034

OLS Regression Line (Blue)

OLS Regression Slope	-0.2340
OLS Regression Intercept	9,581.3030

Statistically significant evidence of a decreasing trend at the specified level of significance.



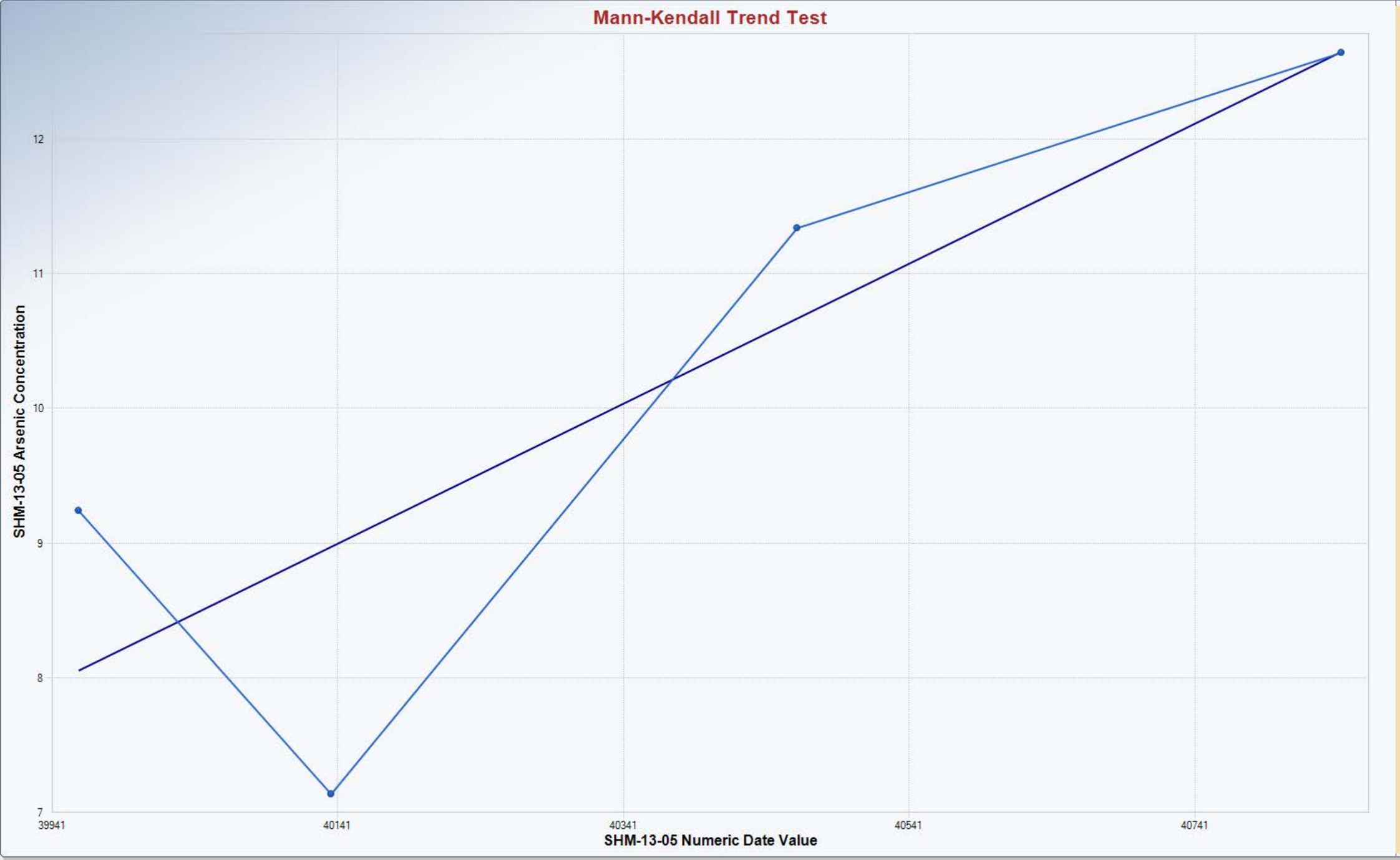
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	4.0825
Standardized Value of S	-0.7348
M-K Test Value (S)	-4
Tabulated p-value	0.2420
Approximate p-value	0.2312

OLS Regression Line (Blue)

OLS Regression Slope	-1.6043
OLS Regression Intercept	65,628.4807

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	4
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	2.9439
Standardized Value of S	1.0190
M-K Test Value (S)	4
Tabulated p-value	0.1670
Approximate p-value	0.1541

OLS Regression Line (Blue)

OLS Regression Slope	0.0052
OLS Regression Intercept	-199.9505

Insufficient statistical evidence of a significant trend at the specified level of significance.

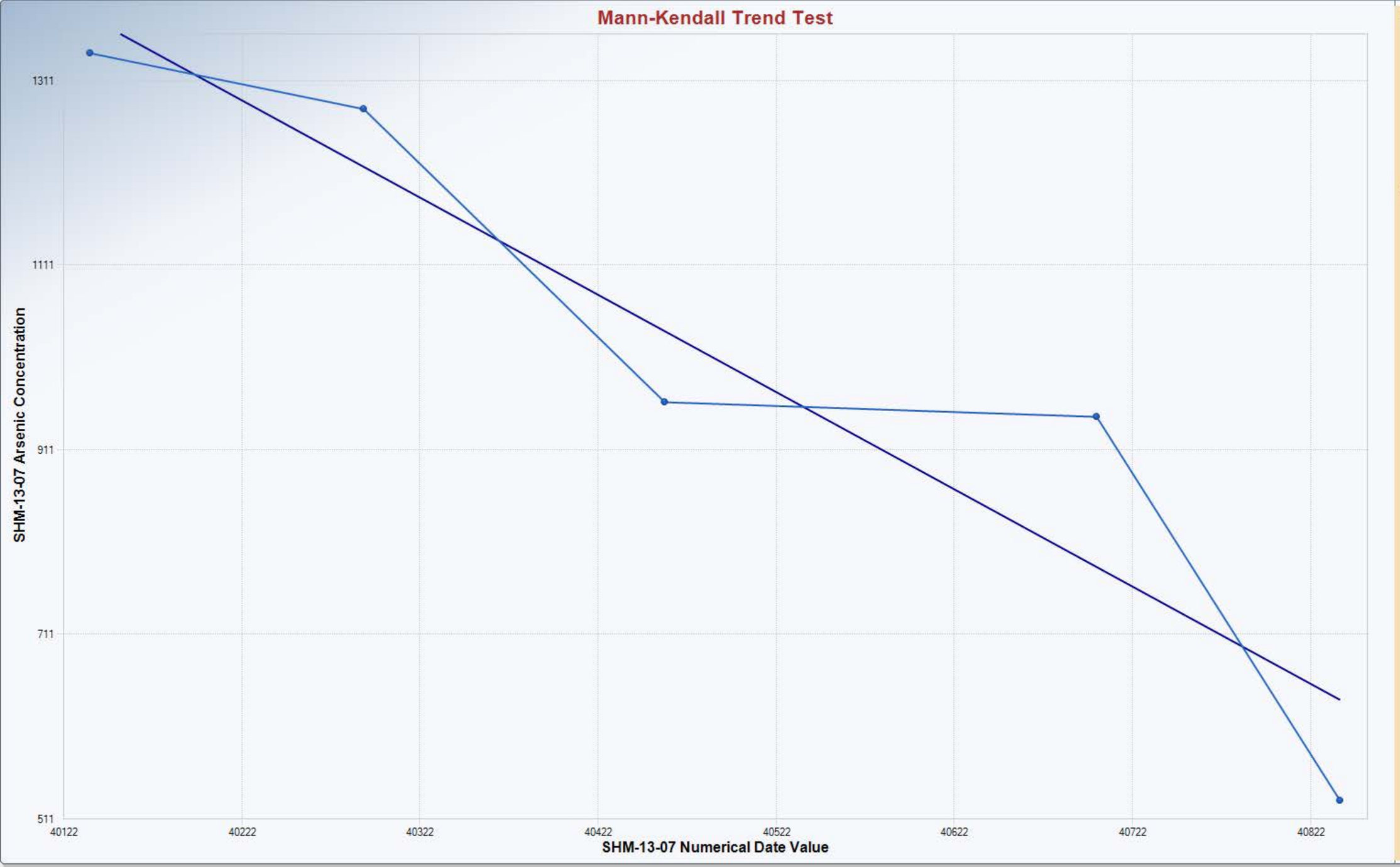
Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	4.0825
Standardized Value of S	-1.7146
M-K Test Value (S)	-8
Tabulated p-value	0.0420
Approximate p-value	0.0432

OLS Regression Line (Blue)

OLS Regression Slope	-0.8642
OLS Regression Intercept	37,553.4403

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	5
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	4.0825
Standardized Value of S	-2.2045
M-K Test Value (S)	-10
Tabulated p-value	0.0080
Approximate p-value	0.0137

OLS Regression Line (Blue)

OLS Regression Slope	-1.0534
OLS Regression Intercept	43,659.3041

Statistically significant evidence of a decreasing trend at the specified level of significance.

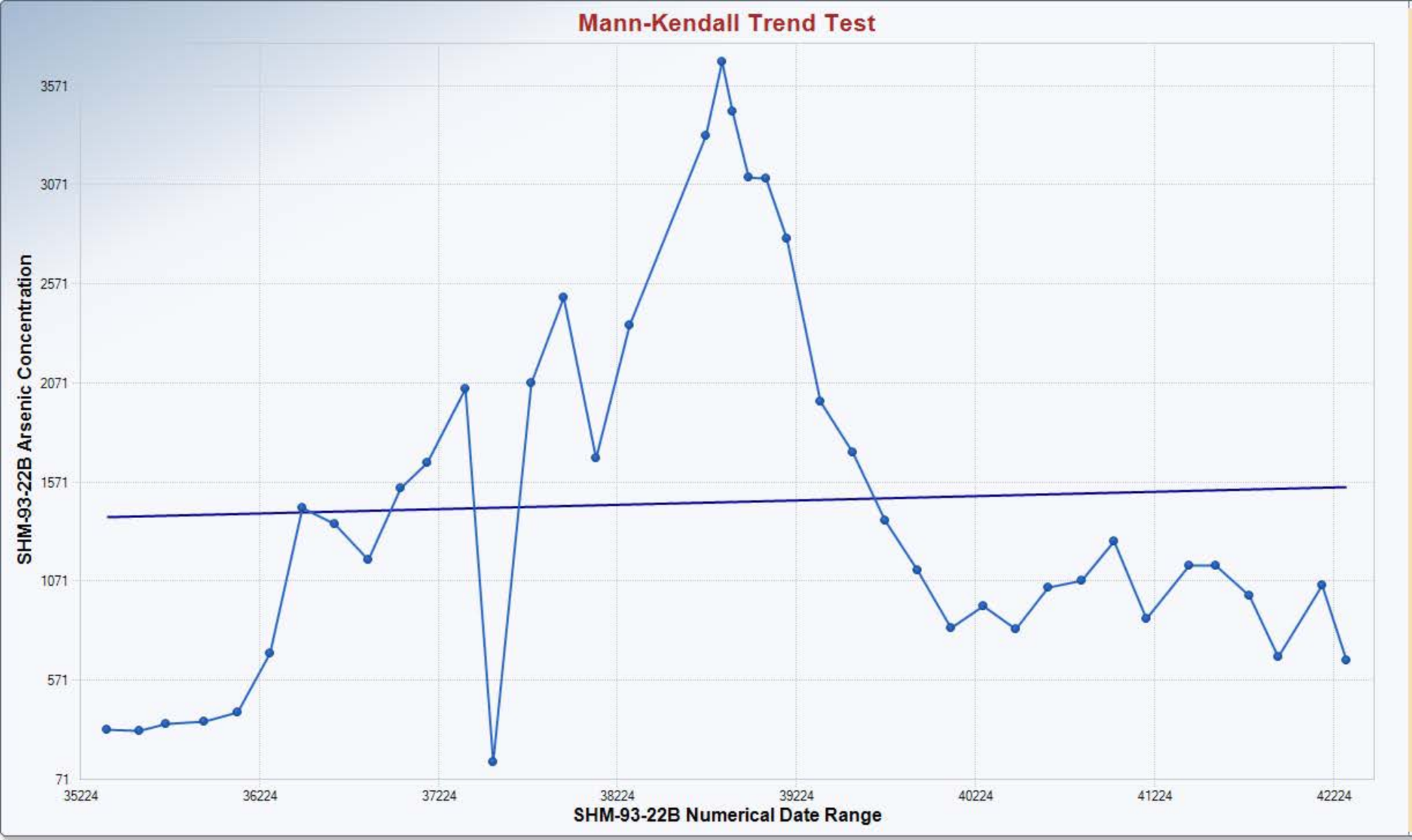
Mann-Kendall Trend Analysis

n	6
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	5.3229
Standardized Value of S	-0.3757
M-K Test Value (S)	-3
Tabulated p-value	0.3600
Approximate p-value	0.3536

OLS Regression Line (Blue)

OLS Regression Slope	-0.1851
OLS Regression Intercept	40,583.2599

Insufficient statistical evidence of a significant trend at the specified level of significance.



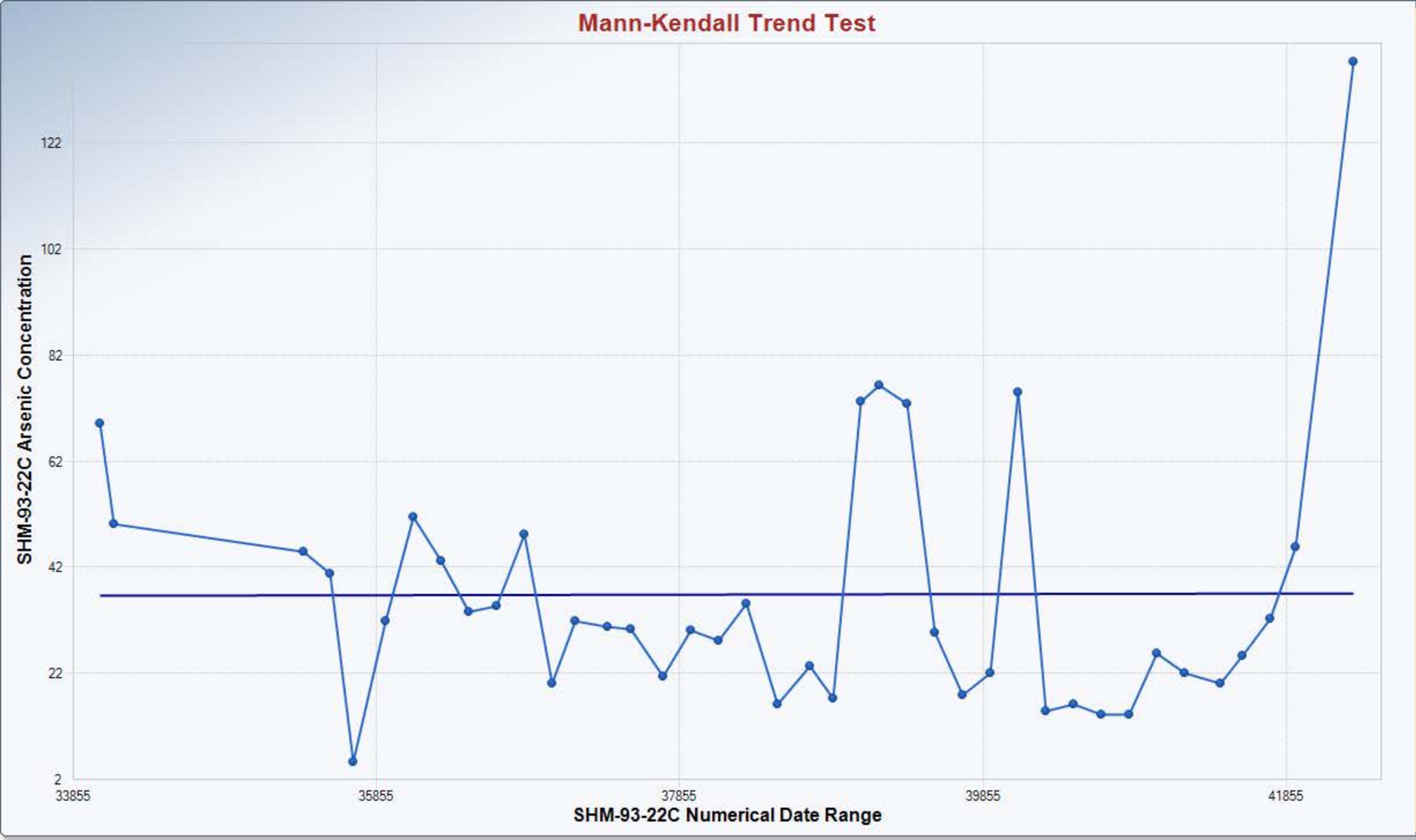
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.8235
Standardized Value of S	0.0699
M-K Test Value (S)	7
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.4721

OLS Regression Line (Blue)

OLS Regression Slope	0.0218
OLS Regression Intercept	621.4242

Insufficient statistical evidence of a significant trend at the specified level of significance.



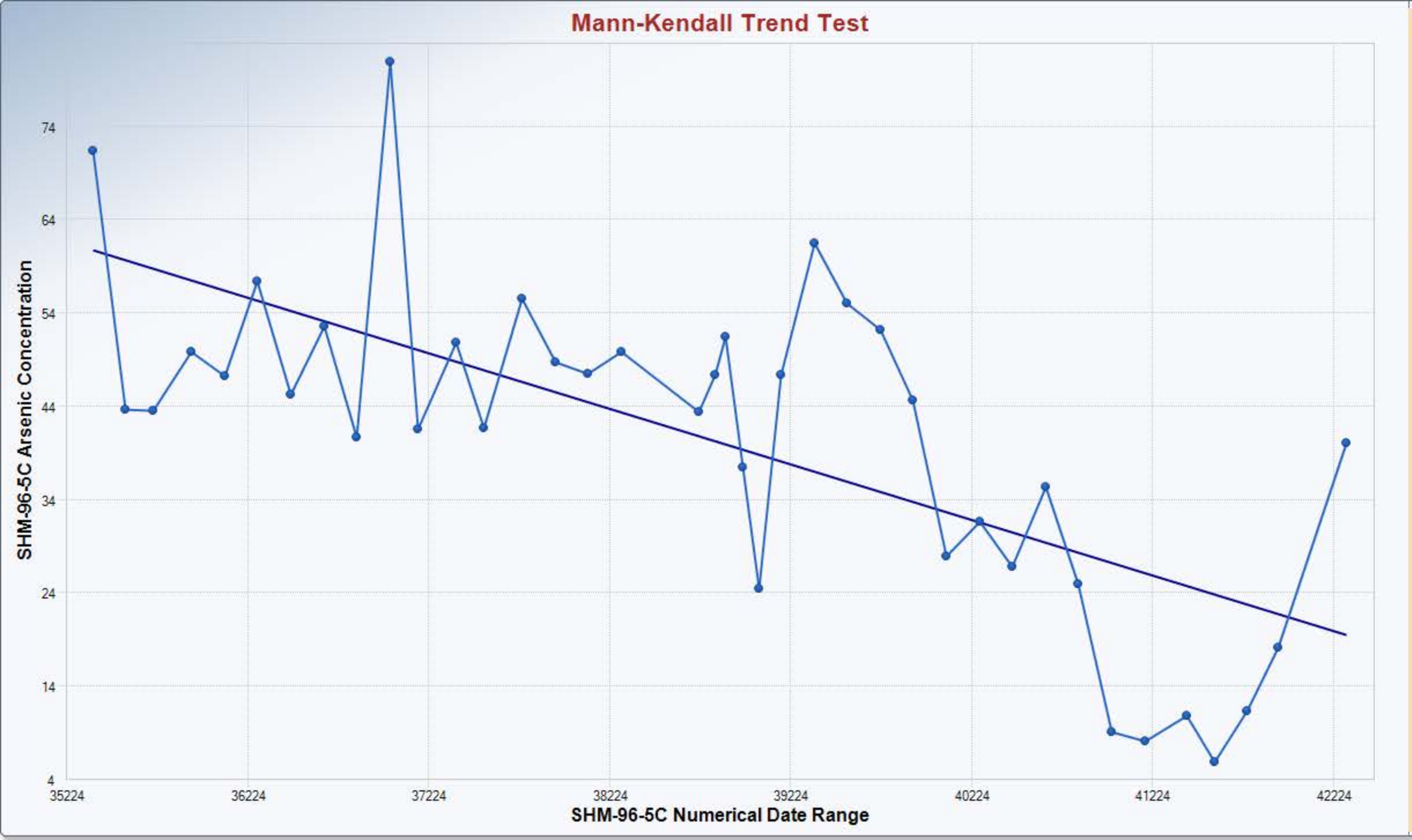
Mann-Kendall Trend Analysis

n	40
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	85.8002
Standardized Value of S	-1.9114
M-K Test Value (S)	-165
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0280

OLS Regression Line (Blue)

OLS Regression Slope	0.0001
OLS Regression Intercept	34.3250

Statistically significant evidence of a decreasing trend at the specified level of significance.



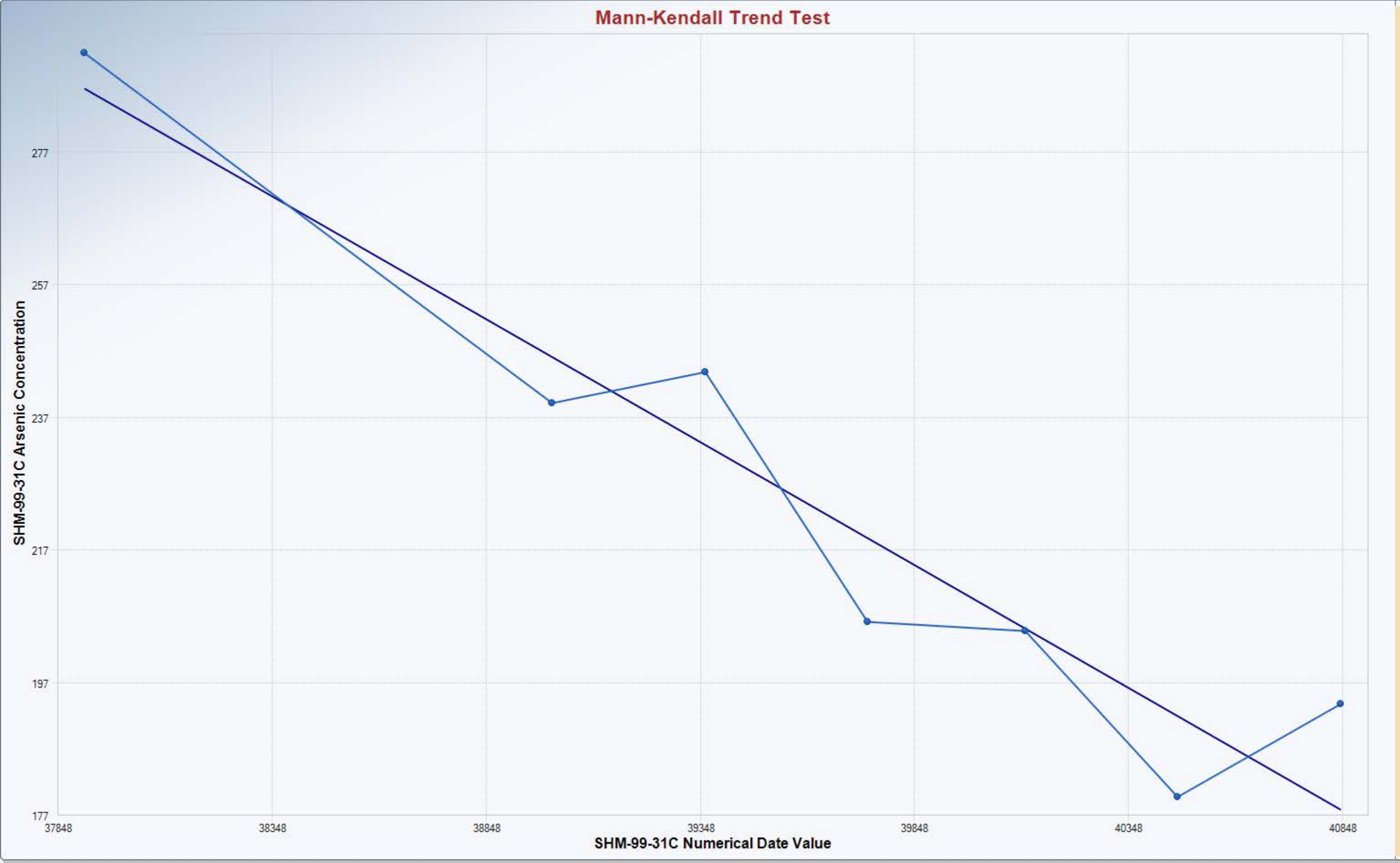
Mann-Kendall Trend Analysis

n	39
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	82.6539
Standardized Value of S	-4.0651
M-K Test Value (S)	-337
Appx. Critical Value (0.05)	-1.6449
Approximate p-value	0.0000

OLS Regression Line (Blue)

OLS Regression Slope	-0.0059
OLS Regression Intercept	270.3538

Statistically significant evidence of a decreasing trend at the specified level of significance.



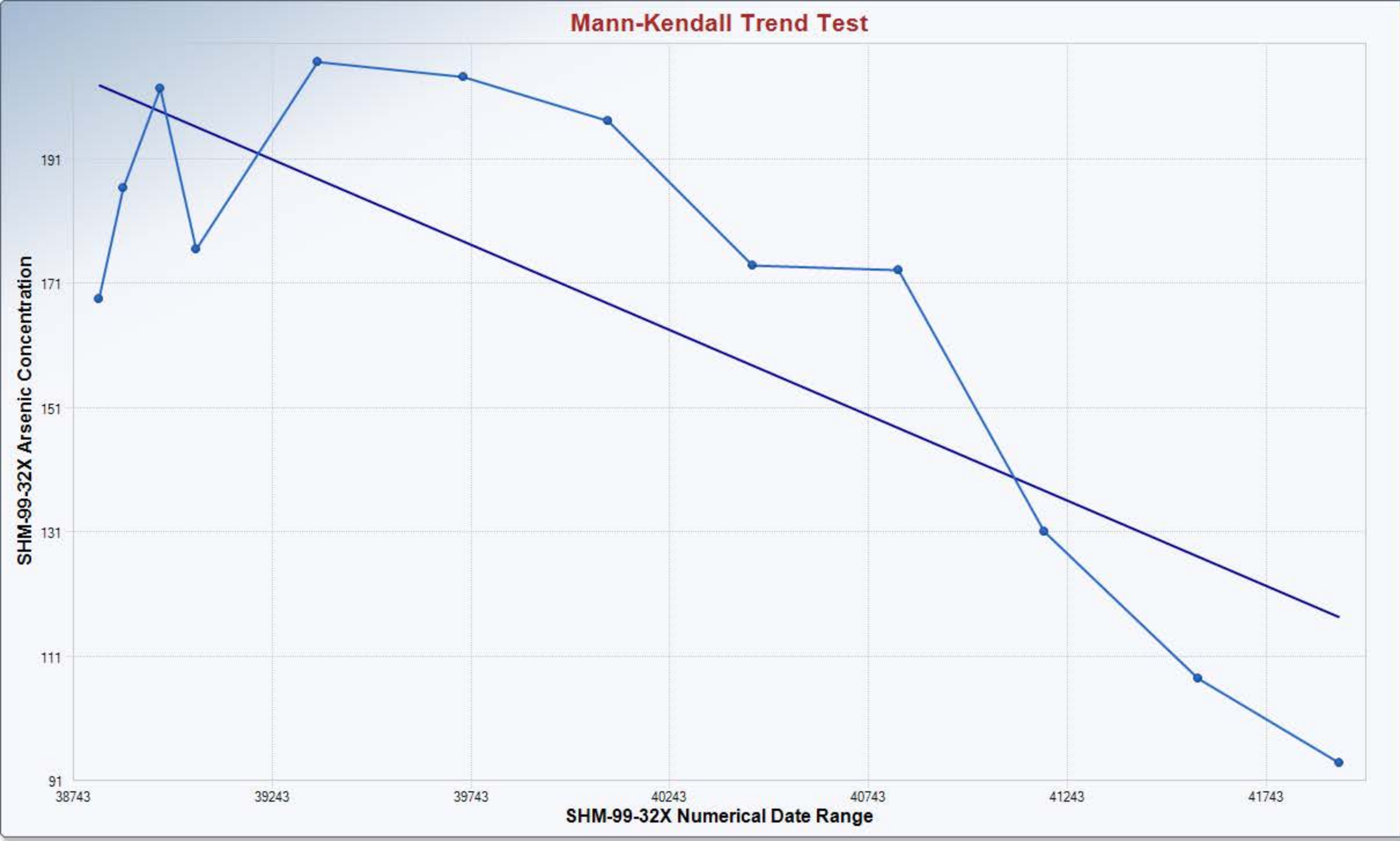
Mann-Kendall Trend Analysis

n	7
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	6.6583
Standardized Value of S	-2.4030
M-K Test Value (S)	-17
Tabulated p-value	0.0050
Approximate p-value	0.0081

OLS Regression Line (Blue)

OLS Regression Slope	-0.0371
OLS Regression Intercept	1,692.1189

Statistically significant evidence of a decreasing trend at the specified level of significance.



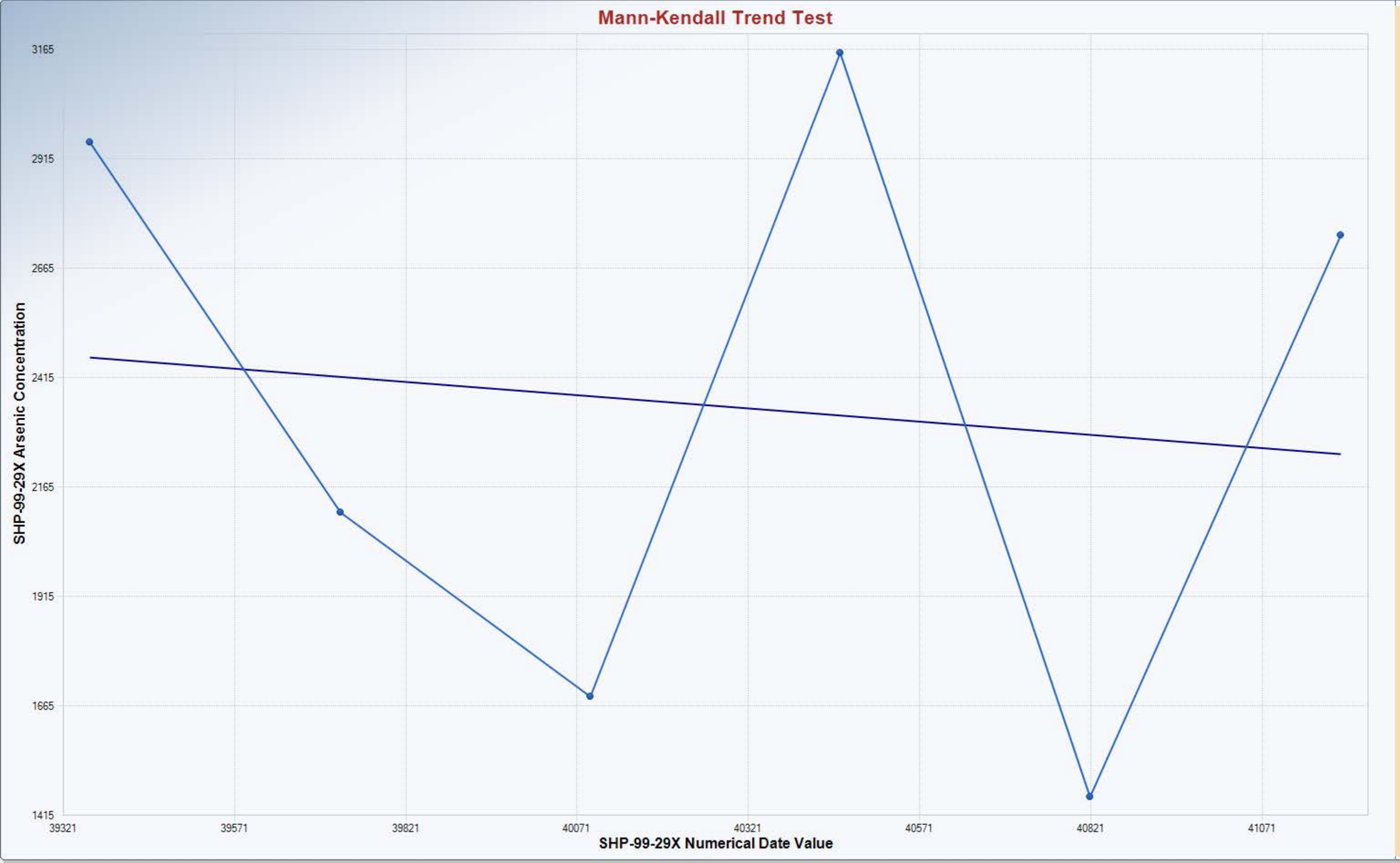
Mann-Kendall Trend Analysis

n	12
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	14.5831
Standardized Value of S	-2.1257
M-K Test Value (S)	-32
Tabulated p-value	0.0160
Approximate p-value	0.0168

OLS Regression Line (Blue)

OLS Regression Slope	-0.0275
OLS Regression Intercept	1,267.9490

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	6
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	5.3229
Standardized Value of S	-0.3757
M-K Test Value (S)	-3
Tabulated p-value	0.3600
Approximate p-value	0.3536

OLS Regression Line (Blue)

OLS Regression Slope	-0.1210
OLS Regression Intercept	7,222.3978

Insufficient statistical evidence of a significant trend at the specified level of significance.

APPENDIX H

Model Simulation Memorandum

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Memorandum

Date: 18 March 2016

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Copies to: Carol Keating (USEPA), David Chaffin (MADEP), Ron Ostrowski (MassDev)

From: Denise Tripp, Doug Larson

Subject: DRAFT
Shepley's Hill Groundwater Model Revision Summary and Preliminary Results

INTRODUCTION

This memorandum describes recent revisions to the numerical model used to analyze groundwater flow patterns at the Shepley's Hill Landfill (SHL) site (the Site) in Ayer, Massachusetts. This modeling effort updated the previous numerical flow model for the Site described in the 2013 Groundwater Modeling Report (Sovereign, 2013). The model revisions were developed through discussions with USEPA and MADEP during a one-day meeting on 27 April 2015. In general, it was agreed that the areal extent of the 2013 model, designated as SHL200, was appropriate and that input boundary conditions should be revised to reflect available site specific temporal data. The revised model simulates temporal site conditions based on available data by quarterly stress period and provides an appropriate tool to help develop our understanding of the complex flow system at the Site. The revised model was utilized to evaluate flow paths in the vicinity of the landfill to evaluate the performance of the existing groundwater capture system and to better understand groundwater flow downgradient form the capture system.

MODEL EXTENT AND LAYERING

The model discretization is consistent with the grid from the 2013 model and consists of 318 rows and 312 columns with variable grid spacing from 10 to 500 feet. The finer grid spacing is in the vicinity of the groundwater extraction wells where grid spacing is as fine as 10 feet by 10 feet, in order to better simulate water level changes in response to pumping. The model covers an area of approximately 4.3 square miles and extends approximately 2.5 miles from the Nashua River on the western boundary to the eastern edge of Grove Pond on the eastern boundary (see Figure 1).

The layering in the 2013 model was revised to include a second bedrock layer that simulates an upper fractured bedrock zone overlying more competent bedrock (see Figure 2). In the 2013 model, the bedrock layer (Layer 5) was specified as 100 feet thick. The revised model specifies

the fractured bedrock in Layer 5 with a thickness of 50 feet and includes an additional Layer 6 to simulate more competent bedrock; Layer 6 has a thickness of 250 feet.

Consistent with the 2013 model, Layers 1 to 3 represent the silty sand overburden encountered over much of the Site. The overburden layer thicknesses were revised to provide three layers of equal thickness; this was achieved by dividing the approximate saturated thickness above the till by 3. Layer 4 represents till overlying bedrock with variable thickness in the vicinity of the landfill and a uniform thickness of five feet in the remainder of the model area. In the vicinity of the SHL and North Impact Area (NIA), the top elevation of the till and the bedrock surfaces were developed using the 3D EVS model developed for the Site with data from observed elevations of till and bedrock obtained from boring logs.

SIMULATION PERIOD

The full simulation period evaluated with the revised model spans 2006 through 2025, with the period 2016 to 2025 included for predictive model evaluations. The full simulation period was modeled in two parts using two sub-models. The first sub-model (SHL300T1) simulates the period from 2006 to the third quarter 2012 when the barrier wall was installed along the eastern edge of the landfill. The second sub-model (SHL300T2) includes the barrier wall and simulates the time period from the fourth quarter 2012 through 2025 after the wall was in place and influencing groundwater flow.

The start of the simulation period for the first sub-model (SHL300T1) is the first quarter of 2006 and was chosen because 2006 was the first year of the Arsenic Treatment Plant (ATP) operation. In addition, the post-2005 historical water level data set was more reliable because of uncertainty in earlier measuring point elevations and reference vertical datum (i.e., NAVD88 or NGVD29). The time period spanned by the first sub-model is simulated with 30 transient stress periods. All stress periods represent one quarter-year with the exception of stress periods 9 through 12 which collectively represent one quarter (the first quarter of 2008). The first quarter of 2008 was simulated with four stress periods to include periods that correspond to the 2008 ATP system shut down test. The test consisted of a non-pumping period of 5 days followed by 8 days of pumping at a flow rate of 50 gpm (ECC, 2008). Water levels were measured before and after each shutdown/startup period on February 20 and 25 and March 4.

The second sub-model (SHL300T2) consists of 53 transient quarterly stress periods from the fourth quarter 2012 through 2025. The stress periods for both sub-models are presented in Tables 1a and 1b.

BOUNDARY CONDITIONS

Recharge

Recharge was based on a percentage of the measured precipitation reported through 2015. Two precipitation gauging stations are located near the site in Ayer and Fitchburg, MA. Monthly

precipitation data was downloaded from the publically accessible Climate Data Online (CDO) website maintained by the National Oceanic and Atmospheric Administration (https://www.ncdc.noaa.gov/cdo-web/). The gauging station at the Fitchburg Municipal Airport in Fitchburg, Massachusetts (Global Historical Climatology Network Designation: GHCND: USW00004780) is located within a straight-line distance of approximately 8.5 miles of the SHL and provides a full precipitation record from January 2006 to December 2015. Data for the gauging station located in Ayer, Massachusetts (GHCND: US1MAMD0025) was available for the period from January 2012 to December 2015 and was compared to data from the Fitchburg station to evaluate differences. The monthly precipitation data for the period between January 2012 and December 2015 for the two stations were generally comparable with limited differences attributable to localized precipitation events. However, based on the short span of the available records and several months with no reported data for the Ayer station, the Fitchburg station data was used for the full modeling period. The total quarterly precipitation in inches is presented on Figure 3.

The raw monthly water-equivalent Total Precipitation (TPCP) data, which includes snowfall, was converted to quarterly average precipitation for each quarter between January 2006 and December 2015. The quarterly averages were estimated by summing the total monthly precipitation for the three months of the quarter and dividing by the sum of days within the respective quarter. Future quarterly precipitation was estimated for the period 2016 to 2025 using the average quarterly values of the previous five years.

The recharge zones specified in the 2013 model were revised by evaluating the zonation and grouping similar land use areas based on a review of aerial photographs. The new zones were assigned a recharge value as a percentage of total precipitation. For each stress period, the quarterly recharge was estimated for each zone by multiplying the recharge percentage by the average quarterly precipitation. The estimated recharge percentages were evaluated as part of the model calibration. Recharge zone 7 which represents a zone of high recharge associated with bedrock outcrops was based on a 2008 geologic map identifying areas of bedrock outcrops and fractures (Kopera, 2008).The recharge zonation and a tabulation of percent precipitation specified in the updated model are shown on Figure 4. The post-2015 recharge inputs were set to the average of the 2010 through 2015 recharge estimates.

Surface Water

The surface water bodies within the model area include the Nashua River, Cold Spring Brook, Willow Brook, Nonacoicus Brook, Plow Shop Pond, and Grove Pond. The location of the grid blocks with River Boundary conditions was unchanged from the 2013 groundwater model. The surface water bodies and reach numbers specified in the revised model are illustrated on Figure 5. A uniform length and width was specified for each grid block within a reach. A uniform riverbed thickness was specified for each reach in the model except for the reaches that represent Plow Shop Pond (Reach 11, 12, 13) and Grove Pond (Reach 14). A 1999 study of the bathymetry and soft sediment thickness in the ponds by the USGS and EPA indicated a range of sediment

thickness from 1.5 feet around the shallow edges to a maximum of approximately 17 feet in Plow Shop Pond and approximately 7.4 feet in Grove Pond in the deeper central portions (Mercadante, et. al, 1999). Modeled thicknesses in the ponds were specified as 1.6, 8.2, and 16.4 feet in Plow Shop Pond and 1.6 and 5 feet in Grove Pond consistent with the areal distribution reported in the 1999 study. Hydraulic conductivity for each surface water body was varied through the model calibration process with a final conductance of 100 feet^2/day specified for the Nashua River, Willow Brook, Nonacoicus Brook and Cold Spring Brook. Conductance in Plow Shop Pond varied, as a function of sediment thickness, from 24 feet^2/day to 244 feet^2/day and in Grove Pond from 81 feet^2/day to 244 feet^2/day.

Transient surface water stages for the model were based on the long term stage elevation data reported for the Nashua River and short term data collected at several gauges in Nonacoicus Brook, Plow Shop Pond, Grove Pond, Willow Creek and Cold Spring Brook. The locations of the stream gauges are shown on Figure 5. Stream stages were derived for discrete points on the Nashua River, Nonacoicus Brook, Cold Spring Brook, and Willow Creek and stage was calculated assuming a linear gradient between points; the following sections describe the derivation of the quarterly average stages for these water bodies. The post-2015 quarterly average stage inputs were set to the average of the 2010 through 2015 quarterly stages.

Nashua River

Long term data was available for three USGS gaging stations located on the Nashua River within the vicinity of the model area. Two of the gauges, gauge 01094500 and 01094400, are located in Leominster and Fitchburg, approximately 7.0 and 9.2 miles upstream, respectively. A third gauge, 01096500, is located in East Pepperell approximately 7.9 miles downstream. The stream gauge SWEL-105, located on the Nashua River within the model domain, was measured for a limited period between 1998 and 1999. The respective drainage areas for the Fitchburg and Leominster gauges are 64 and 110 square miles, as compared to 434 square miles for the East Pepperell gauge. The drainage area above gauge SWEL-105 was estimated to be 305 square miles using the USGS StreamStats online tool. Based on a more comparable drainage area between the gauge in East Pepperell and SWEL-105, stage data recorded at the East Pepperell gauge was chosen as a basis for estimating long term average quarterly stage elevations for the Nashua River within the model domain for the period January 2006 to December 2015.

The stage elevation measured at gauge SWEL-105 on four dates in 1998 and 1999 were compared to the average daily Nashua River stage elevations at East Pepperell. The average difference between the SWEL-105 stage and the East Pepperell stage for this period was 33.1 feet. This value was added to the average quarterly stage elevations for East Pepperell to derive average quarterly stage elevations at SWEL-105 for model stress periods spanning the period 2006 to 2015. The stage gradient was derived from the 33.1 feet elevation difference and the estimated linear distance between SWEL-105 and the East Pepperell gauge. The gradient was used to estimate the quarterly stage elevations relative to SWEL-105 for Nashua River boundary condition grid blocks across the model domain (Figure 6).

Nonacoicus Brook

The Nashua River stage at the confluence with Nonacoicus Brook was estimated, using a linear gradient, to be 2.06 feet below the stage at gauge SWEL-105. Based on historical stage elevation data from gaging locations SWEL-107, SWEL-108, SWEL-109, SWEL-110, SWEL- 111, and SWEL-112 monitored from 1998 to 2001 and more recent data from SHMSG-01G, SHMSG-02G, and SHMSG-03G, monitored from 2013 to 2014, an average stage differential was estimated for discrete points along Nonacoicus Brook. The stage differential is the height in feet relative to the Nonacoicus Brook stage at the confluence with Nashua River for upgradient points along Nonacoicus Brook as summarized below:

Reference Points along Nonacoicus Brook	**Stage Differential above the Nashua River confluence (feet)**
Confluence with Willow Creek	2.2
Beaver Dam Bottom	4.2
Beaver Dam Top	6.2
SWEL-111	6.3
Eastern Edge of Reach 5	7.7
SWEL-108	9.4
SWEL-107	10.4

A two-foot stage drop across the beaver dam was incorporated into the Nonacoicus Brook boundary conditions to simulate the impact on localized groundwater flow in the vicinity of the dam. Review of aerial photos indicates that the dam has likely been in place since at least 2006 and its presence was confirmed during a 2015 site walk. The quarterly stage elevations for Nonacoicus Brook boundary condition grid blocks were derived by adding their respective stage differentials to the quarterly average Nashua River stage elevations at the confluence with Nonacoicus Brook. The stage for each grid block between the points was estimated assuming a linear gradient.

Willow Brook

Willow Brook is located to the west of SHL and flows in a northerly direction through AOC 69W to drain into Nonacoicus Brook. Stage elevation records for the Brook are limited to four measurements at gauge SWEL-16 recorded between 2005 and 2007. The stage differential between the average stage at gauge SWEL-16 and the average quarterly stage for Nonacoicus Brook at Willow Brook was estimated at 14.4 feet. The quarterly average stage elevations for SWEL-16 were derived by adding the stage differential to the quarterly average stage for Nonacoicus Brook at the confluence with Willow Brook. Review of aerial photographs shows a storm water basin with standing water in the area at the most upstream point of Willow Brook

within the model. The stream stage at this point was set to 242 feet which is one foot below the approximate ground surface elevations in the area.

Plow Shop Pond

The Plow Shop Pond (PSP) stage has been historically monitored at six locations including SWEL-104, SWEL-106, Staff 1, Staff 2, SWEL-PSP and PSP-01. For the simulation period, a datalogger installed at Staff 1 located within Red Cove on the western side of the pond provided continuous stage data between August 2006 and September 2009. Manual measurements were taken at variable time intervals at Staff 1 during the datalogger operation and subsequent to the removal of the datalogger, manual measurements were collected on a semiannual to annual basis until 2013 (see Figure 7). Quarterly average stage elevations for PSP were derived as the quarterly average of the stage recorded by the datalogger. For the time period with no datalogger data available, the quarterly stage elevations were set equal to the average of 2006 to 2009 datalogger quarterly elevations for the respective quarters to simulate seasonal stage variations (Figure 7). These projected PSP stage elevations are generally within 0.2 feet of the manual measurements at Staff 1 for their respective quarters in the 2009 to 2013 time period (see Figure 7).

Grove Pond

Grove Pond is connected to and drains into PSP via a short culvert located under a railroad bridge between the two ponds. Three gaging locations were historically established at Grove Pond: SG-GP, SWEL-05 and SWEL-GRP. However, the available stage records are limited to two measurements recorded in 1992 and four measurements from 1993. Three out of the four 1993 stage measurements were recorded on the same dates as measurements from SWEL-PSP in Plow Shop Pond. On these dates, the Grove Pond stage was 0.5 to 0.8 feet above the Plow Shop Pond stage. The Grove Shop Pond quarterly stage elevations were derived by adding 0.5 feet to the Plow Shop Pond stage elevations. The stage elevations for the culvert connecting the two ponds were set using a linear gradient between the stages of the ponds.

Cold Spring Brook

The stage of the wetland adjacent to Cold Spring Brook in AOC 57 has been monitored at gaging locations SG-01, SG-02 and SG-03. Between 2006 and 2015, the stage was measured on a semiannual basis from 2006 and 2008 and annually between 2009 and 2014 with the exception of 2010 for which no records are available. For the quarters with available data, the stage elevation in the wetlands was estimated as the average of the three gauges and as the average of all available data for quarters with no stage measurements (Figure 8). The stage elevation in the brook at AOC 57 was set to 0.5 feet below the stage of the wetland assuming drainage towards Cold Spring Brook. Quarterly stage elevations upstream and downstream from AOC 57 were calculated using an estimated gradient derived from the stage elevation difference between AOC

57 and Grove Pond. This stage gradient varies between 0.0005 to 0.0009, depending on the stage differences between Cold Spring Brook at AOC 57 and Grove Pond.

PUMPING WELLS

Municipal Supply Wells

Several public water supply wells within the model domain were in operation during the modeling simulation period. These include:

- Grove Pond Well 1 (and Replacement Well 6);
- Grove Pond Well 2 (and Replacement Well 7);
- MacPherson Well;
- Grove Pond Well; and
- NSA Well at Grove Pond.

The Public Water System Annual Statistical Reports submitted to the Massachusetts Department of Environmental Protection (MassDEP) were obtained for the years 2006 through 2014. The flow rate for each well over the ten-year reporting period is illustrated on Figure 9. The Grove Pond Well only operated for 9 quarters starting in January 2006 and has been inactive since March 2008. Additionally, Grove Pond Well 1 and Grove Pond Well 2 were replaced with Well 6 and Well 7, and NSA Well at Grove Pond went into operation in June 2014. The pumping data, reported in total gallons per month, were converted to quarterly average pumping rates by adding the total volume pumped for each well during the three months within a given quarter and dividing by the total time in the quarter. The annual reports for 2015 were not available at the time of the analyses and as such, the pumping rates were projected into 2015 based on data from 2014. For Grove Pond Wells 6 and 7 and the NSA Well, the average 3rd and 4th Quarter 2014 pumping rates were used for all quarters in 2015. For the model simulations, the MacPherson Well pumping rates for 2014 were replicated in 2015 to provide realistic seasonal pumping rate variations. Post 2015 pumping rates were specified in the model for each stress period using the pumping rate from the 4th Quarter of 2015 for each well.

ATP Extraction Wells

The average effective monthly flow rates reported for the period from March 2006 through December 2015 were analyzed to derive representative pumping rates for extraction wells EW-01 and EW-04 to use in the model simulations. Prior to the ATP system upgrade completed in 2014, the pumping rates were reported as the total pumping rate for both extraction wells and were reported to be distributed evenly between the wells. In January 2015, flow meters were installed on each extraction well discharge line and individual flow rates were reported for EW-01 and EW-04. The data indicate that generally the flow rate is distributed evenly between the wells. Consequently, model specified flow rates for EW-01 and EW-04 assume the rate was distributed equally between the two wells for the period 2006 to 2025. The average quarterly

effective pumping rates were calculated using the total volume pumped for each well during the quarter and dividing by the total time in the quarter. Total monthly pumping is included in Table 2. These data have been previously reported in SHL Annual Reports. Supplemental model analysis in which two simulations were conducted using the 2013 groundwater model (SHL200T2) to compare the model predicted capture using average online pumping rates with a complex configuration of pump-on and pump-off cycles that replicate actual system operation were included in the 2014 Annual Report (M2S Joint Venture, 2015). The results of these two simulations indicate that the two capture zones compare favorably. Therefore, the approach used in the current model revision which specifies effective (average) pumping rates is a reasonable estimate of average conditions and capture by the extraction wells. The post-2015 pumping rates were set to the average of the last three quarters of 2015.

A system shut down test of the ATP conducted in February 2008 (ECC, 2008) required breaking the first quarter of 2008 into four separate stress periods in order to simulate the effects of the test. The extraction wells were shut down for 5 days on February 20 and restarted on February 26 at a pumping rate of 50 gpm for a period of 8 days. The pumping rates for the first and last stress periods within this quarter were set to the average effective quarterly pumping rates reported for the quarter.

HYDRAULIC CONDUCTIVITY

Hydraulic conductivity data for site wells is compiled in Table 3. The data were analyzed to evaluate trends with site lithology (e.g., brown sand vs. grey sand) as well as depth (i.e., shallow vs. deep). Boring logs were reviewed to evaluate lithology. For several borings where no boring log or sample description was available, the lithologic descriptions from nearby locations with available data were used. Additionally, the tested wells were classified as shallow or deep. The shallow classification was based on the proximity of the well screens to the water table. The deep classification was assigned to deeper wells. A total of six wells were excluded from the statistical analysis, three based on being partially screened in till (EPA-PZ-2012-1B, SHM-10-07, SHM-13-05) and three with high hydraulic conductivity values (SHL-13, SHL-17 and SHM-96-5C) considered to be outliers. The distribution of hydraulic conductivity in wells across the Site by lithology is mapped for the shallow and the deep wells on Figures 10 and 11, respectively.

The summary statistics indicate that measured hydraulic conductivity in the overburden in the vicinity of the landfill is within the range of 1 to 87 feet/day. Based on the analysis, the hydraulic conductivities measured in the gray sand were 20 percent higher than those in the brown sand and hydraulic conductivities measured in the shallow wells were 13 percent higher than those in deep wells. These differences, which are within the margin of accuracy for hydraulic conductivity testing results, were considered in the calibration process. Ultimately the bulk hydraulic conductivity of the heterogeneous mix of gray and brown sand was simulated with a uniform value for all three layers representing the overburden sands (Layers 1, 2, and 3).

Additionally, hydraulic conductivity data were obtained for other areas of study (AOC 69, AOC 32/43A, and AOC 57) within the model domain (Figure 1). These data are provided in Table 4 and indicate values similar to the SHL area with the exception of AOC 32/43A, where relatively lower hydraulic conductivity values in the range of 0.4 to 19.9 feet/day were reported.

Hydraulic conductivities in the revised model were divided into 7 zones representing overburden sands, and into single zones for each layer representing till, shallow bedrock and deep bedrock (Layers 4, 5, and 6). The hydraulic conductivity distribution in the overburden, Layers 1, 2, and 3, are illustrated in Figure 12. The zonation was developed though the calibration process. Zones 1, 2, and 3 represent the overburden deposits in the vicinity of SHL and the NIA and extend to AOC 69W and AOC 57 where similar hydraulic conductivity values were reported. The areal coverage of Zones 1, 2, and 3 is the same but separate zones in Layers 1 through 3 were specified to evaluate differences in hydraulic conductivity with depth during the calibration process. Zones 5 and 6 represent areas of higher hydraulic conductivity related to sand and gravel deposits in the deeper bedrock valleys in the vicinity of the McPherson and Grove Pond Supply wells. Zones 4 and 10 represent zones of lower hydraulic conductivity in the vicinity of higher bedrock elevations. Zone 4, which extends towards AOC 32/43A where hydraulic conductivity testing indicated a zone of relatively lower hydraulic conductivity in the overburden, was specified separately to facilitate simulation of the groundwater divide observed at AOC 32/43A.

STORAGE AND POROSITY

The storage coefficient was specified as 0.005 in all layers except for the area near the landfill corresponding to overburden hydraulic conductivity Zones 1, 2, and 3 where the storage coefficient was specified as 0.0005. Specific yield was specified as 0.01 in all layers and porosity was specified as 0.3 in the unconsolidated deposits and 0.01 in the bedrock.

CALIBRATION

Model calibration was based primarily on hydraulic head data from the period 2006 to 2015. Flux to Red Cove and water level response to the ATP system shutdown test in 2008 was also evaluated as part of the calibration process.

Water Levels

Calibration of the first sub-model (SHL300T1) was based on head data from the period 2006 to 2012. A total of 148 target wells and 1801 water level data points were used to evaluate the fit of observed water levels to simulated water levels over the approximately 12 year period from 2006 to the third quarter of 2012. Calibration of the post-barrier wall sub-model (SHL300T2) was assessed with head data from the third quarter 2012 to 2015 with a total of 168 target wells and 855 water level data points. The target wells are widely distributed within the model domain and include the following areas:

Area	Group	Weight
Shepley's Hill Landfill and NIA	1	1
Shepley's Hill	2	0.2
AOC 32/43A	3	0.4
AOC 57	4	0.4
South of Grove Pond	5	0.6
AOC 69	6	1

The target wells were grouped by area and a weighting factor was applied for each group. Targets in the primary area of interest, SHL and the NIA, were given a weight of 1.

Shepley's Hill has a steep water table slope and extreme water level fluctuations due to the steep surface topography and the nature of bedrock fracture flow. The conditions in this area were difficult to simulate resulting in large localized deviations (residuals) of the hydraulic heads predicted by the model vs. the measured head data. To reduce the degree to which the residuals in this area drive the calibration process, these targets were given a weight of 0.2.

In the vicinity of AOC32/43A, located at the southern end of Shepley's Hill, observed hydrogeologic conditions also proved challenging to simulate. This area is characterized by thin overburden and relatively high bedrock elevations that generally correspond to an observed groundwater divide trending northwest to south east through the middle of the Site. In addition, a bedrock outcrop with observed fractures is located southeast of the Site. To reduce the effect of these residuals to drive the calibration process, these targets were given a weight of 0.4.

Target wells south of Grove Pond in the vicinity of the pumping wells were given a weighting factor of 0.6 and wells at AOC 69 were given a weight of 1.

Model calibration was assessed by comparing weighted, model-predicted water levels to measured water levels referred to as residuals. Plots of weighted and non-weighted target water levels versus simulated water levels for the two sub models are provided in Figures 13 and 14. The data are generally well distributed along the diagonal indicating a reasonable match to observed water level data across the model area. The plots of the non-weighted data indicate that simulated heads in the vicinity of AOC 32/43 and Shepley's Hill were below observed heads. Summary statistics for the weighted and non-weighted residuals from sub-models SHL300T1 and SHL300T2 are provided in Table 5. The scaled, weighted residual standard deviations for SHL300T1 and SHL300T2 are 2.7% and 2.4%, respectively. These statistics indicate differences between simulated and observed data across the model area and are within the recommended range of 10% for a well calibrated model. The scaled, non-weighted residual standard deviations of 5.7% for SHL300T1 and 4.3% for SHL300T2 were also below the recommended limit of 10%.

Surface Water Flux

In addition to head data, available surface water flux data was evaluated for comparison to model simulated flux. Flux data is available for two locations, Red Cove and Grove Pond. The data for Red Cove was collected in April, August and November of 2007 (Ford, 2008). In the model, Red Cove was specified as a separate reach (Reach 11) for comparison to measured data. Based on an evaluation of the data and an assumed discharge area of 23,000 square feet, the discharge of groundwater to the cove in April and November was reported to be 2000 cfd and 840 cfd, respectively. These data compared reasonably well (within a comparable order of magnitude) to estimates derived from flow net analysis with reported values of 4300 cfd and 1500 cfd in April and November, respectively. In general, flux to the cove in November was approximately 35 to 40 percent of the flux observed in April.

In 2000, four seepage meters were deployed in Grove Pond within 100 feet of the shore immediately north of the production wells and measured as part of an investigation related to the Grove Pond water supply wells (Gannett Fleming, 2002). Measured fluxes ranged from 0 to 0.34 feet/day downward under pumping conditions. The seepage data was reported to be "regarded as highly uncertain" but infiltration was conservatively estimated to be "less than 1% of typical well discharge". Consequently, these data were not used in a quantitative comparison for calibration.

Simulated fluxes in Reach 11(Red Cove) for stress periods 6 and 7 (SHL300T1), which correspond to periods of measurement in April and August 2007, were 1112 cfd and 1046 cfd. The observed fluxes during this time period were reported to be up to 2000 cfd. Normalizing the observed flux to account for the reduced area defined by Reach 11 (16,000 sf), rather than the 23,000 sf assumed to calculate the 2007 discharge, results in a flux of approximately 1400 cfd which is comparable to the model simulated flux. In stress period 8, the simulated flux was 193 cfd compared to 840 cfd in November 2007. Normalizing the observed flux to account for the reduced area defined by Reach 11, results in a flux of approximately 584 cfd which is more comparable to the model simulated flux. It should be noted that the average stage for the third quarter 2007 specified in the model is relatively high compared to the stage during the November 2007 field measurement (see Figure 7). Consequently, the long term quarterly average flux for this stress period would be less than the short term observation in November 2007.

Pumping

Drawdown data recorded during the 2008 shutdown test were evaluated to compare changes in water levels at the end of the recovery and pumping periods. In the 2013 model analysis, drawdown was adjusted to account for increasing and decreasing trends observed during the test (Sovereign, 2013). Consistent with the 2013 evaluation, drawdown simulated in the current model was compared to the corrected drawdown reported in the 2013 analysis. The differences between corrected observed drawdown and simulated drawdown indicate that the model simulated drawdowns generally compare well to observed drawdowns (Table 6).

MODEL ANALYSIS

The calibrated post-barrier wall sub-model (SHL300T2) was used to evaluate capture of the ATP through particle track analysis using MODPATH. To predict the extent of the capture zone at 2015 pumping rates, particles were released in a ring around each recovery well and particles were tracked in reverse starting at the end of the SHL300T2 simulation. The results of the analysis indicate that at the current 2015 pumping rates, the zone of capture extends across the full width of the landfill (see Figure 15).

An additional analysis using forward particle tracking was conducted to evaluate flow paths from site monitoring well locations where arsenic exceedances have been observed. A list of the wells is included in Table 7. The particles were released at the beginning of the simulation in 2012. The results of the analysis indicate that particles released in landfill monitoring wells located upgradient from the ATP are captured (see Figure 16). The flow paths from monitoring wells downgradient of the ATP in the NIA migrate in a northwesterly direction towards Nonacoicus Brook. It should be noted that the flow paths follow a more westerly direction compared to the flow paths predicted by the 2013 model (Sovereign, 2015). In addition, some particles do not discharge directly to Nonacoicus Brook but migrate beneath the brook before discharging to the brook further downstream. This is likely due to the localized hydraulic influence of the increased stage level at the beaver dam in Nonacoicus Brook. This is consistent with the vertical gradients observed in SHM-13-14S and SHM-13-14D which indicates the direction of flow fluctuates and is not consistently upward.

At the request of EPA, additional forward particle track analysis was implemented along a transect running west-to-east across the landfill through monitoring locations SHM-11-06 and SHP-05-44. The analysis included the release of evenly spaced particles along the transect in Layers 1 through 5. Particle start time was specified at 913 days corresponding to the beginning of 2015 in SHL300T2 to simulate the current operation of the groundwater capture system since upgrades were completed in 2014. The results of the analysis are illustrated in Figure 17. The analysis indicates that most particles released across the section are captured by the ATP with the exception of the outermost western edge. The particles at the western edge originate at shallow depths in the overburden and bedrock and migrate towards SHL-23 and then northwesterly towards Nonacoicus Brook. Arsenic concentrations in monitoring wells along this flow path (SHL-23, EPA-PZ2012-7A, SHM-07-03, SHM-10-01) are below the cleanup level of 10 µg/L, indicating that the shallow area on the western edge of the landfill is not a significant source of arsenic.

SUMMARY

The revised model is a reasonable representation of the complex hydrogeologic conditions present at the Site. Through the specification of measured temporal boundary conditions and calibration of simulated groundwater elevations to measured targets over the time period 2006 to 2015, the model simulates average quarterly hydraulic conditions over the model period and provides a useful tool to evaluate groundwater flow at the Site.

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Tables

Table 1a - Stress Periods for Model 1 (SHL300T1)

Stress Period	Start Date	Number of Days	Cumulative Number of Days
1	12/31/2005	90	90
2	4/1/2006	91	181
3	7/1/2006	92	273
4	10/1/2006	92	365
5	12/31/2006	90	455
6	4/1/2007	91	546
7	7/1/2007	92	638
8	10/1/2007	92	730
9	12/31/2007	51	781
10	2/21/2008	5	786
11	2/26/2008	8	794
12	3/5/2008	27	821
13	4/1/2008	91	912
14	7/1/2008	92	1004
15	10/1/2008	92	1096
16	12/31/2008	90	1186
17	4/1/2009	91	1277
18	7/1/2009	92	1369
19	10/1/2009	92	1461
20	12/31/2009	90	1551
21	4/1/2010	91	1642
22	7/1/2010	92	1734
23	10/1/2010	92	1826
24	12/31/2010	90	1916
25	4/1/2011	91	2007
26	7/1/2011	92	2099
27	10/1/2011	92	2191
28	12/31/2011	91	2282
29	4/1/2012	91	2373
30	7/1/2012	92	2465

Notes:

1. Stress periods 9 through 12 respresent the February 2008 Shutdown and Recovery Test.

Table 1b - Stress Periods for Model 2 (SHL300T2)

Stress Period	Start Date	Number of Days	Cumulative Number of Days
1	9/30/2012	92	92
2	12/31/2012	90	182
3	4/1/2013	91	273
4	7/1/2013	92	365
5	10/1/2013	92	457
6	12/31/2013	90	547
7	4/1/2014	91	638
8	7/1/2014	92	730
9	10/1/2014	92	822
10	12/31/2014	90	912
11	4/1/2015	91	1003
12	7/1/2015	92	1095
13	9/30/2015	92	1187
14	12/31/2015	91	1278
15	4/1/2016	91	1369
16	7/1/2016	92	1461
17	9/30/2016	92	1553
18	12/31/2016	90	1643
19	4/1/2017	91	1734
20	7/1/2017	92	1826
21	9/30/2017	92	1918
22	12/31/2017	90	2008
23	4/1/2018	91	2099
24	7/1/2018	92	2191
25	9/30/2018	92	2283
26	12/31/2018	90	2373
27	4/1/2019	91	2464
28	7/1/2019	92	2556
29	9/30/2019	92	2648
30	12/31/2019	91	2739
31	4/1/2020	91	2830
32	7/1/2020	92	2922
33	9/30/2020	92	3014
34	12/31/2020	90	3104
35	4/1/2021	91	3195
36	7/1/2021	92	3287
37	9/30/2021	92	3379
38	12/31/2021	90	3469
39	4/1/2022	91	3560
40	7/1/2022	92	3652
41	9/30/2022	92	3744
42	12/31/2022	90	3834
43	4/1/2023	91	3925
44	7/1/2023	92	4017
45	9/30/2023	92	4109
46	12/31/2023	91	4200
47	4/1/2024	91	4291
48	7/1/2024	92	4383
49	9/30/2024	92	4475
50	12/31/2024	90	4565
51	4/1/2025	91	4656
52	7/1/2025	92	4748
53	9/30/2025	92	4840

Notes:
1. Model 2 simulates the effects of the barrier wall.

Table 2 – Monthly ATP Discharge 2006 to 2015

Month	Discharge Flow (gallons)	Month	Discharge Flow (gallons)	Month	Discharge Flow (gallons)
startup 8&9/2005	213,900	Nov-10	1,869,600	Aug-15	2,454,900
Mar-06	555,800	Dec-10	1,833,600	Sep-15	2,530,300
Apr-06	833,600	Jan-11	1,907,600	Oct-15	2,577,600
May-06	941,700	Feb-11	1,766,400	Nov-15	2,522,000
Jun-06	979,000	Mar-11	1,413,900	Dec-15	2,399,400
Jul-06	646,600	Apr-11	1,834,200		
Aug-06	327,200	May-11	2,064,700		
Sep-06	453,500	Jun-11	1,872,000		
Oct-06	597,500	Jul-11	1,642,500		
Nov-06	562,500	Aug-11	1,904,500		
Dec-06	606,800	Sep-11	1,825,500		
Jan-07	739,600	Oct-11	1,438,700		
Feb-07	0	Nov-11	1,907,200		
Mar-07	672,400	Dec-11	1,843,300		
Apr-07	854,000	Jan-12	1,814,900		
May-07	974,700	Feb-12	1,641,400		
Jun-07	942,200	Mar-12	1,530,400		
Jul-07	970,500	Apr-12	1,512,300		
Aug-07	1,563,400	May-12	1,374,700		
Sep-07	1,809,100	Jun-12	1,938,100		
Oct-07	1,616,000	Jul-12	1,557,500		
Nov-07	1,436,200	Aug-12	1,595,800		
Dec-07	1,629,200	Sep-12	1,807,400		
Jan-08	1,589,100	Oct-12	1,729,100		
Feb-08	1,418,100	Nov-12	1,979,100		
Mar-08	1,596,600	Dec-12	1,915,900		
Apr-08	1,586,500	Jan-13	1,776,000		
May-08	1,616,300	Feb-13	1,310,700		
Jun-08	1,424,400	Mar-13	1,926,400		
Jul-08	1,591,800	Apr-13	2,055,600		
Aug-08	1,101,700	May-13	1,492,100		
Sep-08	1,652,800	Jun-13	2,055,700		
Oct-08	1,238,900	Jul-13	2,023,050		
Nov-08	1,649,500	Aug-13	2,185,000		
Dec-08	1,521,400	Sep-13	1,679,300		
Jan-09	1,602,500	Oct-13	1,697,700		
Feb-09	1,625,700	Nov-13	1,865,600		
Mar-09	909,400	Dec-13	2,054,300		
Apr-09	1,292,500	Jan-14	1,905,500		
May-09	1,631,000	Feb-14	1,773,000		
Jun-09	1,793,400	Mar-14	2,108,500		
Jul-09	1,830,700	Apr-14	1,696,300		
Aug-09	1,935,700	May-14	2,124,000		
Sep-09	1,879,100	Jun-14	1,943,600		
Oct-09	1,832,600	Jul-14	2,019,100		
Nov-09	1,909,100	Aug-14	2,182,900		
Dec-09	1,773,100	Sep-14	1,871,900		
Jan-10	2,030,000	Oct-14	1,646,600		
Feb-10	1,695,500	Nov-14	1,980,900		
Mar-10	1,922,900	Dec-14	1,948,100		
Apr-10	1,986,900	Jan-15	1,600,100		
May-10	1,997,200	Feb-15	1,779,800		
Jun-10	1,882,400	Mar-15	1,992,100		
Jul-10	1,606,700	Apr-15	2,198,900		
Aug-10	1,552,700	May-15	2,118,300		
Sep-10	1,207,200	Jun-15	2,071,000		
Oct-10	1,768,600	Jul-15	2,037,000		

Cummulative Total	192,700,950

Table 3 - Summary of Hydraulic Conductivity (K) Estimates

Well	Screened in shallow or deep overburden	Screened in brown or gray sand	Individual K Estimates[11]		Average K (feet/day)	Data Source
			K (feet/day)	K (feet/day)		
B202-1	shallow	gray	33	21	77	Sovereign, 2013 [CDM, 1993]
			176			
B202-2	shallow	brown	2		23	Sovereign, 2013 [CDM, 1993]
			43			
B202-3	shallow	brown	17	1	55	Sovereign, 2013 [CDM, 1993]
			147			
EW-01	deep	gray		27.4	27	Sovereign, 2013 [CH2M Hill 2006]
EW-04	deep	gray		21.2	49	Sovereign, 2013 [CH2M Hill 2006]
			249.52	69.3		
			203.88	56.6		
SHL-5	shallow	brown	37		37	Sovereign, 2013 [ENSR, 1993]
SHL-7	shallow	brown	20		20	Sovereign, 2013 [ENSR, 1993]
SHL-8D	deep	gray	7		7	Sovereign, 2013 [ENSR, 1993]
SHL-8S	deep	gray	252	56	43	Sovereign, 2013 [ENSR, 1993; SWETS, 1998]
			288	64		
				9		
SHL-9	shallow	brown	617	68.6	47	Sovereign, 2013 [ENSR, 1993; CH2M Hill 2006]
			409.6	45.5		
			499.2	55.5		
				18		
SHL-10	shallow	brown	15		15	Sovereign, 2013 [ENSR, 1993]
SHL-11	shallow	gray	0.7		1	Sovereign, 2013 [ENSR, 1993]
SHL-12	shallow	gray	31		31	Sovereign, 2013 [ENSR, 1993]
SHL-13	shallow	brown	1728	288	194	Sovereign, 2013 [ENSR, 1993; SWETS, 1998]
			1728	288		
				7		
SHL-15	shallow	gray	43		43	Sovereign, 2013 [ENSR, 1993]
SHL-17	shallow	gray	130		130	Sovereign, 2013 [ENSR, 1993]
SHL-18	shallow	gray	71		71	Sovereign, 2013 [ENSR, 1993]
SHL-20	shallow	gray	82		82	Sovereign, 2013 [ENSR, 1993]
SHL-21	shallow	gray	26		26	Sovereign, 2013 [ENSR, 1993]
SHL-23	shallow	brown	576	64	64	Sovereign, 2013 [SWETS, 1998]
SHP-05-45A	shallow	brown	146.2	8.1	7	Sovereign, 2013 [CH2M Hill, 2006]
			110.4	6.1		
			123.2	6.8		
SHP-05-45B	deep	gray	467	51.9	42	Sovereign, 2013 [CH2M Hill, 2006]
			446	49.6		
			214.5	23.8		
SHP-05-46A	shallow	brown	164.8	9.2	9	Sovereign, 2013 [CH2M Hill, 2006]
			1896.4	105.4		
			144	8		
SHP-05-46B	deep	gray	335.6	37.3	69	Sovereign, 2013 [CH2M Hill, 2006]
			948.2	105.4		
			897.3	99.7		
SHM-96-5B	deep	gray	230	26	38	Sovereign, 2013 [SWETS, 1998; CH2M Hill, 2006]
			2559	29		
			560.7	59		
			750.5	83.4		
SHM-96-5C	deep	gray	1614	179.3	167	Sovereign, 2013 [CH2M Hill, 2006]
			1581	175.7		
			1327	147.4		
SHM-96-22B	deep	gray	403	45	74	Sovereign, 2013 [SWETS, 1998; CH2M Hill, 2006]
			403	45		
			795.8	88.4		
			1058	117.6		
RSK1-7	Shallow	brown	67		67	Sovereign, 2013 [Ford, et. al., 2008]
RSK8-12	Shallow	brown	83		83	Sovereign, 2013 [Ford, et. al., 2008]
RSK13-15	Shallow	brown	35		35	Sovereign, 2013 [Ford, et. al., 2008]
RSK16-19	Shallow	brown	66		66	Sovereign, 2013 [Ford, et. al., 2008]
RSK37-41 (shlw)	Shallow	brown	75		75	Sovereign, 2013 [Ford, et. al., 2008]

Table 3 - Summary of Hydraulic Conductivity (K) Estimates

Well	Screened in shallow or deep overburden	Screened in brown or gray sand	Individual K Estimates[11]		Average K (feet/day)	Data Source
			K (feet/day)	K (feet/day)		
RSK37-41 (deep)	Shallow	brown	4.4		4.4	Sovereign, 2013 [Ford, et. al., 2008]
EPA-PZ-2012-1B	deep	gray	7		0	U.S. EPA, 2015
EPA-PZ-2012-5B	deep	gray	15		15	U.S. EPA, 2015
EPA-PZ-2012-6B	deep	gray	62		62	U.S. EPA, 2015
EPA-PZ-2012-7A	shallow	brown	23		23	U.S. EPA, 2015
EPA-PZ-2012-7B	deep	gray	87		87	U.S. EPA, 2015
SHM-05-40X	shallow	brown	30		30	U.S. EPA, 2015
SHM-10-07	deep	gray	4		4	U.S. EPA, 2015
SHM-10-11	deep	brown	14		14	U.S. EPA, 2015
SHM-10-12	deep	gray	49		49	U.S. EPA, 2015
SHM-10-13	deep	gray	21		21	U.S. EPA, 2015
SHM-10-14	deep	gray	6		6	U.S. EPA, 2015
SHM-10-15	deep	brown	12		12	U.S. EPA, 2015
SHM-10-16	deep	gray	54		54	U.S. EPA, 2015
SHM-13-04	shallow	brown	77		77	U.S. EPA, 2015
SHM-13-05	deep	brown	5		5	U.S. EPA, 2015
SHM-93-01A	shallow	brown	3.7	11.3	11.1	U.S. Army, 1993
			4.0	25.5		
SHM-93-18B	deep	brown	1.5	11.3	6.4	U.S. Army, 1993
			1.5	11.3		
SHM-93-24A	shallow	brown	45.4	56.7	65.2	U.S. Army, 1993
			45.4	113.4		

Notes:

1. U.S. EPA, 2015. Fort Devens Site, Shepley's Hill Landfill, Devens, MA (16-R01-001), Slug Tests for Selected Wells at Shepley's Hill Landfill, Memorandum, November.
2. Sovereign, 2013. DRAFT Shepley's Hill Landfill Groundwater Model Revision, Former Fort Devens Army Installation, Devens, MA, October 2013, Attachment 1.
3. Ford, R.G., Scheckel, K.G., Acree, S., Ross, R., Lien, B., Luxton, T., and P. Clark, 2008. Arsenic Fate, Transport and Stability Study, Groundwater, Surface Water, soil and Sediment Investigation, Fort Devens Superfund Site, Devens, Massachusetts. Prepared by U.S. EPA National Risk Management Research Laboratory. September 30.
4. CH2M Hill, 2006. Start-Up Extraction Test-Shepley's Hill Groundwater Extraction, Treatment, and Discharge System,Memorandum, BRAC Clean-Up Team(BCT), February.
5. SWETS, 1998. Groundwater Pumping Test Report, Shepley's Hill Landfill, Devens, Massachusetts. Prepared by Stone & Webster Environmental Technology & Services for U.S. Army Corps of Engineers. January
6. U.S. Army, 1993. Final Remedial Investigation Addendum Report, Data Item A009 Table C-1, Volume II of IV, U.S Army Environmental Center, Aberdeen Proving Ground, Maryland, December.
7. ENSR, 1993. Conceptual Zone II Delineations for Fort Devens, Massachusetts. Prepared by ENSR Consulting and Engineering for Fort Devens Environmental Management Office. Document Number 6583-081-200. March
8. CDM, 1993. Town of Ayer, Massachusetts, Grove Pond Wells Hydrogeologic Investigation and Zone II Aquifer Mapping. Prepared by Camp Dresser & McKee Inc. Janua
9. Measurements shaded in gray were reported to be "anomalous" (Sovereign, 2013).
10. Blank cells indicated that data is not available for a given parameter.
11. Multiple columns report results from different pumping tests, slug tests or different method of analysis.

Summary Statistics:

	K (feet/day)				
	Average	brown	gray	deep	shallow
n:	45	23	22	18	27
mean:	40	37	44	38	42
median:	38	30	43	40	37
stdev:	26	27	26	25	27
std err:	1	1	1	1	1
min:	1	4	1	6	1
max:	87	83	87	87	83
% diff in mean:			20.4%		12.9%

Notes:

1. These statistics exclude measurements shaded gray which were reported to be anomalous (Sovereign, 2013).
2. Wells highlighed green have been excluded from the statistics as they are partially screened in Till.
3. Hydraulic conductivity estimates from wells SHL-13, SHL-17, and SHM-96-5C were classified as outliers and excluded from the statistics.

Table 4 - Hydraulic Conductivity Data from AOCs in the Model Domain

Area of Concern	Well ID	Casing Diameter (inches)	Screened Interval (ft bgs)	Bouwer and Rice (ft/day)	Hvorslev (ft/day)	Average (ft/day)	Screened Geology
	Overburden						
AOC-69	69W-94-09	2	3.5 - 13.5	3.7	0.26	2.0	Poorly Graded Sand/Silty Sand
	69W-94-10	2	4.5 - 14.5	59.0	4.26	31.7	Well Graded Sand
	69W-94-11	4	4.5 - 14.5	44.6	5.04	24.8	Poorly Graded Sand/Silty Sand
	69W-94-12	2	3 - 13	15.8	4.52	10.2	Well Graded Sand
	69W-94-13	4	3 - 13	73.4	10.66	42.0	Well Graded Sand
	69W-94-14	2	3 - 13	83.5	3.92	43.7	Well Graded Sand
	ZWM-95-15X	4	3 - 13	83.5	8.74	46.1	Well Graded Sand/Well Graded Gravel
	ZWM-95-16X	4	6.3 - 16.3	27.4	2.81	15.1	Well Graded Sand/Poorly Graded Sand
	ZWM-95-17X	4	12.2 - 22.2	54.7	5.88	30.3	Well Graded Sand/Poorly Graded Sand
	ZWM-95-18X	4	3 - 13	77.8	6.88	42.3	Well Graded Sand/Silty Sand
	ZWM-95-19X	2	5.8 - 15.8	12.2	2.10	7.1	Poorly Graded Sand/Well Graded Sand/Silty Sand
	ZWM-95-20X	2	2.8 - 12.8	12.5	2.07	7.3	Poorly Graded Sand
	ZWM-95-21X	2	4.8 - 14.8	12.7	2.04	7.4	Poorly Graded Sand/Well Graded Sand
AOC-57	57M-95-01X	4	19 - 29	346	35.9	190.7	Poorly Graded Sand
	57M-95-02X	4	14 - 24	259	23.2	141.2	Well Graded Sand/Silty Sand
	57M-95-03X	4	7 - 17	16	1.5	8.7	Well Graded Sand/Silty Sand
	57M-95-04A	4	2.4 - 12.4	82	8.2	45.1	Poorly Graded Sand
	57M-95-04B	4	18.5 - 28.5	33	8.3	20.7	Poorly Graded Sand
	57M-95-05X	4	10 - 20	144	14.5	79.3	Well Graded Sand/Silty Sand
	57M-95-06X	4	11.9 - 21.9	24	2.4	13.4	Poorly Graded Sand
	57M-95-07X	4	3 - 13	96	10.1	53.3	Well Graded Sand/Silty Sand
	57M-95-08A	4	3 - 13	1	0.1	0.7	Well Graded Sand/Silty Sand
	57M-95-08B	4	18 - 28	11	2.9	6.8	Silty Sand
	57M-96-09X	2	12.8 - 22.8	12	0.6	6.2	Poorly Graded Sand
	57M-96-10X	2	3 - 13	2	0.1	1.0	Silty Sand
	57M-96-11X	2	2 - 12	3	0.2	1.6	Silty Sand
	57M-96-12X	2	2 - 12	4	0.2	2.0	Silty Sand
	57M-96-13X	2	2 - 12	4	0.2	2.2	Silty Sand
AOC-43	43MA93-04X	4	22 - 32	10.9	N/A	10.9	Poorly sorted SAND
	43MA93-05X	4	69.91 - 79.91	9.1 - 9.6	N/A	9.3	Not available
	43MA93-07X	4	25 - 35	15.4	N/A	15.4	Poorly graded SANDS, with little fines, more Gravel and Sand
	43MA93-08X	4	24 - 34	0.2	N/A	0.2	Poorly graded SANDS, with Silt and Gravel
	POL 1	2	17 - 27	0.7 - 0.9	N/A	0.8	Fine silty SAND
	POL 3	2	21 - 31	1.4 - 2.1	N/A	1.7	Poorly sorted SAND with Silt
AOC-32	32M-92-01X	4	13.7	0.4	N/A	0.4	Silty SAND/Till
	32M-92-02X	4	18.5	18.9	N/A	18.9	Silty SAND
	32M-92-07X	4	13.7	0.4	N/A	0.4	Silty SAND/Till
	32M9206X	2	15	0.9	N/A	0.9	Bedrock, Granodioritic Gneiss

Notes:

1. Only top of screen depth was provided for AOC-32 wells.

1. N/A = Not Available. AOC-32 and AOC-43 slug test data were analyzed using the Bouwer and Rice, 1976 method only.

Table 5 - Weighted Residual Statistics for SHL300T1 and SL300T2

SHL300T1	Weighted	Non-Weighted
Residual Mean	-0.39	-0.24
Absolute Residual Mean	1.37	2.12
Residual Std. Deviation	1.77	3.77
Sum of Squares	5921	25650
RMS Error	1.81	3.77
Min. Residual	-7.20	-13.40
Max. Residual	6.79	30.41
Number of Observations	1801	1801
Range in Observations	65.90	65.90
Scaled Residual Std. Deviation	0.02688	0.05715
Scaled Absolute Residual Mean	0.02086	0.03216
Scaled RMS Error	0.02752	0.05727
Scaled Residual Mean	-0.00586	-0.00361

SHL300T2	Weighted	Non-Weighted
Residual Mean	-0.25	-0.18
Absolute Residual Mean	1.23	1.66
Residual Std. Deviation	1.55	2.87
Sum of Squares	2106	7070
RMS Error	1.57	2.88
Min. Residual	-4.79	-10.55
Max. Residual	5.36	26.79
Number of Observations	855	855
Range in Observations	66.07	66.07
Scaled Residual Std. Deviation	0.0235	0.0434
Scaled Absolute Residual Mean	0.0187	0.0251
Scaled RMS Error	0.0238	0.0435
Scaled Residual Mean	-0.0038	-0.0028

Table 6 - Comaprison of Simulated and Observed Drawdown during the 2008 Shutdown Test

Name	Observed	Simulated	Corrected[1]	Residual
N1-P1	0.21	0.00	0	0.00
N1-P2	-0.13	0.00	0.13	0.13
N1-P3	-0.07	0.00	0.23	0.23
N2-P1	0.11	0.01	0	-0.01
N2-P2	0.08	0.00	0	0.00
N3-P1	0.31	0.01	0	-0.01
N3-P2	0.06	0.00	0	0.00
N5-P1	0.07	0.02	0	-0.02
N5-P2	0.16	-0.01	0	0.01
N6-P1	0.16	0.02	0	-0.02
N7-P1	0.19	0.04	0	-0.04
N7-P2	0.19	0.04	0	-0.04
SHL-10	-0.43	0.02	0.07	0.05
SHL-11	-0.06	0.00	0.13	0.13
SHL-13	-0.26	-0.02	0.09	0.11
SHL-15	-0.27	0.03	-0.01	-0.04
SHL-18	-0.32	0.02	0.05	0.03
SHL-19	-0.41	0.02	0.07	0.05
SHL-20	-0.07	0.02	0.13	0.11
SHL-21	-0.29	-0.12	-0.18	-0.06
SHL-22	-0.85	0.00	-0.55	-0.55
SHL-23	-0.57	-0.54	-0.6	-0.06
SHL-24	-0.13	0.03	0.13	0.10
SHL-3	-0.29	0.02	0.05	0.03
SHL-4	-0.05	0.01	0.23	0.22
SHL-5	0.05	-0.22	0	0.22
SHL-8D	-0.45	-0.06	-0.11	-0.05
SHL-8S	-0.39	-0.06	-0.07	-0.01
SHL-9	-0.80	-0.35	-0.22	0.13
SHM-05-40X	-0.50	-0.01	-0.21	-0.20
SHM-05-41A	-0.79	-0.21	-0.45	-0.24
SHM-05-41B	-0.83	-0.19	-0.45	-0.26
SHM-05-41C	-0.63	-0.05	-0.37	-0.32
SHM-93-10C	-0.26	0.03	0.09	0.06
SHM-93-18B	-0.30	0.02	0.05	0.03
SHM-93-22B	-0.78	0.01	-0.23	-0.24
SHM-93-22C	-0.78	0.07	-0.23	-0.30
SHM-96-5B	-0.78	-0.03	-0.45	-0.42
SHM-96-5C	-0.72	-0.25	-0.45	-0.20
SHM-99-31A	-0.06	-0.04	NR	NA
SHM-99-31B	-0.40	-0.03	NR	NA
SHM-99-31C	-0.41	-0.03	NR	NA
SHP-01-36X	-0.47	0.00	NR	NA
SHP-01-37X	0.04	0.00	0	0.00

Table 6 - Comaprison of Simulated and Observed Drawdown during the 2008 Shutdown Test

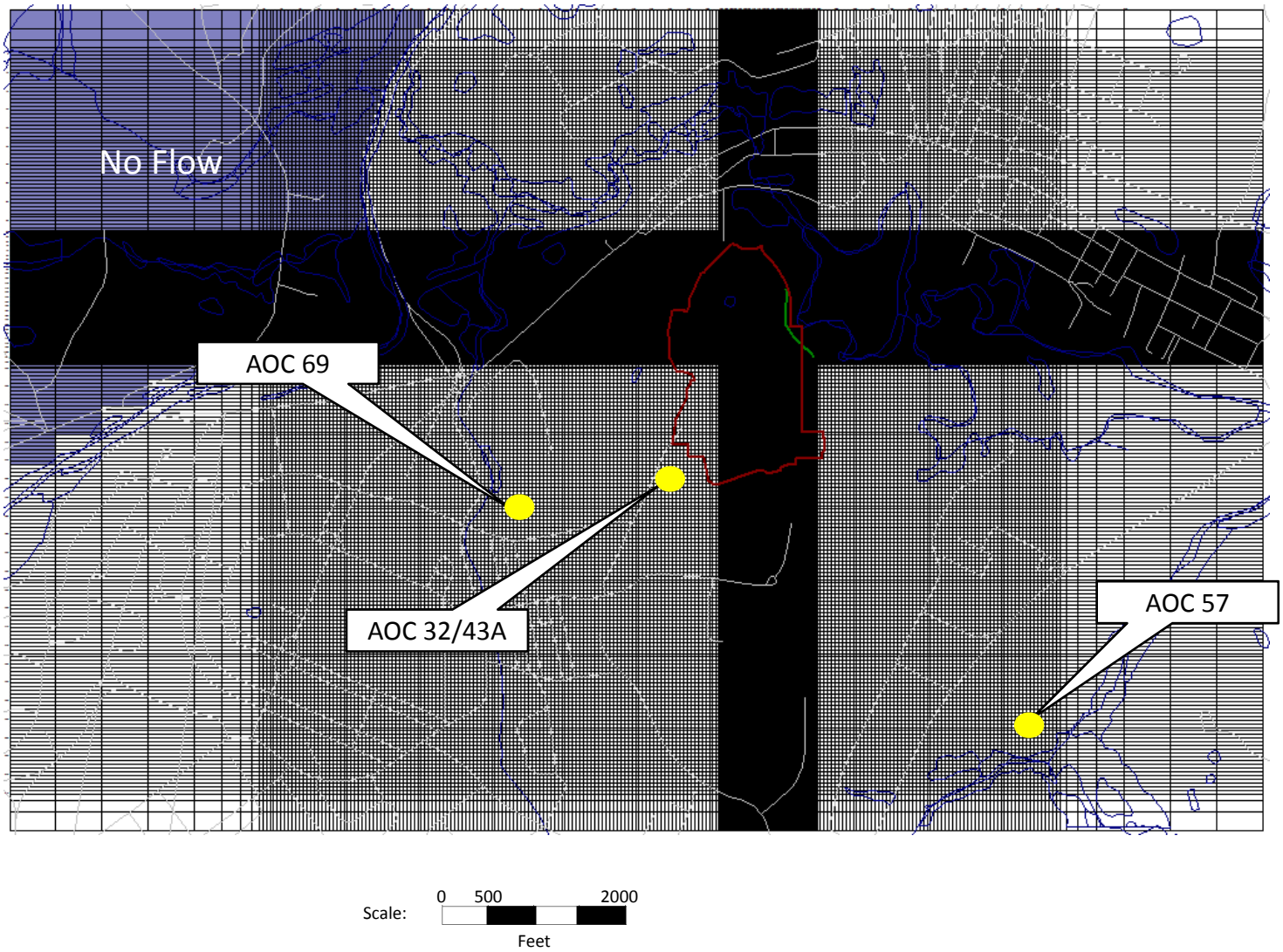
Name	Observed	Simulated	Corrected[1]	Residual
SHP-01-38A	0.14	0.01	0	-0.01
SHP-01-38B	0.10	0.01	0	-0.01
SHP-05-43	-0.22	-0.03	-0.14	-0.11
SHP-05-44	-0.11	-0.01	0	0.01
SHP-05-45A	-1.31	-0.57	-0.99	-0.42
SHP-05-45B	-1.34	-0.93	-1.01	-0.08
SHP-05-46A	-1.12	-0.49	-0.91	-0.42
SHP-05-46B	-1.12	-0.63	-0.81	-0.18
SHP-05-47A	0.00	-0.01	NR	NA
SHP-05-47B	-0.46	-0.01	NR	NA
SHP-05-48A	-0.39	-0.03	NR	NA
SHP-05-48B	-0.12	-0.03	NR	NA
SHP-05-49A	-0.09	0.00	NR	NA
SHP-05-49B	0.02	0.00	0	0.00
SHP-99-34A	-0.05	0.00	0.47	0.47
SHP-99-34B	-0.14	0.00	-0.49	-0.49
SHP-99-35X	0.12	0.00	0	0.00

1. Drawdown corrected to account for water level trends at the time of the test. (Sovereign 2013)
NR = Not Reported
NA -= Not applicable

Table 7 - Site Monitoring Wells with Arsenic Concentrations above 10 µg/L

Well Name	Site Area
PZ-12-01	Barrier Wall
PZ-12-02	Barrier Wall
PZ-12-05	Barrier Wall
PZ-12-06	Barrier Wall
PZ-12-07	Barrier Wall
SHL-11	Barrier Wall
SHP-01-38A/B	Barrier Wall
N5-P1/2	Landfill
PZ-12-03	Landfill
PZ-12-04	Landfill
SHM-10-06	Landfill
SHM-10-06A	Landfill
SHM-10-07	Landfill
SHM-10-11	Landfill
SHM-10-12	Landfill
SHM-10-13	Landfill
SHM-10-14	Landfill
SHM10-15	Landfill
SHM-11-06	Landfill
SHP-99-29X	Landfill
SHL-22	NIA
SHL-9	NIA
SHM-0541 A/B/C	NIA
SHM-05-42B	NIA
SHM-10-16	NIA
SHM-13-03	NIA
SHM-13-04	NIA
SHM-13-06	NIA
SHM-13-08	NIA
SHM-93-22B	NIA
SHM-93-22C	NIA
SHM-96-5B/C	NIA
SHL-15	Upgradient

Figures



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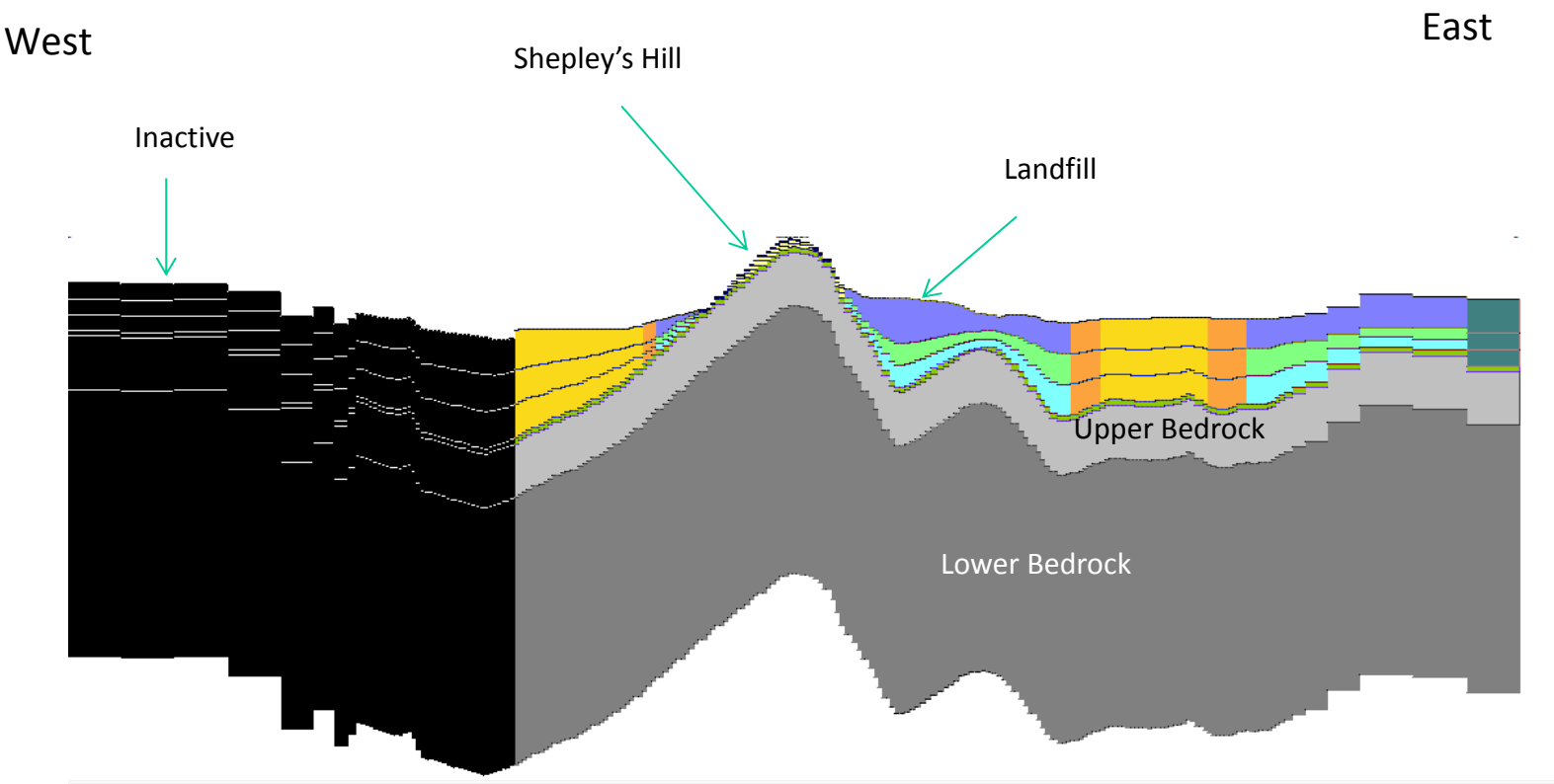
Model Extent and Grid

Figure 1

March 2016



- EW section along through Shepley's Hill Landfill along model row 155.
- Vertical:horizontal scale = 10:1

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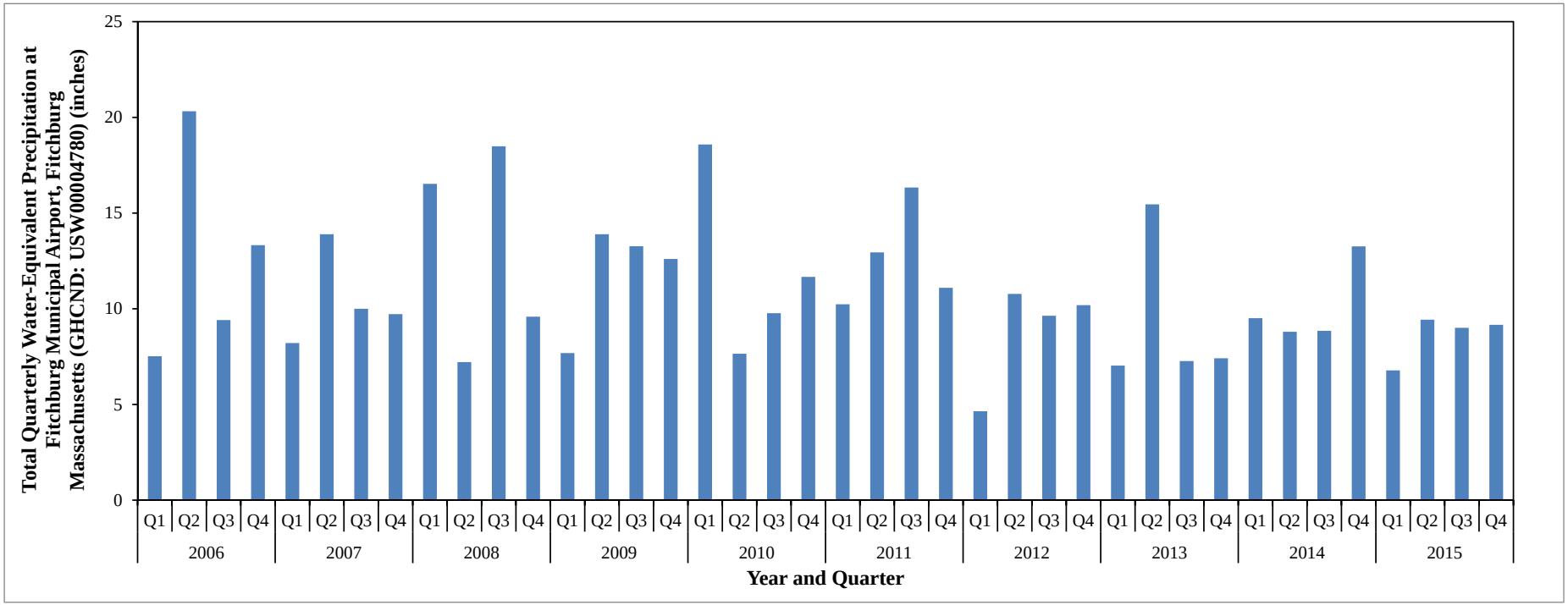
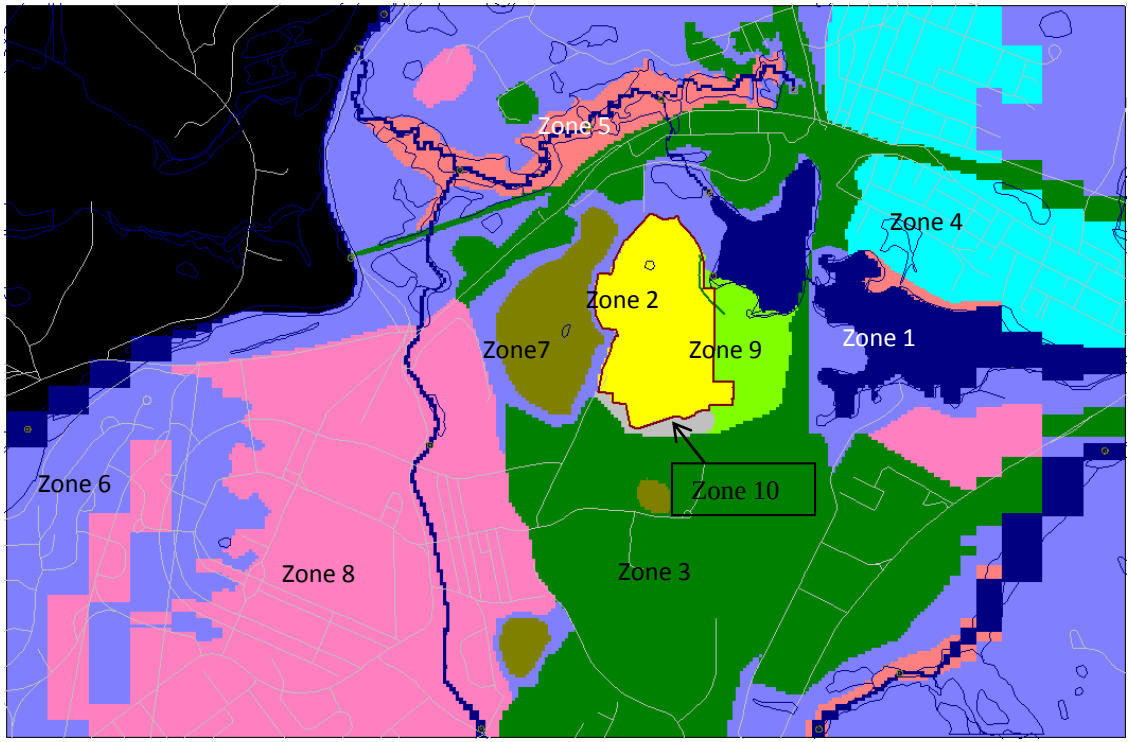
Model Layering

Figure 2

March 2016

Figure 3
Quarterly Precipitation Data used for Model Input
Fort Devens, Ayer, Massachussetts





Recharge Zone	Pecent Total Precip	Description
1	0%	Surface Water
2	0.01%	Landfill Cap
3	35%	Dense commercial
4	35%	Residential
5	25%	Non-forested wetland
6	33%	Forest, forested wetland
7	85%	Forested bedrock outcrop
8	35%	Light commercial, open land
9	50%	Open land[1]
10	150%	Recharge basin Area[2]

1. Assumed LF runoff diversion pathway
2. Assumed runoff from landfill/commercial

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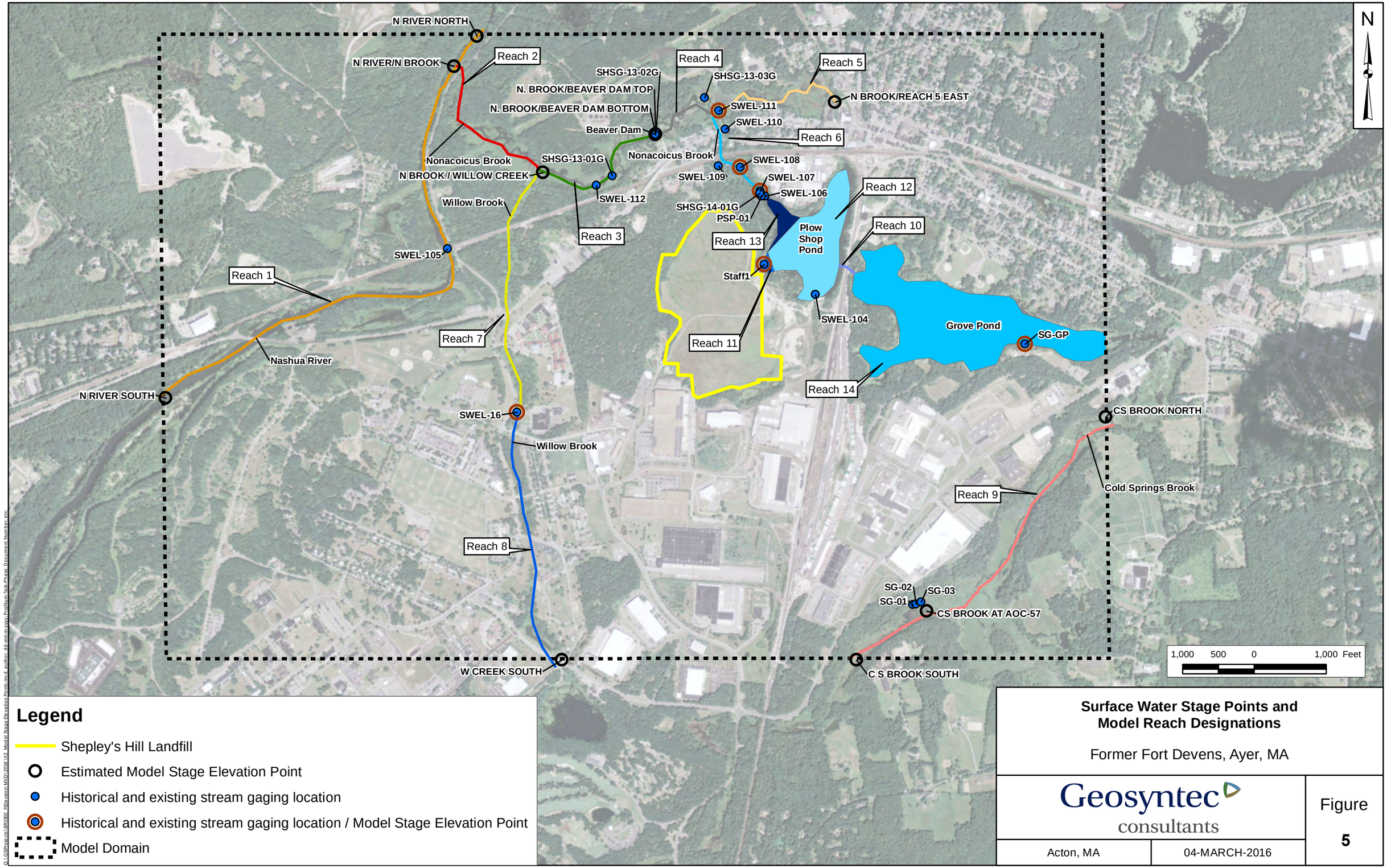
Model Recharge Zonation

Figure 4

March 2016



Surface Water Stage Points and Model Reach Designations

Former Fort Devens, Ayer, MA

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Acton, MA | 04-MARCH-2016

Figure 5

Figure 6 - Extrapolated Quarterly Nashua River Stage at SWEL-105

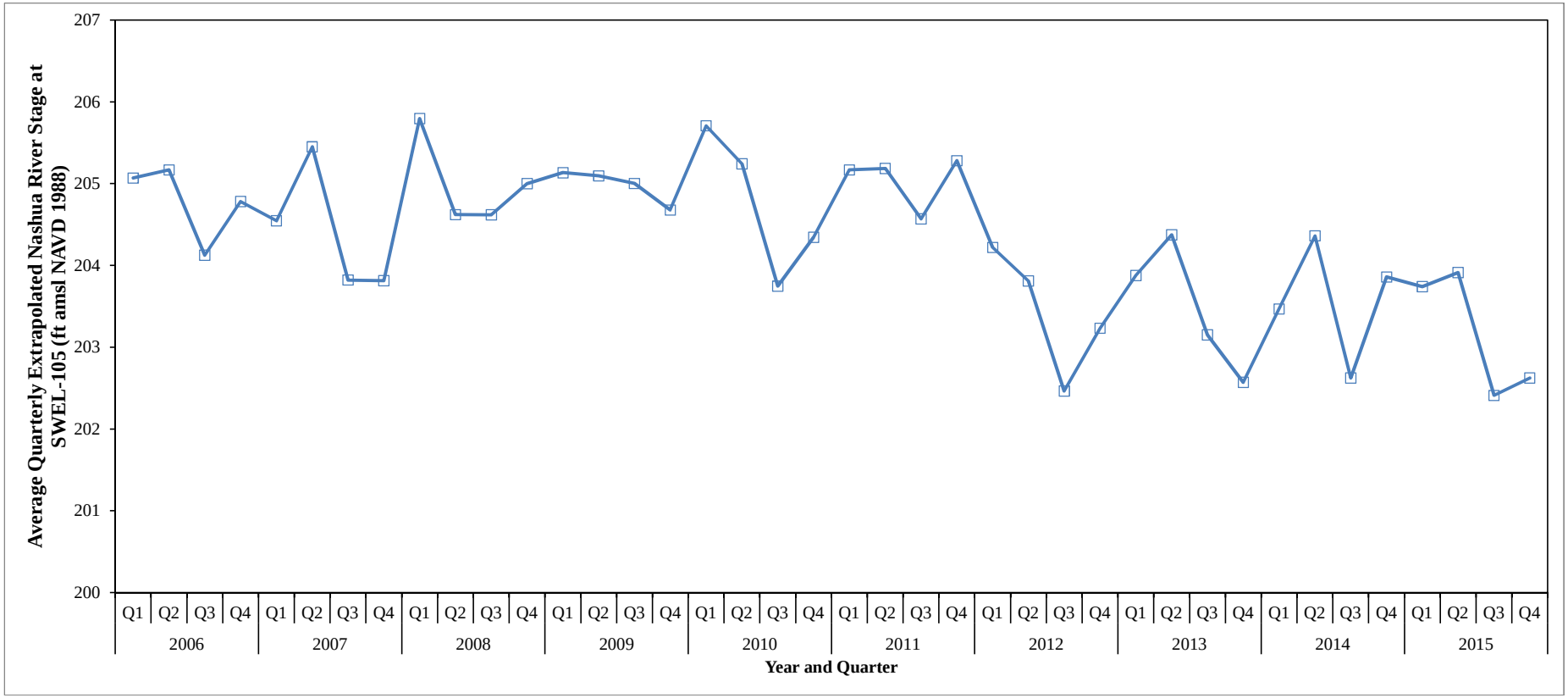
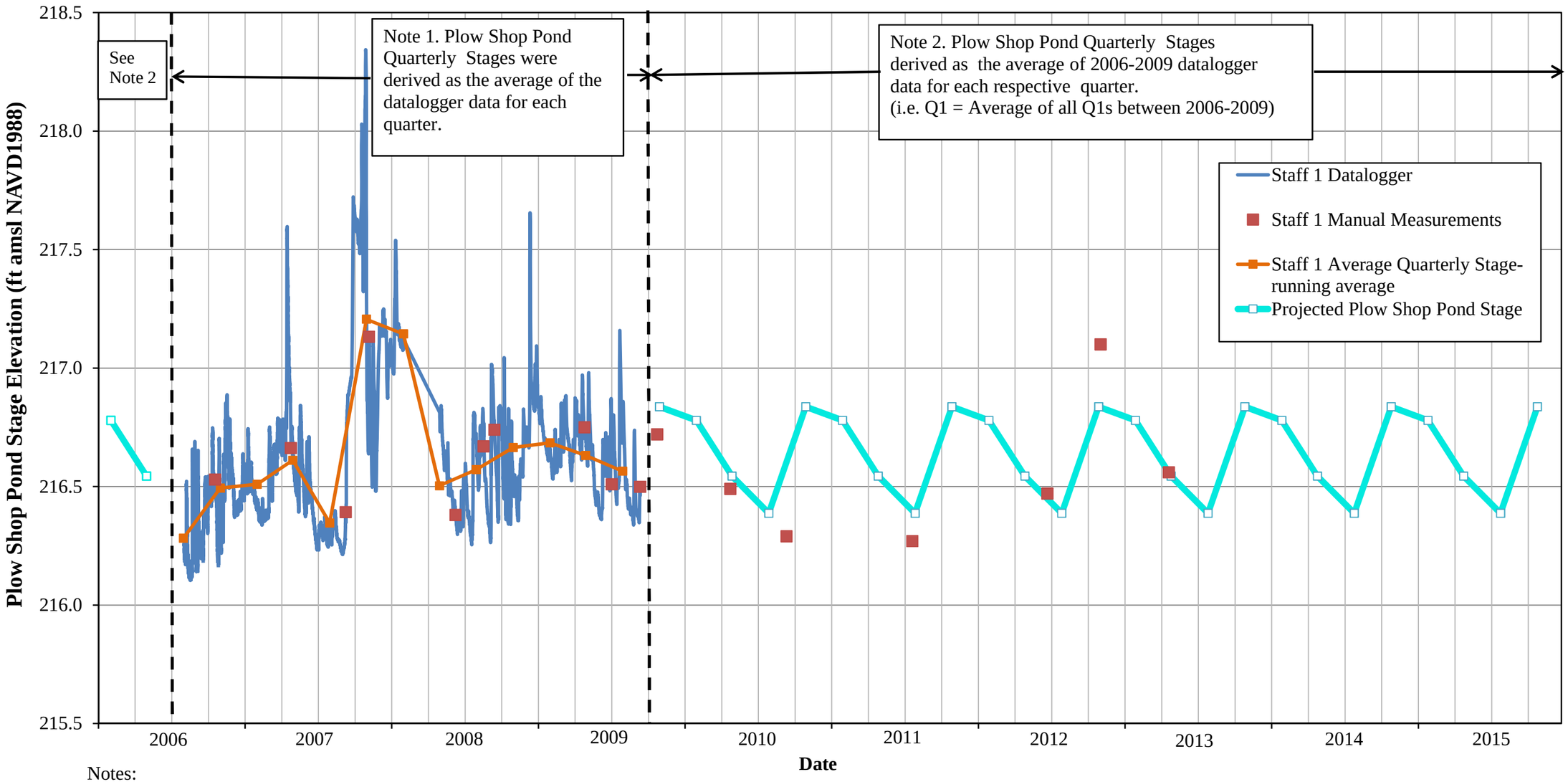
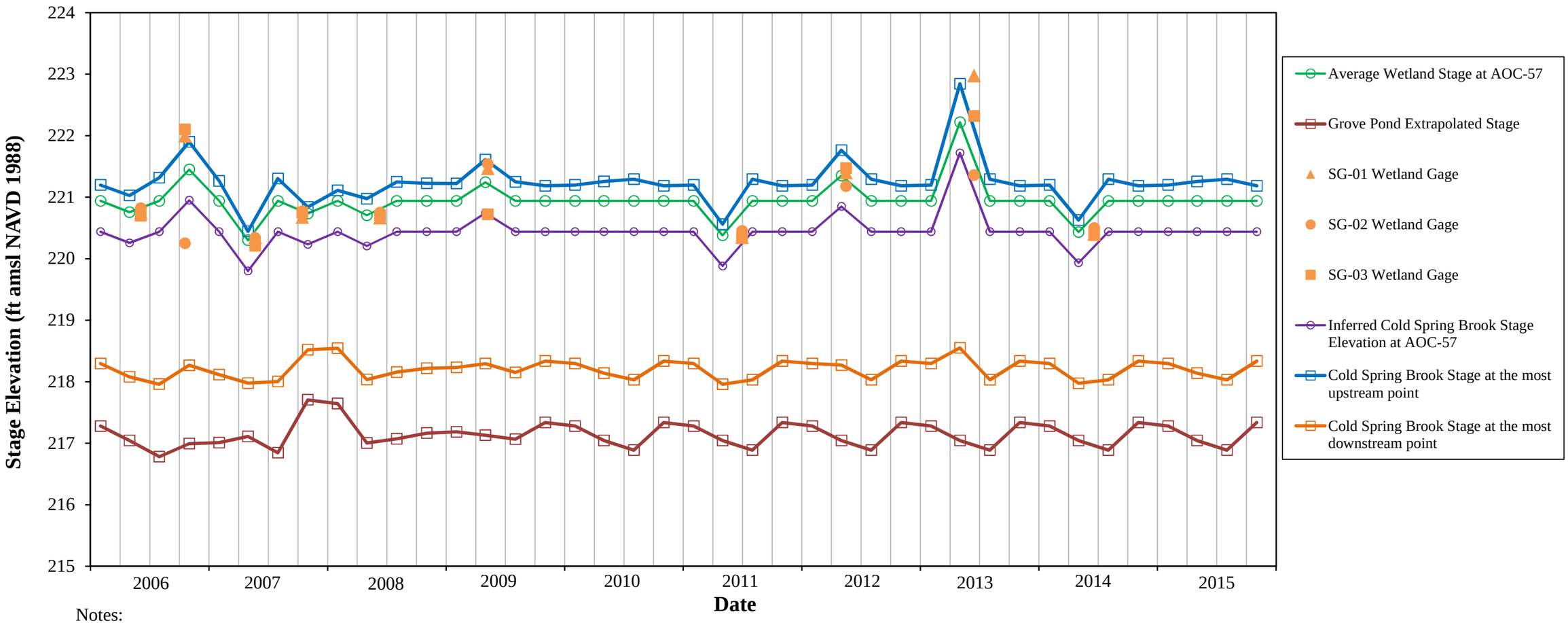


Figure 7 - Plow Shop Pond Quarterly Stage Elevations



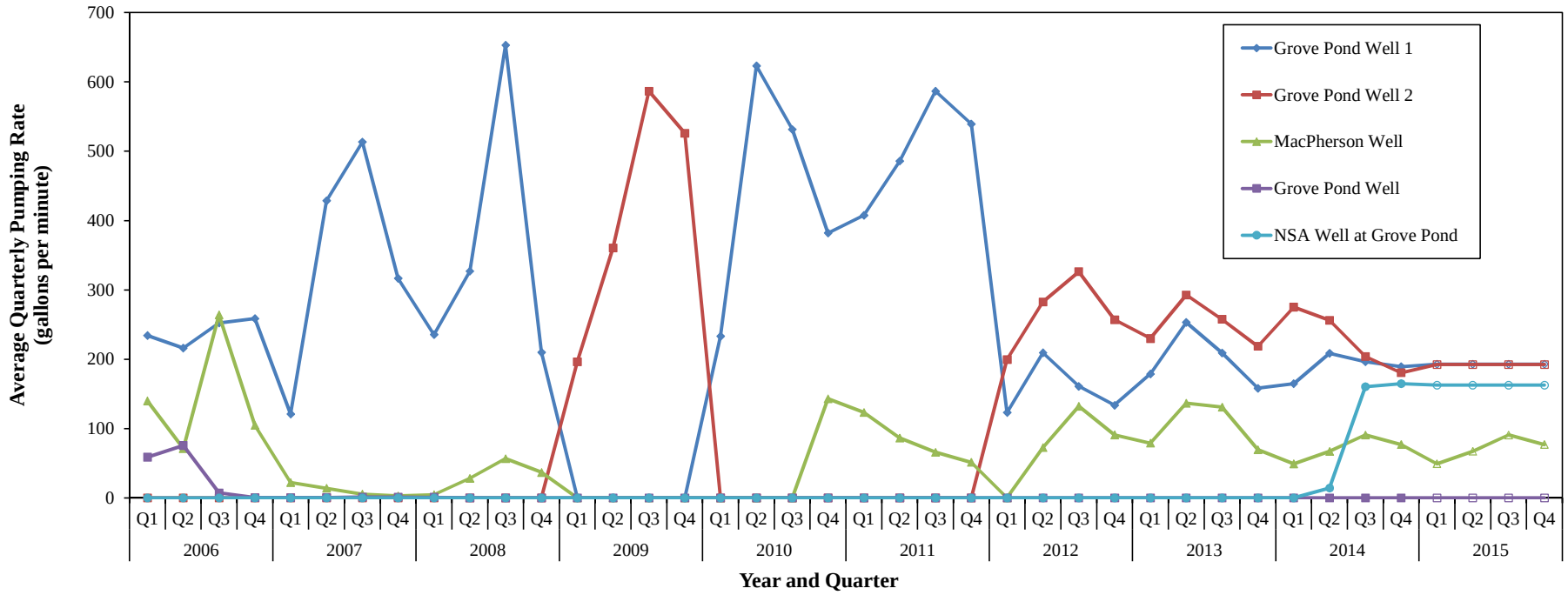
Notes:
1. Solid data markers are used for measured surface water elevations.
2. Open data markers are used for projected quarterly stage elevations based on 2006-2009 datalogger records.

Figure 8 - Cold Spring Brook Stage Elevations Fort Devens, Ayer, Massachusetts

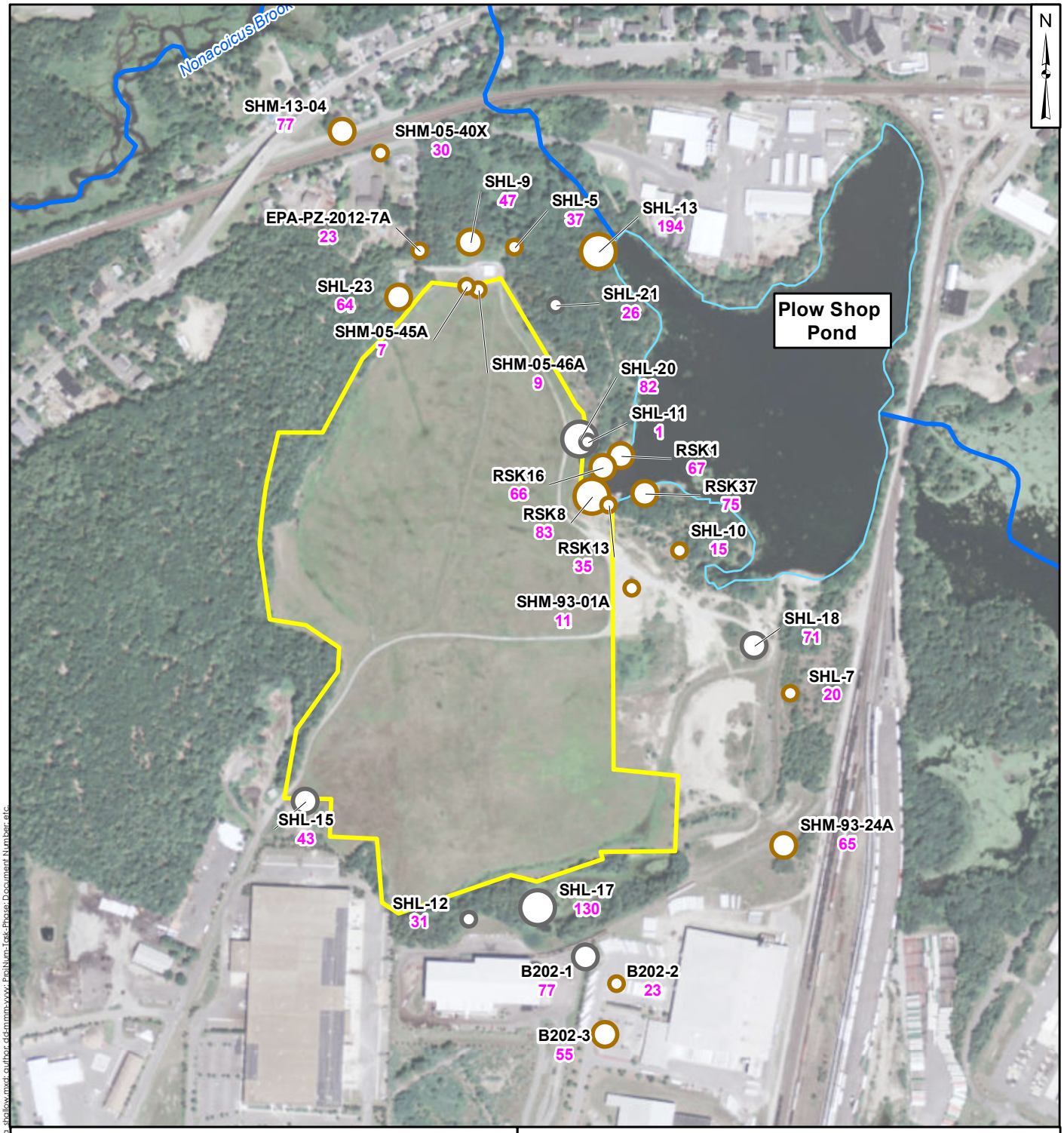


Notes:
1. Solid data markers are used for measured surface water elevations.
2. Open data markers are used for projected quarterly stage elevations..

Figure 9 - Pumping Rates of Municipal Wells within Model Domain



Notes:
1. Grove Pond Well 1 and Grove Pond Well 2 were replaced by Well 6 and Well 7 which went into operation on 10 June 2014.
2. 2015 Pumping data were not available at the time of analyses. The average between the third and fourth Quarter 2014 pumping rates were used to derive the 2015 pumping rates for Well 6, Well 7, and NSA Well at Grove Pond . The 2014 MacPherson Well Pumping rates were replicated in 2015 to preserve the seasonal pumping rate variations. All projected data are shown using open data markers.



Legend

Shepley's Hill Landfill

36 Hydraulic Conductivity (ft/day)

0 - 40 ft/day

40 - 80 ft/day

> 80 ft/day

Brown Sand*

Gray Sand*

* Lithology interpreted from boring logs or data from adjacent borings with available boring logs.
- Brown vs. Gray interpretation is based on a broad range of sample descriptions evident in boring logs recorded by multiple inspectors.

600 300 0 600 Feet

Hydraulic Conductivity

Data - Shallow Locations

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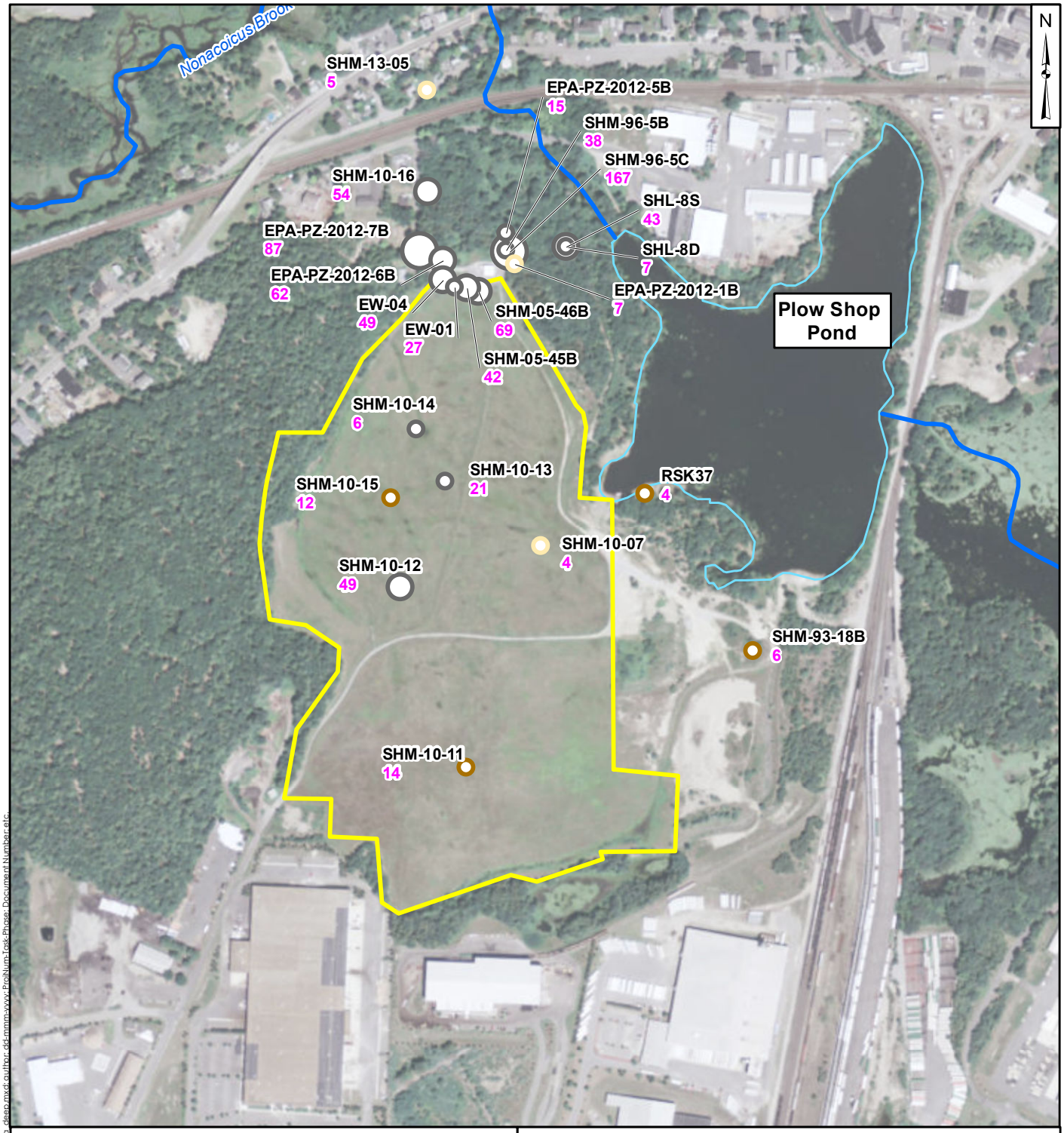
Figure 10

(Q:\ = \\boston-01\GIS$\1_Q:\GISProjects\BR0302_FtDevens\MXD\K_data\Kdata_shallow.mxd; author: dd-mmm-yyyy; ProjNum-Task-Phase; Document Number: etc.



Legend

Shepley's Hill Landfill

36 Hydraulic Conductivity (ft/day)

- 0 - 40 ft/day
- 40 - 80 ft/day
- > 80 ft/day
- Brown Sand*
- Partially Till*
- Gray Sand*

* Lithology interpreted from boring logs or data from adjacent borings with available boring logs.
- Brown vs. Gray interpretation is based on a broad range of sample descriptions evident in boring logs recorded by multiple inspectors.

600 300 0 600 Feet

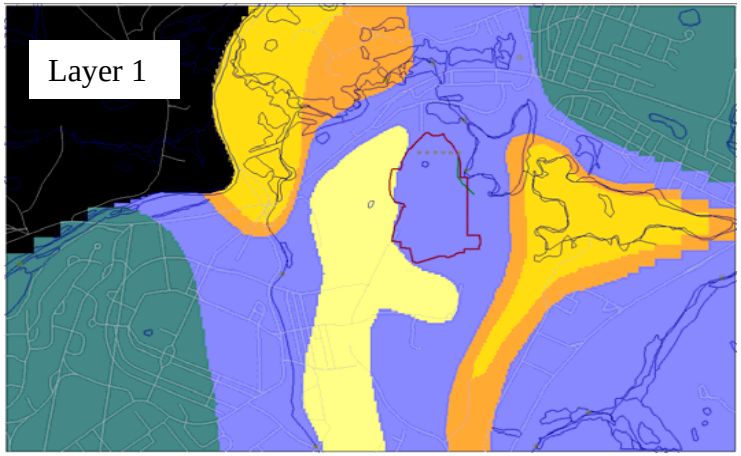
Hydraulic Conductivity Data - Deep Overburden Locations Former Fort Devens, Ayer, MA

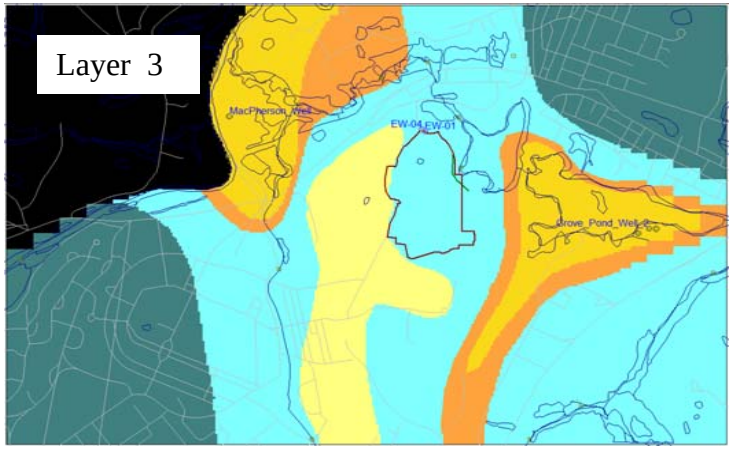
Geosyntec consultants

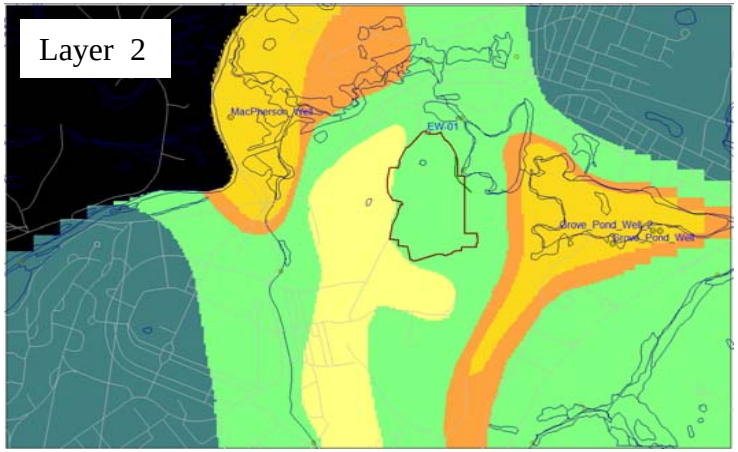
Acton, MA | February 2016

Figure 11

(Q:\=\boston-01\GIS$\1_Q\GISProjects\BR0302_FtDevens\MXD\K_data\Kdata_deep.mxd; author: dd-mmm-yyyy; ProjNum-Task-Phase; Document Number; etc.







	Kx	Ky	Kz		Color
1	45	45	4.5	0	
2	45	45	4.5	0	
3	45	45	4.5	0	
4	10	10	1	0	
5	90	90	9	0	
6	300	300	30	0	
7	1.2	1.2	0.12	0	
8	1.5	1.5	1	0	
9	0.03	0.03	0.003	0	
10	10	10	1	0	

Uniform zonation in layers 4, 5, and 6 correspond to Zones 7, 8, and 9, respectively.

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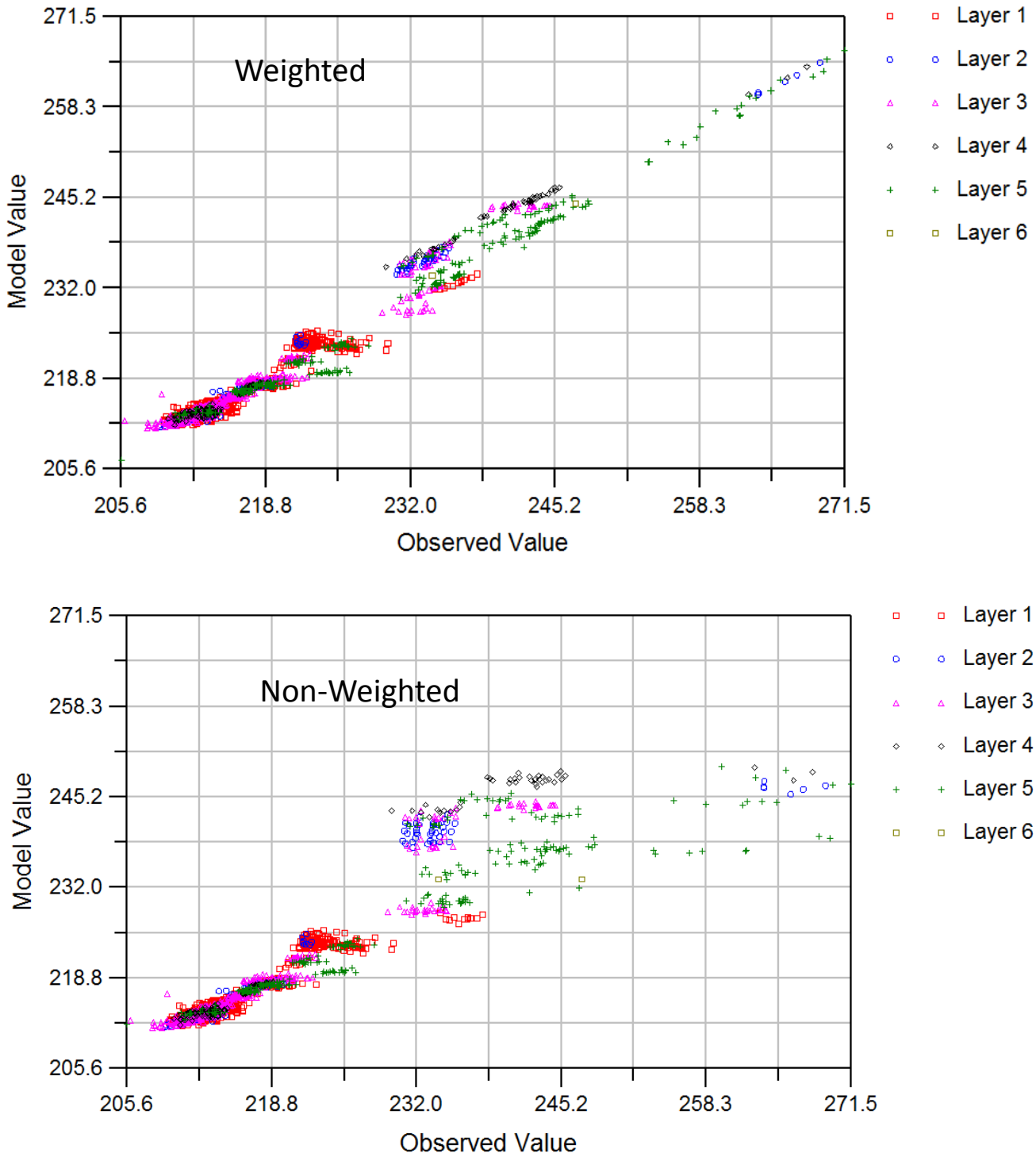
Model Hydraulic Conductivity Zonation

Figure 12

March 2016



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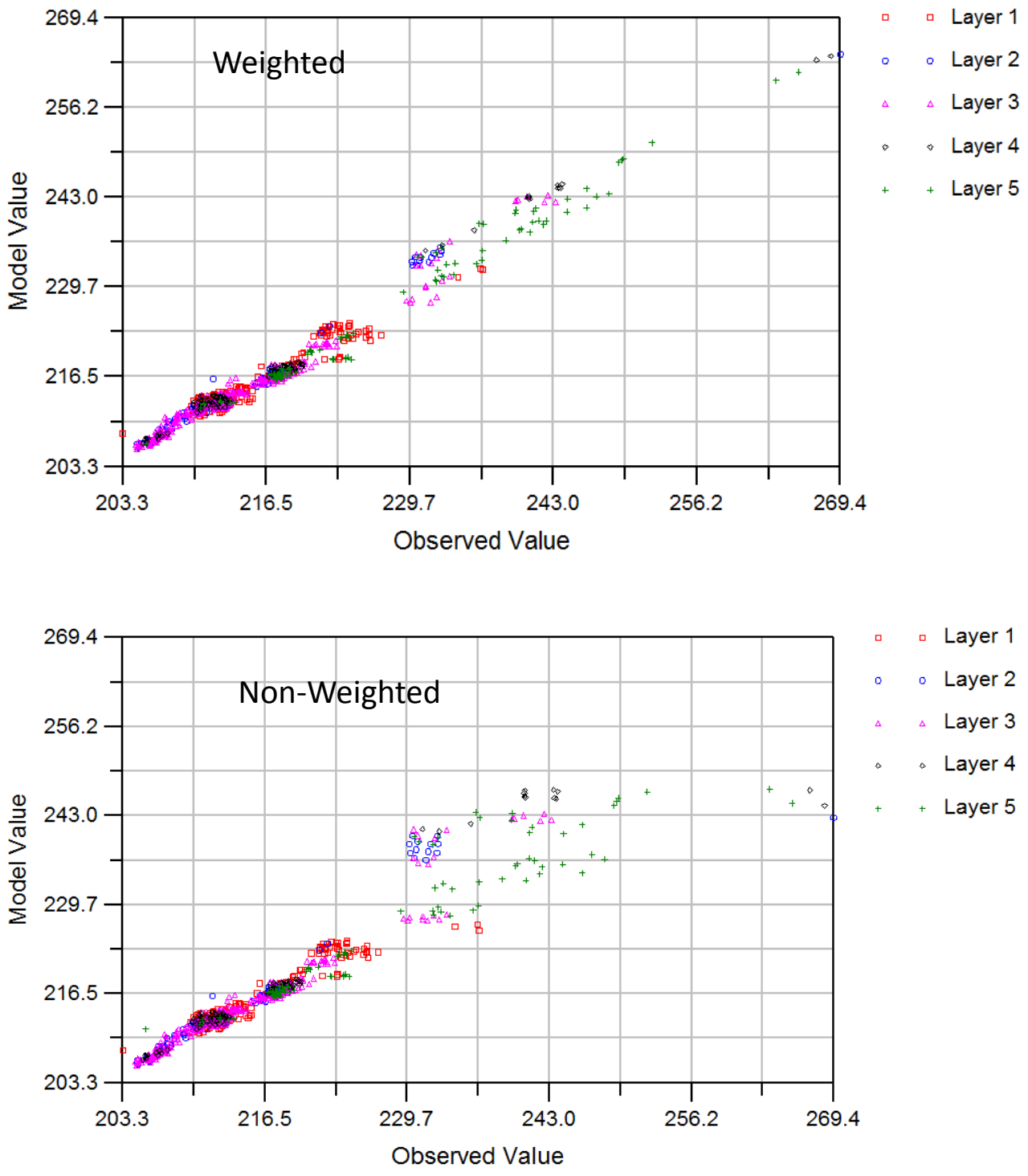
SHL300T1 Observed vs. Computed Target Water Levels

Figure 13

March 2016



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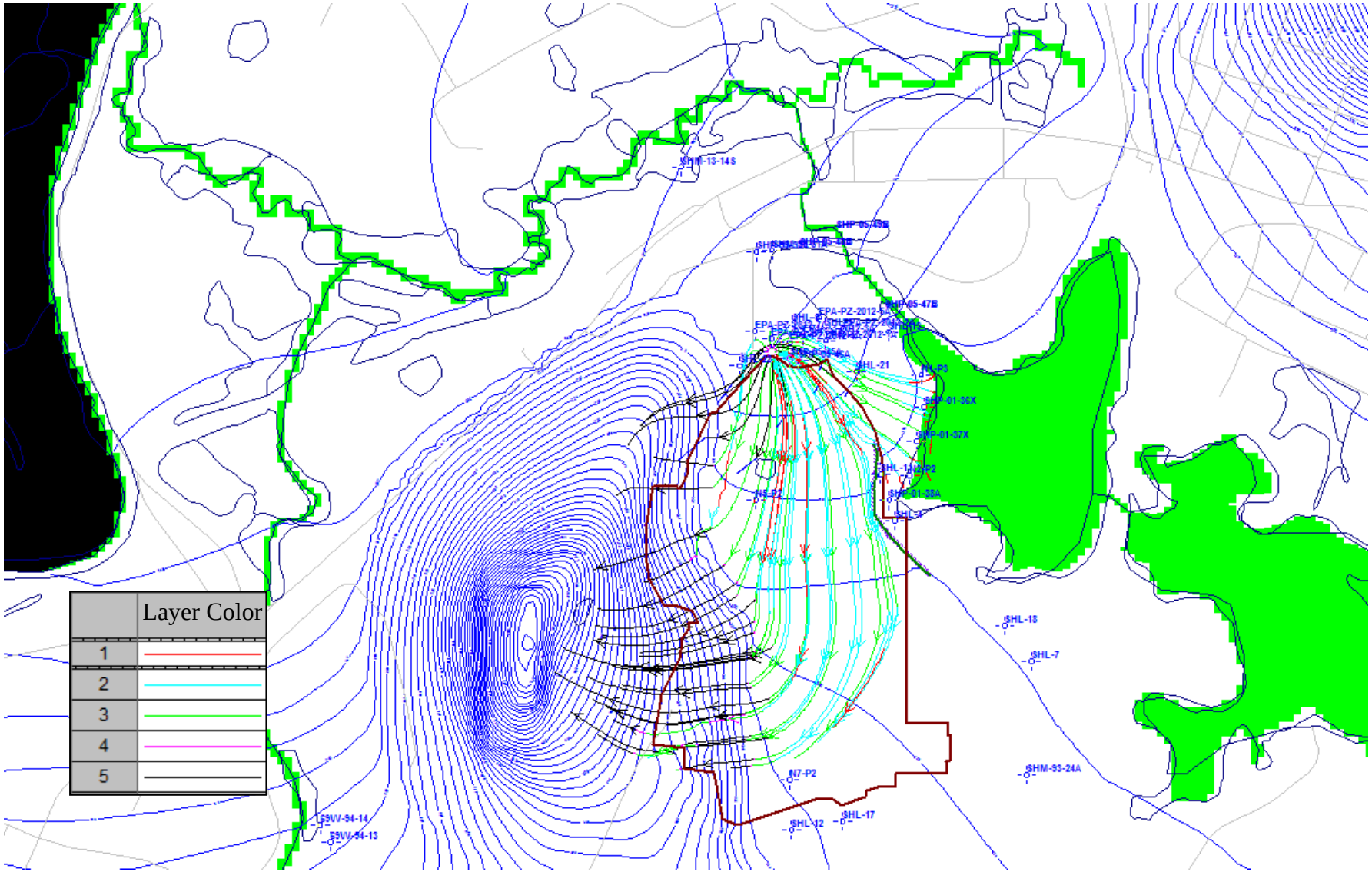
SHL300T2 Observed vs. Computed Target Water Levels

Figure 14

March 2016



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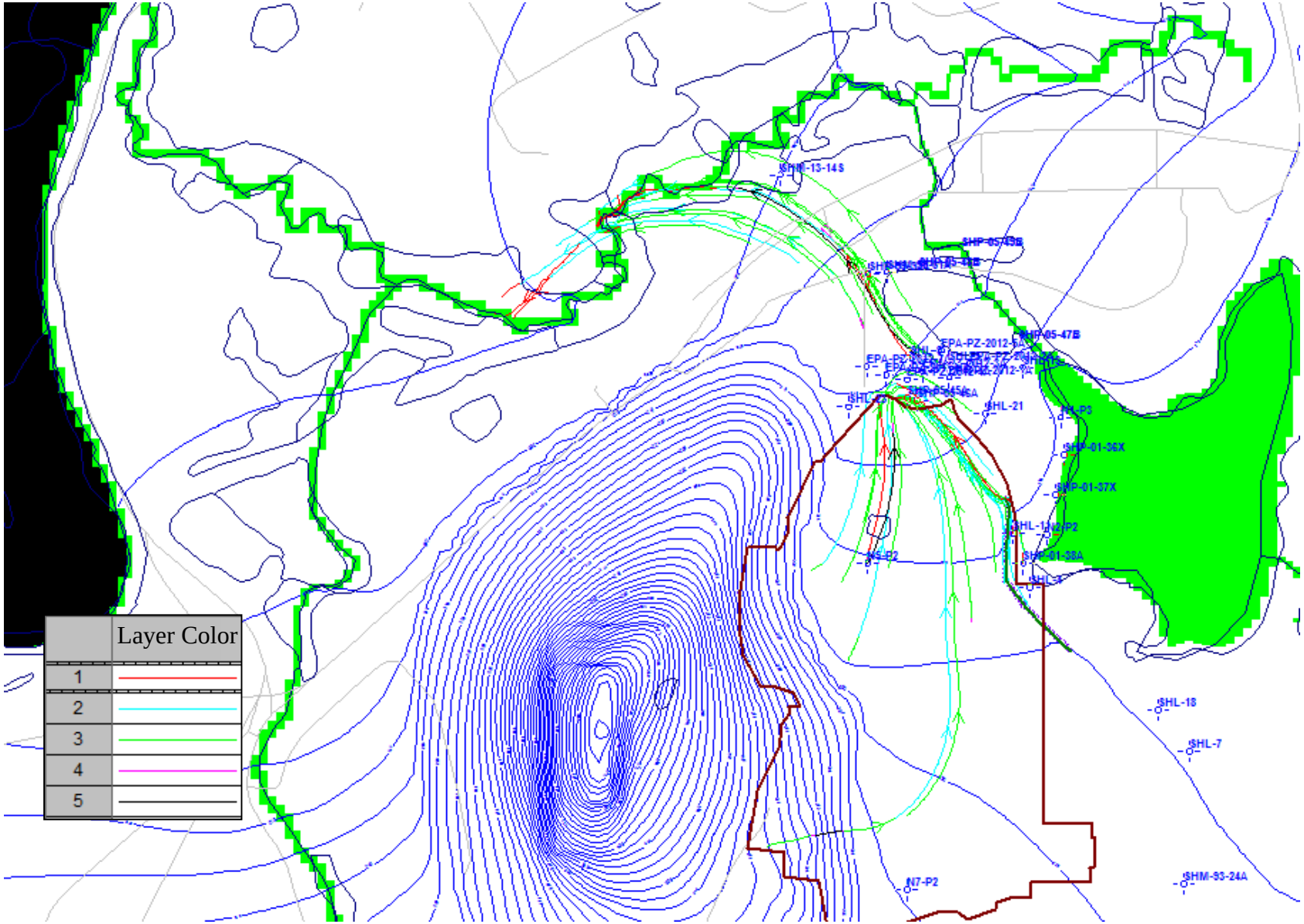
Reverse Particle Tracks from EW-1 and EW-4

Figure 15

March 2016



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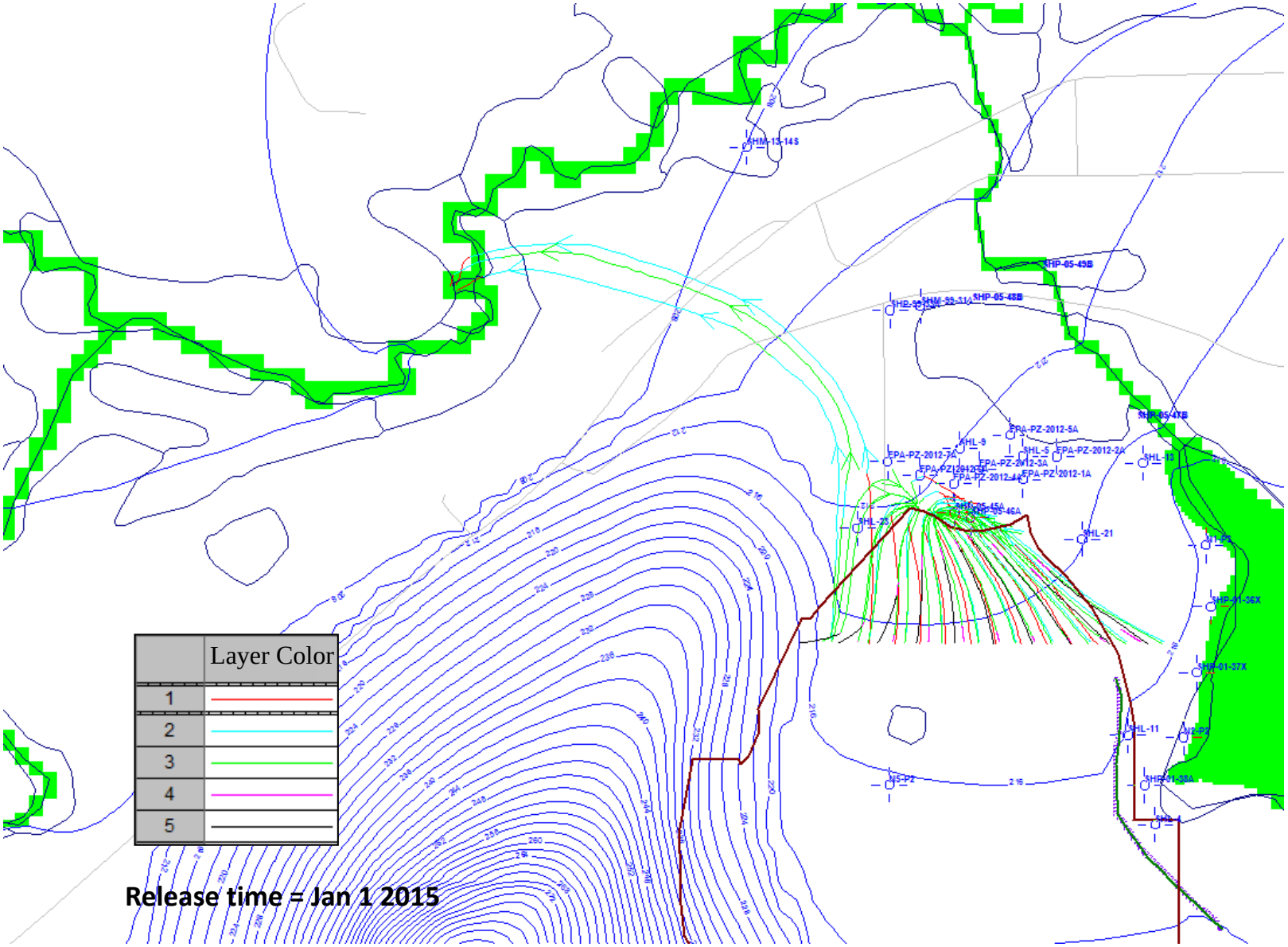
Particle tracks from Wells with Arsenic Exceedances (SHL300T2)

Figure 16

March 2016



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Particles Released in Layers 1 to 5 Along a Section through SHM-11-06 and SHP-05-44 (SHL300T2)

Figure 17

March 2016

APPENDIX I

LUCIP Pamphlet

How Are People Being Protected from Arsenic In Groundwater?

In August 2014, the Army released the final report called a "Land Use Control Implementation Plan" (LUCIP), based on the land use controls (LUCs) established per the Shepley Hill Landfill remedy. The LUCIP is part of the remedy for Shepley's Hill landfill. It establishes the framework for land use controls to protect people from exposure to contaminated groundwater. The final LUCIP is available at:

- Town of Ayer website (www.ayer.ma.us)
- Ayer Public Library
- Ayer Town Hall
  - The Board of Health Office
  - The Board of Selectman's Office
  - The Town Clerk

The Army has implemented Land Use Controls that will reduce the risk of arsenic exposure by:

- Supporting compliance with the Ayer Zoning By-laws and the Subdivision Control Regulations.
- Supporting compliance with a Moratorium on Groundwater Use issued by the Town of Ayer Board of Health limiting groundwater use where arsenic groundwater contamination is present.
- Supporting compliance with the Ayer Board of Health Well Regulations (Adopted January 10, 2001) – Town of Ayer permitting requirements for the installation and use of new drinking water wells.
- Continued public education and outreach.
- Continued groundwater monitoring and inspections where arsenic groundwater contamination is present.
- Conducting meetings with the Ayer Board of Health at least once a year.

Where to Get More Information

Comments on the Land Use Control Implementation Plan can be sent to the Army by mail or email:

Army BRAC Environmental Coordinator
30 Quebec Street (Unit 100)
Devens, MA 01434-4479
Robert.j.simeone.civ@mail.mil

If you have a water well in or near the affected area contact the Army and the Board of Health with your comments and well information:

Ayer Board of Health
1 Main Street (3rd Floor)
Ayer, MA -1432

References & Other Resources

Arsenic in Your Drinking Water: Just the Facts for Consumers
http://www.epa.gov/ogwdw/arsenic/pdfs/fs_arsenic_justthefactsforconsumers.pdf

Toxicological Profile for Arsenic
http://www.atsdr.cdc.gov/toxprofiles/tp2.pdf

Town of Ayer 2012 Annual Drinking Water Quality Report
http://www.ayer.ma.us/Pages/AyerMA_DPW/AyerMA_Water/ccr2012.pdf

Town of Ayer Water Department
http://www.ayer.ma.us/Pages/AyerMA_DPW/AyerMA_Water/index

Land Use Control Implementation Plan:

Restriction of Groundwater Use

SHEPLEY'S HILL LANDFILL

Introduction

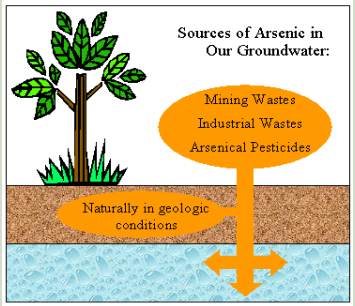
A Land Use Control Implementation Plan has been established by the Army to protect human health and the environment from arsenic contamination in groundwater affecting a localized portion of the aquifer in the Town of Ayer. Arsenic contamination in groundwater is attributable to both naturally occurring causes and groundwater discharge from the former Shepley's Hill Landfill (SHL). SHL is located on the northeast corner of the former Main Post at Fort Devens.

What Area is Affected?

Groundwater contaminated with arsenic is located north of the SHL. Approximately 65 to 70 homes in the Town of Ayer are located within the impacted area.

What Is Arsenic?

Arsenic is an odorless and tasteless metal that is both naturally occurring in the environment and also a by-product of agricultural, mining and industrial activities. It can enter the groundwater from runoff or infiltration through the ground.



http://www.idwr.idaho.gov/WaterInformation/GWQuality/FactSheets/Arsenic/Arsenic.htm

Where Does Arsenic Drinking Water Come From?

Arsenic in groundwater can be from anthropogenic sources, originating from human activity, or from natural sources, such as minerals in soil and bedrock. Many arsenic compounds dissolve in water and can enter the groundwater by dissolving in rain or snow or through the discharge of industrial wastes. The arsenic in groundwater in the Town of Ayer is occurring in groundwater because of both natural conditions and from the former operation of the SHL. The SHL has been closed and capped since 1993. Since its closure, the SHL has had long term monitoring and maintenance of the existing landfill cap and groundwater monitoring. A groundwater extraction and treatment system has operated at the SHL since 2006, however, arsenic is still present at high levels in groundwater in an area north of the landfill.

What Are Health Effects of Consuming Water With Arsenic?

Arsenic is known to cause cancer and is classified as a carcinogen by the Environmental Protection Agency (EPA). Specifically, exposure to arsenic can result in cancer of the bladder, lungs, skin, kidneys, nasal passages, liver and prostate. Arsenic in drinking water can result in the following symptoms:

- Discoloration of the skin
- Irritation of the stomach and intestines
- Fatigue
- Abnormal heart rhythm
- Blood-vessel damage resulting in bruising
- Impaired nerve function causing "pins and needles" sensation in your hands and feet

How to Avoid Arsenic

Not using private well water for drinking or irrigation purposes where arsenic groundwater contamination is present will prevent exposure of arsenic from groundwater. Drinking public water provided from the Town of Ayer and avoiding drinking private well water will mitigate the risk of arsenic exposure. The Town of Ayer's public drinking water supply meets all state and federal standards. The Town of Ayer Department of Public Works Water Division conducts annual water quality reports to document that the Town of Ayer drinking water quality is safe for drinking. **If you have a private well, you need to notify the Town of Ayer Board of Health at the contact number provided below.** The Ayer Board of Health will work with the Army to make necessary arrangements to properly abandon the well and obtain a new source of water, if necessary.

LUCIP ANNUAL REVIEW CHECKLIST
NORTHERN IMPACT AREA
FORMER FORT DEVENS, DEVENS MA

Check	Task	Notes:	
LAND USE CONTROLS			
X	Annual meeting with BOH, DPW and Building Department personnel	Name(s) and title(s) of person(s) interviewed	Mark Wetzel, DPW Pam Papineau, BOH
		Date of Interview	May 12, 2015
X	Verify any changes to SHL plume or NIA impact area. Provide updates maps as necessary.	Name(s) and title(s) of person(s) interviewed	Robert Simeone, BRAC Army
		Date of Interview	4/25/2015
AFFIRMATIVE MEASURES			
X	Verify Annual distribution of educational materials.	Name(s) and title(s) of person(s) interviewed	Bill Varner, resident
		Date of Interview	05/15/2015
X	Annual preparation of a list of land owners and residents within the LUCs Area	Name(s) and title(s) of person(s) interviewed	No interview, confirmed addresses and names through Assessors Office online database
		Date of Interview	
NA	Completion of door to door survey every five years.	Name(s) and title(s) of person(s) interviewed	
		Date of Interview	

LUCIP ANNUAL REVIEW CHECKLIST
NORTHERN IMPACT AREA
FORMER FORT DEVENS, DEVENS MA

Check	Task	Notes:	
NA	Meeting with the Town DPW and Building Department to discuss LUCs implementation, confirm water supply connections, and assess presence of private wells in the LUCs Area (every 5 years).	Name(s) and title(s) of person(s) interviewed	
		Date of Interview	

APPENDIX J

3PE Vector Analysis

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 1
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
PZ-12-10	630,723.91	3,026,778.24	1
PZ-12-08	630,546.01	3,026,962.26	1
SHM-10-07	630,301.76	3,026,889.84	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

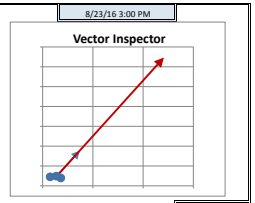
User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Statistics			
Head (L)	PZ-12-10	PZ-12-08	SHM-10-07
Maximum =	218.88	218.45	219.02
Minimum =	218.88	218.45	219.02
Average =	218.88	218.45	219.02
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.003791	0.852875
Minimum =	0.003791	0.852875
Average =	0.003791	0.852875

8/23/16 3:00 PM



Hydraulic Gradient Vector is BLUE

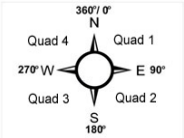
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	57,597.40
Velocity Scale Factor =	15,000.00	255.99

Number of Measurements	
Date/Time	1
PZ-12-10	1
PZ-12-08	1
SHM-10-07	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,523.89	3,026,876.78	631,480.36	3,029,553.97
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,523.89	3,026,876.78	634,828.01	3,038,924.13

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	1	1
90 -180	0	0
180 -270	0	0
270 - 360	0	0



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,523.89	3,026,876.78		
Triangle Area	28,915.20	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	255.95	(L)	PZ-12-10	31.16
Distance #2 - #3	254.76	(L)	PZ-12-08	117.52
Distance #1 - #3	436.65	(L)	SHM-10-07	31.32

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,723.91	3,026,778.24	630,546.01	3,026,962.26
Nodes #2-#3	630,546.01	3,026,962.26	630,301.76	3,026,889.84
Nodes #1-#3	630,723.91	3,026,778.24	630,301.76	3,026,889.84

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	PZ-12-10	PZ-12-08	SHM-10-07	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	218.88	218.45	219.02	0.003791	19.66	0.852875	19.66	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
-0.001275295	-0.003569584	11827.579	0.001275	0.003570	1	0.286941	0.803156	1	630,523.89	3,026,876.78	631,480.36	3,029,553.97	630,523.89	3,026,876.78	634,828.01	3,038,924.13

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 2
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-27A	630,420.52	3,027,041.52	1
PZ-12-08	630,546.01	3,026,962.26	1
SHM-10-07	630,301.76	3,026,889.84	1

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

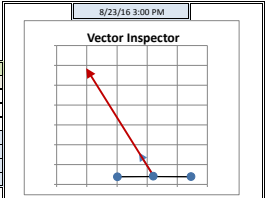
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Statistics			
Head (L)	RSK-27A	PZ-12-08	SHM-10-07
Maximum =	217.80	218.45	219.02
Minimum =	217.80	218.45	219.02
Average =	217.80	218.45	219.02
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.008096	1.821559
Minimum =	0.008096	1.821559
Average =	0.008096	1.821559

8/23/16 3:00 PM



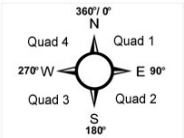
Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	15,734.06
Velocity Scale Factor =	15,000.00	69.93

Number of Measurements	
Date/Time	1
RSK-27A	1
PZ-12-08	1
SHM-10-07	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,422.76	3,026,964.54	630,372.78	3,033,036.20
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,422.76	3,026,964.54	630,197.82	3,054,286.99

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,422.76	3,026,964.54		
Triangle Area	14,223.23	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	148.42	(L)	RSK-27A	95.78
Distance #2 - #3	254.76	(L)	PZ-12-08	48.79
Distance #1 - #3	192.64	(L)	SHM-10-07	35.42

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,420.52	3,027,041.52	630,546.01	3,026,962.26
Nodes #2-#3	630,546.01	3,026,962.26	630,301.76	3,026,889.84
Nodes #1-#3	630,420.52	3,027,041.52	630,301.76	3,026,889.84

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-27A	PZ-12-08	SHM-10-07	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	217.80	218.45	219.02	0.008096	359.53	1.821559	359.53	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components		
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad
6.66494E-05	-0.008095542	24681.323	-0.000067	0.008096	4	-0.014996	1.821497	4

Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
630,422.76	3,026,964.54	630,372.78	3,033,036.20	630,422.76	3,026,964.54	630,197.82	3,054,286.99

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 3
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-27A	630,420.52	3,027,041.52	1
PZ-12-08	630,546.01	3,026,962.26	1
PZ-12-06	630,454.66	3,027,082.18	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

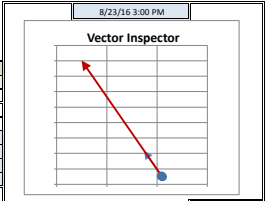
Statistics			
Head (L)	RSK-27A	PZ-12-08	PZ-12-06
Maximum =	217.80	218.45	217.70
Minimum =	217.80	218.45	217.70
Average =	217.80	218.45	217.70
Range =	0.00	0.00	0.00

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.005041	1.134163
Minimum =	0.005041	1.134163
Average =	0.005041	1.134163

8/23/16 3:00 PM



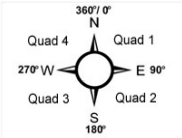
Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	14,953.23
Velocity Scale Factor =	15,000.00	66.46

Number of Measurements	
Date/Time	1
RSK-27A	1
PZ-12-08	1
PZ-12-06	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,473.73	3,027,028.65	628,696.29	3,030,365.30
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,473.73	3,027,028.65	622,475.24	3,042,043.56

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,473.73	3,027,028.65		
Triangle Area	3,904.03	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	148.42	(L)	RSK-27A	82.26
Distance #2 - #3	150.75	(L)	PZ-12-08	20.42
Distance #1 - #3	53.09	(L)	PZ-12-06	77.31

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,420.52	3,027,041.52	630,546.01	3,026,962.26
Nodes #2-#3	630,546.01	3,026,962.26	630,454.66	3,027,082.18
Nodes #1-#3	630,420.52	3,027,041.52	630,454.66	3,027,082.18

User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-27A	PZ-12-08	PZ-12-06	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	217.80	218.45	217.70	0.005041	331.96	1.134163	331.96	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
0.002369922	-0.004448863	12190.645	-0.002370	0.004449	4	-0.533232	1.000994	4	630,473.73	3,027,028.65	628,696.29	3,030,365.30	630,473.73	3,027,028.65	622,475.24	3,042,043.56

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 4
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-27A	630,420.52	3,027,041.52	1
RSK28A	630,417.37	3,027,119.41	1
PZ-12-06	630,454.66	3,027,082.18	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

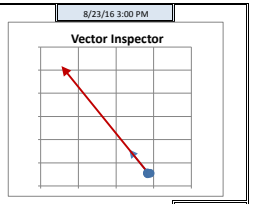
User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Statistics			
Head (L)	RSK-27A	RSK28A	PZ-12-06
Maximum =	217.80	217.59	217.70
Minimum =	217.80	217.59	217.70
Average =	217.80	217.59	217.70
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.002768	0.622756
Minimum =	0.002768	0.622756
Average =	0.002768	0.622756

8/23/16 3:00 PM



Hydraulic Gradient Vector is BLUE

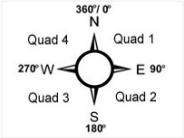
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	14,081.68
Velocity Scale Factor =	15,000.00	62.59

Number of Measurements	
Date/Time	1
RSK-27A	1
RSK28A	1
PZ-12-06	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,430.85	3,027,081.03	630,174.21	3,029,140.96
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,430.85	3,027,081.03	629,275.96	3,036,350.71

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,430.85	3,027,081.03		
Triangle Area	1,393.42	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	77.95	(L)	RSK-27A	42.33
Distance #2 - #3	52.69	(L)	RSK28A	42.73
Distance #1 - #3	53.09	(L)	PZ-12-06	94.94

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,420.52	3,027,041.52	630,417.37	3,027,119.41
Nodes #2-#3	630,417.37	3,027,119.41	630,454.66	3,027,082.18
Nodes #1-#3	630,420.52	3,027,041.52	630,454.66	3,027,082.18

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-27A	RSK28A	PZ-12-06	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	217.80	217.585	217.7	0.002768	352.90	0.622756	352.90	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
0.000342191	-0.00274657	8316.0573	-0.000342	0.002747	4	-0.076993	0.617978	4	630,430.85	3,027,081.03	630,174.21	3,029,140.96	630,430.85	3,027,081.03	629,275.96	3,036,350.71

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 5
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
PZ-12-04	630,452.75	3,027,194.22	1
RSK-28A	630,417.37	3,027,119.41	1
PZ-12-06	630,454.66	3,027,082.18	1

Principal Hydraulic Conductivity Components		
K_{MAX} =	45.0000	(L/T)
K_{MIN} =	45.0000	(L/T)
Orientation of K_{MAX} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

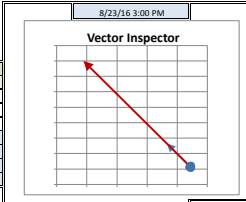
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Statistics			
Head (L)	PZ-12-04	RSK-28A	PZ-12-06
Maximum =	217.47	217.59	217.70
Minimum =	217.47	217.59	217.70
Average =	217.47	217.59	217.70
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.002291	0.515489
Minimum =	0.002291	0.515489
Average =	0.002291	0.515489

8/23/16 3:00 PM



Hydraulic Gradient Vector is BLUE

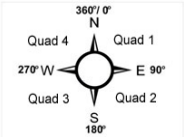
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	24,455.08
Velocity Scale Factor =	15,000.00	108.69

Number of Measurements	
Date/Time	1
PZ-12-04	1
RSK-28A	1
PZ-12-06	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,441.59	3,027,131.94	629,652.07	3,028,658.10
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,441.59	3,027,131.94	626,888.72	3,033,999.70

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,441.59	3,027,131.94		
Triangle Area	2,053.21	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	82.76	(L)	PZ-12-04	26.28
Distance #2 - #3	52.69	(L)	RSK-28A	109.65
Distance #1 - #3	112.06	(L)	PZ-12-06	44.07

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,452.75	3,027,194.22	630,417.37	3,027,119.41
Nodes #2-#3	630,417.37	3,027,119.41	630,454.66	3,027,082.18
Nodes #1-#3	630,452.75	3,027,194.22	630,454.66	3,027,082.18

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	PZ-12-04	RSK-28A	PZ-12-06	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	217.47	217.585	217.70	0.002291	332.65	0.515489	332.65	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components		
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad
0.001052704	-0.002034892	5713.8039	-0.001053	0.002035	4	-0.236858	0.457851	4

Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
630,441.59	3,027,131.94	629,652.07	3,028,658.10	630,441.59	3,027,131.94	626,888.72	3,033,999.70

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 6
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
PZ-12-04	630,452.75	3,027,194.22	1
RSK-28A	630,417.37	3,027,119.41	1
RSK-32A	630,424.17	3,027,204.81	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

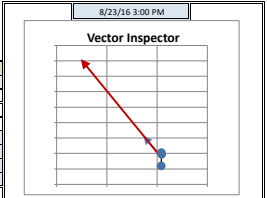
Statistics			
Head (L)	PZ-12-04	RSK-28A	RSK-32A
Maximum =	217.47	217.40	217.40
Minimum =	217.47	217.40	217.40
Average =	217.47	217.40	217.40
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.002386	0.536934
Minimum =	0.002386	0.536934
Average =	0.002386	0.536934

User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

8/23/16 3:00 PM



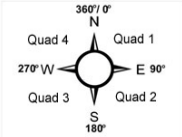
Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	17,949.76
Velocity Scale Factor =	15,000.00	79.78

Number of Measurements	
Date/Time	1
PZ-12-04	1
RSK-28A	1
RSK-32A	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,431.43	3,027,172.81	628,647.28	3,027,314.71
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,431.43	3,027,172.81	622,402.77	3,027,811.34

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,431.43	3,027,172.81		
Triangle Area	1,256.48	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	82.76	(L)	PZ-12-04	85.01
Distance #2 - #3	85.67	(L)	RSK-28A	20.76
Distance #1 - #3	30.48	(L)	RSK-32A	74.23

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,452.75	3,027,194.22	630,417.37	3,027,119.41
Nodes #2-#3	630,417.37	3,027,119.41	630,424.17	3,027,204.81
Nodes #1-#3	630,452.75	3,027,194.22	630,424.17	3,027,204.81

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	PZ-12-04	RSK-28A	RSK-32A	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	217.47	217.4	217.4	0.002386	274.55	0.536934	274.55	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
0.002378861	-0.000189195	-709.5606	-0.002379	0.000189	4	-0.535244	0.042569	4	630,431.43	3,027,172.81	628,647.28	3,027,314.71	630,431.43	3,027,172.81	622,402.77	3,027,811.34

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 7
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
PZ-12-04	630,452.75	3,027,194.22	1
SHL-20	630,463.22	3,027,329.51	1
RSK-32A	630,424.17	3,027,204.81	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

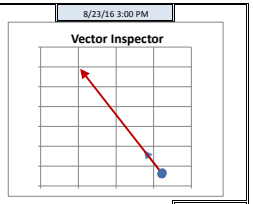
User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Statistics			
Head (L)	PZ-12-04	SHL-20	RSK-32A
Maximum =	217.47	217.06	217.40
Minimum =	217.47	217.06	217.40
Average =	217.47	217.06	217.40
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.003386	0.761764
Minimum =	0.003386	0.761764
Average =	0.003386	0.761764

8/23/16 3:00 PM



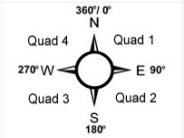
Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	20,039.86
Velocity Scale Factor =	15,000.00	89.07

Number of Measurements	
Date/Time	1
PZ-12-04	1
SHL-20	1
RSK-32A	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,446.71	3,027,242.85	629,479.42	3,029,590.60
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,446.71	3,027,242.85	626,093.90	3,037,807.73

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,446.71	3,027,242.85		
Triangle Area	1,988.98	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	135.69	(L)	PZ-12-04	74.11
Distance #2 - #3	130.68	(L)	SHL-20	12.96
Distance #1 - #3	30.48	(L)	RSK-32A	92.93

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,452.75	3,027,194.22	630,463.22	3,027,329.51
Nodes #2-#3	630,463.22	3,027,329.51	630,424.17	3,027,204.81
Nodes #1-#3	630,452.75	3,027,194.22	630,424.17	3,027,204.81

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	PZ-12-04	SHL-20	RSK-32A	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	217.47	217.06	217.4	0.003386	337.61	0.761764	337.61	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components		
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad
0.001289721	-0.003130338	8880.502	-0.001290	0.003130	4	-0.290187	0.704326	4

Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
630,446.71	3,027,242.85	629,479.42	3,029,590.60	630,446.71	3,027,242.85	626,093.90	3,037,807.73

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 8
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
PZ-12-02	630,467.48	3,027,384.00	1
SHL-20	630,463.22	3,027,329.51	1
RSK-34	630,395.49	3,027,445.39	1

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

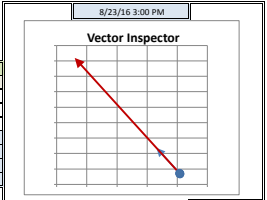
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Statistics			
Head (L)	PZ-12-02	SHL-20	RSK-34
Maximum =	216.84	217.06	216.20
Minimum =	216.84	217.06	216.20
Average =	216.84	217.06	216.20
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.006818	1.533940
Minimum =	0.006818	1.533940
Average =	0.006818	1.533940

8/23/16 3:00 PM



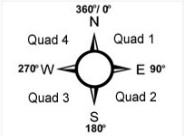
Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	9,843.81
Velocity Scale Factor =	15,000.00	43.75

Number of Measurements	
Date/Time	1
PZ-12-02	1
SHL-20	1
RSK-34	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,442.06	3,027,386.30	626,563.10	3,030,717.63
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,442.06	3,027,386.30	612,986.73	3,042,377.30

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,442.06	3,027,386.30		
Triangle Area	2,092.10	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	54.66	(L)	PZ-12-02	125.99
Distance #2 - #3	134.22	(L)	SHL-20	34.78
Distance #1 - #3	94.61	(L)	RSK-34	19.24

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,467.48	3,027,384.00	630,463.22	3,027,329.51
Nodes #2-#3	630,463.22	3,027,329.51	630,395.49	3,027,445.39
Nodes #1-#3	630,467.48	3,027,384.00	630,395.49	3,027,445.39

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	PZ-12-02	SHL-20	RSK-34	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	216.84	217.06	216.195	0.006818	310.66	1.533940	310.66	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
0.005171952	-0.004441779	10403.062	-0.005172	0.004442	4	-1.163689	0.999400	4	630,442.06	3,027,386.30	626,563.10	3,030,717.63	630,442.06	3,027,386.30	612,986.73	3,042,377.30

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 9
Date:	7-Oct-15

Well Location

Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-34	630,395.49	3,027,445.39	1
SHL-20	630,463.22	3,027,329.51	1
RSK-32A	630,424.17	3,027,204.81	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Statistics

Head (L)	RSK-34	SHL-20	RSK-32A
Maximum =	216.20	217.06	217.40
Minimum =	216.20	217.06	217.40
Average =	216.20	217.06	217.40
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.006859	1.543221
Minimum =	0.006859	1.543221
Average =	0.006859	1.543221

Principal Hydraulic Conductivity Components

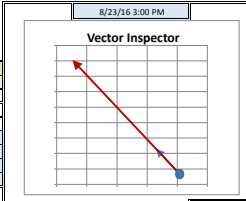
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

8/23/16 3:00 PM



Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	17,662.58
Velocity Scale Factor =	15,000.00	78.50

Number of Measurements

Date/Time	1
RSK-34	1
SHL-20	1
RSK-32A	1

Vector Inspector Arrow Coordinates

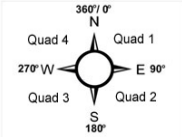
Plotted Hydraulic Gradient Arrow Coordinates

x_start	y_start	x_end	y_end
630,427.63	3,027,326.57	626,468.75	3,030,611.20

Plotted Groundwater Velocity Arrow Coordinates

x_start	y_start	x_end	y_end
630,427.63	3,027,326.57	612,612.71	3,042,107.40

Orientation (deg)	Number of Vectors: i-vector	Number of Vectors: V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components

K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information

Triangle Centroid (x,y)	630,427.63	3,027,326.57		
Triangle Area	6,485.84	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	134.22	(L)	RSK-34	23.51
Distance #2 - #3	130.68	(L)	SHL-20	132.31
Distance #1 - #3	242.29	(L)	RSK-32A	24.19

Triangle Plot Coordinates

Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,395.49	3,027,445.39	630,463.22	3,027,329.51
Nodes #2-#3	630,463.22	3,027,329.51	630,424.17	3,027,204.81
Nodes #1-#3	630,395.49	3,027,445.39	630,424.17	3,027,204.81

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-34	SHL-20	RSK-32A	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	216.20	217.06	217.4	0.006859	309.68	1.543221	309.68	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components		
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad
0.005278495	-0.004379506	10147.372	-0.005278	0.004380	4	-1.187661	0.985389	4

Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
630,427.63	3,027,326.57	626,468.75	3,030,611.20	630,427.63	3,027,326.57	612,612.71	3,042,107.40

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 10
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-34	630,395.49	3,027,445.39	1
PZ-12-02	630,467.48	3,027,384.00	1
RSK-35A	630,437.55	3,027,515.53	1

Principal Hydraulic Conductivity Components		
K_{MAX} =	45.0000	(L/T)
K_{MIN} =	45.0000	(L/T)
Orientation of K_{MAX} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

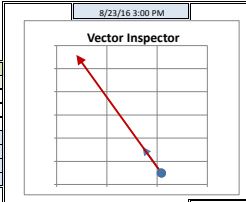
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Vector Inspector Row of Interest:	22
Must be between 22 and	22

Statistics			
Head (L)	RSK-34	PZ-12-02	RSK-35A
Maximum =	216.20	216.84	215.77
Minimum =	216.20	216.84	215.77
Average =	216.20	216.84	215.77
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.007969	1.793086
Minimum =	0.007969	1.793086
Average =	0.007969	1.793086

8/23/16 3:00 PM



Hydraulic Gradient Vector is BLUE

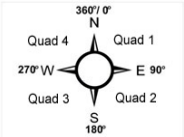
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	8,463.45
Velocity Scale Factor =	15,000.00	37.62

Number of Measurements	
Date/Time	1
RSK-34	1
PZ-12-02	1
RSK-35A	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,433.51	3,027,448.31	628,551.28	3,033,121.16
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,433.51	3,027,448.31	621,963.50	3,052,976.13

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,433.51	3,027,448.31		
Triangle Area	3,815.81	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	94.61	(L)	RSK-34	99.51
Distance #2 - #3	134.90	(L)	PZ-12-02	36.73
Distance #1 - #3	81.79	(L)	RSK-35A	43.77

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,395.49	3,027,445.39	630,467.48	3,027,384.00
Nodes #2-#3	630,467.48	3,027,384.00	630,437.55	3,027,515.53
Nodes #1-#3	630,395.49	3,027,445.39	630,437.55	3,027,515.53

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-34	PZ-12-02	RSK-35A	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	216.195	216.84	215.77	0.007969	341.64	1.793086	341.64	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
0.002509632	-0.007563799	21533.123	-0.002510	0.007564	4	-0.564667	1.701855	4	630,433.51	3,027,448.31	628,551.28	3,033,121.16	630,433.51	3,027,448.31	621,963.50	3,052,976.13

Project:	Devens - SHL - West of Barrier Wall
Location:	Triangle 11
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-34	630,395.49	3,027,445.39	1
SHM-11-06	630,411.28	3,027,590.18	1
RSK-35A	630,437.55	3,027,515.53	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

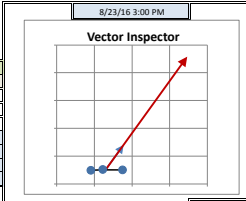
User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Statistics			
Head (L)	RSK-34	SHM-11-06	RSK-35A
Maximum =	216.20	215.32	215.77
Minimum =	216.20	215.32	215.77
Average =	216.20	215.32	215.77
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.006040	1.358949
Minimum =	0.006040	1.358949
Average =	0.006040	1.358949

8/23/16 3:00 PM



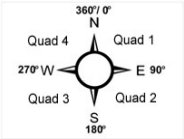
Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	12,057.52
Velocity Scale Factor =	15,000.00	53.59

Number of Measurements	
Date/Time	1
RSK-34	1
SHM-11-06	1
RSK-35A	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,414.77	3,027,517.03	630,438.89	3,032,046.80
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,414.77	3,027,517.03	630,523.27	3,047,900.98

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	1	1
90 -180	0	0
180 - 270	0	0
270 - 360	0	0



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,414.77	3,027,517.03		
Triangle Area	2,491.20	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	145.65	(L)	RSK-34	24.72
Distance #2 - #3	79.13	(L)	SHM-11-06	25.61
Distance #1 - #3	81.79	(L)	RSK-35A	129.66

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,395.49	3,027,445.39	630,411.28	3,027,590.18
Nodes #2-#3	630,411.28	3,027,590.18	630,437.55	3,027,515.53
Nodes #1-#3	630,395.49	3,027,445.39	630,437.55	3,027,515.53

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-34	SHM-11-06	RSK-35A	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
8/23/16 15:00	216.195	215.32	215.77	0.006040	0.30	1.358949	0.30	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
-3.21481E-05	-0.006039688	18521.286	0.000032	0.006040	1	0.007233	1.358930	1	630,414.77	3,027,517.03	630,438.89	3,032,046.80	630,414.77	3,027,517.03	630,523.27	3,047,900.98

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 12
Date:	7-Oct-15

Well Location

Well Name	X Coordinate (L)	Y Coordinate (L)	
PZ-12-09	630,740.71	3,026,801.33	1
RSK-25	630,635.42	3,026,963.43	1
RSK-37	630,729.55	3,027,107.43	1

Vector Inspector Row of Interest:	22	
Must be between 22 and 22		

Principal Hydraulic Conductivity Components

K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

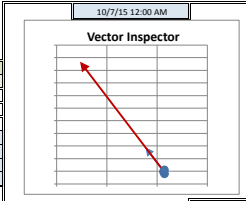
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Statistics

Head (L)	PZ-12-09	RSK-25	RSK-37
Maximum =	217.32	216.64	216.50
Minimum =	217.32	216.64	216.50
Average =	217.32	216.64	216.50
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.003582	0.805860
Minimum =	0.003582	0.805860
Average =	0.003582	0.805860

10/7/15 12:00 AM



Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	42,760.73
Velocity Scale Factor =	15,000.00	190.05

Number of Measurements	
Date/Time	1
PZ-12-09	1
RSK-25	1
RSK-37	1

Vector Inspector Arrow Coordinates

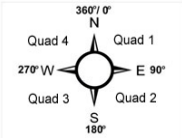
Plotted Hydraulic Gradient Arrow Coordinates

x_start	y_start	x_end	y_end
630,701.89	3,026,957.40	628,841.73	3,028,895.30

Plotted Groundwater Velocity Arrow Coordinates

x_start	y_start	x_end	y_end
630,701.89	3,026,957.40	622,331.17	3,035,677.96

Orientation (deg)	Number of Vectors i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 - 270	0	0
270 - 360	1	1



Hydraulic Conductivity Components

K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information

Triangle Centroid (x,y)	630,701.89	3,026,957.40		
Triangle Area	15,209.92	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	193.30	(L)	PZ-12-09	30.92
Distance #2 - #3	172.03	(L)	RSK-25	113.82
Distance #1 - #3	306.30	(L)	RSK-37	35.26

Triangle Plot Coordinates

Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,740.71	3,026,801.33	630,635.42	3,026,963.43
Nodes #2-#3	630,635.42	3,026,963.43	630,729.55	3,027,107.43
Nodes #1-#3	630,740.71	3,026,801.33	630,729.55	3,027,107.43

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	PZ-12-09	RSK-25	RSK-37	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	217.32	216.64	216.5013878	0.003582	316.17	0.805860	316.17	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
0.002480213	-0.002583872	6473.8145	-0.002480	0.002584	4	-0.558048	0.581371	4	630,701.89	3,026,957.40	628,841.73	3,028,895.30	630,701.89	3,026,957.40	622,331.17	3,035,677.96

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 13
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-15	630,584.44	3,027,055.17	1
RSK-25	630,635.42	3,026,963.43	1
RSK-37	630,729.55	3,027,107.43	1

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

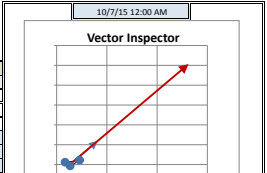
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Statistics			
Head (L)	RSK-15	RSK-25	RSK-37
Maximum =	216.59	216.64	216.50
Minimum =	216.59	216.64	216.50
Average =	216.59	216.64	216.50
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.000814	0.183127
Minimum =	0.000814	0.183127
Average =	0.000814	0.183127

10/7/15 12:00 AM



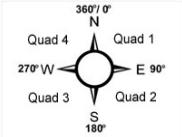
Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	105,683.69
Velocity Scale Factor =	15,000.00	469.71

Number of Measurements	
Date/Time	1
RSK-15	1
RSK-25	1
RSK-37	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,649.80	3,027,042.01	630,908.28	3,027,595.01
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,649.80	3,027,042.01	631,812.97	3,029,530.48

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	1	1
90 -180	0	0
180 -270	0	0
270 - 360	0	0



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,649.80	3,027,042.01		
Triangle Area	7,988.09	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	104.95	(L)	RSK-15	80.74
Distance #2 - #3	172.03	(L)	RSK-25	62.23
Distance #1 - #3	154.23	(L)	RSK-37	37.02

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,584.44	3,027,055.17	630,635.42	3,026,963.43
Nodes #2-#3	630,635.42	3,026,963.43	630,729.55	3,027,107.43
Nodes #1-#3	630,584.44	3,027,055.17	630,729.55	3,027,107.43

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-15	RSK-25	RSK-37	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	216.5899288	216.64	216.5013878	0.000814	25.05	0.183127	25.05	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
-0.000344644	-0.000737325	2665.8411	0.000345	0.000737	1	0.077545	0.165898	1	630,649.80	3,027,042.01	630,908.28	3,027,595.01	630,649.80	3,027,042.01	631,812.97	3,029,530.48

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 14
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-15	630,584.44	3,027,055.17	1
RSK-25	630,635.42	3,026,963.43	1
PZ-12-07	630,568.41	3,026,971.76	1

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

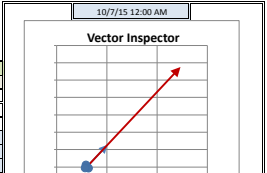
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Statistics			
Head (L)	RSK-15	RSK-25	PZ-12-07
Maximum =	216.59	216.64	216.67
Minimum =	216.59	216.64	216.67
Average =	216.59	216.64	216.67
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.001017	0.228921
Minimum =	0.001017	0.228921
Average =	0.001017	0.228921

10/7/15 12:00 AM



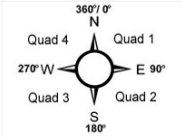
Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	51,577.55
Velocity Scale Factor =	15,000.00	229.23

Number of Measurements	
Date/Time	1
RSK-15	1
RSK-25	1
PZ-12-07	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,596.09	3,026,996.79	631,011.40	3,027,636.94
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,596.09	3,026,996.79	632,465.01	3,029,877.46

Orientation (deg)	Number of Vectors i-vector	Number of Vectors V-vector
0 - 90	1	1
90 -180	0	0
180 -270	0	0
270 - 360	0	0



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,596.09	3,026,996.79		
Triangle Area	2,861.44	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	104.95	(L)	RSK-15	39.94
Distance #2 - #3	67.52	(L)	RSK-25	53.86
Distance #1 - #3	84.94	(L)	PZ-12-07	86.21

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,584.44	3,027,055.17	630,635.42	3,026,963.43
Nodes #2-#3	630,635.42	3,026,963.43	630,568.41	3,026,971.76
Nodes #1-#3	630,584.44	3,027,055.17	630,568.41	3,026,971.76

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-15	RSK-25	PZ-12-07	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	216.5899288	216.64	216.67	0.001017	32.97	0.228921	32.97	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
-0.000553754	-0.000853532	3149.4656	0.000554	0.000854	1	0.124595	0.192045	1	630,596.09	3,026,996.79	631,011.40	3,027,636.94	630,596.09	3,026,996.79	632,465.01	3,029,877.46

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 15
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-15	630,584.44	3,027,055.17	1
PZ-12-05	630,479.09	3,027,087.35	1
PZ-12-07	630,568.41	3,026,971.76	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

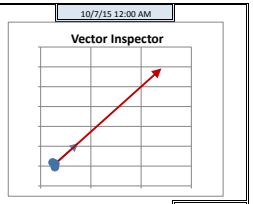
User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Statistics			
Head (L)	RSK-15	PZ-12-05	PZ-12-07
Maximum =	216.59	216.70	216.67
Minimum =	216.59	216.70	216.67
Average =	216.59	216.70	216.67
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.001453	0.326951
Minimum =	0.001453	0.326951
Average =	0.001453	0.326951

10/7/15 12:00 AM



Hydraulic Gradient Vector is BLUE

Groundwater Velocity Vector is RED

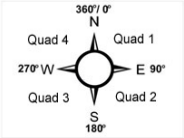
		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	50,264.13
Velocity Scale Factor =	15,000.00	223.40

Number of Measurements	
Date/Time	1
RSK-15	1
PZ-12-05	1
PZ-12-07	1

Number of Vectors		
Orientation (deg)	i-vector	V-vector
0 - 90	1	1
90 -180	0	0
180 -270	0	0
270 - 360	0	0

Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,543.98	3,027,038.09	631,491.87	3,027,575.91
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,543.98	3,027,038.09	634,809.50	3,029,458.25



Triangle Information				
Triangle Centroid (x,y)	630,543.98	3,027,038.09		
Triangle Area	4,651.56	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	110.15	(L)	RSK-15	96.11
Distance #2 - #3	146.08	(L)	PZ-12-05	35.32
Distance #1 - #3	84.94	(L)	PZ-12-07	48.57

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,584.44	3,027,055.17	630,479.09	3,027,087.35
Nodes #2-#3	630,479.09	3,027,087.35	630,568.41	3,026,971.76
Nodes #1-#3	630,584.44	3,027,055.17	630,568.41	3,026,971.76

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-15	PZ-12-05	PZ-12-07	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	216.59	216.7	216.67	0.001453	60.43	0.326951	60.43	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
-0.001263857	-0.000717084	3184.2101	0.001264	0.000717	1	0.284368	0.161344	1	630,543.98	3,027,038.09	631,491.87	3,027,575.91	630,543.98	3,027,038.09	634,809.50	3,029,458.25

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 16
Date:	7-Oct-15

Well Location			
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-19	630,558.89	3,027,213.62	1
PZ-12-03	630,474.29	3,027,193.61	1
PZ-12-01	630,488.32	3,027,384.39	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

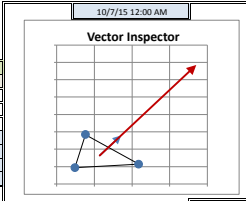
User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Statistics			
Head (L)	RSK-19	PZ-12-03	PZ-12-01
Maximum =	216.55	216.56	216.53
Minimum =	216.55	216.56	216.53
Average =	216.55	216.56	216.53
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.000159	0.035787
Minimum =	0.000159	0.035787
Average =	0.000159	0.035787

10/7/15 12:00 AM



Hydraulic Gradient Vector is BLUE

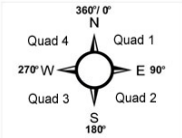
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	601,352.92
Velocity Scale Factor =	15,000.00	2,672.68

Number of Measurements	
Date/Time	1
RSK-19	1
PZ-12-03	1
PZ-12-01	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,507.17	3,027,263.87	630,535.64	3,027,379.72
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,507.17	3,027,263.87	630,635.28	3,027,785.17

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	1	1
90 -180	0	0
180 - 270	0	0
270 - 360	0	0



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,507.17	3,027,263.87		
Triangle Area	7,929.33	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	86.93	(L)	RSK-19	80.86
Distance #2 - #3	191.30	(L)	PZ-12-03	72.49
Distance #1 - #3	184.77	(L)	PZ-12-01	26.66

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,558.89	3,027,213.62	630,474.29	3,027,193.61
Nodes #2-#3	630,474.29	3,027,193.61	630,488.32	3,027,384.39
Nodes #1-#3	630,558.89	3,027,213.62	630,488.32	3,027,384.39

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-19	PZ-12-03	PZ-12-01	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	216.5536977	216.56	216.53	0.000159	13.81	0.035787	13.81	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
-3.79613E-05	-0.000154458	708.06638	0.000038	0.000154	1	0.008541	0.034753	1	630,507.17	3,027,263.87	630,535.64	3,027,379.72	630,507.17	3,027,263.87	630,635.28	3,027,785.17

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 17
Date:	7-Oct-15

Well Location

Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-19	630,558.89	3,027,213.62	1
RSK-7	630,633.63	3,027,264.01	1
PZ-12-01	630,488.32	3,027,384.39	1

Vector Inspector Row of Interest:	22
Must be between 22 and	22

Statistics

Head (L)	RSK-19	RSK-7	PZ-12-01
Maximum =	216.55	216.50	216.53
Minimum =	216.55	216.50	216.53
Average =	216.55	216.50	216.53
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.000645	0.145026
Minimum =	0.000645	0.145026
Average =	0.000645	0.145026

Principal Hydraulic Conductivity Components

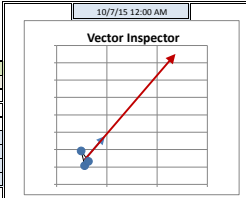
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

10/7/15 12:00 AM



Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	146,373.88
Velocity Scale Factor =	15,000.00	650.55

Number of Measurements	
Date/Time	1
RSK-19	1
RSK-7	1
PZ-12-01	1

Vector Inspector Arrow Coordinates

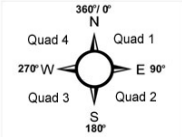
Plotted Hydraulic Gradient Arrow Coordinates

x_start	y_start	x_end	y_end
630,560.28	3,027,287.34	630,961.39	3,027,557.17

Plotted Groundwater Velocity Arrow Coordinates

x_start	y_start	x_end	y_end
630,560.28	3,027,287.34	632,365.27	3,028,501.57

Orientation (deg)	Number of Vectors: i-vector	Number of Vectors: V-vector
0 - 90	1	1
90 -180	0	0
180 -270	0	0
270 - 360	0	0



Hydraulic Conductivity Components

K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information

Triangle Centroid (x,y)	630,560.28	3,027,287.34		
Triangle Area	8,159.94	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	90.14	(L)	RSK-19	78.46
Distance #2 - #3	188.69	(L)	RSK-7	73.63
Distance #1 - #3	184.77	(L)	PZ-12-01	27.91

Triangle Plot Coordinates

Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,558.89	3,027,213.62	630,633.63	3,027,264.01
Nodes #2-#3	630,633.63	3,027,264.01	630,488.32	3,027,384.39
Nodes #1-#3	630,558.89	3,027,213.62	630,488.32	3,027,384.39

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-19	RSK-7	PZ-12-01	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	216.5536977	216.4955943	216.53	0.000645	56.07	0.145026	56.07	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
-0.000534812	-0.000359771	1642.8892	0.000535	0.000360	1	0.120333	0.080949	1	630,560.28	3,027,287.34	630,961.39	3,027,557.17	630,560.28	3,027,287.34	632,365.27	3,028,501.57

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 18
Date:	7-Oct-15

Well Location

Well Name	X Coordinate (L)	Y Coordinate (L)	
N2P2	630,658.52	3,027,311.16	1
RSK-7	630,633.63	3,027,264.01	1
PZ-12-01	630,488.32	3,027,384.39	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

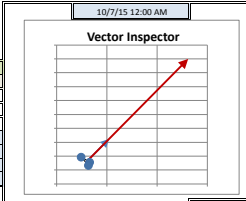
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Statistics

Head (L)	N2P2	RSK-7	PZ-12-01
Maximum =	216.46	216.50	216.53
Minimum =	216.46	216.50	216.53
Average =	216.46	216.50	216.53
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.000743	0.167158
Minimum =	0.000743	0.167158
Average =	0.000743	0.167158

10/7/15 12:00 AM



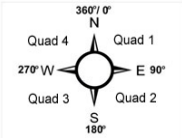
Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	126,994.27
Velocity Scale Factor =	15,000.00	564.42

Number of Measurements	
Date/Time	1
N2P2	1
RSK-7	1
PZ-12-01	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,593.49	3,027,319.85	631,043.39	3,027,648.58
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,593.49	3,027,319.85	632,618.02	3,028,799.10

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	1	1
90 -180	0	0
180 -270	0	0
270 - 360	0	0



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,593.49	3,027,319.85		
Triangle Area	4,923.47	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	53.31	(L)	N2P2	85.45
Distance #2 - #3	188.69	(L)	RSK-7	78.19
Distance #1 - #3	185.29	(L)	PZ-12-01	16.36

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,658.52	3,027,311.16	630,633.63	3,027,264.01
Nodes #2-#3	630,633.63	3,027,264.01	630,488.32	3,027,384.39
Nodes #1-#3	630,658.52	3,027,311.16	630,488.32	3,027,384.39

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	N2P2	RSK-7	PZ-12-01	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	216.46	216.50	216.53	0.000743	53.85	0.167158	53.85	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
-0.000599861	-0.000438294	1921.6192	0.000600	0.000438	1	0.134969	0.098616	1	630,593.49	3,027,319.85	631,043.39	3,027,648.58	630,593.49	3,027,319.85	632,618.02	3,028,799.10

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 19
Date:	7-Oct-15

	Well Location		
Well Name	X Coordinate (L)	Y Coordinate (L)	
N2P2	630,658.52	3,027,311.16	1
SHP-01-37X	630,696.92	3,027,498.37	1
PZ-12-01	630,488.32	3,027,384.39	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

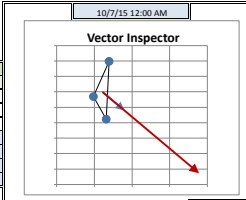
Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

Statistics			
Head (L)	N2P2	SHP-01-37X	PZ-12-01
Maximum =	216.46	216.46	216.53
Minimum =	216.46	216.46	216.53
Average =	216.46	216.46	216.53
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.000386	0.086804
Minimum =	0.000386	0.086804
Average =	0.000386	0.086804

10/7/15 12:00 AM



Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	308,075.71
Velocity Scale Factor =	15,000.00	1,369.23

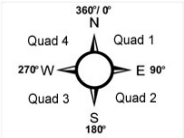
Number of Measurements	
Date/Time	1
N2P2	1
SHP-01-37X	1
PZ-12-01	1

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	1	1
180 -270	0	0
270 - 360	0	0

Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{YY} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,614.59	3,027,397.97		
Triangle Area	17,337.59	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	191.11	(L)	N2P2	78.31
Distance #2 - #3	237.71	(L)	SHP-01-37X	49.76
Distance #1 - #3	185.29	(L)	PZ-12-01	51.93

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,614.59	3,027,397.97	630,898.03	3,027,339.83
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,614.59	3,027,397.97	631,890.09	3,027,136.35



Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,658.52	3,027,311.16	630,696.92	3,027,498.37
Nodes #2-#3	630,696.92	3,027,498.37	630,488.32	3,027,384.39
Nodes #1-#3	630,658.52	3,027,311.16	630,488.32	3,027,384.39

User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	N2P2	SHP-01-37X	PZ-12-01	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	216.46	216.46	216.53	0.000386	101.59	0.086804	101.59	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_Y	i-Quad	V_x	V_Y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
-0.000377927	7.75194E-05	220.1277	0.000378	-0.000078	2	0.085034	-0.017442	2	630,614.59	3,027,397.97	630,898.03	3,027,339.83	630,614.59	3,027,397.97	631,890.09	3,027,136.35

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 20
Date:	7-Oct-15

	Well Location		
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-35A	630,437.55	3,027,515.53	1
SHP-01-37X	630,696.92	3,027,498.37	1
PZ-12-02	630,467.48	3,027,384.00	1

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

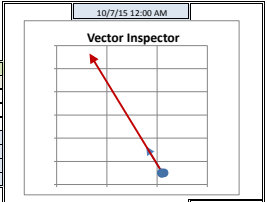
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

	Statistics		
Head (L)	RSK-35A	SHP-01-37X	PZ-12-02
Maximum =	215.77	216.46	216.84
Minimum =	215.77	216.46	216.84
Average =	215.77	216.46	216.84
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.007942	1.787042
Minimum =	0.007942	1.787042
Average =	0.007942	1.787042

10/7/15 12:00 AM



Hydraulic Gradient Vector is BLUE

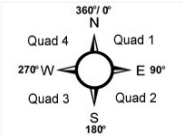
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	16,363.82
Velocity Scale Factor =	15,000.00	72.73

Number of Measurements	
Date/Time	1
RSK-35A	1
SHP-01-37X	1
PZ-12-02	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,533.98	3,027,465.97	628,918.15	3,033,199.43
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,533.98	3,027,465.97	623,262.74	3,053,266.56

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{YY} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,533.98	3,027,465.97		
Triangle Area	16,800.96	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	259.94	(L)	RSK-35A	73.40
Distance #2 - #3	256.37	(L)	SHP-01-37X	30.28
Distance #1 - #3	134.90	(L)	PZ-12-02	76.32

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,437.55	3,027,515.53	630,696.92	3,027,498.37
Nodes #2-#3	630,696.92	3,027,498.37	630,467.48	3,027,384.00
Nodes #1-#3	630,437.55	3,027,515.53	630,467.48	3,027,384.00

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-35A	SHP-01-37X	PZ-12-02	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	215.77	216.46	216.84	0.007942	344.26	1.787042	344.26	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_Y	i-Quad	V_x	V_Y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
0.002154442	-0.007644619	22001.733	-0.002154	0.007645	4	-0.484749	1.720039	4	630,533.98	3,027,465.97	628,918.15	3,033,199.43	630,533.98	3,027,465.97	623,262.74	3,053,266.56

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 21
Date:	7-Oct-15

	Well Location		
Well Name	X Coordinate (L)	Y Coordinate (L)	
RSK-35A	630,437.55	3,027,515.53	1
SHP-01-37X	630,696.92	3,027,498.37	1
SHP-05-44	630,586.00	3,027,588.88	1

Vector Inspector Row of Interest:	22
Must be between 22 and 22	

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

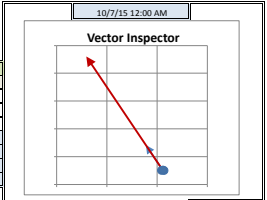
Statistics			
Head (L)	RSK-35A	SHP-01-37X	SHP-05-44
Maximum =	215.77	216.46	215.66
Minimum =	215.77	216.46	215.66
Average =	215.77	216.46	215.66
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.006477	1.457423
Minimum =	0.006477	1.457423
Average =	0.006477	1.457423

User input cells are shaded green.

HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

10/7/15 12:00 AM



Hydraulic Gradient Vector is BLUE

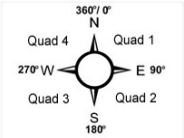
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	20,064.74
Velocity Scale Factor =	15,000.00	89.18

Number of Measurements	
Date/Time	1
RSK-35A	1
SHP-01-37X	1
SHP-05-44	1

Vector Inspector Arrow Coordinates			
Plotted Hydraulic Gradient Arrow Coordinates			
x_start	y_start	x_end	y_end
630,573.49	3,027,534.26	628,879.56	3,032,087.45
Plotted Groundwater Velocity Arrow Coordinates			
x_start	y_start	x_end	y_end
630,573.49	3,027,534.26	622,950.79	3,048,023.60

	Number of Vectors	
Orientation (deg)	i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 -270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{YY} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information				
Triangle Centroid (x,y)	630,573.49	3,027,534.26		
Triangle Area	10,785.88	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	259.94	(L)	RSK-35A	30.08
Distance #2 - #3	143.16	(L)	SHP-01-37X	35.43
Distance #1 - #3	165.58	(L)	SHP-05-44	114.49

Triangle Plot Coordinates				
Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,437.55	3,027,515.53	630,696.92	3,027,498.37
Nodes #2-#3	630,696.92	3,027,498.37	630,586.00	3,027,588.88
Nodes #1-#3	630,437.55	3,027,515.53	630,586.00	3,027,588.88

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	RSK-35A	SHP-01-37X	SHP-05-44	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	215.77	216.46	215.66	0.006477	339.59	1.457423	339.59	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_Y	i-Quad	V_x	V_Y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
0.002258577	-0.006070916	17171.672	-0.002259	0.006071	4	-0.508180	1.365956	4	630,573.49	3,027,534.26	628,879.56	3,032,087.45	630,573.49	3,027,534.26	622,950.79	3,048,023.60

Project:	Devens - SHL - East of Barrier Wall
Location:	Triangle 22
Date:	7-Oct-15

Well Location

Well Name	X Coordinate (L)	Y Coordinate (L)	
SHP-01-36X	630,737.88	3,027,688.84	1
SHP-01-37X	630,696.92	3,027,498.37	1
SHP-05-44	630,586.00	3,027,588.88	1

Vector Inspector Row of Interest:	22	
Must be between 22 and 22		

Principal Hydraulic Conductivity Components		
K_{max} =	45.0000	(L/T)
K_{min} =	45.0000	(L/T)
Orientation of K_{max} =	90.00	(degrees from N)
θ =	0.00	(degrees from X axis)

Effective Porosity =	0.20	(-)

User input cells are shaded green.

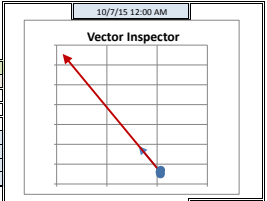
HYDRAULIC HEAD DATA SET MUST NOT CONTAIN BLANK LINES

Statistics

Head (L)	SHP-01-36X	SHP-01-37X	SHP-05-44
Maximum =	216.36	216.46	215.66
Minimum =	216.36	216.46	215.66
Average =	216.36	216.46	215.66
Range =	0.00	0.00	0.00

	Hyd. Grad. (L/L)	Velocity (L/T)
Maximum =	0.006035	1.357977
Minimum =	0.006035	1.357977
Average =	0.006035	1.357977

10/7/15 12:00 AM



Hydraulic Gradient Vector is BLUE
Groundwater Velocity Vector is RED

		Suggested Scaling Factors
Hyd. Grad. Scale Factor =	750,000.00	16,139.99
Velocity Scale Factor =	15,000.00	71.73

Number of Measurements	
Date/Time	1
SHP-01-36X	1
SHP-01-37X	1
SHP-05-44	1

Vector Inspector Arrow Coordinates

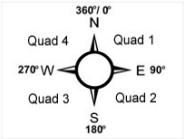
Plotted Hydraulic Gradient Arrow Coordinates

x_start	y_start	x_end	y_end
630,673.60	3,027,592.03	626,345.15	3,028,916.61

Plotted Groundwater Velocity Arrow Coordinates

x_start	y_start	x_end	y_end
630,673.60	3,027,592.03	611,195.56	3,033,552.66

Orientation (deg)	Number of Vectors: i-vector	V-vector
0 - 90	0	0
90 -180	0	0
180 - 270	0	0
270 - 360	1	1



Hydraulic Conductivity Components		
K_{xx} =	45.0000	(L/T)
K_{yy} =	45.0000	(L/T)
K_{xy} = K_{yx} =	0.0000	(L/T)

Triangle Information

Triangle Centroid (x,y)	630,673.60	3,027,592.03		
Triangle Area	12,417.11	(L^2)	Angle of Triangle (degrees) @	
Distance #1 - #2	194.82	(L)	SHP-01-36X	44.51
Distance #2 - #3	143.16	(L)	SHP-01-37X	62.92
Distance #1 - #3	181.82	(L)	SHP-05-44	72.57

Triangle Plot Coordinates

Triangle Sides	x_start	y_start	x_end	y_end
Nodes #1-#2	630,737.88	3,027,688.84	630,696.92	3,027,498.37
Nodes #2-#3	630,696.92	3,027,498.37	630,586.00	3,027,588.88
Nodes #1-#3	630,737.88	3,027,688.84	630,586.00	3,027,588.88

	Hydraulic Head (L)			Hydraulic Gradient		Groundwater Velocity		Angle Between Vectors
Date/Time	SHP-01-36X	SHP-01-37X	SHP-05-44	Magnitude (L/L)	Direction (deg)	Magnitude (L/T)	Direction (deg)	(deg)
10/7/15 0:00	216.36	216.46	215.66	0.006035	287.02	1.357977	287.02	0.00

Planar Equation Constants			Hydraulic Gradient Vector Components			Groundwater Velocity Vector Components			Hydraulic Gradient Arrow Plot Coordinates				Groundwater Velocity Arrow Plot Coordinates			
A	B	C	i_x	i_y	i-Quad	V_x	V_y	V-Quad	x_start	y_start	x_end	y_end	x_start	y_start	x_end	y_end
0.00577127	-0.001766111	1923.4369	-0.005771	0.001766	4	-1.298536	0.397375	4	630,673.60	3,027,592.03	626,345.15	3,028,916.61	630,673.60	3,027,592.03	611,195.56	3,033,552.66

APPENDIX K

Response to Comments

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

REPLY TO
ATTENTION OF
Base Realignment and Closure Division

04 November 2016

Ms. Anni Loughlin
Chief, Federal Facility Superfund Section
United States Environmental Protection Agency Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

RE: EPA Comment Letter Dated 20 September 2016 Regarding the Shepley's Hill Landfill (SHL) 2015 Annual Report

Dear Ms. Loughlin:

This letter responds to EPA comments on the 2015 SHL Annual Report provided with your letter dated September 20, 2016. As per the SHL Record of Decision, this annual report includes all 2015 remedial operation and maintenance activities and a summary environmental monitoring data per the requirements of 310 CMR 19.132 and 19.142. Therefore, the Army respectfully requests that the issues and concerns regarding SHL remedy performance and the ongoing Additional Work identified in EPA's February 24, 2016, SHL Scope of Work (SOW) not be addressed within this annual report. The Army will continue to implement the Additional Work as agreed upon including the evaluation of remedy performance within future Five-Year Review reports. It is also noted that the Army does not consider these Annual O&M Reports as primary documents under the Devens FFA.

If you have any questions please contact me at 978-796-2205 or Robert.j.simeone.civ@mail.mil

Sincerely,

Robert J Simeone
BRAC Environmental Coordinator
Base Realignment and Closure Division

Copies Furnished:

David Chaffin, Mass DEP
Penny Reddy, USACE
Andy Van Dyke, U.S. Army
Sue Ryan, U.S. Army

Printed on Recycled Paper

Army Response to EPA Comments (Received September 20, 2016)

2015 Annual Report for Shepley's Hill Landfill dated August 2016

GENERAL COMMENTS

1. Army's continued assertions regarding "capture of groundwater at the north end at the SHL" and "the ongoing arsenic mobilization in the NIA" are unsupported by existing site data and contrary to recent discussions between Army and EPA regarding the resolution of 2015 FYR Review deficiencies and data gaps. Further discussion of Army's refuted "multiple lines of evidence approach" should await completion of the tasks and subtasks described in the February 24, 2016 SHL SOW.

   RESPONSE: *Please see Cover Letter response. The additional data being collected under U.S. EPA's February 24, 2016 SHL SOW and U.S. Army's Draft Work Plan dated October 2016 will be used to further understand the complexity of SHL and the NIA.*

2. As stated in EPA's September 9, 2015 and September 21, 2015 comments on the draft 2015 Five-Year Review and draft 2014 draft SHL Annual Report, respectively, the current SHL groundwater monitoring program is inadequate and will remain deficient until an adequate data collection and analysis plan is developed and implemented. In addition, EPA provided numerous comments on the SHL LTMMP Update that were never resolved to EPA's satisfaction and are now the subject of Additional Work required per SHL SOW, Phase II, Task I, Subtasks 1.a through 1.d. EPA anticipates that completion of the work, as requested, will provide the information needed to develop and implement a long term monitoring program that can effectively evaluate the SHL remedy's ability to achieve cleanup goals and ensure long-term protectiveness.

   RESPONSE: *Please see Cover Letter response. The LTMMP was finalized in September 2015 incorporating comments and previous discussions. The LTMMP will be updated with the items outlined in the February 2016 EPA SOW. This annual report focuses on data collected in 2015. Data collected under the SOW and plan described in General Comment 1 will be discussed under subsequent technical memorandum and annual reports when applicable.*

PAGE SPECIFIC COMMENTS

1. Page 3, Section 1.2 - This section provides an inaccurate discussion of issues relevant to the "fourth, 2015 FYR" and must be amended to reflect recent dispute resolution discussions between Army and EPA and Army's commitment to perform the Additional Work necessary to address unresolved 2015 FYR Report issues. Alternatively, the discussion can be deleted in its entirety.

   As you will recall, EPA's September 9, 2015 comments on the draft 2015 FYR Report, identified a significant number of deficiencies and data gaps related to theArmy's evaluation of the existing remedy's ability to sufficiently contain/capture contamination migrating from the SHL so as to assure that human health and the environment are protected. Since the issues could not be resolved before the relevant deadline, EPA concurred with Army findings regarding the SHL remedy's short term protectiveness, but deferred any decisions regarding long term protectiveness until the issues, recommendations and requirements identified could be satisfactorily addressed/resolved. Unfortunately, Army issued the "final" 2015 FYR Report that did not

identify the unresolved deficiencies and data gaps as "Issues" and, as such, it did not define a strategy in the "Recommendations and Follow-Up Actions" to address and resolve each of them.

As a result, EPA invoked the dispute resolution provision of the FFA on November 3 2015. Numerous meetings and telephone calls ensued to resolve the matter and based on consensus of the specific tasks to be performed (and Army's commitment to perform the work), on February 24, 2016, EPA issued a "Scope of Work for the Additional Work necessary to determine whether the remedy at SHL is protective of human health and environment over the long term and to satisfy the requirements of a FYR under CERCLA, the National Contingency Plan (NCP) and relevant guidance" (i.e. SHL SOW). The Additional Work was divided into three, sequential phases, with specific tasks and subtasks to be performed in each phase. While Army is nearing completion of Phase I tasks, there is a considerable amount of Additional Work yet to be performed. The reference to the 2015 FYR Report as "completed" is incorrect and should be amended or deleted. In addition, the bulleted list of "additional items of concern" should be amended to include the issues and uncertainties identified in EPA's September 9, 2016, SHL-specific comments on the draft 2015 FYR Report (and identified during recent dispute resolution discussions). Accordingly, the list of "recommendations to the technical concerns" should include the agreed upon Additional Work (i.e. tasks and subtasks) to resolve each of those issues.

RESPONSE: *The 2015 Annual Report does not address the SHL Additional Work since this work was not defined until February 2016. The Army believes that the fourth FYR was complete when it was issued as final. Within the FYR it was noted that additional work should be conducted under Section 2.8.6 Summary of Technical Assessment. Also, the 2015 Annual Report is a discussion of the 2015 operations and not the work conducted in 2016.*

2. Page 3, Section 1.2, 2nd 1J - The first sentence states that "Based on the data reviewed, the response actions related to the Shepley's Hill Landfill are generally performing as designed and meeting the RAOs". For reasons discussed above, this statement is misleading and unsupported by existing site-specific data and analyses. In addition, while "containment" or "target capture zone" may not have been defined in the 1995 ROD, Army has yet to demonstrate that the existing extraction and treatment system is sufficiently containing/capturing contamination migrating from the landfill so as to assure that human health and the environment are protected by the remedial action. Although the addition of Institutional Controls (ICs) and Land Use Controls (LUCs) to the 1995 remedy, through the December 2013, Explanation of Significant Differences (ESD), addressed concerns related to short-term protectiveness, additional, site-specific data must be collected to determine whether the remedial action will remain protective of human health and the environment in the long-term. Based on the foregoing, EPA requests that this discussion be amended to reflect recent EPA/Army dispute resolution discussions regarding 2015 FYR deficiencies and the Additional Work to be performed by Army, in accordance with EPA's February 24, 2016, SHL Scope of Work (SOW), to address unresolved issues or deleted in its entirety.

   RESPONSE: *The Army will continue to address issues related to remedy performance and long-term protectiveness through the SHL Additional Work requirements, revisions to the SHL LTMMP and future Five-Year Reviews.* .

3. Page 3, Section 1.2, 3rd 1) -As discussed above, while modified slightly from those identified in the draft 2015 FYR Report, the "additional items of concern" and "recommendations for additional consideration at the site" listed at the bottom of the page does not reflect the deficiencies, data gaps, and technical issues, initially identified in EPA's September 9, 2015 comments on the draft 2015 FYR Report and subsequently discussed during the aforementioned

dispute resolution process. Accordingly, this discussion should be amended to identify all of the SHL-specific deficiencies identified in the draft 2015 FYR and the agreed upon "Additional Work" necessary to resolve each issue/concern or deleted in its entirety.

Specifically, the discussion of "items of concern" should be amended to include the following:

- Ability of the existing extraction and treatment system as designed, constructed and operated to provide sufficient containment/capture of the contamination migrating from the SHL and insure long term protectiveness of human health and the environment
- Incomplete delineation of the lateral and vertical extent of contamination upgradient, near, and downgradient of the extraction wells
- Inconsistencies between the SHL groundwater flow model and field measured, site specific data
- Absence of remedial component [in 1995 ROD] to address contaminated groundwater in the NIA - critical to ensuring (1) long term protectiveness of the overall SHL remedy (2) compliance with federal and/or state drinking water standards, and (3) achievement of the NCP goal of returning useable groundwater to their beneficial uses, whenever possible
- Conceptual Site Model (CSM) is unsupported by available site data (which shows a definite response to operation of the ATP extraction wells and statistically significant declining trends in arsenic concentrations in NIA groundwater)
- September 2015, SHL LTMMP is inadequate for purposes of defining the nature and extent of contaminants in all portions of the SHL aquifer, evaluating the performance and effectiveness of all remedial components, evaluating the remedy's ability to achieve cleanup goals (i.e. MCLs) and ensuring long-term protectiveness of the SHL remedy.

Accordingly, the list of "recommendations to the technical concerns" should be amended to reflect the specific tasks/subtasks to be performed in accordance with the SHL SOW:

- Define the lateral and vertical extent of the capture zone of the existing remedy (i.e. two extraction wells) based on hydraulic data collected with the ATP operating at the designed capacity of 50 gpm from existing and newly installed piezometers and monitoring wells [near the extraction wells]
- Perform geoprobe profile sampling up gradient and downgradient of the extraction system to delineate the lateral and vertical extent of contamination
- Validate/update the groundwater flow model with sufficient field measured hydraulic data to confirm conclusions
- Validate the extent of capture by evaluating concentrations trends in the NIA monitoring locations as compared to flow paths developed from the updated groundwater flow model above
- Upon determination of sufficient capture (i.e. completion of SHL SOW Phase I, Tasks 1-5), perform a study to determine the site-specific background level of arsenic in groundwater (SHL SOW Phase II, Task 2, Subtasks 2.a. through 2.e.)
- Collect and analyze geochemical (wells) and hydrologic (piezometers) data for a minimum of five (5) years, for the parameters defined in the current l TMMP, at the monitoring locations and frequency identified in EPA's February 24, 2016, SHL SOW (Phase II, Task 1, Subtask l.a.)

- Submit annual monitoring reports (SHL SOW Phase II, Task 1, Subtask 1.c.) summarizing fall (previous year) and spring (current year) sample data, analyzing arsenic trends for each key subarea (SHL SOW Phase II, Task 1, Subtasks 1.a. and 1.c.)
- Evaluate ability of extraction system, coupled with MNA, to restore groundwater in the NIA in a reasonable timeframe
- Amend the 1995 ROD to either (1) include a remedial component for restoration of groundwater in the NIA or (2) design, construct, operate and maintain an alternate remedy to restore groundwater in the NIA and ensure long-term protectiveness in accordance with CERCLA, the NCP, and the FFA.

RESPONSE: *See responses to General Comments #1 and #2 and Specific Comment #2 above.*

4. Page 5, Section 1.4, 5th bullet - Based on EPA's recent disapproval of Army's "updated groundwater flow model", the inclusion of "results of the 2015 revised modeling effort" in the draft 2015 annual report is unacceptable and should be deleted. Several significant issues regarding model construction and parameterization require resolution before the model can be considered useful in the analysis presented in subsequent sections of the document.

   RESPONSE: *The model reference will reference a draft groundwater flow model. Bullet has been revised to the following:*

   - *Present the draft results of the 2015 revised modeling effort that is currently under EPA review,*

5. Page 13, Section 3.3.1.2, 11 3 - Please identify the specific VOCs and concentrations of each identified in the ATP influent.

   RESPONSE: *Agreed. The specific VOCs and the concentration will be identified.*

6. Page 15, Section 4.0 - Please amend the discussion to identify each of the annual "Monitoring and Maintenance Activities" outlined in Section 5.1 of the LUCIP and include a summary of the items reviewed from the checklist, identification of deviations from this LUCIP, corrective actions necessary due to implementation issues or as a result of changes in site conditions or land use, and proposed changes to the plan and reporting frequency. The summary should also identify any deficiency(ies), including any violations of the ICs, found during the annual review, and a written explanation indicating the deficiency and the efforts or measures that will be or have been undertaken to correct the deficiency. In addition, a copy of the completed Annual Review Checklist (August 2014, Final NIA LUCIP, Appendix E) should be submitted and included in the revised final Annual Report.

   RESPONSE: *Agreed. Section will be updated as recommended.*

7. Page 16, Section 5.0 - As you may recall, EPA provided numerous comments on the 2015 LTMMP, which were never resolved to EPA's satisfaction and are now the subject of Additional Work for the 2015 FYR (February 24, 2016, SHL SOW - Attachment 1). As such, reference to the document as "final" should be changed to "draft". In addition, since many of EPA's comments were included in recent EPA/ Army dispute resolution discussions regarding 2015 FYR, this section should be amended to discuss the unresolved deficiencies and the Additional Work to be performed by Army, in accordance with EPA's February 24, 2016, SHL Scope of Work (SOW), to address these issues.

   RESPONSE: *Please see response to General Comments #1 and #2.*

The Army worked with EPA to address all LTMMP comments over a 2 year period. The Army incorporated all substantive EPA comments on the LTM network and accepted EPA's recommended changes to the SHL monitoring program with the addition of numerous wells, piezometers and associated analytical parameters and sampling frequency changes. The Army will be updating the LTMMP to include the additional monitoring requirements in the February 24, 2016, SHL SOW - Attachment 1.

8. Page 16, Section 5.1-Please amend this section to include a description of the Additional Work to be performed in accordance with the SHL SOW, Phase llJ Task l, Subtasks 1.a and 1.c. and identification of the additional monitoring wells and piezometers added to the LTMMP per the SHLSOW- Phase I Task 1Subtasks1.c and 1.f, Phase 1Task2 Subtask 2.e, Phase I Task 3 Subtask 3.e and Phase II Task 1 Subtask l.a and 1.d.

   RESPONSE: *Please see responses to General Comments #1 & #2.*

9. Page 16, Section 5.2.1- Contrary to Army's commitment (in response to EPA comments on the 2014 Annual Report) to address deficiencies in its evaluation of barrier wall performance, it does not appear that Army executed the agreed upon changes. It appears that the current discussion of barrier wall performance follows the same (previously rejected) approach used in the draft 2014 Annual Report. EPA requests, therefore, that this discussion be amended to address recent EPA/Army dispute resolution discussions regarding 2015 FYR deficiencies and the Additional Work to be performed by Army, in accordance with EPA's February 24, 2016, SHL Scope of Work (SOW), to address unresolved FYR issues or deleted in its entirety.

   As previously stated, differences in hydraulic heads across the barrier wall should not be used to evaluate barrier wall performance. This section presents data regarding the differences in hydraulic head between piezometers installed on each side of the barrier wall, which indicates that the hydraulic head on the west (landfill) side of the wall is generally higher than on the east (Red Cove) side of the wall. It is implied that these observations indicate the barrier wall is performing as designed. However, as previously noted, a decrease in hydraulic head across the wall is not a sufficient indicator of wall effectiveness. In this area, a decrease in hydraulic head also existed prior to wall construction (see attached Figure 1). Therefore, a more definitive indicator of hydraulic performance must be used.

   Additionally, EPA recommends that hydraulic gradients on the west side of the wall and on the east side of the wall be calculated for each round of water level measurements. Hydraulic gradient vectors could be calculated using simple three-point analyses to estimate groundwater flow direction and magnitude both east and west of the wall. In order to best implement this approach, consideration should be given to incorporation of selected wells from the RSK well network into the hydraulic monitoring program to supplement the existing coverage and improve the analysis both east and west of the wall. Although other wells could be chosen, well triangles located west of the wall that would be useful in defining hydraulic gradients include PZ-12-10/PZ-12-08/SHM-10-07, RSK27A/PZ-12-08/SHM-10-07, RSK27A/PZ-12-08/PZ-2-6, RSK27A/RSK28A/PZ-12-06, PZ-12-04/RSK28A/PZ-12-06, PZ-12-04/RSK28A/RSK32A, PZ-12-04/SHL-20/RSK32A, PZ-12-02/SHL-20/RSK34, RSK34/SHL-20/RSK32A, RSK34/PZ-12-02/RSK35A, and RSK34/SHM-11-06/RSK35A. Well triangles located east of the wall that would be useful in defining hydraulic gradients include PZ-12-09/RSK25/RSK37, RSK15/RSK25/RSK37, RSK15/RSK25/PZ-12-07, RSK15/PZ-12-05/PZ-12-07, RSK19/PZ-12-03/PZ-12-01, RS Kl 9 /RS K7 /PZ-12-01, N 2P2/RSK7 /PZ-12-01, N 2 P2/SH P-01-3 7X/PZ-12-01, RSK35A/SH P- 01-37X/PZ-12-0l, RSK35A/SHP-01-37X/SHP-05-44, and SHP-01-36X/SHP-01-37X/SHP-05-44.

RESPONSE: *The report will be revised to include vector analysis.*

Army Response to MassDEP Comments (Received September 9, 2016)

2015 Annual Report for Shepley's Hill Landfill dated August, 2016

1. Section 2.3.1: Please confirm/correct the cited range of barometric pressure readings (the readings are inconsistent with the values listed in Table 2-1).

   RESPONSE: *The barometric pressure readings have been corrected in the text consistent with Table 2.1.*

2. Section 4.0: The report should include a copy of an interview form that documents the interview conducted with the Ayer Board of Health (refer to Appendix E of the LUCIP).

   RESPONSE: *Appendix E has been updated*

3. Section 5.2.1: This brief discussion of water level measurements acquired in the vicinity of the barrier wall is inadequate to evaluate the performance of the barrier wall. As specified in the LTMMP, the report should include a more comprehensive evaluation that also uses hydraulic gradients and arsenic concentrations on the east side of the wall to develop an estimate of the arsenic flux in groundwater that discharges to Red Cove.

   RESPONSE: *Please see response to EPA Comment 9.*

4. Section 5.4.2 (Arsenic Concentration Trends): The Army recently (August 22, 2016) submitted an update to the evaluation presented in this section; consequently, MassDEP will comment separately on arsenic trends following a review of the updated evaluation.

   RESPONSE: *Comment noted.*

5. Section 6.0 (SYSTEM PERFORMANCE METRICS AND ASSESSMENT): The Army recently initiated a program of field investigation and assessment intended to provide an improved understanding of the performance of the extraction system ("Additional Work"); consequently, MassDEP will comment separately on system performance following review of the results from the on-going Additional Work.

   RESPONSE: *Comment noted.*

6. Sections 7.1.2 and 7.1.3: MassDEP will comment separately on arsenic trends and system performance (refer to preceding comments).

   RESPONSE: *Comment noted.*

7. Table 3-1 should include data from July 2015.

   RESPONSE: *Table 3-1 will be updated to include the July 2015 data.*

8. Table 5-2: Please confirm/correct the data presented in the last two columns (most of these entries are identical to those presented in the 2014 annual report).

   RESPONSE: *Table 5-2 has been updated with the correct measurements.*

9. Table 5-3: The report should explain the reason(s) water levels were not measured in many of the monitoring wells during one or both monitoring events.

   RESPONSE: *Water level readings were collected from wells specified in the Final Shepley's LTMMP (Sovereign, September 2015). Table 5-3 is an historical table which was updated with the*

2015 readings. Table 5-3 was reviewed and any 2015 missing data points have been added. A revised Table 5-3 has been included.

10. Table 5-4: Field stabilization measurements associated with several samples (SHL-4, SHL-19, 99-31A, 99-31B, 11-02, PZ-4A/B, PZ-6A/B) were not tabulated. These measurements should be included in the table, or the report should explain why they were not collected.

    RESPONSE: *Table 5-4 has been updated with the missing 2015 field stabilization measurements.*

11. Table 5-4: Please confirm/correct the sampling date listed for the fall sample collected from well SHM-13-08 (Section 5.3 indicates this well was sampled in December).

    RESPONSE: *The sample date of December 2015 is correct for the well. Well SHM-13-08 was not located in October 2015 due to construction activities at the residential property. The well was sampled it in December.*

12. Appendix F: Many of the charts do not include October sample results; charts should be revised as necessary for completeness.

    RESPONSE: *Appendix F has been revised.*

13. Appendix H (Model Simulation Memorandum): The revised groundwater model is one of the Additional Work items currently under discussion with USEPA; consequently, MassDEP will comment separately on the revised model after the associated Additional Work submittal is reviewed

    RESPONSE: *Comment noted.*

Army Response to PACE Comments (Received September 6, 2016)

on the 2015 Annual Report for Shepley's Hill Landfill, dated August 4, 2015

1. PACE and ECR acknowledge and appreciate the Army's efforts and success in increasing the flow rate from the extraction wells, improving the capability of the treatment system to process higher flows, and maintaining the system to decrease downtime.

   RESPONSE: *Comment noted.*

2. Section 2.3.2 should acknowledge and discuss the fact that many landfill gas monitoring points yielded readings above 10% of the Lower Explosive Limit (LEL), and several were at or above 100% of the LEL. Although similar readings have been obtained in the past, the existence of potentially explosive conditions merits acknowledgment and discussion in the text.

   RESPONSE: *The presence of LEL is most likely attributed to the observed methane concentration. The Army will consider the use of a different field equipment which can differentiate between VOC and methane. A brief discussion of methane and its effect on LEL will be included.*

3. Section 5.4.2 includes the results of an analysis of Arsenic Concentration Trends. The text should mention the time period over which the analysis was conducted. The apparently longer time period used in this analysis relative to that included in the August 23, 2016 Draft Technical Memorandum prepared by KGS leads to conflicting trends being identified for several wells. Two of the three wells where increasing trends are identified in Section 5.4.2 (SHL-22 and SHM-05-41C) are identified as having a decreasing trend and no significant trend, respectively, in the August memorandum. The third well identified as having an increasing trend (SHM-10-02) is not considered meaningful because arsenic concentrations have consistently been less than 5 ppb (i.e., less than one-half the drinking water standard).

   RESPONSE: *The Army will include additional analysis and discussion in future annual O&M reports and technical memorandum.*

4. Section 5.4.2 should acknowledge that the trend analysis shows strong evidence of decreasing arsenic concentrations, particularly in the most impacted wells, including SHM- 13-06 and SHM-10-15, where the highest arsenic concentrations were detected in June and October 2015, respectively. Other wells with elevated arsenic concentrations (i.e., greater than 1000 ppb) that show statistically significant downtrends include N5-P1, SHM- 96-5B, SHM-05-41B, and SHM-13-07. The verification of statistically significant downtrends at these highly-impacted wells, many of which are down-gradient of the extraction system, is an important result that is not given any meaningful discussion in the report.

   RESPONSE: *The Army will include additional analysis and discussion in future annual O&M reports and technical memorandum.*

5. In light of the above, the conclusion presented in Section 7.1.3 that "Arsenic data from monitoring wells down-gradient of the extraction well capture zone exhibit both increasing and decreasing arsenic concentrations" is misleading. At SHL-22 and SHM-04-41C, shorter-term trends more reflective of the effect of the extraction system do not confirm the increasing trends identified in Section 5.4.2. The remaining well identified as having an increasing trend (SHM-10-02) has not been impacted by arsenic at levels above 50% of the drinking water

standard. In contrast, most of the wells with decreasing trends lie down-gradient of the extraction wells, and include the wells most impacted by arsenic. Please revise this conclusion to accurately reflect the results obtained.

RESPONSE: *The Army considers these general conclusions to be accurate and appropriate for this annual O&M report.*

6. The final sentence of Section 6.1.3 should be rewritten to acknowledge the preponderance of statistically significant downtrends in arsenic concentrations, and omit the reference to the "persistence" of arsenic which is not supported by the trend analyses. The statement that it will take "a considerable amount of time to reduce down-gradient arsenic concentrations" is vague and not supported by the trend analyses, and should also be deleted.

   RESPONSE: *Disagree. The Army considers these statements to be accurate and appropriate for this annual O&M report.*

7. Given that significant downtrends in arsenic concentrations have been documented, the statement in Section 6.3 that "hundreds of years" will be required to flush residual carbon and arsenic in groundwater should be deleted pending the results of a recalculation of cleanup times based on the observed downtrends and the results of on-going additional work

   RESPONSE: *The Army has conducted several calculations to determine the amount of time necessary to clean the site to current standards. These previous calculations have shown significant time periods; as such, this section will not be revised. The Army will consider a recalculation of the cleanup period in the next annual report, based upon a revised cleanup goal and pending the results of the recent work.*