

Submitted to AVX Corporation 801 17th Avenue South Myrtle Beach, SC 29578 Submitted by AECOM 1155 Elm Street Suite 401 Manchester, NH 03101 September 18, 2015

# Phase II Comprehensive Site Assessment

Former Aerovox Facility 740 Belleville Avenue New Bedford, Massachusetts RTN 4-0601

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# List of Acronyms

%RE percent reference emitter

ACO Administrative Consent Order and Notice of Responsibility

ADD Average Daily Exposure Dose

AECOM Technical Services, Inc. (formerly URS Corporation)

AST aboveground storage tank

ATV Acoustic Televiewer

AUL Activity and Use Limitation

AVX AVX Corporation
Bgs below ground surface

CAM Compendium of Analytical Methods CCV Continuing calibration verification

Cm/s centimeters per second

Cm<sup>2</sup>/s square centimeters per second

COC Contaminant of Concern

CVOC chlorinated volatile organic compound DNAPL dense non-aqueous phase liquid

EPA United States Environmental Protection Agency

EV electrovolt

FID flame ionization detector

FLUTe<sup>™</sup> Flexible Liner Underground Technologies

Ft feet

Gal/min/foot gallons per minute per foot

Gpm gallons per minute

Hager-Richter Hager-Richter Geoscience, Inc.

HPFM Heat Pulse Flow Meter HPT hydraulic profiling tool

ID inner diameter

ILCR Incremental lifetime cancer risk IRA Immediate Reponse Action K Hydraulic conductivity

MALM mise-a-la-masse

MassDEP Massachusetts Department of Environmental Protection

MCP Massachusetts Contingency Plan

Mg/kg milligrams per kilogram mg/L micrograms per liter MHW Mean High Water

MiHpt combination Membrane Interface Tool/Hydraulic Profiling Tool

MIP Membrane Interface Probe

MI/s milliliters per second

MNA Monitored Natural Attenuation MS/MSD matrix spike/matrix spike duplicate

Msl mean sea level

NAPL non-aqueous phase liquid

NGVD National Geodetic Vertical Datum

NPDES National Pollutant Discharge Elimination System

NTCRA Non-Time-Critical Removal Action

OHM Oil and Hazardous Material

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OTV Optical Televiewer

PCBs polychlorinated biphenyls

PCE tetrachloroethene

Phase I ISI Phase I Initial Site Investigation

Phase II CSA Phase II Comprehensive Site Assessment

Phase II SOW Phase II CSA Scope of Work PID photoionization detector

Ppm parts per million

Psi pounds per square inch PVC polyvinyl chloride

QC quality control

REDUA Representativeness and Data Usability Assessment

RfC Reference Concentration

RfD Reference Dose

RPDs Relative Percent Differences RTN Release Tracking Number

T Transmissivity TCE trichloroethene

TCLP toxicity characteristic leaching potential

TOC total organic carbon
Troll In-Situ Level Troll700
TSS Total suspended solids
UCL Upper Concentration Limit
UST underground storage tank

UVOST Ultraviolet Optical Screening Tool

VI Vapor Intrusion

VOC volatile organic compound XSD halogen specific detector

# 1 Introduction and Disposal Site Information

On behalf of AVX Corporation (AVX), AECOM Technical Services, Inc. (AECOM, formerly URS Corporation (URS)) has prepared this *Phase II Comprehensive Site Assessment* (Phase II CSA) for the disposal site known as the former Aerovox Facility (Site or Disposal Site) located at 740 Belleville Avenue in New Bedford, Massachusetts. The Release Tracking Number (RTN) for the Site is 4-0601. This Phase II CSA is being submitted to address the presence of polychlorinated biphenyls (PCBs) and chlorinated volatile organic compounds (CVOCs) present in the subsurface at the Site in accordance with the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000 (specifically 310 CMR 40.0830)

Assessment and remediation of the Disposal Site under Massachusetts General Law Chapter 21E and the MCP are subject to the Administrative Consent Order and Notice of Responsibility (ACO) between AVX and the Massachusetts Department of Environmental Protection (MassDEP) and Office of the Attorney General, effective as of June 3, 2010 (ACO-SE-09-3P-016). A six-month extension for submittal of the Phase II CSA was requested by AVX on February 27, 2015 due to several findings/events resulting in the need for further investigation. On March 10, 2015, MassDEP approved the Request for Extension via electronic mail to AVX. An Amendment to the ACO memorializing the extension was executed in June 2015.

# 1.1 Site Information (310 CMR 40.0835(4)(a)-(b))

The Disposal Site known as Aerovox Inc. is located at 740 Belleville Avenue, Bristol County, New Bedford, Massachusetts. **Figure 1-1**, Site Location Plan, shows the Site location with respect to the surrounding topography and features. The coordinates of the Site (referenced to the corner of Belleville Avenue and Hadley Street) are latitude 41° 40' 25.12" N and longitude 70° 55' 13.84" W (UTM coordinates 340135.53m E and 4615326.34m N).

The Disposal Site at the time it was tier classified (and at the time the ACO became effective) was defined as the Aerovox property (Property) which encompasses approximately 10.3 acres and according to the ACO has the following boundaries:

- The northern boundary of the Property is the existing Aerovox northern property line which is located approximately in the middle of Graham Street, a private alley that lies between Aerovox and a factory operated by Precix, Inc.
- The southern boundary of the Property is the existing Aerovox southern property line which is located approximately in the middle of Hadley Street, a private street that lies between Aerovox and a factory operated by Acushnet Company (Titleist).
- The western boundary of the Property is the existing Aerovox western property line along Belleville Avenue, and
- The eastern boundary of the Property is the existing sheet pile wall (inclusive of the wall itself) running generally in a north-south orientation along the Acushnet River, and the line formed by the elevation of Mean High Water (MHW) where the sheet pile wall is not present.

Refer to Figure 1-2 for a graphical depiction of the original site boundaries as defined by the ACO.

The Property formerly contained an approximately 450,000 square foot manufacturing building and associated ancillary buildings (the Facility) along with a parking lot located on industrially-zoned land. The building consisted of a western section containing two floors, and an eastern section containing three floors. The exterior walls were brick; the roof was constructed of wood. The first floor, which was the building foundation floor, was constructed of concrete; the second floor consisted of both concrete and wood; and the third floor was constructed of wood. Ancillary structures included a brick sewer pump station and a brick boiler house that were located along the south side of the main manufacturing building, and a brick structure that housed electrical switching equipment that was located at the southwest corner of the main building. All Facility infrastructure on the Property was demolished and removed in 2011 as part of a Non-Time-Critical Removal Action (NTCRA), and an asphalt cap was installed.

The Property is currently a vacant, asphalt paved (capped) parking lot. The land surrounding the Property is used industrially to the south and north, and residentially to the west. The Acushnet River is immediately east of the Site. The Acushnet River and the area below MHW east of the Site is part of the New Bedford Harbor Superfund Site.

As a result of the Phase II CSA, and the findings discussed herein, the area encompassing the Site has been modified from that defined in the ACO. The MCP defines the Disposal Site to be (310 CMR 40.0006) "...any structure, well, pit, pond, lagoon, impoundment, ditch, landfill or other place or area, excluding ambient air or surface water, where uncontrolled oil and/or hazardous material has come to be located as a result of any spilling, leaking, pouring, abandoning, emitting, emptying, discharging, injecting, escaping, leaching, dumping, discarding or otherwise disposing of such oil and/or hazardous material." As described further in the subsequent sections of this report, and in the Conceptual Site Model provided in **Appendix A**, because PCBs and/or CVOCs have come to be located in soil and groundwater outside of the Property boundaries originally defined in the ACO, the Site boundary extends beyond the Property to the north, beneath and beyond the property currently occupied by Precix, Inc. (Precix property) and to the south, beneath the property currently occupied by the Acushnet Company/Titleist (Titleist property). **Figure 2-2** presents a Site plan including the presently defined Site boundary in comparison to the ACO boundary. Note that the eastern boundary of the Site remains unchanged, by definition in accordance with the terms of the ACO.

# 1.2 Disposal Site History (310 CMR 40.0835(4)(c))

Electrical component manufacturing began at the Site in approximately 1938. Beginning in the 1940s, use of dielectric fluid containing PCBs in capacitor manufacturing started. Various common industrial solvents were also used in manufacturing operations. Use of PCBs in the manufacturing process ended on or about October 1978. Operations and disposal practices during the period involving the use of PCBs and solvents resulted in the release of hazardous substances which contributed to the contamination of soils, building materials and equipment, surface water runoff and groundwater at the Site. The Facility has not been in operation since 2001.

During a 1981 United States Environmental Protection Agency (EPA) compliance inspection of the Facility, "oil impregnated soil was observed in the culverts leading to and at both outfalls." Culvert, as used here is believed to refer to the open drainage trenches that were formerly adjacent to the north and south sides of the building. In addition to the oily soils observed in the drainage trenches, stained

soil was observed in the "backyard power substation" located between the former Aerovox building and the Acushnet River. Samples collected from the soils within the drainage ditches and in the former backyard power substation contained PCB concentrations of up to 24,000 parts per million (ppm). The backyard power substation was reportedly used for drum storage within the month prior to EPA's collection of the samples.

In addition to the use of PCBs, Aerovox also utilized a trichloroethene (TCE) capacitor degreasing operation. Degreasing residues were stored in 55-gallon drums on a concrete floor with no secondary containment. A TCE aboveground storage tank (AST) was formerly located in the second floor of the building, just outside of the impregnation room. In addition, the TCE recovery system ASTs were located in the first floor of the building. Note that TCE was also historically used during manufacturing on the Precix property to the north, and its TCE AST is located directly north of the location of the former Aerovox ASTs. See **Appendix B** for figures depicting the location of features within the former Aerovox building.

Operations and disposal practices involving the use of PCBs and solvents reportedly resulted in the release of hazardous materials. Inspections, assessments and sampling programs from the 1980s forward, undertaken by the former owner and operator, Aerovox, Inc. as well as by EPA, confirmed the presence of PCBs in soils under the concrete foundation, in soils outside the building and mixed into the asphalt parking lot, in groundwater, as well as throughout the interior of the building.

Based on prior investigations and available reports dating back to 1983, known or presumed releases from past operations of the Facility include the following:

- Discharge of National Pollutant Discharge Elimination System (NDPES) water (including PCBs) to the former storm water discharge trenches located on the northern and southern side of the building (portions of which remain at the east end of the Property to convey runoff from the cap);
- Contaminated soils located beneath the existing hydraulic asphalt concrete cap (from storage of drums containing wastes in this area);
- Contaminated soils located beneath the parking area in the vicinity of the former pump building;
- Leakage of stored virgin and waste PCB containing oils and TCE through cracks in the building foundations or ground surface;
- Possible overfills of virgin PCB containing oil (for Aerovox) and TCE (for both Aerovox and Precix) to the ground surface on the northern side of the Facility during delivery/tank filling activities;
- Release of oil from two underground storage tanks (USTs) formerly located on the south side of the building and associated contaminated soils that were not excavated due to structural concerns associated with the nitrogen cooling system pad and corrugated storm sewer;
- PCBs contained within the former parking lot asphalt;
- Infiltration of storm water formerly in contact with contaminated building materials; and
- PCB containing sediment within the catch basin/surface water runoff system.

None of these historic or potential sources is currently uncontrolled. No specific release mechanism or volume is documented; rather the release is presumed to be the result of the historic manufacturing of electrical components at the Facility over forty years of industrial activity. Releases to the environment

including soil, groundwater, and the adjacent Acushnet River likely occurred through surface spills and through floor drains and storm water outfall systems.

#### 1.3 Phase I Conceptual Site Model

Prior to completion of the Phase II CSA described herein, the Conceptual Site Model was focused on the Property and its boundaries as the defined disposal site. The Conceptual Site Model included with the Phase I Initial Site Investigation report identified the constituents of concern for the Site as PCBs and volatile organic compounds (VOCs), and included as the presumed primary release mechanism for these hazardous materials the following:

- Releases of hazardous materials to the ground surface through the following mechanisms:
  - waste solvents and PCB oils reportedly spilled at the eastern end of the Property between the former building and the river in an area that was previously unpaved;
  - waste solvents and PCB oils reportedly discharged in the previously unpaved ditch along the northern side of the former building and to the north and south drainage culverts that ran along the sides of the building and discharged to the river under a NPDES permit;
  - solvent and PCB oil products spilled as these materials were delivered to tanks with fill ports along the northern side of the building;
  - PCBs stabilized by mixing with asphalt and placement of this asphalt on the parking lot surface;
  - PCB capacitors discarded just outside the Site boundary in the northeast corner of the Property along the shoreline.
- Releases of hazardous materials to the subsurface through the following mechanisms:
  - spills of product and waste solvents and PCB oils inside the building during manufacturing that infiltrated the subsurface through cracks, sumps and penetrations in the floor slab;
  - infiltration of hazardous materials contained in storm water in contact with the former building through flood and precipitation events;
  - residual hazardous materials left in place in subsurface soil after remediation of the former bunker oil tanks;
  - erosion and deposition of PCB containing sediment within the catch basin/surface water runoff system.

Secondary release mechanisms/contaminant transport mechanisms were tentatively evaluated prior to the Phase II CSA as follows:

- Dissolution of hazardous materials from source area soils into groundwater. The primary soil
  source areas were anticipated to be the eastern end of the Property along the shoreline, the
  north side of the former building along the south side of Graham Street, and beneath the former
  building slab, particularly where the former pump room and impregnation room were located.
  Additional impacted soils were presumed to exist beneath the rest of the capped site, but below
  MCP Upper Concentration Levels (UCLs).
- Dissolved contaminant migration with shallow and deep overburden groundwater. General migration with groundwater was anticipated to be from west to east. Deep overburden

groundwater was noted to be tidally influenced while shallow groundwater flow was less so because of the dampening effect of the sheet pile containment wall. Preferential migration along the overburden/bedrock contact was anticipated given the density of the site contaminants, but significant impacts to bedrock groundwater were not anticipated based on the historic data available at the time.

- Discharge of contaminated groundwater from the deep overburden to the Acushnet River was presumed, however the river itself is separate and distinct from the Site.
- Discharge of contaminated storm water and sediment to the Acushnet River via the subsurface storm sewer system within the Property and the storm sewer line in Hadley Street. Again, the river itself is separate and distinct from the Site.
- The potential for storm water surface runoff to have historically carried PCB impacts onto the
  adjacent unpaved portions of the Titleist property to the south was considered a possible
  migration mechanism given that PCB impacts were measured in the Hadley Street pavement
  during the NTCRA.
- Known VOC impacts in the shallow overburden groundwater in proximity to the Precix building
  to the north suggested that the potential for vapor intrusion could exist and would need to be
  evaluated.

Accordingly, given these mechanisms, the distinction between the river and the Site, and the agreed upon Activity and Use Limitation planned for the Property, the potential exposures and receptors that could present a risk to human health and the environment included the following:

- Construction workers during foreseeable development of the Property;
- Commercial/industrial exposure to indoor air impacts if the vapor intrusion pathway was found to be complete;
- Trespasser and employee exposure to surface soils if soil impacts on the unpaved portions of the Titleist property were confirmed;
- Aquatic environmental exposure, to the extent that the Site could pose a continuing source to surface water (and not related to historical prior releases to the river or the remediation of surface water or sediment in the river itself).

In addition to these Conceptual Site Model driven assessment needs and corresponding data gaps, the MCP performance standards for a Phase II CSA were considered in developing the scope and approach to the Phase II work described in the following sections. Specifically, the need to identify the nature and extent of contamination laterally and with depth, and the need to identify source areas so that source control could be demonstrated figured prominently in planning the remote sensing, sampling and analysis that follows. The results of the Phase II CSA were used to update the Phase I Conceptual Site Model as described in Section 8.2.

# 2 Site Hydrogeological Characteristics (310 CMR 40.0835(4)(d))

# 2.1 Phase II Investigations (310 CMR 40.0835(4)(d)(1)-(2))

The following sections of this report summarize the subsurface investigation approach and methods used and activities that have been completed as part of the Phase II CSA. For activities that were completed by subcontractors to AECOM, subcontractor reports are contained within the appendices at the end of this document for reference. In general, the Phase II CSA approach incorporated step-wise iterative methods involving remote sensing and screening tools followed by targeted sampling and laboratory analysis.

## 2.1.1 Seismic Refraction Survey

In October 2013, Hager-Richter Geoscience, Inc. (Hager-Richter) completed a seismic refraction survey at the Site. The purpose of the seismic survey was to identify and contour the till surface and bedrock surface beneath the Site, so that soil borings and monitoring wells could be located appropriately. Hager-Richter laid out a total of ten transect lines, identified as Seismic Line 1 through Seismic Line 10. Seismic lines 1 through 4 were East-West trending transects covering the areas of the Site between the building and Acushnet River. Seismic lines 5 through 10 were North-South transects between Graham Street and Hadley Street. Refer to **Appendix C** for the locations of the seismic survey lines.

According to the Hager-Richter seismic refraction survey, the depth to competent bedrock beneath the Site ranges between 5 feet to 67 feet below the ground surface, corresponding to an elevation from approximately 4 feet to -62 feet relative to the North American Vertical Datum of 1988 (NAVD 88). In general, Hager-Richter identified that bedrock surface elevations were highest in the western end of the Site and deepest in the eastern end of the Site. Two bedrock knobs were identified along the southern and western boundaries of the Site. The bedrock surface is reportedly gently undulating in the western half of the Site, with a steep "V" shaped downward slope to a lower area ("terrace") in the eastern end of the Site. In addition, a bowl-shaped depression in the bedrock was identified in the eastern third of the Site, south of the former building, and a triangular shaped depression was identified along the Acushnet River in the center of the Site. Subsequent subsurface Phase II work was in general agreement with the seismic refraction survey; however differences were noted including: (1) the downward slope between the western side of the Property and the lower terrace area on the east of the Site is more linear than that shown on the Hager-Richter bedrock surface plan; (2) the bowl shaped depression in the southeast corner of the site appears to be part of a linear depression emanating from a smaller and shallower bowl shaped depression along the northern Property line; and, (3) the bedrock knob identified by Hager-Richter in the northeast corner of the site appears to be larger and centered further north. Figure 2-1 presents the top of bedrock elevation contours for the Site as modified by findings from subsequent drilling activities.

#### 2.1.2 Membrane Interface Probe/Hydraulic Profiling Tool Summary

To better define Site impacts, a Membrane Interface Probe/ Hydraulic Profiling (MiHpt) investigation was conducted along the northern and eastern Property boundaries in November 2013 by Columbia

Technologies. The Membrane Interface Probe technology is used to map the dissolved phase, vapor phase and sorbed phase of VOCs and provides soil electrical conductivity information, whereas the Hydraulic Profiling Tool sensors aid in collection of data on subsurface soil hydraulic properties. The purpose of the MiHpt investigation was to qualitatively identify the presence of CVOCs in three dimensions of the target area for subsequent quantitative sampling and analysis, keying on areas where the majority of the mass resides or is transported. The results were also used to optimize placement of groundwater monitoring wells and to obtain information on the relative hydraulic properties of the unconsolidated materials in the Site's subsurface. The three detectors on the MIP tooling include a photoionization detector (PID), flame ionization detector (FID) and a halogen specific detector (XSD). The PID responds to compounds with an ionization potential of less than 10.6 electron volts as well as chlorinated compounds containing double-bonded carbons (TCE and tetrachloroethene (PCE)); the FID responds to molecules with a carbon-hydrogen bond; and the XDS responds best to halogens such as bromine, chlorine, and fluorine. This detector responds the most strongly to CVOCs. Note that although the MIP recorded PID, FID and XSD readings, the XSD results are presented below as they most closely represent the qualitative presence of the site CVOCs, including TCE. The MIP tooling is not a good detector for PCBs; however TCE and PCBs are co-located in some areas of the Site, therefore the MiHpt application was warranted for all contaminants of concern (COCs).

Two East-West transect lines were performed. These lines were placed parallel to the former northern drainage ditch, which ran the length of the three story section of the former Aerovox building. One transect line was conducted immediately adjacent to the former drainage ditch and the second line was located approximately 40 feet north of the ditch (within 30 feet of the Precix building footprint). Two North-South MIP transects were conducted adjacent to the Acushnet River. The easternmost transect was completed just inside the Site boundary with the Acushnet River, and the second North-South transect was completed approximately 30 to 40 feet west of the first North-South transect line. The MiHpt locations were identified as MIP-1 through MIP-44.

The MiHpt termination depths were based on Geoprobe<sup>™</sup> refusal. It is understood that refusal by the Geoprobe<sup>™</sup> does not necessarily indicate the presence of bedrock. Refer to **Figure 2-2**, Subsurface Investigation Plan for the MiHpt locations and **Appendix D** for the complete Columbia Technologies MiHpt reports.

The XSD detector (and for the most part the PID as well) indicated the potential presence of CVOCs at locations MIP-07, MIP-11 through MIP-15, MIP-22, MIP-27 and MIP-28. The depth below ground surface (bgs) where notable XSD responses were observed ranged from shallow, 3 to 13 feet bgs, at MIP-07 and MIP-13, to deep, 22 to 27 feet bgs, across locations MIP-11, MIP-12, MIP-14, MIP-15, MIP-22, MIP-27 and MIP-28. The highest magnitude of XSD response was observed at depth in MIP-11. The Columbia report provided in **Appendix D** includes graphic representations of the area and depth of impacts inferred from the detector responses.

The Hpt sensor provided real time estimated hydraulic conductivity (K in ft/day) values and identified the depth to groundwater as ranging from three feet bgs along the eastern boundary of the Site, down to eight feet bgs to the west. Based on a lower K value, the Hpt sensor identified a lower permeability layer between five and eight feet bgs along the eastern end of the Site, which corresponds to the identified peat layer. Otherwise, relatively high hydraulic permeability was found across the Site and with depth.

# 2.1.3 Geoprobe™ UCL Investigation

In December 2013, AECOM completed a Geoprobe<sup>™</sup> investigation at the Site. The purpose of the Geoprobe<sup>™</sup> soil sampling program was to provide soil sampling data across the Site and with depth in order to further define the nature and extent of soil impacts. The Geoprobe<sup>™</sup> borings were located in the field on a 100-foot by 100-foot grid. A total of four West-East transect lines (identified as A through D) and ten North-South transect lines (identified as 1 through 10) were laid out across the Site. Geoprobe<sup>™</sup> boring locations were identified using the grid (e.g., B04C). The soil samples were identified with the boring location and the depth interval from which the sample was collected, for example, B04C (20-22) was collected from 20 feet to 22 feet bgs at boring location B04C. Soil samples collected from MIP locations were identified with the MIP location number and depth.

In addition to grid based boring locations, Geoprobe<sup>™</sup> borings were also advanced at select MIP boring locations to collect soil samples for use in interpretation of the MiHpt results. Refer to **Figure 2-2** for the location of the Geoprobe<sup>™</sup> soil borings. The Geoprobe<sup>™</sup> borings were advanced by Geosearch, Inc. of Fitchburg, Massachusetts. Geosearch is a Massachusetts licensed driller.

The objectives of the Geoprobe<sup>™</sup> investigation were four-fold: (1) delineate the extent of soil impacts and in particular of PCB concentrations in soils above the MCP Upper Concentration Limit (UCL) of 100 milligrams per kilogram (mg/kg) or ppm; (2) identify potential areas of dense non-aqueous phase liquid (DNAPL); (3) provide a verification on the bedrock elevation contour identified by the seismic refraction survey; and (4) collect soil samples from MiHpt locations to correlate laboratory analytical data with the MiHpt readings.

At each soil boring location, the Geoprobe<sup>™</sup> macrocore was advanced in five-foot intervals. After each interval was sampled, the macrocore was retrieved and opened. The recovered soils were visually observed by an AECOM geologist and included assessment for potential impacts (e.g., staining, odor and other indications) and classified according to the Unified Soil Classification System. The soils were divided into five intervals representing each foot of recovery. A PID equipped with a 10.6 electron-volt (EV) lamp was used to screen each of the five sections of macrocore. Soil was then collected from the interval with the highest screening value and placed into a glass jar for screening with the PID using the Jar Headspace Procedure. Soil samples were collected from each boring based on the following:

- A sample was collected from the two-foot interval below the ground surface for analysis of PCBs.
- For each five-foot macrocore, samples were collected for PCBs and CVOCs from the soil
  interval(s) corresponding to the highest PID readings (if PID reading was > 5 ppm). If there were
  no PID readings in the five-foot macrocore interval > 5 ppm, a sample was collected from the
  bottom two feet of the macrocore for CVOCs and PCBs analysis.
- At the completion of each boring, the sample interval with the highest PID reading was submitted for laboratory analysis. Remaining samples collected from the boring were placed on laboratory hold pending review of the initial sample data.

Soil samples were placed in appropriate sample containers, labeled, and placed into a pre-cooled ice chest maintained at or below 4°C. All samples were collected under standard chain-of-custody procedures and were either picked up by an Alpha Analytical Laboratory courier or transported by AECOM personnel to Alpha Analytical Laboratory, a Massachusetts certified laboratory.

Subsequent to the grid based and MIP Geoprobe<sup>™</sup> investigation, additional Geoprobe<sup>™</sup> borings and soil sample collection and analysis were undertaken to refine the assessment, including the following:

• In July 2014, additional soil samples were collected in the vicinity of B04B to delineate TCE concentrations in soil. A total of nine borings were installed around B04B, and were identified relative to compass points (B04BN, B04BW, etc.). A total of six samples were run for analysis of CVOCs and PCBs. Also in July 2014, additional Geoprobe™ borings were advanced at locations B08B and B09B for the sole purpose of collecting samples for Total Organic Carbon (TOC) analysis. The samples were collected from each of the six different stratigraphic layers identified in the borings. Three Geoprobe™ borings were advanced in the northeastern area of the Property, in the vicinity of well MW-15D: B10A, MIP-15, and MIP-43. These borings were advanced to refusal, which was estimated to be approximately 28 feet bgs, 30 feet bgs, and 20 feet bgs, respectively.

Additional Geoprobe<sup>™</sup> and hand auger borings were advanced to collect shallow soil samples
across the unpaved portion of the eastern end of the Titleist property to further characterize
shallow PCB impacts in this area.

After completion of the Geoprobe<sup>™</sup> borings, the boring locations and ground surface elevation at each boring location were surveyed relative to the National Geodetic Vertical Datum (NGVD) of 1929.

Refer to **Appendix D** for the corresponding boring logs.

The soil analytical data for the Geoprobe<sup>™</sup> investigations conducted during the Phase II CSA were compared to UCLs and Method 1 S-3/GW-2, S-3/GW-3. The UCLs are directly applicable standards for the Site. The Method 1 soil standards were included as comparison criteria for informational purposes only. In general, analytical data from the Geoprobe<sup>™</sup> borings indicated that PCBs are present above the Method 1 S-3 soil standards¹ pervasively across the Site, with the exception of the westernmost portion of the Property. In the eastern part of the Property, where a peat layer was observed, PCB concentrations are highest at the ground surface, decreasing to low or non-detect below the peat layer for a number of feet, finally increasing in concentrations over the bedrock surface. CVOCs, predominantly chlorinated ethenes, were detected across the area of investigation as well.

PCB concentrations above the UCLs were detected in soil samples BO2A, BO4BN, BO4BWW, BO6.5I, BO6B, BO7.5BC (0 to 2 feet bgs and 13 to 15 feet bgs), BO7.5E, BO7.5F, B07H, BO8.5EF, BO8H, BO8.5EF, BO8EF, BO8FG, BO8G, B09B, BO9D, B10A, B10B, and B10C. PCB concentrations were detected above the Method 1 S-3/GW-3 standard for PCBs in 31 soil samples collected from the Site as part of the Geoprobe™ investigations. Eight soil samples exceeded the Method 1 S-2/GW-3 Standard for PCBs.

There were no soil samples collected as part of the Geoprobe™ investigation containing a CVOC concentration above the UCL. The TCE concentration in sample B04B (3.5-3.5) was reported as 480,000 mg/kg. Samples collected on a smaller sample grid were advanced during the second mobilization in July 2014. None of the additional samples collected from the vicinity of B04B (3.5-3.5) contained CVOC concentrations above the Method 1 S-3/GW-3 standard or UCL.

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<sup>&</sup>lt;sup>1</sup> Method 1 standards are referenced for illustrative purposes only and are not directly applicable. This Phase II CSA includes a Method III Risk Characterization.

Soil samples were also collected from several MiHpt locations (MIP03, MIP11, MIP15, MIP23 and MIP43). PCBs above the UCL were detected in samples collected from MIP03 (0-2), MIP11 (0-2), MIP15 (0-2), MIP15 (21.5-22.5), MIP15 (24), MIP15 (26), MIP 15 (28-30), MIP23 (0-2), MIP23 (4-5), and MIP 23 (5-6). CVOCs above the UCLs were detected only in the MIP-15 (24) interval.

More detailed discussion of the results of soil sampling and analysis is provided in the discussion of nature and extent of contamination in Section 4. Refer to **Figure 2-2** for the location of the Geoprobe<sup>™</sup> borings, **Appendix D** for the corresponding boring logs, **Table 2-1** for the Geoprobe<sup>™</sup> investigation soil analytical summary and **Appendix F** for the analytical reports.

#### 2.1.4 Well Installation

In February 2014, nineteen monitoring wells were installed to supplement the monitoring well network at the Site. The well locations were selected based on data generated by the MiHpt investigation, observations made during the Geoprobe™ investigation, analytical data for soil samples collected in December 2014, and the location of pre-existing monitoring wells on the Site. In total, five monitoring wells were installed as shallow overburden wells: MW-4S, MW-12S, MW-16S, MW-18S, and MW-19S; six wells were installed just over the top of the bedrock surface (MW-10D, MW-13D, MW-15D, MW-18D, MW-17D and MW-19D); and, nine wells were installed in shallow bedrock (MW-2B, MW-6B, MW-7B, MW-11B, MW-13B, MW-15B, MW-17B, MW-19B, and MW-101B). Refer to **Figure 2-2** for the monitoring well locations.

Elevated concentrations of CVOCs had previously been detected in monitoring well GZ-4A, located within 30 feet of the Precix building footprint. This well terminates at a depth of 23 feet bgs, so it was unknown if CVOC concentrations were present in the shallow or deep overburden. Therefore, monitoring wells MW-4S, MW-16S, and MW-18S were installed adjacent to the Precix facility to assess CVOC concentrations in shallow groundwater (where the GW-2 groundwater classification would apply).

The monitoring wells were installed using drive and wash drilling techniques by Geosearch, Inc. Environmental Contractors, a Massachusetts licensed driller. Based upon chemical analytical data from the December 2013 Geoprobe™ investigation, the monitoring wells were installed by telescoping the appropriate combination of 8-inch, 6-inch, 5-inch and 4-inch casings to permit construction of vertically discrete 2-inch monitoring wells inside a 4-inch cased borehole while preventing contamination in shallower intervals from being transferred to depth.

Collection of soil samples at well locations was dependent upon existing chemical analytical data from the December 2013 Geoprobe™ investigation and existing available data. For example, at locations where monitoring well couplets were formed (MW-19D/MW-19B), soil sampling was conducted only in the deepest overburden well (MW-19D), or where a monitoring well (MW-101B) was installed adjacent to previously existing monitoring well(s) (GZ-101S/GZ-101D), soil sampling was conducted only where chemical analyses were not previously analyzed or soil stratigraphy was not previously classified. Soil samples were collected using 2-inch split spoon samplers at variable depths.

The monitoring wells were installed to designated depths with 5-foot or 10-foot, 0.010 slotted schedule 40 polyvinyl chloride (PVC) well screen with 2-inch PVC riser pipe to the ground surface. The wells were completed at the ground surface with flush-mount well covers, sealed with concrete. After installation, the monitoring well locations and the elevation of the ground surface, well cover, and top of PVC riser pipe were surveyed relative to the NGVD 1929.

After review of the initial round of groundwater sampling (discussed in later sections of this report), it was determined that additional monitoring wells were required to delineate the nature and extent of groundwater contamination at the Site. In July 2014, Geosearch, Inc. and Maher Services, Inc. mobilized to the Site to complete additional monitoring well installations. A monitoring well couplet (MW-24D/MW-24B) was installed north of the Precix facility. A total of seven monitoring wells (MW-20D/MW-20B, MW-21D/MW-21B, MW-22S, and MW-23D/MW-23B) were installed along the northern and eastern sides of the Titleist building. One monitoring well (MW-25D) was installed on the Site, adjacent to Geoprobe™ boring location B04C, which is south of the former Boiler Room.

In addition, three open borehole wells were installed on the Site for the purpose of characterization of bedrock groundwater flow. These wells were designated as MW-26B, installed near the center of the three-story section of the former building; MW-27B, installed southwest of MW-10D; and MW-28B, installed at the northeast corner of the former building and on the south side of the northern drainage ditch. The objectives of these monitoring wells were to evaluate (1) bedrock fractures with depth; (2) DNAPL presence or indication at the weathered top of bedrock overburden interface; (3) DNAPL migration along the bedrock surface down slope from west to east across the eastern half of the Site; and (4) hydraulic connection between overburden and bedrock, and if the connection is influenced by the tidal cycles within the adjacent Acushnet River.

Monitoring well MW-26B was installed to a depth of approximately 88 feet bgs. Depth to bedrock at this location was approximately 31 feet bgs. The well was finished with 4-inch permanent stainless steel casing to a depth of 40 feet bgs, with approximately 47 feet of open 3.8-inch borehole. Monitoring well MW-27B was installed approximately in-line with existing monitoring well MW-13B and MW-7B, and along the downward slope of the bedrock surface. This well was finished with 4-inch permanent stainless steel casing to 10 feet into the bedrock, with a 10-foot, 3.8-inch open borehole. Monitoring well MW-28B was installed with approximately 40 feet of 4-inch permanent casing and a 3.8-inch open borehole. The open borehole section of this well was targeted to be at an elevation below the screened portion of the MW-15B monitoring well. On September 2, 2014, a monitoring well was constructed with a 10-foot screen from 77.5 feet bgs to 87.5 feet bgs in the MW-26B open borehole.

After review of the groundwater sampling data for these bedrock monitoring wells, additional site mobilizations were completed between April 2015 and August 2015. In April 2015, three shallow bedrock wells were installed to address data gaps in the extent of shallow bedrock (upper 20 feet) impacts. A fourth shallow bedrock monitoring well was planned to further characterize groundwater quality and hydrogeology north of the Precix property; however, access to the Coyne Laundry property, north of Precix, was not able to be obtained in time for inclusion as part of this Phase II CSA. The three shallow bedrock monitoring wells were installed south of the Titleist building; in Graham Street near the former Precix TCE AST; and in the northeast corner of the Precix property. These shallow bedrock monitoring wells were installed to further delineate shallow bedrock contamination to the north and south, and to evaluate shallow bedrock contaminant concentrations near the Precix AST location. The initial five feet of each of the three well locations was pre-cleared using soil vacuum excavation. Once each of the three locations was pre-cleared, the remainder of the overburden thickness was drilled using a direct-push drill rig. Soil samples were obtained for screening soil sample headspace with a PID, soil classification, and collection of soil samples for potential analysis. After completion of overburden drilling, the shallow monitoring wells were installed using drive and wash drilling techniques, with 4-inch permanent casing set approximately 8 to 10 feet into competent bedrock. An open borehole of approximately 20 feet was then drilled at each location using air hammer drilling.

Competent bedrock was inferred through the use of existing site data on a combination of bedrock cores, previous site investigation data and drilling resistance encountered.

Also in April 2015, three deep bedrock wells were installed within the Property. The three deep bedrock monitoring wells were installed to evaluate groundwater contaminant concentrations with depth, and to evaluate bedrock fractures, flow and groundwater conditions in deep bedrock. These monitoring wells were installed near the center of the Property and existing monitoring well MW-26B (deep well designated as MW-33B); at the southwest corner of the Site near the MW-17B/MW-17D couplet (deep well designated as MW-32B); and, in the northeast corner of the Site in an area believed to be on the outside edge of soil contamination and potential DNAPL (deep well designated as MW-34B). These monitoring wells were drilled to depths of 185 feet bgs, 292 feet bgs, and 198 feet bgs, respectively. Overburden drilling was completed using drive and wash drilling techniques. After installation of 4-inch permanent casing, each of the deep bedrock monitoring wells were drilled using air hammer drilling techniques. The boreholes were advanced in approximately 20 foot intervals. After drilling each 20 foot interval, the borehole was flushed by air lifting. A single packer and pump assembly was positioned to isolate the bottom 20 feet of the borehole. The isolated zone was pumped and a groundwater sample was collected by AECOM after removal of a minimum of one well volume from the packer zone. The groundwater samples from packer intervals were intended as a screening step, and were submitted for laboratory analysis of TCE concentrations and PCB concentrations (on hold). Drilling and packer testing was continued until two consecutive 20-foot intervals yielded less than 0.1 gallon per minute or to the maximum well depths (two 200-foot wells and one 300-foot well).

Each of the three, 4-inch diameter deep bedrock monitoring wells received a Flexible Liner Underground Technologies (FLUTe<sup>™</sup>) liner to seal and stabilize the well pending subsequent planned installation of a multi-port, multi-level sampling apparatus, i.e., the Water FLUTe<sup>™</sup> system.

In August 2015, one shallow bedrock monitoring well, designated as MW-35B, was installed south of MW-29B on the Titleist property. This well was installed to evaluate the southern extent of groundwater contamination in shallow bedrock. The 4-inch open borehole monitoring well was installed similar to the procedure described above for the shallow bedrock monitoring wells installed in April 2015.

Each monitoring and open borehole well was developed by surging and pumping the wells using dedicated whale pumps or a Grunfos RediFlow pump not less than 24 hours after completion of each monitoring well installation. Each monitoring well was pumped a minimum of three well volumes or until water quality parameters stabilized and the discharge water was clear. Drilling cuttings, drilling fluids, and well development water was containerized in 55-gallon drums pending characterization and subsequently transported under manifest for off-site disposal.

Refer to **Figure 2-2** for the monitoring well locations and **Appendix E** for the boring and monitoring well construction logs.

The analytical data for soil samples collected during the Phase II CSA monitoring well installations were compared to UCLs and Method 1 S-3/GW-2, S-3/GW-3. The UCLs are directly applicable standards for the Site. The Method 1 soil standards were included as a comparison criteria for informational purposes only. PCB concentrations in two of these soil sample locations exceeded the UCL (MW-15D (20-22) and MW-15D (26-28)). PCB concentrations in two of these soil samples exceeded the Method 1 S-3/GW-2 standard (MW-4S (0 to 2 feet bgs), MW-18S (0 to 2 feet bgs)). There were no soil sample PCB concentrations collected as part of monitoring well installation exceeding the Method 1 S-3/GW-3

standard. The TCE concentration in the soil sample collected at MW-15D (26-28) was reported as 3,100,000 ug/kg, exceeded the UCL of 600,000 ug/kg. In addition, the PCE concentration of this same sample (1,200,000 ug/kg) exceeded the Method 1 S-3/GW-3 standard. No other CVOCs were detected above UCLs or Method 1 S-2/GW-3 or S-3/GW-3 standards. Refer to **Table 2-1** for the analytical summary for soil samples collected during monitoring well installation activities and **Figure 2-4** and **Figure 2-5** for a graphical depiction of soil analytical data for PCBs and TCE. The soil sample analytical reports are included in **Appendix F**.

# 2.1.5 Borehole Geophysics

Bedrock boreholes were drilled at six locations to assess the vertical extent of groundwater contamination, as discussed in Section 5.2. The boreholes and their completed depths/elevations are:

- MW-29B: 62 ft bgs / -55 ft mean sea level (msl) (located)
- MW-30B: 53 ft bgs / -45 ft msl (located)
- MW-31B: 60 ft bgs / -53 ft msl (located)
- MW-32B: 193 ft bgs / -188 ft msl (located)
- MW-33B: 290 ft bgs / -282 ft msl (located)
- MW-34B: 197 ft bgs / -191 ft msl (located)

**Table 2-2** summarizes the bedrock borehole field activities. Borehole geophysical logging was conducted on all six of the new bedrock boreholes. Based on review of the borehole geophysics data, the multiport liner intervals for two deep borings were selected to target water-bearing fractures.

Groundwater in the bedrock primarily occurs in fractures and open fracture orientation controls flow direction. The crystalline bedrock lacks primary pores that could contain groundwater. The characteristics of the bedrock fracture system and the hydraulic head distribution within the bedrock are the primary influences on the bedrock hydrology. An extensive fracture system increases the opportunity for groundwater to occur within bedrock. However, assuming a hydraulic gradient is present in the bedrock, the orientation and interconnectivity of the fractures determines their ability to facilitate bedrock groundwater movement and contaminant migration. Absent a hydraulic gradient, groundwater will not move, regardless of how extensive or interconnected the fractures are. Contamination may be persistent in fractures that are poorly interconnected because they are not subject to flushing by groundwater movement.

After the deep bedrock boreholes were drilled, borehole geophysical logging was conducted. This logging identified fracture occurrence and orientation, groundwater occurrence, relationship between groundwater occurrence/flow and fracturing, and lithology. The types and description of each borehole geophysical test is described in **Table 2-3**.

# 2.1.5.1 Optical Televiewer and Acoustic Televiewer

**Appendix G** presents the borehole geophysics logging results. The results reveal overall good correlation between the Optical Televiewer (OTV), Acoustic Televiewer (ATV) amplitude, and ATV acoustic caliber, which, collectively, reveal the occurrence of bedrock fractures. Fractures indicated by the OTV are nearly always also indicated by the ATV amplitude results; however, the converse was not always true, indicating a greater sensitivity of ATV amplitude to identify fractures. The ATV acoustic

caliber results correlate well with the ATV amplitude results. Where the ATV acoustic caliber indicated the borehole diameter increases, the ATV amplitude results support the interpretation that open fractures were the cause of the ATV acoustic caliber response.

**Table 2-4** lists the overall fracture ranks, frequencies, and orientations for the six bedrock boreholes. Three different fracture ranks were observed:

- Fracture Rank 1 describes minor fractures that are not distinct and may not be continuous around the borehole.
- Fracture Rank 2 describes intermediate fractures that are distinct and continuous around the borehole with little or no apparent aperture.
- Fracture Rank 3 describes major fractures that are distinct with continuous apparent aperture around the borehole.

For each borehole and fracture rank, **Table 2-4** lists the number of fractures (count), the mean dip azimuth, the mean dip, and the percentage of fractures for each borehole. **Table 2-5** presents fracture classifications which are based on measurements that cluster around a common dip azimuth and mean dip. The classification process began with a review of the Schmidt Plots and Rose Diagrams presented in **Appendix G**. The dip azimuths were sorted within the most highly populated ranges.

Fracture analysis identified three recurring fracture patterns and – in some borings – numerous other directions that do not appear to form a distinct fracture population. One of the fracture directions is prevalent in all bedrock wells and is presumed to represent the rock fabric, and is referred to as the rock "foliation." This foliation was observed as a dominant feature in nearly all of the rock cores from existing bedrock wells. The other two directions are referred to as "Fractures 1 and 2" and are likely a conjugate joint set. The three identified fracture patterns and ranges of the dip azimuths and degree of dip for each are presented below:

Foliation: 293°-359° \ 50°-60°
 Fracture 1: 150°-205° \ 29°-55°
 Fracture 2: 75°-83° \ 55°-65°

**Figure 2-3** presents Rose Diagrams for each of the borings with the individual mean dip azimuths and dip amounts. The following observations are apparent from this figure in conjunction with **Table 2-4**:

- Inland borings MW-30B and MW-33B and coastal boring MW-29B show greater than 60 percent
  of the fractures were classified as foliations. Additionally, the majority of these fractures had a
  fracture rank 1 indicating that while they were prevalent they appear to be very narrow and
  closed in most cases.
- Coastal borings MW-31B, MW-34B, and MW-32B, which are located to the east of the inland borings, show nearly 70 percent of fractures were classified as other than foliation. The same foliation fabric was apparent and measureable, but was a lower density of the total and ranged from 26 to 33 percent. These borings are adjacent to the Acushnet River and are very close to the presumed alignment of a major fault zone. Additionally, these wells had 41 to 45 percent of the fractures that did not fall within one of the predominant directions established for that well boring. This apparent lack of directional orientation suggests that the rock in this area was subjected to stresses from multiple directions.

 Borings MW-31B, MW-33B, and MW-34B were the only ones to show the rock foliation and the conjugate fracture set which may indicate a greater similarity in the rock fabric along this northeast-south west alignment.

Another indicator of relative bedrock transmissivity/groundwater flow is the bedrock borehole fracture frequencies normalized to logged borehole length (**Table 2-6**); more fractures are expected to correlate with greater likelihood for flow. The fracture frequencies are expressed as the number of fractures per foot interval of logged borehole. Because three of the borings were relative shallow (49 to 62 ft bgs) and three were deep (183 to 289 ft bgs) the evaluation of fracture frequency was divided up into 30 and 60 foot segments for easy comparison. The fracture frequency ranged from 0.5 to 2.3 fractures per foot. The fracture frequency generally decreased with depth for boring MW-33B but was relatively consistent in boring MW-34B. This supports the notion that the potential for flow decreases with depth.

#### 2.1.5.2 Heat Pulse Flow Meter

The Heat Pulse Flow Meter (HPFM) measures the direction and rate of vertical flow in the borehole, under ambient conditions when no water is pumped from or added to the borehole, and under non-ambient conditions when a small volume of water is pumped from or added to the borehole. Water movement in the borehole under ambient conditions indicates a natural pressure gradient between fracture zones intersected by the borehole, and the fractures zones can be identified that are facilitating groundwater movement. In the absence of a natural pressure gradient at the time of testing, there will be no water movement in the borehole, and fractures that would otherwise be transmissive cannot be identified. In this circumstance, an artificial gradient is induced by adding or removing water from the borehole to induce water movement within the borehole and facilitate identification of the transmissive fractures.

**Table 2-7** summarizes the site-specific HPFM results based on the HPFM logs presented in **Appendix G**. Under ambient conditions, no flow was detected in any of the borings. When water was pumped from the boreholes at a typical rate of less than 0.5 gallons per minute, flow into the borehole was induced, which then flowed upward toward the pump. In all cases, the amount of the flow increased as testing progressed up the borehole. This indicates information that at the depths where flow increased the corresponding fracture zone was contributing additional flow to the borehole. This also suggests that groundwater from shallow fractures does not migrate to deeper fractures and vice versa under ambient flow conditions. However, as is evidenced by the tidal study (**Appendix H**) there is cyclical change in the bedrock water levels, particularly for wells located near the river. These fluctuations may drive daily movement of constituents within the bedrock aquifer.

General observations for the wells tested with the HPFM are as follows:

- The pumping induced flow near the top of each well range from 0.38 to 0.72 gallons per minute (gpm). The significant increase in flow near the rock casing in wells MW-30B and MW-33B suggests that much of the flow may originate from a weathered rock zone around the casing.
- Flow rates measured with the HPFM were very low at shallow bedrock well MW-31B with the highest rate of 0.04 gpm.
- Flow rates measured in MW-34B were relatively high compared to the other deep bedrock wells and ranged from 0.25 to 0.60 gpm.

 Little or no flow was detected in deep bedrock wells MW-32B, MW-33B, and MW-34B below depths of 159, 185, and 195 ft bgs. This lack of flow in the deeper zones suggests that bedrock connectivity is limited at depth.

#### 2.1.6 FLUTe Profiling and Water FLUTe Installation

On July 29, 2014, a FLUTe<sup>TM</sup> liner was installed in MW-26B, the deepest open borehole at that time. The FLUTe liner is a flexible, water tight liner that is filled with clean water to create a constant head that everts the liner into the borehole. As the liner passes and seals a permeable fracture within the borehole, the changes in the liner eversion rate provides an estimate of the transmissivity. Profiles of transmissivity (square centimeters per second [cm²/s]) with depth and flow rate (gallons per minute per foot [gal/min/ft]) with depth were generated for the borehole.

Based on the data generated during deployment of the FLUTe liner, five fracture zones were identified:

- Zone 1: 51.5 58 ft Conductivity 10<sup>-5</sup> cm/sec range
- Zone 2: 59 61.5 ft Conductivity 10<sup>-5</sup> cm/sec range
- Zone 3: 63 67.5 ft Conductivity 10<sup>-5</sup> cm/sec range
- Zone 4: 74 75.8 ft Conductivity 10<sup>-5</sup> cm/sec range
- Zone 5: 78 87.5 ft Conductivity 10<sup>-4</sup> cm/sec range

Based on these results, it can be inferred that site bedrock contains several fracture zones capable of transmitting water. The fracture with the highest conductivity identified in MW-26B is the deepest zone identified (78 feet to 87.5 feet bgs). Refer to **Appendix I** for the FLUTe profile results.

The installed depth intervals for the final multi-port liner sampling port depths for deep bedrock were selected for MW-32B, MW-33B and MW-34B based on the results of the borehole geophysical testing and the packer testing groundwater results, and relative drawdown/recovery rates for each zone. Refer to the table included in **Appendix I** for a summary of the packer testing groundwater sample data and **Appendix F** for the analytical reports. Multi-port (FLUTe) wells were planned for all three wells but only two wells could be installed as discussed below.

The liner for MW-33B was deployed but would not descend past 180 ft bgs. Numerous attempts were made to achieve the required depth of 250 ft bgs, but none were successful. A second attempt at installation was made; however, efforts to remove the partially deployed liner were also unsuccessful. On July 9, 2015 the final attempt to remove the liner was successful; and the liner was damaged beyond repair in the process. A blank liner was installed in the borehole on the following day; it was later decided to install a conventional 2-inch diameter PVC monitoring well at this location. The boring IDs, completion dates, and sampling port depths for these wells are provided below:

	I	Multiport Line	er Installation		
Boring ID	Began	Completed	Sampling Ports, Depth ft. bgs.	Comments	
MW-32B 7-8-15		7-8-15	100-112; 135-145; and 153-163	Liner with three ports was installed	

		Multiport Line			
Boring ID	Began Completed		Sampling Ports, Depth ft. bgs.	Comments	
MW-33B	6-22-15	Blank Liner 7-10-15	Not Installed	Liner removed and conventional monitoring well installed with well screen at 240-250 ft bgs	
MW-34B	6-24-15	6-26-15	60-80; 92-112; 120- 130; and 170-180	Liner with four ports was installed	

Following completion of the two multi-port wells, water levels were measured from each of the ports and then tested by purging the sampling ports with nitrogen gas. Each of the ports was purged with nitrogen a minimum of two times to ensure functionality and to develop the sample ports.

#### 2.1.7 Groundwater Sampling

The objective of groundwater sampling at the beginning of the Phase II CSA was to collect samples on a quarterly frequency from selected wells in the established monitoring well network. However, based on the initial round of sampling, additional monitoring wells were prescribed and the monitoring well network was expanded, as noted herein. The expanded monitoring well network was sampled at a decreased frequency, depending upon the time at which they were installed. In addition, some of the original monitoring wells installed for the Phase II CSA were not sampled four times if upon reevaluation of the CSM a well was not deemed important to further definition of the nature and extent of contamination on the Site.

Each of the groundwater sampling rounds is summarized below. It should be noted that with limited exception (Water FLUTes and monitoring wells with poor recharge), the monitoring wells were sampled using EPA low flow sampling methodology, described under the March 2014 groundwater sampling event. Groundwater analytical parameters were generally consistent, and where exceptions apply, it is so noted in the sections below.

Monitoring well locations are provided on **Figure 2-2** and low flow sampling purge forms for each of the sampling rounds are included in **Appendix J**.

#### 2.1.7.1 March 2014

AECOM sampled all existing and newly-installed monitoring wells (total of 45) on the Site and on the Precix property (abutting the Site to the north) in March 2014 (the first quarterly sampling round). Prior to sampling, all of the wells were gauged for depth to groundwater and the presence of non-aqueous phase liquids (NAPL) using an interface probe. The depth to groundwater in monitoring wells ranged from a minimum of 2.02 feet bgs in monitoring well MW-2A to a maximum of 10.52 feet bgs in monitoring well MW-5. Groundwater elevation in the monitoring wells with depths of less than 15 feet bgs ranged from 1.00 feet NGVD at MW-1 and 3.35 feet NGVD at MW-4A. At the time of these measurements, the tide was ebbing.

Approximately 6.5-inches of DNAPL was observed at the bottom of monitoring well MW-15D, as measured using the weighted string test. A sample of the DNAPL was collected and submitted for laboratory analysis of PCB and TCE content. Samples were collected from each of the Site and Precix monitoring wells and submitted for analysis for CVOCs, PCBs and total suspended solids (TSS). The presence of DNAPL represented an Immediate Response Action (IRA) condition. IRA activities are summarized in Section 2.1.12 of this report.

Groundwater samples were collected using EPA low flow sampling protocol. During purging, a flow through cell was used to measure temperature, pH, specific conductivity, and dissolved oxygen. Turbidity was measured using a separate turbidity meter, and depth to groundwater was gauged with a water level indicator. Once water quality parameters had stabilized, groundwater samples were collected for CVOC, PCB, and TSS analysis. Duplicate samples were collected from monitoring well MW-2 (DUP2), MW-6 (DUP1), MW-15D (DUP4), and MW-17D (DUP3) and matrix spike/matrix spike duplicate (MS/MSD) samples were submitted from monitoring well MW-5. Samples were stored on ice under chain-of-custody protocol and were submitted to Alpha Analytical for analysis.

#### 2.1.7.2 June 2014

In June 2014, a subset of the 45 monitoring wells was selected for analysis for the second quarterly round, based on historic analytical data. The wells selected were based on historic presence of contaminants of concern (COCs) above Method 1 GW-2 and/or GW-3 Standards, as applicable, and to aid in confirming the extent of contamination across the Site. Samples were collected from the Precix and Aerovox properties as listed below using the low flow sampling procedure.

- Precix Property: GZ-1, GZ-103S, GZ-103D, MW-4S, and MW-16S
- Aerovox Property: GZ-101S, GZ-101D, MW-101B, GZ-102S, GZ-102D, MW-2, MW-2B, MW-4B, MW-6, MW-6B, MW-7, MW-7A, MW-10D, MW-11B, MW-12S, MW-13B, MW-13D, MW-15B, MW-15D, MW-17B, MW-17D, MW-18D, MW-018S, MW-19D, and MW-19S

The samples were again submitted to Alpha for CVOC, PCB and TSS analysis. In addition, samples from this round were also analyzed for degradation parameters including, RSK-175 gases (methane, ethane, and ethane), bicarbonate alkalinity, ammonia (as nitrogen), ferrous iron, total iron, nitrate (as nitrogen), phosphorus, sulfate, and total organic carbon (TOC).

Duplicate samples were collected from MW-6B (DUP2), MW-07 (DUP3), MW-18S (DUP1).

#### 2.1.7.3 August 2014

The eleven monitoring wells and two open borehole wells installed in July 2014 were sampled in August 2014 using the low flow sampling procedure. In addition, a grab sample was collected from open borehole well MW-26B prior to installation of the FLUTe liner. Samples were collected from the Precix, Aerovox and Titleist properties as listed below using the low flow sampling procedure

- Precix Property: MW-24B, MW-24D, and MW-103B
- Aerovox Property: MW-25D, MW-27D, MW-28B
- Titleist Property: MW-20D, MW-20B, MW-21B, MW-21D, MW-22S, MW-23B and MW-23D

A duplicate sample was collected from MW-27B (DUP1). With the exception of the sample from MW-26B, which was analyzed for CVOCs and PCBs only, the samples were submitted to Alpha for the same analyses as the June 2014 samples.

## 2.1.7.4 September 2014

In September 2014, forty (40) of the monitoring wells were selected for analysis for the third quarterly sampling round. The wells selected were based on historic presence of COCs above Method 1 GW-2 and/or GW-3 Standards, as applicable, and to aid in confirming the extent of groundwater contamination across the Site. Samples were collected from the Precix, Titleist and Aerovox properties as listed below using the low flow sampling procedure.

- Precix Property: GZ-1, GZ-4A, GZ-103S, GZ-103D, MW-103B, MW-4S, MW-16S, MW-18D, MW-24D and MW-24B
- Titleist Property: MW-20D, MW-20B, MW-21D, MW-21B, MW-22S, MW-23D and MW-23B
- Aerovox Property: GZ-101S, GZ-101D, MW-2, MW-2B, MW-4, MW-5, MW-6B, MW-7A, MW-7, MW-7B, MW-8S, MW-10D, MW-11B, MW-13B, MW-15B, MW-15D, MW-17B, MW-17D, MW-19D, MW-26B, MW-27B, and MW-28B

Duplicate samples were collected from MW-6B (DUP3), MW-7 (DUP2), MW-17B (DUP-1), and MW-26B (DUP4). The samples were analyzed for the same parameters as the June 2014 and August 2014 samples.

#### 2.1.7.5 December 2014

In December 2014, forty-three (43) monitoring wells were selected for analysis in the final quarterly round. The wells selected were based on historic presence of COCs above Method 1 GW-2 and/or GW-3 Standards, as applicable, and to aid in confirming the extent of contamination across the Site. Samples were collected from the Precix and Aerovox properties as listed below using the low flow sampling procedure.

- Precix Property: GZ-2, GZ-4A, GZ-103S, GZ-103D, MW-103B, MW-4S, MW-16S, MW-18S, MW-18D, MW-24D and MW-24B
- Titleist Property: MW-20D, MW-20B, MW-21D, MW-21B, MW-22S, MW-23D and MW-23B
- Aerovox Property: GZ-101S, GZ-101D, MW-2, MW-2B, MW-4B, MW-5, MW-6, MW-6A, MW-6B, MW-7, MW-7B, MW-8S, MW-10D, MW-11B, MW-13B, MW-13D, MW-15B, MW-15D, MW-17D, MW-19D, MW-19S, MW-26B, MW-27B, and MW-28B

The samples were analyzed for the same parameters analyzed in June, August and September 2014. Duplicate samples were collected from MW-6B (DUP4), MW-7 (DUP2), MW-17B (DUP1) and MW-26B (DUP3),

#### 2.1.7.6 May 2015

In May 2015, the newly installed shallow bedrock monitoring wells and four other monitoring wells were sampled. The wells included in this sampling round are the following:

- Precix Property: MW-24B, MW-30B, MW-31B, MW-101B
- Titleist Property: MW-21D, MW-29B, MW-TITL01

Aerovox Property: GZ-101S, GZ-101D, MW-2, MW-2B, MW-4B, MW-5, MW-6A, MW-6B, MW-7

The groundwater samples were submitted to Alpha for analysis for CVOCs, PCBs, RSK-175 gases (methane, ethane, and ethane), bicarbonate alkalinity, ammonia (as nitrogen), ferrous iron, total iron, nitrate (as nitrogen), phosphorus, sulfate, and total organic carbon (TOC) analysis. A duplicate sample (DUP1) was collected from MW-24B.

## 2.1.7.7 July 2015

In July 2015, the two deep bedrock Water FLUTes in MW-32B and MW-34B were sampled (a total of seven zones). The samples were collected using inert gas (nitrogen) to discharge water from each sampling interval. Following the FLUTe provided procedure, each sampling zone was evacuated three times prior to collection of the samples. Water quality parameters were collected from each interval using a YSI water quality meter and turbidity meter. The samples were submitted to Alpha for analysis for CVOCs, PCBs, TSS, RSK-175 gases (methane, ethane, and ethane), bicarbonate alkalinity, ammonia (as nitrogen), ferrous iron, total iron, nitrate (as nitrogen), phosphorus, sulfate, and TOC. The sampled Water FLUTe intervals were as follows:

- MW-32B: 100 to 112 feet bgs, 135 to 145 feet bgs, and 153 to 163 feet bgs;
- MW-34B: 60 to 80 feet bgs, 92 to 112 feet bgs, 120 to 130 feet bgs, and 170 to 180 feet bgs.

A duplicate sample was collected from the 170 foot to 180 foot interval of MW-34B (DUP1) and a matrix spike/matrix spike duplicate (MS/MSD) was collected from the 60 foot to 80 foot interval of MW-34B.

# 2.1.7.8 August 2015

In early August 2015, a second groundwater monitoring round for the shallow bedrock monitoring wells and deep bedrock monitoring wells was completed. In addition, several other site monitoring wells were resampled for continued evaluation of groundwater contaminant concentrations.

- Precix Property: MW-30B, MW-31B, and MW-101B
- Titleist Property: MW-23B and MW-29B
- Aerovox Property: MW-15D, MW-15B, MW-27B, MW-28B, MW-32B (all zones), and MW-34B (all zones)

After installation of MW-35B and completion of a PVC monitoring well in MW-33B, these two monitoring wells were also sampled.

The groundwater samples were submitted to Alpha for analysis for CVOCs and PCBs.

# 2.1.7.9 Summary of Groundwater Monitoring

Figures 2-6 through 2-11 provide visual summaries of the detected PCBs and VOCs in groundwater, respectively. Average groundwater COC concentrations for each well were calculated for the monitoring rounds conducted during the Phase II CSA and then compared to Method 1 GW-2 (where applicable) and Method 1 GW-3 Standards for informational purposes only. In addition, the data were compared to UCLs, as these standards are directly applicable to the Site. The data review indicates that samples collected from the monitoring wells with average concentrations exceeding applicable UCLs are the TCE concentrations in bedrock monitoring wells MW-15B, MW-26B, MW-32B (135 foot to

145 foot bgs interval); and MW-34B (92 foot to 112 foot bgs interval, 120 to 130 foot bgs interval, and 170 to 180 foot bgs interval); and carbon tetrachloride in MW-24B. There are no detected contaminant concentrations in shallow or deep overburden monitoring wells above UCLs.

Average groundwater concentrations exceeding the Method 3 GW-3 standards for site COCs include PCBs in deep overburden (MW-2, MW-7, MW-10D, MW-15D, MW-17D) and bedrock (MW-2B, MW-6B, MW-13B, MW-15B, MW-17B); TCE in shallow overburden (MW-4S), deep overburden (MW-7, MW-10D, MW-15D, MW-19D) and bedrock (MW-4B, MW-13B, MW-15B, MW-17B, MW-23B, MW-27B, MW-28B); cis-1,2-dichloroethene in bedrock at MW-15B; vinyl chloride in shallow overburden (MW-4S) and bedrock (MW-7B); and chloroform in bedrock at MW-24B. Average groundwater concentrations (where applicable) exceed the Method 1 GW-2 standards in shallow groundwater at MW-16S (cis-1,2-dichloroethene, TCE, and vinyl chloride; MW-18S (TCE and cis-1,2-dichloroethene), and MW-21D (TCE).

Refer to **Table 2-8** for a summary of groundwater analytical results and **Appendix F** for the analytical reports.

# 2.1.8 Slug Testing and Tidal Survey

To assess the tidal influence on groundwater flow in shallow and deep overburden and in bedrock, a series of slug tests and a tidal survey were completed.

# 2.1.8.1 Slug Testing

Slug tests are field procedures that measure the response of a well-aquifer system to a sudden change of water level in a well (ASTM D4044-96, 2008). Interpretation of resultant data yields an estimate of aquifer transmissivity (T) and hydraulic conductivity (K). Slug tests were used to estimate K values of soils and bedrock.

The physical slug test method is commonly used to generate the rapid displacement of water in well casings and open bedrock wells. Water level change during physical slug tests was accomplished by insertion and removal of a solid object (slug rod). Tests using the slug rod method can be used for both falling head conditions (after the rod is submerged) and rising head conditions (after the rod is removed). For most tests, the slug rod consisted of a 4.0-foot long, 1.25-inch diameter PVC rod. This cylinder volume was equivalent to maximum changes in head of approximately 1.56 feet for a 2-inch inner diameter (ID) schedule 40 PVC casing. A measured section of nylon rope was used to carefully lower and raise the slug in order to measure the slug position in the well bore and to minimize slug rod bounce during the tests.

During the period from August 11 through 14, 2014, slug tests were performed on sixteen (16) selected monitoring wells, including three shallow monitoring wells: MW-4S, MW-16S and MW-19S; seven deep overburden/top of bedrock wells: MW-6, MW-13D, MW-17D, MW-19D, MW-21D, MW-24D, MW-103D; and six bedrock wells: MW-6B, MW-13B, MW-17B, MW-27B, MW-101B, and MW-103B. Rising and falling head tests were performed on monitoring wells with fully submerged screen intervals, and rising head tests were performed on partially saturated screen intervals.

Prior to initiating slug testing at each well location, the depth to static water within the monitoring well was measured. An In-Situ Level Troll700 (Troll), 30 pounds per square inch (psi) was placed in the well approximately 15-25 feet below the water table. Placement of the transducer was deep enough to cover

the range of expected head change, leaving sufficient space for the slug to move in and out without disturbing the transducer. To correct for barometric effects, the transducer was calibrated (zeroed) to outside atmospheric pressure before testing. To correct for temperature variations in data recording, the transducer was placed under the water table for a minimum of 15 minutes to acclimate to the temperature of the water inside the well before recording measurements. The data logging software was set to collect and record data at one second intervals, unless otherwise noted, during each test. Each test was identified using the monitoring well identification followed by the type of test (RH for rising head and FH for falling head), and then the trial number (1, 2, 3). For example, the first rising head test at monitoring well MW-21D was identified as MW21dRH1. The criterion for sufficient recovery was considered to be 90% of the previous change in head.

In most cases, four tests were performed for physical slug tests: two falling head tests and two rising head tests. Theoretically only one successful test (either a rising or a falling head test) is required to establish a hydraulic conductivity value for any given well, but to ensure accuracy of a hydraulic conductivity value, multiple tests were generally performed. Physical slug testing was generally performed using the following steps:

- Falling head #1: the slug was inserted and remained submerged until water levels returned to 90% of static or 20 minutes had passed, whichever occurred first.
- Rising head #1: the slug was withdrawn and remained out of the water table until water levels returned to 90% of static or 20 minutes had passed, whichever occurred first.
- Falling head #2: repeat Step 1.
- Rising head #2: repeat Step 2.

Manual water level measurements were collected from each well prior to testing and were recorded in the field notebook along with a corresponding transducer pressure reading. The water level changes recorded by the pressure transducer were downloaded to a portable computer in binary and text formats for redundancy and brought back to the office for analysis.

The response data are plotted as the change in head (displacement) versus time. Groundwater wells with a sand/gravel envelope or developed zone typically exhibit a "double straight line effect" (Bouwer, 1989) where the test results can plot in three segments representing: (A) the high permeability sand pack or developed zone, (B) undisturbed flow conditions, and (C) deviation from expected values as drawdown diminishes with respect to initial conditions.

When data collected produced an underdamped response, resulting in oscillations of the water level during the slug tests, the Springer-Gelhar (1991) method was used to provide a response curve that best fit the data. It is noted that the Springer-Gelhar (1991) method include inertial effects in the test well which could account for an oscillatory water-level response sometimes observed in aquifers of high hydraulic conductivity. Hydraulic conductivity was estimated from portions of the data best representing these undisturbed flow conditions.

Results of the slug test analysis indicate that average hydraulic conductivity values for wells screened in overburden materials at the Site range from a maximum of 7.25E-02 centimeters per second (cm/s) to a minimum of 4.56E-04 cm/s. The hydraulic conductivity value of monitoring wells screened in bedrock ranged from a maximum of 3.95E-02 cm/s to a minimum of 3.14E-05 cm/s. The average

hydraulic conductivity for the single open borehole bedrock well tested was 1.11E-04 cm/s, as summarized in **Table 2-9.** Refer to **Appendix K** for slug test analysis graphs.

#### 2.1.8.2 Tidal Survey

A tidal study was conducted at the Site between September 8 and September 18, 2014. The study was conducted to characterize the relationship between the tidal fluctuations in the Acushnet River and the potentiometric water levels in the overburden and bedrock aquifers present on the Site. Data logging pressure transducers were installed into 17 overburden wells, and eight bedrock wells, and a staff gauge in the Acushnet River. Wells were chosen to provide representative coverage across the Site.

The groundwater (potentiometric) levels monitored in on-site monitoring wells exhibit wave-like (sinusoidal) patterns which in most cases closely mimic the water levels recorded in the adjacent river. Potentiometric levels from several bedrock rock wells measured during the week of September 15 through September 18, were also evaluated for tidal fluctuations as pumping activities during that time did not appear to affect water levels in those wells. A data logger was also attached to a staff gauge which was installed in the Acushnet River. A summary of data from the staff gauge is presented in the following table.

Table 2.10
Summary of Staff Gauge Data
Acushnet River

Period	Cycles	Start	End	Days	Min (ft, msl)	Max (ft, msl)	Average (ft, msl)	Range (ft)
		9/9/2014	9/12/2014					
1	6	8:15	4:45	2.9	-1.53	4.33	1.21	5.86
		9/12/2014	9/15/2014					
2	6	11:30	6:30	2.8	-1.10	4.19	1.19	5.29
		9/15/2014	9/18/2014					
3	7	14:15	22:45	3.4	-0.12	3.37	1.32	3.49

To facilitate this assessment, the data was divided into three approximately 3-day periods. The largest tidal range was observed during Period 1. However, the highest mean tide was recorded during Period 3. Period 1 corresponded to a supermoon (or perigee new moon) which is the moon's closest point to the earth in its orbit; this causes unusually large tidal effects. **Appendix H Figure 1** presents water levels recorded at the Acushnet River Staff Gauge and the three 3-day periods.

Small fluctuations in water levels from the Acushnet River were recorded during low and high tides when water levels are relatively stable over the course of several hours. These fluctuations likely continue 24 hours per day but are largely masked during rising and falling tides. It is hypothesized that a narrowing of the water way 1.25 miles to the south of the Site is the possible source of these fluctuations. The closest narrowing of the Acushnet River is the opening at the Coggeshall Street/Howland Road Bridge. This restricted inlet is a focal point and source for refractory waves which travel up the river and possibly refract from one side to the other shore. This focal point is analogous to dropping a pebble in a stream and watching concentric waves emanating from this point. These smaller

water level fluctuations are transmitted in detail to both the overburden and bedrock wells on the Site. Figures depicting potentiometric hydrograph data from both overburden and bedrock monitoring wells versus the water levels from the Acushnet River Staff Gauge are presented in **Appendix H**.

The tidal efficiency was calculated for each monitoring well to obtain the tidal fluctuation and average percent response at each location relative to the water level in the river.

Hydrographs for each well were reviewed to determine the difference in elevation from the trough (minimum) to the crest (maximum) over multiple tidal cycles. The change in water level elevations for each well and for each cycle was divided by the change in water level measured in the river during the corresponding time period. Shallow overburden well MW-3A showed only minor fluctuations, which is likely due to its shallow depth and location next to the sheet pile wall. The resulting percent response values for each well were then averaged. This data is presented in the table below.

Table 2.11
Summary of Tidal Efficiency

	Distance	Average			Distance	Average	
Well ID	from river (feet)	Percent Response	Fluctuation (feet)	Well ID	from river, feet	Percent Response	Fluctuation (feet)
Overbure	den Wells	•		Bedrock Wells			
MW03A	72	1.2	0.07	MW04B	704	4.0	0.14
MW07	28	59.8	3.31	MW07B	34	52.9	2.94
MW08S	628	1.2	0.06	MW13B	652	1.8	0.10
MW10D	217	25.0	1.39	MW15B	27	52.4	2.92
MW13D	647	1.9	0.10	MW17B	49	41.0	2.29
MW15D	27	61.0	3.40	MW20B	898	4.4	0.24
MW17D	52	42.0	2.35	MW21B	569	2.6	0.15
MW18D	385	4.2	0.23	MW23B	163	32.6	1.82
MW19D	296	18.9	1.06	MW27B	300	22.1	0.63
MW19S	291	6.9	0.38	MW28B	118	33.7	0.96
				MW103			
MW20D	894	1.0	0.05	В	60	18.3	1.01
MW21D	574	3.7	0.20				
MW22S	226	16.5	0.92				
MW23D	163	30.4	1.70				
MW24D	555	1.8	0.10				
GZ101D	708	1.2	0.07				
GZ103S	60	32.3	1.80	Staff Gauge	NA	100.0	5.54

Additionally, the calculated tidal efficiency/percent response was plotted for overburden and bedrock monitoring wells versus distance from the Acushnet River. A best fit trend line/response curve was applied to both aquifers and is presented in **Appendix H Figure 2**. The percent response to water level

fluctuations in the river was as high as 60 percent for observation wells in both overburden and bedrock within 30 feet of the river but drop to 10-20 percent within the first 300 feet. Beyond 150 feet from the river, the tidal efficiency of the bedrock aquifer appears to be slightly higher than that of the overburden, but this may be a function of well control. Based on the data, the response of the overburden aquifer and the bedrock aquifers is quite similar which suggests that the two units are in hydraulic communication with the river and likely each other.

#### 2.1.9 Catch Basin Videography and Sampling

As part of the Phase II CSA, videography of the existing storm drain system was performed to evaluate the potential for the sewers to provide a migration pathway for site related constituents and for contaminated groundwater inflow to the catch basins system and discharge to the Acushnet River. In addition, the sewer video provided a means to evaluate the structural condition of the lines.

On May 20, 2014, the storm sewer videography was completed by Advanced Pipe Inspection, Inc. of Dedham, Massachusetts. The four storm sewer lines videotaped include the following:

- · Hadley Street Line to Outfall
- CB-01 to Hadley Street Line
- CB-13 to Hadley Street Line
- CB-06 to CB-03

The Hadley Street line runs from upstream of MH-04 through MH-02 and MH-01, and then discharges into the Acushnet River. This line is constructed of a 36" diameter concrete pipe.

The second line runs from CB-01 through CB-09, and discharges into MH-04 where it flows into the Hadley Street line. This line is constructed of clay pipe and has a section that was replaced with PVC pipe

The third line runs from CB-13 into MH-03, through a backflow preventer, and discharges into the Hadley Street line downstream of MH-04.

The last line runs from CB-06 through two parallel pipes to CB-02, through CB-05 and CB-04 to CB-03. From CB-03, the flow splits into two pipes, one which goes to a buried manhole and presumably discharges into the river, the other is assumed to discharge directly to the river.

Refer to **Figure 2-1** and **Figure 2-2** for the location of the manholes, catch basins, and storm sewer drain lines on the Property and in Hadley Street.

# 2.1.9.1 Sediment Sampling

Accumulated sediment in catch basin and manholes was sampled and analyzed for PCBs. Samples of accumulated sediment within MH-03, CB01, CB-02, CB-03, CB-04, CB-05, CB-06, CB-09 and CB-13 were submitted for analysis of PCBs by EPA Method 8082. Sediment accumulation was not noted in manholes MW-01 and MH-02, and manhole MW-04 contained only gravel. Therefore, samples were not obtained from these manholes. In addition, a composite sample (with sediment from all of the catch basins and manholes) was submitted for waste characterization analysis for VOCs by EPA Method 8260C, semi-volatile organic compounds by EPA Method 8270D, pesticides by EPA Method 8081B, and total metals by EPA Method 6010C and 7471D, ignitability by EPA Method 1030, reactivity by SW-

846 Method 7.3, pH by EPA Method 9045D, and toxicity characteristic leaching potential (TCLP) lead. The samples were placed on ice, maintained and submitted to Alpha Analytical under chain-of-custody procedures. Refer to **Figure 2-2** for the catch basin, sewer line and sewer sediment sample locations.

Analytical results for sediment samples collected from MH-03 and the catch basins indicated the presence of a minimum PCB concentration of 4.21 ppm in the sediment sample collected from CB-04 to a maximum PCB concentration of 310 ppm in CB-02. According to the composite waste CVOC compounds (tetrachloroethene, chlorobenzene, characterization sample, six 1,1,1trichloroethane, trichloroethene, cis-1,2-dichloroethene, and acetone) 17 semi-volatile organic compounds (including polynuclear aromatic hydrocarbons, dibenzofuran bix-2ethylhexyl)phthalate), one pesticide (heptachlor epoxide), and six RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, and mercury) were detected. Based on the total lead concentration of 220 mg/kg, an aliquot of the sample was analyzed for TCLP lead. The TCLP result (0.84 milligrams per liter [mg/l]) indicates the sediment sample is not characteristic hazardous waste for lead.

#### 2.1.9.2 Structural Issues

The Hadley Street line has many structural issues. For the entire length of the scoped line, there is severe degradation of the mortar and loss of material along the water line (at approximately one-quarter full level). There is infiltration visible all along this line where the mortar has been worn away, as well as loose debris and holes in the sidewalls of the pipe where the pipe material has fallen out. There was sufficient debris in each length of the pipe to block inspection of each length in both the upstream and downstream directions. In the length of pipe between MH-04 and MH-02, there are two service connections, one likely connects to MH-03, and the other has an unknown origin. Between MH-02 and MH-01, the top of the pipe slopes down towards the bottom of the pipe in one location, reducing the flow area. In MH-01 at low tide there was sufficient standing water in the manhole to prevent access to the pipe either to the outfall or to MH-02. Standing water was observed in the pipe between MH-02 and MH-01 when it was inspected from the upstream direction.

The CB-01 line is constructed of clay pipe. There are cracks along the length of pipe from CB-09 to MH-04. There is a section of PVC pipe that replaced the original section of clay pipe along this length as well. In CB-09, there is a six inch clay pipe that enters the catch basin with a three inch rubber hose inside of it, and dirt and debris in the space between the three inch hose and six inch pipe. The rubber hose is severely degraded and is breaking apart along the length of the pipe. This pipe was inspected for nine feet to where the pipe is collapsed. The origin of this pipe is unknown. Based on the historic building footprint, this pipe may have originated in the former building.

The CB-13 line consists of one length of pipe from CB-13 to MH-03. This pipe is constructed of alternating sections of clay pipe and corrugated metal pipe. One section of the corrugated metal pipe is slightly crushed. In MH-03, there is a backflow preventer which presumably connects to the Hadley Street line at one of the observed service connections. The corrugated metal pipes are corroded and rusted on the interior, except for the very top of the pipe where air bubbles collect during high flows. There is some standing water throughout the length of pipe indicating potential for infiltration at the joints in the clay pipe and between pipe materials. There is debris (sand and gravel) accumulated in the bottom of the corrugated metal pipe sections.

The CB-06 line consists of multiple lengths of clay pipe. There are two pipes in parallel from CB-06 to CB-02, and two pipes which leave CB-03. Generally, throughout the entire line, the pipes are not

straight and pitch up, down, left, and right. There is standing water where the pipes sag and in the manholes. Several joints throughout this line have infiltration and have collected sufficient debris in each length of the pipe to block inspection of each length in both the upstream and downstream directions. There are two lines which leave from CB-03. The right line is presumed to terminate in an outfall to the Acushnet River; however the inspection was blocked by debris in the pipe, and this was not confirmed. The left line terminates in a buried manhole after 110 ft of pipe. This manhole was not located, and any discharge from the manhole was not identified. Based on the length of pipe to this manhole, it is presumed that the manhole discharges to the Acushnet River.

Refer to **Figure 2-2** for the location of the manholes, catch basins, and storm water drain lines on the Property and in Hadley Street. Refer to **Appendix L** for the storm sewer logs and site sketch showing sewer investigation locations.

#### 2.1.10 Vapor Intrusion Assessments

The MassDEP Interim Final Vapor Intrusion Guidance (MassDEP 2011) (the VI Guidance), and the pending Final Vapor Intrusion Guidance (produced for public comment subsequent to the 2014 revisions of the MCP but not yet finalized), require an evaluation of the potential for vapor intrusion to indoor air when the weight of evidence suggests that the pathway to indoor air may be complete. The weight of evidence approach considers, among other factors, the comparison of volatile constituents in groundwater to Method 1 GW-2 standards, with GW-2 defined in the MCP to include groundwater located within 30 feet of an existing or planned building or structure that is or will be occupied, and the average annual depth to groundwater in that area is 15 feet or less. Based on the results of groundwater sampling compared to GW-2 standards at both the Precix and Titleist properties, further evaluation of the potential for vapor intrusion was necessary.

# 2.1.10.1 Precix Property

Considering the results of soil sampling at location MIP-43 and analytical results for groundwater samples collected from shallow groundwater wells within 30 feet of the southern wall of the Precix building, additional lines of evidence, including sub slab soil gas and indoor air were assessed. AECOM installed permanent sub-slab vapor points in the Precix building. On April 7, 2014, AECOM performed a site visit at Precix to observe the building interior and identify sample collection locations. The building inspection was conducted in conformance with MassDEP's VI Guidance. Four locations, two along the southern interior wall and two closer to the center of the building were chosen for installation of sub-slab vapor points, as shown on **Figure 2-2**.

The sub-slab vapor points were installed on April 27, 2014. The soil vapor points were installed using a four-inch diamond-bit concrete saw to make an opening in the concrete slab. Upon removal of the concrete core, hand tools were used to excavate soil to a depth of approximately six inches below the bottom of the concrete slab. Approximately one inch of clean silica sand was placed in the bottom of the hole prior to placing the soil vapor point with attached tubing in the hole. The soil vapor point was backfilled with silica sand to the bottom of the concrete slab. Molding clay was then used to seal off the lower half of the core hole. A two-inch manhole was cemented into place with non-shrinking concrete. The sub-slab vapor points were identified as AX-VI-SS1 through AX-VI-SS-4.

A helium leak test was conducted on each point after installation to evaluate whether the sub-slab area was completely sealed. To perform the helium leak test, an inverted five-gallon plastic bucket with two small holes was placed over the soil vapor point. An extension of the sub-slab vapor point tubing was

added, and this tubing is routed through one of the small holes in the bucket. The sampling tube is connected to a low flow sampling pump. A second length of tubing is placed through the second hole in the bucket and attached to a helium canister. Modeling clay was used to seal the two bucket holes around the tubing and the bucket to the floor. The helium canister valve was opened, and the air pump attached to the sub-slab vapor point was turned on. The soil vapor discharging from the air pump was monitored with a helium detector. The soil vapor point was concluded to be properly sealed if helium was not detected. If helium was detected, modifications to the soil vapor point were made to enhance the seal, and the leak test was re-run until no leakage was detected.

On May 4, 2014, sub-slab vapor samples from each of the four vapor points were collected. Prior to collection of the samples, another helium leak test was conducted to verify the seal on each vapor point in accordance with the AECOM SOP for sub-slab soil vapor sampling. The sub-slab vapor samples were collected in a 2.7 liter Summa-type canister using a flow rate of approximately 100 milliliters per second (ml/s). Sample collection time was approximately 20 minutes for each sample.

Four indoor air and one ambient air (exterior) sample were also collected on May 4, 2015. These samples were designated as AX-VI-IA1 through AX-VI-IA4 and AX-VI-OA5, respectively. The four indoor air samples were collected from the same areas of the building where the sub-slab vapor points are located and the exterior sample was collected from near the southeast corner of the building. These air samples were collected in a six liter Summa-type canister with flow controllers set for an eight-hour sampling duration.

The Summa canisters were maintained under chain-of-custody procedures and delivered to Alpha Analytical's Mansfield, Massachusetts laboratory. The samples were analyzed for CVOCs using EPA Method TO-15.

On December 30, 2015, consistent with the recommendations in the VI Guidance, a second round of sub-slab vapor and indoor air sampling was completed during heating season using the above-described methodology and sample identifications.

Sub-slab soil samples collected from Precix indicate concentrations of TCE in sub-slab soil vapor samples ranged from 168 ug/m³ to a maximum of 23,200 ug/m³, exceeding the commercial/Industrial screening value of 130 ug/m³ at all four locations during both sampling rounds. Tetrachloroethylene was detected at a concentration of 821 ug/m³ at location SS-01 during the December 2014 sampling event, above the commercial/industrial screening value of 290 ug/m³. Indoor air TCE concentrations exceeded the commercial/industrial threshold value² (1.8 ug/m³) in both sampling rounds at location IA01 (2.90 ug/m³ and 6.45 ug/m³) and in one round at location IA02 (2.07 ug/m³). Refer to **Table 2-12** and **Table 2-13** for summaries of the Precix indoor air and sub-slab soil vapor analytical results.

# 2.1.10.2 Titleist Property

Groundwater analytical results for samples collected from monitoring well MW-21D indicated that the Method 1 GW-2 standard for one compound was exceeded. Therefore, a vapor intrusion assessment

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<sup>&</sup>lt;sup>22</sup> Threshold values are MCP risk management criteria intended to expedite the evaluation of indoor air data collected as part of MCP response actions. The detected TCE values were also compared to Reference Concentrations, Imminent Hazard and Urgent Concern Levels contained in MassDEP's "US EPA Trichloroethene Toxicity Values and Office of Research and Standards Recommendations Regarding Remediation Targets and Timeframes to Address Potential Developmental Risks", dated August 15, 2014. As a result, it was found that an IH condition was not present, and an urgent response was not required, but that the indoor air pathway was complete and required further evaluation in the Method 3 Risk Assessment.

was initiated for Titleist. On November 18, 2014, AECOM met with Titleist representatives to discuss and identify potential sub-slab soil vapor point installation locations. Four locations were agreed upon during the meeting, identified as AX-VIT-SS01 through AX-VIT-SS04. Three of the locations were installed radially out from MW-21D in the cross gradient and inferred downgradient sections. A fourth location was installed farther away from the other identified points. Refer to **Figure 2-2** for the Titleist sub-slab sampling point locations.

On December 29, 2015, the four sub-slab soil vapor points were installed in the Titleist facility. The vapor point installation was completed and the seals were tested using the same methodology outlined for installation of the Precix sub-slab vapor points described above. On December 31, 2015, AECOM collected sub-slab soil samples from the four Titleist vapor points using 2.7 liter Summa-type canisters. Flow controllers were set to approximately 100 ml/s for a sample collection time of approximately 20 minutes for each sample. The samples were submitted to Alpha for analysis of CVOCs using EPA Method TO-15.

A second confirmatory round of soil vapor sample collection was completed on April 19, 2015 using the same methodology as the first round.

There were no CVOC concentrations in the sub-slab soil vapor samples collected during either round from Titleist exceeding the commercial/industrial threshold value. Refer to **Table 2-14** for a summary of the Titleist sub-slab soil vapor analytical results.

# 2.1.11 Titleist Access Control and Security Measures

Soil samples collected in the unpaved landscaped areas to the east and north of the east end of the Titleist building in December 2013 contained PCB concentrations above the Imminent Hazard concentration of 10 ppm. An imminent hazard evaluation was completed and it was determined that the PCB concentrations in soil do not pose an imminent hazard to three receptors, including employees, trespassers, or landscapers. A portion of the area of soil contamination was surrounded by a locked, chain link fence. According to Titleist, activities in this area were limited to observation and monitoring of the fire suppression system valves and hydrants and removal of solid waste generated by the plant. The solid waste is stored within a compacter located immediately adjacent to the eastern end of the building. Once each week, the solid waste is removed by a Titleist subcontractor. An existing gravel access road allowed the subcontractor to enter through a southern gate, back up to the compactor to remove the solid waste, and then leave through a gate on the northern side of the area. The fence was unlocked and re-locked by Titleist personnel after the solid waste was removed.

Only a portion of the PCB-impacted soils were located within the fenced area. Therefore, in an effort to decrease potential contact and/or spreading of PCB contaminated soil, AVX agreed to construct additional fencing to prevent unauthorized access and construct a non-PCB impacted access road and walkways for the solid waste disposal company to empty the trash compactor and Titleist employees to monitor the fire suppression system without contacting the soil contamination.

During the week of May 5, 2014, Clean Harbors Environmental Services, Inc. placed geotextile liner over the existing soils along the existing access road through the area of contamination. At least sixinches of clean crushed gravel was placed over the geotextile fabric. Similar access paths were provided to the fire suppression valves across the impacted area. Lastly, the fencing was extended to fully enclose the area of soil contamination. Access to the impacted soils remains restricted and the gravel road and fence are routinely inspected and maintained.

Refer to **Appendix M** for the Imminent Hazard Evaluation and **Figure 2-12** for the location of the access control and security measures.

#### 2.1.12 Immediate Response Action

On April 10, 2014, AECOM notified MassDEP of the presence of approximately 6.5 inches of DNAPL in monitoring well MW-15D. Plans for IRA activities, including periodic DNAPL gauging and removal, were orally relayed to MassDEP, and an IRA Plan was submitted to MassDEP on June 10, 2014. The IRA outlined assessment activities, including additional MIP and Geoprobe™ explorations in the northeast corner of the Property and north onto the Precix property to delineate the DNAPL extent, bi-weekly gauging of MW-15B/MW-15D and removal of accumulated DNAPL from MW-15D. Since submittal of the IRA Plan, AECOM has provided the required IRA Status Reports submitted in accordance with the schedule in the MCP, and two additional Interim IRA Status reports provided at the request of MassDEP. The original IRA Plan was amended in these subsequent submittals to include additional data collection and analysis to evaluate the dimensions of the DNAPL plume, if any, and the potential for the DNAPL to migrate or be recoverable.

#### 2.1.12.1 DNAPL Gauging and Recovery

Beginning on May 19, 2014, AECOM has conducted bi-weekly DNAPL recovery from monitoring well MW-15D. On September 29, 2014, DNAPL was identified in monitoring well MW-15B for the first time. Prior to this measurement, only a trace of DNAPL had been observed in this well (weighted string was intermittently stained, but not continuously at bottom of string). Since October 6, 2014, bi-weekly DNAPL recovery has been conducted at monitoring well MW-15B in addition to MW-15D. Since DNAPL recovery was initiated, a total of 29 gauging and recovery events have been completed for MW-15D and 22 gauging and recovery events have been completed for MW-15B.

During each DNAPL recovery event, the thickness of DNAPL in the well is first measured using a weighted string. Once the measurement is recorded, dedicated polyethylene tubing is then deployed to the bottom of the well and the discharge end connected to a peristaltic pump. DNAPL that is located at the bottom of the well is then extracted using the peristaltic pump and discharged into a five-gallon bucket. Pumping is continued until there is no longer any visible evidence of DNAPL being discharged from the tubing. The discharge consists of a mixture of groundwater and DNAPL extracted from the well. By carefully decanting the water collected into a separate container, the volume of the recovered DNAPL is then measured by decanting into a graduated beaker.

The total volume of DNAPL recovered from MW-15D between May 19, 2014 and August 28, 2015 is 2,783 milliliters (0.74 gallons). The average DNAPL thickness observed during this period was 3.70 inches, with a maximum thickness of 7 inches measured on May 19, 2015. On June 29, 2015, only a trace of DNAPL was measured. In general, the thickness has decreased over time. The average volume of DNAPL recovered during an event is 96 milliliters, with a maximum recovery volume of 350 milliliters recovered during the first two events on May 19, 2014 and June 2, 2015, and a minimum recovery volume of 0.10 milliliter on June 29, 2015, corresponding to the trace measurement on that date.

The total volume of DNAPL recovered from MW-15B from the first event on November 6, 2014 through the most recent event on August 28, 2015 is 1,215 milliliters. The average DNAPL thickness observed during this period was 2.9 inches, with a maximum thickness of 5.5 inches measured on May 11, 2015 and a minimum of one inch, measured on July 16, 2015. The average recovery volume during this time

period was 55 milliliters, with a maximum recovery volume of 125 milliliters on March 23, 2015, and a minimum recovery volume of 10 milliliters on July 27, 2015.

In general, both DNAPL thickness and recovery volume have decreased over time. Tidal cycle variations do not appear to correlate with DNAPL thickness or recovery volume. Refer to **Appendix N** for a tabulation of the data and graphs of DNAPL thickness and recovery over time for these two wells individually, as well as the cumulative volume recovered from each of these wells.

#### 2.1.12.2 DNAPL Sampling

A sample of DNAPL was collected from MW-15D when it was initially identified. A subsequent composite DNAPL sample was collected on September 30, 2014 from the top of bedrock at monitoring well MW-15D and from within bedrock at monitoring well MW-15B and submitted for laboratory analysis for CVOCs, PCBs, and physical parameters including specific gravity, viscosity, surface tension and interfacial tension. The MW-15 well cluster is the only well location across the entire Site where DNAPL has accumulated and pooled to the extent that it is measurable. The DNAPL CVOC and PCB analyses indicate that five CVOCs (1,2,4-trichlorobenzene, 1,4-dichlorobenzene, cis-1,2-dichloroethene, tetrachloroethene and TCE) and two Aroclors (1242 and 1254) are present in the DNAPL. The concentration of these constituents in the September 2014 sample was similar to the concentrations detected in the initial DNAPL sample collected from MW-15D. The analysis showed that the mixed DNAPL at the Site is comprised of chlorinated organic constituents and PCBs. Based upon the analytical testing suite, the site-specific DNAPL collected from the MW-15 monitoring well cluster was reported to be comprised of approximately 55% by mass of chlorinated organics and PCBs, with the remaining composition estimated to be comprised of carrier oils. The normalized distribution of chlorinated-only compound, i.e., not including carrier oil, is as follows:

**Table 2.15** 

Constituent	Normalized Percentage (%) By Weight		
cis-1,2-Dichloroethene	0.2		
1,4-Dichlorobenzene	0.4		
Tetrachlorothene (PCE)	1.5		
1,2,4-Trichlorobenzene	2.4		
Trichloroethene (TCE)	3.6		
Aroclor 1254	22.6		
Aroclor 1242	69.3		

These identified primary constituents and associated normalized constituent percentages were utilized to establish baseline physical properties of the mixed DNAPL collected from the MW-15 monitoring well cluster. The establishment of baseline physical DNAPL properties was required to evaluate the migration potential of DNAPL and, given the fact that DNAPL could only be recovered from one monitoring well cluster at the Site (MW-15B/D), the properties of that DNAPL sample were employed in the calculations.

Physical properties (dynamic viscosity, fluid density, surface tension and interfacial tension) of the site-specific DNAPL sample were also obtained through laboratory analysis. Doble Engineering Company

of Watertown, MA provided physical parameter results for viscosity, density and surface tension in January 2015, and these results were provided in the June 2015 IRA status report. Torkelson Geochemistry, Inc. of Tulsa OK provided physical parameter results for density, surface tension and interfacial tension in March 2015. These results of the DNAPL chemical analysis and physical properties are provided in **Appendix O**.

Based upon the make-up of the mixed DNAPL (chlorinated organics, carrier oils and PCBs), as well as site-specific DNAPL physical property testing, baseline DNAPL physical property data were established. The anticipated range of DNAPL physical property values employed within the mobility assessment are summarized in the following table, along with the range of values for each physical property parameter employed in various sensitivity analyses completed herein.

Table 2.16

DNAPL Physical Properties Summary

DNAPL	Density (g/cc)	Viscosity (cp)	Interfacial Tension (dynes/cm)	Contact Angle (°)
Site-specific MW-15 DNAPL Sample	1.22	27.8	15	NA
Baseline DNAPL Parameters	1.22	27.8	15	37.5
Sensitivity Analysis for Baseline Values	1.18- 1.44	25-40	5-25	20-75

NA = Not analyzed

## 2.1.12.3 MiHpt

In July 2014, as part of the IRA, the MiHpt was remobilized to the Site for additional investigation in the northeast corner of the Site (vicinity of MW-15B/MW-15D) with the objective of delineating potential CVOC DNAPL in this area and to aid in advancement of additional soil borings for collection of soil samples for analysis. The MiHpt tooling was advanced at 11 locations designated MIP45 through MIP-55, and re-advanced at prior MIP location MIP-15.

A notable decrease in the MIP readings during this investigation was observed, as compared to the MiHpt data obtained in November 2013. During the November 2013 MIP survey, the "background" (non- or less-impacted) soils were represented by XSD readings hovering around 1.0E+05mV to 3.0E+05mV, with peak values in the 1.0E+06 to 1.0E+07, whereas the XSD data obtained during the July 2014 work were closer to 5.0E+04mV to 2.5E with few to no peak values. As a result, another MIP was advanced adjacent to the MIP-15 location (identified as MIP-15RE) for comparison purposes. A comparison of the two logs indicates that the November 2013 MIP profile readings were approximately two to five times that of the July 2014 readings. Based on the relative response of the July MIP, locations for subsequent Geoprobe™ boring installation and soil sampling were selected.

Geoprobe™ soil borings were advanced at/near selected MiHpt locations to aid in delineation of DNAPL in the vicinity of monitoring wells MW-15B/MW-15D. These soil borings were identified as MIP45 through MIP49, MIP-50e, MIP53, MIP54 and MIP55s. Soil samples were collected from multiple depth intervals according to the PID screening procedure previously discussed in Section 2.1.3 of this report. Based upon the initial sample results, additional samples originally submitted to the laboratory on hold were analyzed. These samples were also compared to UCLs and Method 1 S-3/GW-2 and S-3/GW-3 standards. The UCLs are directly applicable standards for the Site. The Method 1 soil standards were included as a comparison criteria for or informational purposes only. PCB concentrations in both shallow soils and deep soils exceeded the UCL, including MIP45 (3-5), MIP46 (5-7), MIP46 (20-22), MIP4 (3-5), MKP47 (23-25), MIP48 (22.5), MIP48 (30-31), MIP49 (5-7), MIP50e (30-31), MIP-53 (10-12), MIP54 (3-5), MIP54 (7), MIP55S (5-7). PCB concentrations in two of these soil samples exceeded the Method 1 S-3/GW-3 standard (MIP50e (5-7) and MIP54 (25-27)). Additionally, 15 samples contained PCB concentrations above the UCL. The TCE concentration in the sample collected at MIP48 (30-31) exceeded the UCL of 600,000 ug/kg. There were no July 2014 MiHpt soil samples exceeding the Method 1 S-2/GW-3 or S-3/GW-3 standard.

The MiHpt termination depths were based on Geoprobe<sup>™</sup> refusal. It is understood that the Geoprobe<sup>™</sup> cannot reliably identify the presence of bedrock. Refer to **Figure 2-2**, Subsurface Investigation Plan for the MiHpt locations and **Appendix D** for the complete Columbia Technologies MiHpt reports.

#### 2.1.12.4 Electrical Resistivity

AECOM subcontracted Hager-Richter Geoscience, Inc. to perform an electrical resistivity survey of the eastern end of the Site. The objective of the electrical resistivity survey was to confirm the depth to bedrock and identify and delineate bedrock discontinuities that may serve as preferential pathways for migration of impacted groundwater. Three transects were proposed for the electrical resistivity survey. The proposed transects were oriented northeast-southeast across the eastern end of the Site, with the westernmost transect beginning in the northeast corner near MW-15D/-15B and extending southwest to the fence along Hadley Street; the second (middle) proposed transect was to begin just north of the MW-7A/-7/-7B cluster along the eastern Property line, extending southwest to the fence along Hadley Street; and, the third (easternmost) transect was proposed to begin just north of the MW-2A/-2/-2B cluster, extending southwest to the fence along Hadley Street.

Dipole-dipole and Schlumberger resistivity arrays were used for collection of the transect data. However, due to the presence of the former building foundation, sheet pile wall, and several utilities near/below the transect lines, only the two western transect lines were completed in an abbreviated fashion. As discussed in the Hager-Richter report contained in **Appendix P**, due to the presence of metal utilities, the electrical resistivity survey was unable to reliably predict the depth of the bedrock surface or location of bedrock fractures at these two transects. As a result, the third transect proposed, which was closest to the existing sheet pile wall, was not attempted.

#### 2.1.12.5 Resistivity Mise-a-la-Masse Survey

Hager-Richter also conducted a mise-a-la-masse (MALM) survey in the northeast corner of the Site. The MALM method is also called the "charged body potential method." The objective of the MALM survey at the Site was to identify the lateral extent of contaminated groundwater associated with the DNAPL present in MW-15D. The MALM survey does this by mapping the distribution and magnitude of self-potentials caused in an electrically conducting body due to the injection of electrical current in the body.

The MALM survey was conducted over a 100-foot by 100-foot area divided into a 10-point by 10-point grid in the northeast corner of the Property. A current electrode was placed at the bottom of monitoring well MW-15D, within the DNAPL present at the bottom of the well. A second current electrode was placed approximately 775 feet south-southwest of MW-15D on the Titleist property. Two additional electrodes were used; one was placed approximately 300 feet north of MW-15D, and the second was placed at each of the 100 grid points.

Hager-Richter's interpretation of the MALM survey indicates that there is a conductive body associated with the DNAPL present in MW-15D. This area extends approximately 60 feet to 70 feet south and west from MW-15D. Due to the sheet pile wall presence north and east of MW-15D, the extent of the conductive body in those directions could not be determined. Note that the MALM survey indicates only lateral extent of the conducting body, and inferences on vertical extent cannot be made. The MALM survey is discussed in the Hager-Richter report in **Appendix P**.

#### 2.1.12.6 Ultraviolet Optical Screening Tool (UVOST)

Given the relative proportion of chlorinated ethenes, chlorinated benzenes and PCBs found in the site DNAPL sample collected from the MW-15 monitoring well cluster, AECOM collected a sample of the DNAPL to evaluate a similar subsurface detailed assessment tool, based on a Geoprobe™ platform, which uses laser induced fluorescence to identify the presence of polynuclear aromatic hydrocarbons found in petroleum based non-aqueous phase liquid (NAPL). This sample of DNAPL was submitted to ZEBRA Technical Services (ZEBRA) to evaluate whether UVOST equipment was capable of detecting the PCB carrier oil. A fluorescence waveform specific to the site DNAPL (an orange color) was obtained prior to field mobilization to serve as an aid in identification of site DNAPL by the UVOST equipment. The UVOST percent response for this pure DNAPL sample was 333.3%.

The objective of the UVOST investigation was to identify subsurface DNAPL on the eastern side of the Site based on the site-specific DNAPL signature. On March 30, 2015, the UVOST investigation was initiated by ZEBRA, under oversight of AECOM. The initial UVOST locations were spaced approximately 20-25 feet apart in a linear fashion north of the Site and immediately adjacent to the sheet pile wall on the eastern boundary of the Site. In addition, a perpendicular transect was planned on the northern side of Hadley Street, along the section of the sheet pile wall in the southeast corner of the Site that runs east-west. Where UVOST data along these planned transects indicated the likely presence of DNAPL, additional UVOST points were added to identify and delineate these potential DNAPL areas. Refer to **Figure 2-1** for the UVOST locations. One UVOST probe was advanced adjacent to a former boring location designated MIP-11 (a soil boring and MIP log location), and two UVOST probes were advanced adjacent to B08B, where a soil sample collected from the 0-2 foot depth interval contained a PCB concentration of 1,000 milligrams per kilogram (mg/kg).

In general, AECOM used the signature waveform and associated color, and the percent reference emitter (%RE) to evaluate the UVOST data. As a rule of thumb, since the pure DNAPL %RE was 333.3%, AECOM used a conservative cutoff of 30%RE (corresponding to 10% of the pure DNAPL %RE) to identify probable DNAPL in the subsurface. Of the 48 UVOST locations, ten were identified with %RE values greater than 30% (UV-08, UV-09, UV-17, UV-34, UV-35, UV-38, UV-39, UV-40, UV-42 and UV-44), and three of those locations had %RE values greater than 100% (UV-8, UV-9 and UV-17). Of the ten locations with %RE values above 30%, seven of the detections (UV-17, UV-35, UV-38, UV-39, UV-40, UV-42 and UV-44) were shallow (less than 15 feet below the ground surface [bgs] and above the inferred top of peat), two (UV-08 and UV-09) were located greater than 15 feet bgs and one

location (UV-34) had %RE values above 30% at both shallow and deep depth intervals. The locations with greater than 30%RE are concentrated in two areas of the Site. The first area is the northeast corner, near the former northern drainage ditch terminus and MW-15D/-15B (UV-8 [~23.5-24.5 feet bgs], UV-9 [~18-19 feet bgs], UV-34 [~5-6 feet bgs and ~21-22 feet bgs], UV-35 [5.5-6.5 feet bgs], and UV-42 [~6-6.5 feet bgs]) where DNAPL is currently confirmed to be present as measured in MW-15d and MW015B. The second area is near the center of the Aerovox eastern Property boundary, near the former southern drainage ditch discharge point (UV-38 [~4-5.5 feet bgs], UV-39 [~7.5-8 feet bgs], UV-40 [~2.5-4 feet bgs], and UV-44 [~5.25 – 6.25 feet bgs]). Note that only the northeast corner %REs (UV-08, UV-09 and UV-34) indicate the presence of DNAPL in deep overburden, which is consistent with the physical findings. Refer to **Appendix Q** for the UVOST summary table and logs for each location and for a three-dimensional (3-D) representation of the UVOST data.

A 137%RE was the highest %RE measured at the Site. This measurement was collected from UVOST location UV-17, which was advanced just south of where the former southern drainage ditch discharged to the Acushnet River. This value was detected at a depth of 8.22 feet bgs. A Geoprobe™ boring was advanced at this location for the purpose of soil collection, observation, and classification through the five foot to 10 foot depth interval. Samples were submitted for laboratory analysis of CVOCs and PCBs from each one-foot interval from five feet bgs to 10 feet bgs. PCB concentrations in four of the one-foot depth intervals exceeded the UCL, ranging from 2,240 mg/kg in the estimated five foot to six foot interval to a maximum of 5,130 mg/kg in the estimated seven foot to eight foot interval. Soil samples collected from four of the depth intervals from boring UV-17 exceeded the TCE UCL and one depth interval exceeded the cis-1,2-dichloroethene UCL. Samples collected from four depth intervals exceeded the cis-1,2-dichloroethene Method 1 S-3/GW-3 standard, and all five soil samples exceeded the vinyl chloride Method 1 S-3/GW-3 Standard. The five foot to six foot interval was classified as very fine to fine sand, with deeper intervals classified as peat. Subsequent UVOST points were advanced around UV-17 to delineate the extent of the impact (high %RE signal) in this vicinity.

Refer to **Table 2-1** for a summary of the soil analytical data and **Appendix F** for the complete soil laboratory analytical report for the UV-17 soil boring.

## 2.2 Site Hydrogeological Conditions (310 CMR 40.0835(4)(d)(3))

## 2.2.1 Surficial Geology

Unconsolidated subsurface materials at the site vicinity consist of four main categories (from top to bottom): fill, peat, glacial outwash, and till. The fill materials range from approximately two feet to 10 feet in depth across the Site. Fill materials observed in the western end of the Property and throughout the former Aerovox building foundation are largely clean sand backfill that was used to fill the former Aerovox basement after demolition of the building. Fill materials along the eastern end of the Site are mostly related to filling of wetlands and are largely industrial fill and urban fill materials, including wood, brick, concrete, glass mixed with sand and gravel. In the northeast corner of the Property, fill materials also include plastic, rubber gaskets, metal, wire, and cloth mixed with sand and gravel.

In the eastern half of the Property, peat, peaty clay, and fine silts have been identified at depths of between two to 11 feet bgs, with a peat thickness from several inches to a maximum of eight feet at B07C. The peat layer has been identified in shoreline borings on the Titleist property and in several borings in the southeast corner of the Precix property. The peat layer has not been identified beneath

the western portion of the Site. Refer to **Figure 2-13** for a depiction of the estimated extent of peat below the Site.

Underlying the peat is a layer of stratified variable sands and gravels, with some layers and lenses of silt or silty sand. With the exception of the northwest corner of the Site, the sand and gravel deposit is underlain by bedrock. The bedrock has been identified as granitic gneiss, and has been observed from four feet bgs in the western part of the Site (SB-2), two to six feet bgs in the center of the Property (SB-1 and SB-12), 45 feet along the northern Property boundary (MW-6B), and 29 feet (MW-103B) to 35 feet bgs (MW-23B) feet along the river. Till has been identified in several borings between the glacial outwash deposits and the bedrock surface, including MW-20B on the western side of the site, and MW-105D, MW-24B, MW-102D, MW-103, MIP-23, MIP-43, MIP-49, MIP-50E, MIP-53, MIP-54 and MIP-55S. Cross section profiles (**Appendix R**) assume that the till layer is continuous across the Site.

#### 2.2.2 Bedrock Geology

The City of New Bedford lies within the Southeastern Massachusetts Batholith which is Proterozoic in age. The Proterozoic Eon is 2,500 to 542.0±1.0 million years ago. The igneous intrusive rocks at the Site were metamorphosed (heated and squeezed) multiple times to form the rocks observed today. The region has been subjected to many collisions with continents, microcontinents, and volcanic arcs, with metamorphism accompanying these mountain-building events. A geologically significant tectonic event was the Alleghanian orogeny which occurred approximately 325 to 260 million years ago having at least five deformation events.

The Freetown fault is a major structural feature in the area trending north-south from Dartmouth, Massachusetts to Lakeville more than 20 miles to the north. The Acushnet River flows in an erosional feature roughly following the fault zone and forms the eastern boundary of the Site. Movement on the fault is with the upthrown block to the west and the downthrown side to the east of the north-trending fault.

Mineral assemblages in rock cores from the Site are varying and contain quartz, feldspar, amphibole, and other minor minerals. Gneissic foliation is present at thicknesses ranging from less than one to 10 millimeters (mm). Some of the rocks may be classified as mafic gneiss while others are much lighter in color and contain fewer amphiboles. Gneissic banding is present throughout, with breaks frequently observed parallel to foliation planes. Breaks along these structures often show evidence of water migration such as iron staining, the accumulation of sediment, and weathering. Two main fractures sets are identified in the bedrock cores, including a near-horizontal to shallow dipping set and a high angle to vertical fracture set.

In addition to the variation in mineral assemblage, there are differences in foliation. Most of the rock cores exhibit foliation that dips about 30 to 50 degrees. Rocks close to the river (in borings MW-2B, MW-7B and MW-15B) lack distinct foliation but have fractures filled and sealed with a secondary mineral, possibly epidote. Bedrock in the southernmost corner of the Site (MW-17B) is foliated, suggesting that the fault zone passes closer to the northern portion of the Site where the rock is fractured.

In addition to observation of bedrock cores obtained from the Site, information regarding the bedrock structure was inferred from strike and dip measurements of the bedrock outcrop located on the west side of Acushnet Avenue near Hadley Street. Two joint sets were identified in the outcrop, one trending north-south and dipping 61 degrees to east and the other east-west and dipping 49 degrees to the

south. The north-south trending joints are likely expressed as the north-south trending lows on the bedrock contour map. The east-west joints are not as obvious on the bedrock contour map. Both joint sets are likely the major pathways for groundwater migration. The gneissic banding/foliation at this Acushnet Avenue outcrop trends northwest-southeast and dips to the northeast at 36 degrees. This banding is evident in rock cores and fractures along these structures often display evidence of water contact such as iron staining, the accumulation of sediment, and weathering.

The bedrock surface map for the Site (**Figure 2-2**) shows a linear bedrock low between wells MW-17B and MW-6B. This bedrock low trends parallel to the Freetown fault and Acushnet River. West and away from the shoreline, the bedrock surface rises from approximately 30 feet below msl to 0 feet msl in the southwest corner of the Site. Just to the west of MW-10D there is a relatively steep escarpment where the bedrock surface rises to approximately 15 feet within less than 100 feet of horizontal distance. The bedrock rises to the west, and crops out west of the Site.

Additional bedrock characterization was conducted using a suite of borehole geophysical logging techniques, including downhole optical and acoustic televiewer, acoustic caliper, and HPFM. As noted, these logging techniques were used to evaluate bedrock fractures/fracture zones in monitoring wells MW-29B through MW-34B for their potential to transmit water. Each identified fracture was ranked from 1 to 3 with Rank 1 representing a minor fracture that is not distinct and/or continuous around the borehole; Rank 2 representing an intermediate fracture that is distinct and continuous around the borehole but with little to no apparent aperture; and, Rank 3 representing a major fracture that is distinct, continuous around the borehole and has an apparent aperture. Groundwater flow may occur in any of these identified fractures; however, fractures with Rank 3 are generally assumed to provide the most distinct flow to a well. The orientation (strike and dip) of each observed fracture was identified.

The mid-point of the fracture zone was calculated and zones were identified and summarized for each well in the table below. No flow was detected by the HPFM below 159 feet and 185 ft bgs in MW-32B and MW-33B, respectively. Below 180 feet bgs only minor flow (0.04 gpm) was observed in MW-34B. These results suggest that below approximately 185 feet there is little, if any, ability for groundwater to migrate laterally.

Well ID	Depth to Center of Mapped Fracture Zone (feet bgs)						
MW-32	106		140			158	
MW-33	118		180	217.5		245	
MW-34	70		102	125		175	

**Table 2-17 MW-26 Mapped Fracture Zones** 

#### 2.2.3 Hydrogeology

There are three (3) identified water bearing zones at the Site: shallow overburden, deep overburden, and bedrock. Hydrogeologic conditions of the three zones were evaluated during the drilling and installation of the overburden and bedrock monitoring wells, several rounds of synoptic water level measurements, and a week-long tidal study. Generally, the net flow for all three aquifers is from west to east and towards the Acushnet River. However, the water levels, and thus groundwater flow in all

zones are affected by the tidally influenced river level (see **Appendix H**), causing flow direction reversals during incoming (high) tide in the three zones.

Synoptic rounds of water levels were collected for this investigation to define the groundwater flow regime. See **Table 2-18** for these measurements. The most recent two rounds of measurements were collected on May 28, 2015, during low tide, and August 5, 2015, during high tide. Groundwater elevation contour maps created with the data derived from these two events are discussed in the following three subsections.

#### 2.2.3.1 Shallow Overburden

**Figures 2-14 and 2-17** present shallow overburden groundwater contours for low and high tide events, respectively. During both events, the flow patterns and groundwater contours indicate that groundwater flow is to the east-northeast in the western half of the Property and to the west in the eastern portion of the property adjacent to the river. The westward flow, away from the river, is opposite of what is expected, especially at low tide. The presence of the sheet pile wall is blocking the shallow groundwater and preventing direct discharge to the river. This blocking affect is evident in the groundwater elevations in the wells near the river. Wells outside the wall have greater than 1.5 feet of elevation change compared to wells within the wall that have half a foot or less change. Due to this blocking effect, a groundwater low is located about 300 feet from shoreline at low tide and shifts inland approximately 300 feet (600 feet from the shoreline) during high tide. Ultimately, the movement of shallow groundwater is either downward into the deep overburden aquifer or around the wall during low tide, although this is likely a slow process.

The average groundwater flow velocity for the shallow overburden was calculated using an average hydraulic conductivity of 39.7 ft/day, as determined by slug tests, an assumed porosity of 30 percent, and an average low tide horizontal gradient of 0.0022 ft/ft. The shallow overburden groundwater flow velocity is 107 ft/year.

#### 2.2.3.2 Deep Overburden

**Figures 2-15 and 2-18** present deep overburden groundwater contours for low and high tide events, respectively. The groundwater contours for these two events are distinctly different. The low tide event shows a continuous decline in water levels from 2.14 ft msl in MW-5 (upgradient) to 0.06 ft msl in MW-15D (downgradient). The high tide event shows a similar water level in the upgradient well (2.00 ft msl), but displays a much higher water level in downgradient well MW-7, 2.57 ft msl. During the high tide event, there is a pronounced groundwater divide that forms approximately 500-600 ft to the west of the shoreline, similar to water levels found in the shallow overburden. The large range in water levels (low to high tide) in the deep overburden wells located along the coastline is evidence of the excellent hydraulic communication in the deep overburden aquifer that was also observed during the tidal study (see **Appendix H**). Thus, within 600 feet of the shoreline water flows both east and west depending on tidal cycle. However, overall there is a net outflow to the river.

The average groundwater flow velocity was calculated using an average hydraulic conductivity of 126.2 ft/day as determined by slug tests, an assumed porosity of 30 percent, and an average low tide horizontal gradient of 0.0019 ft/ft. The deep overburden groundwater flow velocity is 290 ft/year.

#### 2.2.3.3 Bedrock

Figures 2-16 and 2-19 present bedrock groundwater contours for low and high tide events, respectively. The observed low and high tide conditions reveal groundwater flow patterns that appear similar to those of the deep overburden. During low tide, the bedrock aquifer shows a continuous decline in water levels from the western portion of the Site toward the Acushnet River. During high tide, just as in the overburden aquifer, the flow direction reverses and groundwater flows from the river inland towards the groundwater divide. Groundwater in the vicinity of the divide has the potential to flow to the north and towards monitoring well MW-24B. The bedrock aquifer groundwater divide trends southwest\northeast and appears to be centered slightly further inland than the deep overburden divide. The groundwater contours surrounding the divide are more gradual making it less pronounced than the deep and shallow overburden divides.

The average groundwater flow velocity was calculated using an average hydraulic conductivity of 34.9 ft/day as determined by slug tests, an assumed porosity of 10 percent, and an average low tide horizontal gradient of 0.0020 ft/ft. The bedrock groundwater flow velocity is 252 ft/year.

#### 2.2.3.4 Vertical Gradients

Vertical hydraulic gradients were calculated between aquifers where well control allowed for a comparison of head level measurements at discrete locations. The water levels from shallow overburden wells were compared to deep overburden and bedrock well water levels. The effect of the shallow cutoff wall is apparent in well pairs MW-4A/MW-4 and MW-7A/MW-7, where gradients were 0.271 ft/ft and -0.236 ft/ft, respectively, during low tide but were -0.074 ft/ft and -0.049 ft/ft, respectively, during high tide. The lower vertical gradient measured during high tide is the result of greater water level fluctuations in the deep overburden; the deep overburden is in good hydraulic communication with the changing river level. As the water level rises in deep overburden wells when the tide comes in, the difference between the water levels in these well pairs decreases, but the elevation in the shallow overburden wells have a higher water elevation. The water elevations in the shallow overburden wells appear to be somewhat isolated from the tides by the wall, as is evidenced by a smaller tidal range.

Vertical hydraulic gradients calculated for well pairs screened within the shallow and deep overburden that are located greater than 100 feet inland from the cutoff wall indicate a pattern of slightly negative gradients during low tide (downward flow potential) and slightly positive gradients during high tide (upward flow potential). The magnitude of these gradients are very similar, which suggests that the net flow/movement either up or down is likely minimal. However, these slight gradient reversals may contribute to dispersion of constituents within the aquifer. Many of the vertical hydraulic gradients calculated using deep overburden and shallow bedrock water elevations indicate gradient reversals (low to high tide) similar to that observed within the shallow and deep overburden. These reversals of gradients were observed in the following well pairs: MW-13D/MW-13B, MW-15D/MW-15B, MW-23D/MW-24B, MW-24D/MW-24B, and GZ-103D/MW-103B.

The remaining deep overburden/shallow bedrock well pairs show similar gradients, regardless of the tide. Upward flow potential of similar magnitude, during both tides, is observed near to and west of the groundwater divide (GZ-101S/GZ-101D, MW-6/MW-6B, and MW-21D/MW-21B), and downward flow potential of similar magnitude is observed at well pairs GZ-4A/MW-30B and MW-7/MW-7B. The tides have a significant effect on gradients at MW-17D/MW-17B, which is located in the southeast corner of the Site near the river's edge. The calculated gradients were an order of magnitude higher during high tide, but the gradient was positive during both low and high tide. The steeper gradient observed during

high tide is likely related to a hydraulic connection between shallow bedrock fractures intersecting MW-17B and the adjacent Acushnet River.

In September 2015 during mid-tide conditions, water levels were measured in newly installed multi-port wells MW-32B and MW-34B. This data was used to evaluate vertical gradients within bedrock at these two well locations. The measurements collected from MW-32B suggest that the vertical gradient is upward between the shallow and intermediate zone, and downward between the intermediate and deep zone. An upward gradient in the shallow rock is consistent with the measurements from adjacent well pair MW-17D/MW-17B, where a positive upward gradient was also observed. The measurements from MW-34B show an overall downward gradient between all zones, which is similar to the gradients measured for nearby wells MW-7/MW-7B.

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# 3 Environmental Fate and Transport of Hazardous Materials (310 CMR 40.0835(4)(e))

The primary COCs at the Site include PCBs and CVOCs, released to the surface and subsurface of the Site through spills and material handling practices over decades of manufacturing. The manufacturing of products incorporating PCBs was discontinued in 1978. The transport, disposition, and environmental fate of PCBs and CVOCs at the Site is described below, including, without limitation, mobility, stability, volatility, persistence and bioaccumulative potential of the oil and/or hazardous material, in accordance with the MCP.

## 3.1 Fate and Transport Characteristics of Hazardous Materials (310 CMR 40.0835(4)(e)(1))

#### 3.1.1 PCBs

PCBs are chemically and thermally stable, nonpolar, nonvolatile compounds that strongly adsorb to fine-grained material and organic matter. PCBs are soluble in mineral oil (used in capacitors), and other nonpolar solvents, e.g., TCE, but are only slightly soluble in water. As a free-phase liquid, PCBs are denser than water and readily sink through surface water, saturated soil and sediments, and fractured bedrock, until an impermeable or competent feature is encountered. Once free-phase PCBs have reached an impermeable barrier, they pool and flow by gravity to the lowest impermeable feature, and slowly dissolve into groundwater over a long period of time (decades), unless otherwise perturbed. The high sorption potential and low aqueous solubility of PCBs significantly inhibits the transport of PCBs from soil to groundwater. However, once PCBs have dissolved into groundwater, they may be transported by advection to fluvial, lacustrine, and estuarine environments where they are taken up by small organisms and fish, and have the potential to bioaccumulate. PCBs are partially biodegradable under reducing conditions and favorable pH, which can result in stronger adsorption to the soil and organic matter, and decreased solubility. The volatility of PCBs is low; however, PCBs may be released from unsaturated soil, groundwater, and surface water to the atmosphere and deposited elsewhere through advection and precipitation.

Most of the elevated levels of PCBs (greater than 100 mg/kg in soil and greater than 10 ug/L in groundwater) detected at the Site are in shallow soil (less than 15 feet below the ground surface), in groundwater containing high concentrations of dissolved CVOCs, e.g., chlorinated ethenes and chlorobenzenes, and as a component of DNAPL recovered from monitoring well MW-15D and 15B. PCBs residuals, i.e., those remaining after the demolition of the buildings and excavation of shallow soils, are expected to be relatively immobile, but will likely persist for decades.

#### 3.1.2 CVOCs

The CVOCs that are COCs at the Site are TCE and chlorinated benzenes, which are known to have been used historically in the manufacturing process at the former Aerovox facility. Manufacturing on the Precix property was also known to have historically used TCE. Lesser amounts of PCE were also reportedly used historically at Aerovox. The remaining chlorinated ethenes were not known to be used or released, but rather are present via reductive dechlorination of the PCE and TCE parent products. Note that carbon tetrachloride, also a CVOC, is present in the northernmost well at the Precix property, but was not used or released from Aerovox and is not a COC for this RTN. Like PCBs, the CVOCs at the Site (which include tetrachloroethene, TCE daughter compounds cis-1,2-dichloroethene, trans-1,2-

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dichloroethene, and vinyl chloride, and chlorobenzene [chlorobenzene, 1,2-chlorobenzene, 1,3-chlorobenzene, and 1,4-chlorobenzene]) are nonpolar compounds that strongly adsorb to fine-grained material and organic matter. However, unlike PCBs, TCE, its daughter compounds, and to a lesser extent the chlorinated benzenes are much more soluble in water and readily evaporate when exposed to the atmosphere and unsaturated soil porosity.

As free-phase liquids, TCE and chlorobenzenes are denser than water, and readily sink, similar to PCBs. Once free-phase TCE and chlorobenzenes have reached an impermeable barrier, they pool and flow by gravity to the lowest impermeable feature, and serve as a continuing source of impacts to groundwater over a long period of time (decades), unless otherwise perturbed. The relatively high aqueous solubility of TCE, and to a lesser extent chlorobenzene, makes it possible for the dissolved compounds to be widely dispersed and transported over long distances by advection to fluvial, lacustrine, and estuarine environments. Unlike PCBs, TCE and chlorobenzenes are completely biodegradable under reducing conditions and favorable pH; however, amendments are typically required to accelerate the timeframe under which these compounds and their daughter compounds are completely degraded to innocuous end products, e.g., ethene and ethane. The volatility of TCE, its daughter compounds, and chlorobenzenes is high, therefore there is the significant potential for these compounds to volatilize from the soil and groundwater into the air, unsaturated soil pore spaces, and open atmosphere.

Elevated levels of TCE (above 100 ug/L) are ubiquitous at the Site, with approximately two acres exceeding the GW-3 criteria (5,000 ug/L) in the deep overburden and approximately five acres exceeding the GW-3<sup>3</sup> criteria in the bedrock groundwater. TCE exceeds the UCL of 50,000 ug/L in groundwater samples collected from those monitoring wells noted to have DNAPL present (MW-15D, MW-15B), or potentially present (MW-34B, and MW-26B). In general, DNAPL TCE is concentrated in the northeast corner of the Site; however, isolated hotspots at UV-17 and MW-26 indicate that TCE was released to the ground and subsurface at more than one location. Elevated locations of chlorobenzenes are limited to monitoring well MW-2, where TCE was not detected, and in the DNAPL collected from monitoring well MW-15B.

In general, much of the groundwater at the Site is under reducing conditions (-500 mV to zero mV) favored by anaerobic bacteria that degrade PCE, TCE, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, vinyl chloride, and chlorobenzenes, particularly in those areas and at the depths with the highest concentrations of these compounds. Most notably, several wells exhibit much higher concentrations of cDCE and vinyl chloridethan the parent TCE compound, and most wells have detectable levels of ethene and ethane, which are products of the complete dechlorination of TCE (and PCE). The CVOCs appear to be degrading by aerobic bacteria as well, under less reducing conditions. Additionally, high, low, and significantly variable pH values accompanying TCE daughter compounds throughout the shallow, deep overburden, and bedrock groundwater suggest that abiotic degradation processes are also at work, e.g., reduction of TCE by iron-bearing minerals. Therefore, widespread degradation processes are evidenced in the subsurface of the Site.

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<sup>&</sup>lt;sup>3</sup> Method 1, GW-3 standards are referenced here only to provide a rough approximation of the area that could be considered a potential source for contaminants that could migrate to and affect surface water. They are not included as part of risk characterization, as a Method 3 Risk Assessment was completed for the Site.

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#### 3.2 Migration Pathways (Potential Migration Pathways (310 CMR 40.0835(4)(e)(2))

This section includes the identification and characterization of existing and potential migration pathways of the oil and/or hazardous material at and from the Disposal Site, including, as appropriate, air, soil, groundwater, soil gas, preferential migration pathways such as subsurface utility lines and other subsurface void spaces, surface water, sediment, and food chain pathways. Note that surface water, sediment and food chain potential migration pathways are not considered here as these pathways exist only in the adjacent Acushnet River, part of the New Bedford Harbor Superfund Site, separate and distinct from the Site.

#### 3.2.1 PCBs

As indicated above, the primary migration pathway for PCBs is in DNAPL that has the potential to move primarily vertically to the top of bedrock and into bedrock fractures. Sufficient time has elapsed since the use of PCBs was discontinued that gravity and natural flushing (e.g., of the former trenches and existing underground utilities that formerly likely contained PCBs) have mobilized DNAPL PCB to the horizontal and vertical extent that it can or will be mobilized. From these areas, lateral migration of dissolved PCBs is expected to be diluted in groundwater controlled by the potentiometric gradient. A portion of DNAPL PCBs is anticipated to be strongly and permanently adsorbed to the peat horizon at the Site as well. Dissolved PCBs are likely to ebb and flow with the tide, with a net movement toward the Acushnet River. While the potential exists, PCB vapors are anticipated to represent an inconsequential fraction of total PCBs at the Site, and are not anticipated to be migrating through soil gas or into indoor air. PCBs are present in storm sewer sediment catch basins and manholes, and are expected to continue to migrate through sewers during storm events into the adjacent river. Other preferential pathways for PCB migration, such as utility lines or void spaces, were addressed during the NTCRA and do not present ongoing potential migration pathways of concern.

#### 3.2.2 CVOCs

Like DNAPL PCBs, the DNAPL CVOCs at the Site have most likely been flushed from the utility conduits and former trenches and into the deeper aquifer. Direct evidence of this is exhibited by the relative paucity of TCE and daughter compounds in shallow groundwater, and high concentration of TCE in the bedrock groundwater. Because of its relatively elevated solubility, dissolved TCE will continue to be transported in groundwater by advection and diffusion, tempered by the tidal influences, with a net movement toward the Acushnet River. Where CVOCs (TCE and daughter products) were found to be present in shallow groundwater within thirty feet of an occupied building, migration from soil and groundwater to soil gas and vapor intrusion to indoor air are considered potential pathways. The characterization of these pathways during the Phase II CSA indicates that migration to soil gas is occurring on the Titleist property, but the sub-slab soil gas levels or low enough to eliminate the vapor intrusion to indoor air as a pathway of concern. For the Precix property, migration to sub slab soil gas and vapor intrusion to indoor air was confirmed. While sub slab soil gas concentrations on that property were significant (compared to MassDEP screening values), sufficient attenuation under current conditions exist such that the indoor air concentrations are not above MassDEP imminent hazard or urgent response values for TCE and not above threshold values published in the VI Guidance for other constituents.

The chlorinated benzene CVOCs are combined in various proportions with PCBs in the dielectric fluids used to manufacture capacitors, so their presence and migration pathways at the Site are coincident with those for PCBs as described above.

## 4 Nature and Extent of Contamination (310 CMR40.0835(4)(f))

The following sections describe the type and lateral/vertical extent of contaminants on the Site, based on the investigations summarized in Section 2 of this report.

#### 4.1 Soil

#### 4.1.1 PCBs

In general, surface soils at a depth of between two to three feet in the former Aerovox building footprint were not sampled, as clean fill was placed into the building foundation as part of the Non-Time Critical Removal Action. Soil samples collected from the ground surface to a depth of three feet bgs across the eastern half of the Site exceed the Method 1 S-3/GW-3 standard, including along Graham Street.

Soils exceeding the Method 1 S-3/GW-2 standard (where applicable), Method 1 S-3/GW-3 standard, and/or UCL are primarily present in seven areas of the Site: (1) the area including surrounding and inclusive of B01A, B02A, south to B02B and west to the area surrounding B04B and south to B04C; (2) the area surrounding and inclusive of B07B and B07.5BC; (3) the landscaped area in the eastern third of the Titleist property; (4) soils in the southeast portion of the Property immediately surrounding and inclusive of B09C, B10C and MIP-23; (5) soils on the Property in the immediate vicinity of UV-17, delineated by UVOST borings; (6) the northeast corner of the Property; and (7) along Graham Street within the bounds of the Precix property, including MW-4S and MW-18D, and MIP43.

Soils in the first area described above reach PCB concentrations of less than one mg/kg at depths ranging from eight feet bgs to 13 feet bgs. PCB concentrations at borings B07B above the UCL extend to below 15 feet bgs, and PCB concentrations at B07.5BC decrease to below reporting limits by three feet bgs. Soils on the eastern third of the Titleist property exceeding the Method 1 S-3/GW-2 standard (as applicable), Method 1 S-3/GW-3 standard and/or UCL decrease to less than one mg/kg at depths of between four feet to eight feet bgs, with the exception of soils surrounding and including B06.5I. The deepest soil sample was collected at a depth of four feet to six feet bgs at this location, just over the peat layer. Soils in this vicinity were evaluated due to the potential for migration of contaminants via surface water runoff from the Property. Therefore, samples were not collected below the peat layer. In the vicinity of soils on the southeast corner of the Property, PCB concentrations decrease to below one mg/kg by eight feet bgs, just above or within the peat layer. Soils in the immediate vicinity of UV-17 from a depth of five feet bgs down to 10 feet bgs exceed the Method 1 S-3/GW-3 and/or UCL down to at least 10 feet bgs, which is within the peat layer. Soils in the northeast corner of the Property generally decrease to below four ug/kg between eight feet to 13 feet bgs. Lastly, PCB concentrations in soils along Graham Street collected from below the asphalt pavement to a depth of 2 feet bgs exceed the Method 1 S-3/GW-2 and Method 1 S-3/GW-3 standards. One of the samples (MIP43) contains a PCB concentration exceeding the UCL.

Detectable concentrations of PCBs are present in soil samples collected on the eastern third of the Titleist property, east and south of the building within the area bounded by the asphalt pavement and fence to the west and fence to the south along the Acushnet River. With limited exception, soils in this area exceed the Method 1 S-3/GW-2 standard (where applicable) and Method 1 S-3/GW-3 standard, both of which are four mg/kg. In general, PCB concentrations are highest and exceed the PCB UCL of 100 mg/kg adjacent to the fence line along the Acushnet River.

At depths of greater than 15 feet bgs, sporadic detections of less than one mg/kg are present on the Titleist and Precix properties. In general, soils at this depth from borings throughout the Property are non-detect or detected at less than one mg/kg. Soil samples collected from two locations contain concentrations greater than 1.0 mg/kg but less than 4.0 mg/kg. The only area of the Site with PCB concentrations greater than the UCL in soils at depths greater than 15 feet bgs are located in the northeast corner of the Property, in the vicinity of MW-15B/MW-15D. In this area, soil samples MIP46 (20-22), MIP-47 (23-25), MIP-48 (22.5), MIP-48(30-31) and MIP-50E (30-31) exceed the UCL of 100 mg/kg. The depth to bedrock in this area ranges between 27 feet bgs to 31 feet bgs.

Refer to **Table 2-1**, **Figure 2-4** and the cross sections in **Appendix R** for graphical depictions of PCB concentrations in soil across the site.

#### 4.1.2 CVOCs

#### 4.1.2.1 TCE and Daughter Products

CVOCs were detected in only one sample in the depth interval from the ground surface to three feet bgs. This sample was collected at B04BN. The concentrations of TCE, cis-1,2-dichloroethene and PCE detected in this sample are below the respective UCLs and Method 1 S-3/GW-3 standards. There were no other CVOCs detected in soil samples collected from the ground surface to three feet bgs interval.

TCE concentrations in the three feet to 15 feet bgs depth interval are present beneath the former Aerovox building foundation, in the south central area of the Property near B04B and B04C, at B08B (near MW-10D and MW-27B), at MIP-43 (Titleist property), in the UV-17 area, and within the northeast corner of the Site. TCE concentrations at B04B, soil boring MIP-43, and soil boring UV-17 exceed the Method 1 S-3/GW-2 standard (as applicable), Method 1 S-3/GW-3 standard and/or UCL.

The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. With the exception of soil boring B02B, there are no TCE concentrations detected in soils beneath the former 2-story (west) section of the building. TCE concentrations in this depth interval were detected north as far as MW-30B, and south as far as MW-23B. In general, higher TCE concentrations are detected in deeper soils, with the exception of the TCE concentration of 480,000 ug/kg at 3.5 feet bgs in soil boring B04B. Soil samples collected in the 15 feet bgs to bedrock depth intervals exceeding the Method1 S-3/GW-3 standard and/or UCL include soils collected from boring MIP-11, MIP15, MIP48 and MW-15D.

Soil concentrations of cis-1,2-dichloroethene and vinyl chloride are present pervasively across the Site in the soil profile beneath three feet bgs at variable concentrations. Concentrations of cis-1,2-dichloroethene exceeding the Method 1 S-3/GW-2 standard (as applicable), Method 1 S-3/GW-3 standard and/or the UCL were detected in samples collected from soil borings MIP43 and UV-17. Concentrations of trans-1,2-dichloroethene ranging from 2.1 ug/kg to 4.2 ug/kg were detected in soil samples collected from three soil borings on the Property. These concentrations do not exceed the Method 1 S-3/GW-3 standard or UCL. Vinyl chloride concentrations in soils collected from the UV-17 soil boring exceed the Method 1 S-3/GW-3 standard. There are no soil samples collected from the Site that exceed the vinyl chloride UCL.

Refer to **Table 2-1**, **Figure 2-5**, and the cross sections in **Appendix R** for graphical depictions of TCE concentrations across the Site.

#### 4.1.2.2 PCE

Tetrachloroethene concentrations were detected in soils collected from three soil borings in the three feet to 15 feet bgs depth interval. The detections were reported in soil samples collected from soil boring MW-11B (0.90 ug/kg) in the southwest corner of the Property, and soil borings MIP53 (5.6 ug/kg) and MIP54 (140 ug/kg) in the northeast corner of the Property. Nine soil borings collected at a depth of greater than 15 feet bgs contained PCE concentrations. Of these nine locations, only the PCE concentration in the soil sample collected from a depth interval of 26 feet to 28 feet bgs in soil boring MW-15D exceeds the Method 1 S-3/GW-3 standard. There are no PCE concentrations in soil that exceed the UCL.

#### 4.1.2.3 Chlorobenzenes

Concentrations of 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and/or 1,4-dichlorobenzene were detected in soil samples collected from eleven soil borings on the Aerovox property in the 3 foot to 15 foot bgs depth interval. Similarly, soil samples collected at depths of greater than 15 feet bgs contained concentrations of one or more of these compounds. These compounds were not detected in soil samples collected from the Precix or Titleist properties, and none of the detections exceed the Method 1 S-3/GW-3 and/or UCL standard.

#### 4.1.2.4 Other CVOCs

Other CVOCs detected in soils include 1,1,1-trichloroethane (three feet to 15 feet bgs), 1,1,2-trichloroethane (greater than 15 feet bgs), 1,1-dichloroethane (three feet to 15 feet bgs), 1,1-dichloroethene (greater than three feet bgs), carbon tetrachloride (greater than three feet bgs) and (chloroform (greater than three feet bgs). None of these compound concentrations exceed their Method 1 S-3/GW-3 or UCL.

#### 4.2 Groundwater

As previously discussed, groundwater at the Site is broken into three aquifers: shallow overburden (groundwater within 15 feet of the ground surface), deep overburden (groundwater at depths of greater than 15 feet bgs to the bedrock interface, and bedrock. Groundwater contamination at the Site includes PCBs and CVOCs. Detected concentrations of constituents have been compared to the UCLs applicable to the Site. Method 1 GW-2 and GW-3 standards are also used for illustrative purposes only.

#### 4.2.1 PCBs

PCBs are present in the shallow overburden, deep overburden and bedrock aquifers. Both PCB concentrations and the areal extent of PCB concentrations in groundwater increase with depth.

PCBs were detected in samples collected from 11 of the shallow overburden monitoring wells. The shallow overburden aquifer contains the lowest average total PCB concentrations, ranging from below laboratory reporting limits to 5.46 ug/L, detected in MW-2A. The PCB detections in shallow overburden wells are largely in wells on the Property and Graham Street, with the exception of detections in samples collected from MW-22S. There are no total PCB concentrations in shallow overburden monitoring wells above the UCL or Method 1 GW-3 standard. Refer to **Figure 2-6**, which presents the average PCB concentrations in monitoring wells in the shallow overburden aquifer.

Concentrations of total PCBs were detected in 11 deep overburden monitoring wells: GZ-101D, GZ-103D, MW-2, MW-6, MW-7, MW-10D, MW-15D, MW-17D, MW-18D, MW-19D and MW-23D. Detected PCB concentrations in these wells range from 0.464 ug/L to a maximum of 86.2 ug/L in the sample collected from MW-15D. Refer to **Figure 2-7**, which presents the average PCB concentrations detected in each of these monitoring wells during the Phase II CSA. PCB concentrations in deep overburden groundwater are highest in the northeast corner of the Property, near MW-15D, and in the southeast corner of Property around MW-10D and MW-17D. There are no individual or average PCB concentrations in deep overburden groundwater above the UCL. However, the eastern third of the Property and one monitoring well on the Titleist property exceed the Method 1 GW-3 standard.

PCBs were detected in 12 bedrock monitoring wells including MW-2B, MW-4B, MW-6B, MW-7B, MW-11B, MW-13B, MW-15B, MW-17B, MW-23B, MW-26B, MW-27B and MW-28B. Detected PCB concentrations in individual sample collected from these wells ranged from 0.336 ug/L in MW-28B to a maximum of 215 ug/L in the sample collected from MW-15B. Refer to **Figure 2-8** for a graphical depiction of the average total PCB concentrations in each bedrock monitoring well. The highest total PCB concentrations are centered around MW-13B in the center of the Property, and along the east end of the Property adjacent to the Acushnet River. The average total PCB concentration in groundwater samples collected from MW-15B exceeds the UCL, and concentrations in five of the bedrock monitoring wells exceed the Method 1 GW-3 standard.

Refer to **Table 2-8**, **Figures 2-6 through 2-8**, and the cross sections in **Appendix R** for graphical depictions of PCB concentrations in groundwater across the Site.

#### 4.2.2 CVOCs

Eleven CVOCs were detected in shallow groundwater during completion of this Phase II CSA: tetrachloroethene, trichloroethene, cis-1,2-dicloroethene, trans-1,2-dichloroethene, vinyl chloride, chloroform, 1,1,1-trichloroethane, 1,1-dichloroehtane, chlorobenzene, 1,3-dichlorobenzene and 1,4-dichlorobenzene. Ten CVOCs were detected in shallow groundwater during completion of this Phase II CSA: tetrachloroethene, trichloroethene, cis-1,2-dicloroethene, trans-1,2-dichloroethene, vinyl chloride, chloroform, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene and 1,4-dichlorobenzene. A total of 16 CVOCs were detected in bedrock groundwater samples collected for the Phase II CSA: PCE, TCE, cis-1,2-dichloroethene, trans-1,2-dichloroethene, vinyl chloride, 1,1-dichloroethene, 1,1,2-trichloroethane, 1,1,1-thricloroethane, 1,1-dichloroethane, carbon tetrachloride, chloroform, methylene chloride, bromodicloromethane, 1,3-dichlorobenzene, 1,4-dichlorobenzene and chloromethane.

#### 4.2.2.1 TCE and Daughter Products

Similar to PCBs, TCE and associated daughter products, cis-1,2-dichloroethene, trans 1,2-DCE and vinyl chloride, are present in the shallow overburden, deep overburden, and bedrock aquifers. Also similar is the increasing TCE concentrations detected with depth, with the highest average concentrations in the shallow overburden aquifer, deep overburden aquifer, and bedrock aquifer of 784 ug/L, 24,286 ug/L and 483,333 ug/L, respectively. In general, the aerial extent of the groundwater plume increases with depth.

TCE concentrations were detected in 15 shallow overburden monitoring wells, with groundwater concentrations ranging from below laboratory reporting limits (< 1.0 ug/L) to a maximum of 1,500 ug/l in the sample collected from MW-18S on the Precix property. Refer to **Figure 2-9** for a graphical depiction of the TCE isoconcentration contours in shallow overburden. The average TCE concentration in MW-

18S is 784 ug/L. The highest TCE concentrations are present in two monitoring wells along Graham Street adjacent to the Precix building (MW-18S and MW-16S), as well as MW-8S, located in the center of the Property. The average concentrations of TCE in MW-18S (823 ug/L), MW-16S (270 ug/L) on Precix property and MW-21D (8.85 ug/L) on Titleist property exceed the Method 1 GW-2 standard of five ug/L. Lower concentrations of PCE are detected in monitoring wells across the center portion of the Site, and are roughly bounded by MW-21D and MW-19S to the south, MW-4A and GZ-103D to the east, and GZ-1 and MW-12 to the west. TCE concentrations were detected in deep overburden groundwater samples collected from 14 monitoring well across the Site, including the Titleist property to the south (MW-23D) and Precix to the north (MW-24D). Refer to Figure 2-10 for a graphical depiction of TCE isoconcentration contours in deep overburden. The highest detected TCE concentrations in individual samples collected deep overburden monitoring wells range from a minimum of 2.8 ug/L in MW-24D to a maximum of 29,000 in MW-7. The average TCE concentrations for the samples collected during the Phase II CSA from MW-7 (24,265 ug/L), MW-10D (9,625 ug/L), MW-15D (5,133 ug/L) and MW-19D (4,875 ug/L), exceed the Method 1 GW-3 Standard. There are no average TCE concentrations in deep overburden exceeding the UCL. In general, the wells with TCE concentrations present are largely found along Graham Street and the east edge of the Property, with the exception of detects at two wells located further inland (MW-10D and MW-19D). TCE concentrations are highest in the west-central part of the Property, extending east to MW-7 and MW-15D, adjacent to the Acushnet River.

Concentrations of TCE were detected in bedrock in 23 site monitoring wells at concentrations above laboratory reporting limits. The three monitoring wells with the highest individual sample concentrations are MW-26B (150,000 ug/L), MW-15B (110,000 ug/L), and MW-34B (500,000 ug/L in the 170 foot to 180 foot bgs sampling interval). Refer to **Figure 2-11** for a graphical depiction of the TCE isoconcentration contours in bedrock. The wells on the perimeter of the site boundary contain TCE concentrations ranging from 2.8 ug/L in MW-35B south of the Titleist Building to 9.78 in MW-11B to the southwest, and 504 ug/L and 480 ug/L to the north of the Precix building. The northern boundary of TCE in groundwater in bedrock has not been defined as of this time because access to the property north of Precix (the Coyne property) could not be obtained. Average TCE concentrations detected in MW-26B, MW-15B, and MW-28B exceed the UCL, and average TCE concentrations in MW-4B, MW-6B, MW-7B, MW-13B, MW-27B, MW-28B, MW-32B and MW-101B exceed Method 1 GW-3 Standards.

Refer to **Table 2-8**, **Figures 2-9 through 2-11**, and the cross sections in **Appendix R** for graphical depictions of TCE concentrations across the Site.

Twelve monitoring wells contained concentrations of cis-1,2-dichloroethene in shallow overburden groundwater. Individual sample concentrations of cis-1,2-dichloroethene in shallow overburden groundwater range from below reporting limits (1.0 ug/L) to a maximum of 13,000 ug/L in MW-8S. Detections of cis-1,2-dichloroethene are generally found within the same monitoring wells as TCE, with limited exception. Monitoring well GZ-1 does not contain a detectable concentration of cis-1,2-dichloroethene, and MW-2A and GZ-103S contain cis-1,2-dichloroethene, but do not contain TCE. The monitoring wells bounding the current extent of detectable concentrations of cis-1,2-dichloroethene include MW-21D and MW-22S to the south, MW-12S to the east, multiple wells along Graham Street, and MW-2A to the east and adjacent to the Acushnet River. Average concentrations of cis-1,2-dichloroethene in monitoring wells MW-4S, MW-16S, MW-18S exceed the Method 1 GW-2 standard. There are no UCL or Method 1 GW-3 standard exceedances of cis-1,2-dichloroethene in the shallow overburden aquifer.

With the exception of groundwater samples collected from MW-24D, cis-1,2-dichloroethene is present in the same deep overburden monitoring wells as TCE. The highest detected cis-1,2-dichloroethene concentrations in individual samples collected for the Phase II CSA range from 140 ug/L in MW-101D to a maximum of 4,800 in MW-17D. The center of the existing cis-1,2-dichloroethene plume is shifted slightly southeast of the center of the TCE plume, defined by the average cis-1,2-dichloroethene concentrations in MW-17D (3,150 ug/L), MW-19D (3,475 ug/L) and MW-10D (4,250 ug/L). There are no individual or average concentrations exceeding the UCL or Method 1 GW-3 standard for cis-1,2-dichloroethene in deep overburden.

Concentrations of cis-1,2-dichloroethene were detected in the same 23 bedrock monitoring wells as TCE. The highest individual cis-1,2-dichloroethene sample result was 92,000 ug/L, collected from MW-15B, with the second highest average concentration detected at MW-26B, similar to the TCE concentrations. There were no cis-1,2-dichloroethene concentrations in bedrock groundwater samples exceeding the UCL. However, the concentration detected in MW-15B exceeds the Method 1 GW-3 standard.

Trans-1,2-dichloroethene was detected in groundwater samples collected from MW-4S, MW-12S, MW-13D, MW-16S, MW-19S and GZ-103S. The highest detected trans-1,2-dichloroethene concentration detected was 5.2 ug/L, detected in MW-19S. These detections correspond to two areas of the Site, the central portion of the Property and along Graham Street. Trans-1,2-dichloroethene was detected in samples collected from two deep overburden monitoring wells, MW-17D and MW-23D. These wells are both located in the southeast portion of the Site, near the Acushnet River. There are no individual or average trans-1,2-dichloroethene concentrations above the UCL or Method 1 GW-3 standard. Only four bedrock monitoring wells contained detectable concentrations of trans-1,2-dichloroethene: MW17B, MW-26B, MW-30B, and MW-103B. These four wells are located at various locations across the Site.

Vinyl chloride was detected in twelve monitoring wells. Concentrations of vinyl chloride ranged from below reporting limits to a maximum concentration of 3,700 ug/L in a sample collected from monitoring well MW-8S. The average concentration of vinyl chloride in MW-8S, based on three groundwater sampling events, is 3,233 ug/L. The vinyl chloride concentrations in deep overburden groundwater are present in the same set of monitoring wells that exhibit detectable cis-1,2-dichloroethene concentrations. The highest individual sample detections range from a minimum of 6.1 ug/L in samples collected from GZ-4A to a maximum concentrations of 620 ug/L in a sample collected from MW-7. Vinyl chloride has not been detected in individual sample concentrations above UCLs or Method 1 GW-3 standards. Vinyl chloride concentrations were detected in seven bedrock monitoring wells, also at various locations across the Site. Laboratory reporting limits for these TCE daughter products are elevated in many of the sample analyses, due to the elevated concentration of TCE. None of the detected concentrations of TCE daughter products are reported at concentrations greater than the UCL or Method 1 GW-3 standard.

#### 4.2.2.2 PCE

Reported concentrations of PCE in shallow groundwater range from below laboratory reporting limits (<1.0 ug/l) in MW-16S to a maximum of 4.2 ug/l in GZ-101S. Detections of PCE are generally in monitoring wells along Graham Street, with detections also in the center of the Site near MW-13D.

PCE is present above laboratory detection limits in four monitoring wells, including MW-10D, MW-15D, MW-17D, and MW-23D. Reported concentrations of PCE in deep overburden groundwater collected

from these monitoring wells range from 56 ug/L in MW-10D to a maximum of 180 ug/l in MW-15D. PCE detections are generally present in monitoring wells on the eastern third of the Site.

PCE concentrations were detected in five monitoring wells, MW-11B, MW-13B, MW-17B and MW-103B. Three of these monitoring wells, MW-11B, MW-13B, and MW-24B are located along a roughly northeast-southwest linear fashion relative to each other. The other two wells are located along the eastern edge of the site, adjacent to the Acushnet River. Detected PCE concentrations range from 7.0 ug/L in MW-103B to a maximum of 220 ug/L in MW-11B, which is located in the southeast corner of the Site. There were no PCE concentrations detected above the UCL or Method 3 GW-3 standard.

#### 4.2.2.3 Chlorobenzenes

Chlorobenzene was detected in shallow overburden monitoring wells MW-2A, MW-3A, MW-3A, and GZ-103S, located along the east end of the Site. The highest concentrations of chlorobenzene in these monitoring wells were 38 ug/L, 170 ug/L, 99 ug/L and 6.4 ug/L, below the UCL of 10,000 ug/L and Method 1 GW-3 standard of 1,000 ug/L. Both 1,3-dichlorobenzene and 1,4-dichlorobenzene were detected in the same monitoring wells as chlorobenzene. The highest concentration of 1,3-DCB in these monitoring wells was 5.7 ug/l, 3.9 ug/l, 1.4 ug/L and 2.1 ug/L, respectively, and the highest concentrations of 1,4-DCB in these monitoring wells was 8.6 ug/L, 7.1 ug/L, 2.6 ug/L and 1.4 ug/L, respectively.

Chlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene concentrations were detected in deep overburden monitoring wells MW-2 and MW-4. These two monitoring wells are located between the east end of the former Aerovox building and south of the southern drainage ditch. The highest concentrations of these three constituents detected in MW-2 were 940 ug/L, 52 ug/L and 120 ug/L, respectively. Concentrations of these compounds in samples collected from MW-4 are lower, with the highest detections of 24 ug/L, 9.6 ug/L, and 21 ug/L. The highest detected concentration of 1,2-dichlorobenzene in MW-2 was 14 ug/L. This compound was not detected in MW-4.

There were no detected chlorobenzenes present in any of the bedrock monitoring wells. A 1,3-dichlorobenzene concentration of 2.1 ug/L was detected a groundwater samples collected from MW-103B in September 2014. Analytical results for the samples collected from this monitoring well during the other two groundwater sampling rounds indicate the compound was not detected. Concentrations of 1,4-dichlorobenzene were detected in monitoring wells MW-11B and MW-103 B. The maximum detected concentrations in these two wells were 1.5 ug/L and 1.6 ug/L, respectively. There were no UCL or Method 1 GW-3 exceedances of chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene or 1,4-dichlorobenzene in the shallow overburden, deep overburden or bedrock aguifers.

#### 4.2.2.4 Other CVOCs

Additional CVOCs present in groundwater include 1,1-TCE, carbon tetrachloride and breakdown constituents chloroform, methylenechloride and bromodicloromethane. The average concentrations of 1,1-TCA detected in MW-13D was 4.25 ug/L, which is below the UCL and Method 1 GW-3 standard. 1,1-TCA was not detected in other site monitoring wells. The compound 1,1-dichloroethane (1,1-DCA) was detected in MW-4S, MW-12S and MW-13D at average concentrations of 1.3 ug/L, 4 ug/L and 3.67 ug/L, respectively. Neither of these two compounds was detected in the deep overburden or bedrock aquifers.

Carbon tetrachloride was detected in groundwater samples collected from MW-24B in each of four sampling rounds. Concentrations of carbon tetrachloride in this monitoring well ranged from a minimum of 19,000 ug/L to a maximum of 71,000 ug/L. The average concentration of carbon tetrachloride is 40,750 ug/L, below the UCL but above the Method 1 GW-3 standard. The presence of carbon tetrachloride is not associated with the release that is the basis of RTN 4-0601, was not historically used on the Property, and based on its presence in bedrock at the northern limits of the Precix property is likely associated with operations at the adjacent Coyne facility located north of the Precix property.

The average concentrations of chloroform were detected in three shallow groundwater monitoring wells (GZ-1, GZ-3 and MW-22S) during at least one sampling round at a concentrations of 1.4 ug/L, 2.6 ug/L and 3.6 ug/L, respectively. GZ-1 and GZ-3 are both located on the Precix property, north of the Precix building. Chloroform was detected in deep overburden groundwater samples collected from monitoring wells MW-23D and MW-24D, which are located at the north and southern bounds of the Site. In the bedrock aquifer, chloroform is present in groundwater collected from MW-20B (1.4 ug/L), MW-103B (1.0 ug/L), and MW-24B (up to 34,000 ug/L). Chloroform is a breakdown product of carbon tetrachloride, along with methylene chloride, which is also detected in MW-24B. Bromodicloromethane is also detected in MW-24B, at a concentration of 44 ug/L. These contaminant concentrations are below the UCL and Method 1 GW-3 standards.

#### 4.3 DNAPL

Multiple phases of field investigation have been completed as part of the Phase II CSA and IRA to delineate the extent of DNAPL present at the Site. Based on the results of the MiHpt, UVOST, MALM, analytical data for soils and DNAPL, and DNAPL recovery events, the following potential DNAPL source zones exist:

- Shallow soils in the area adjacent to the Acushnet River from the central to the southeastern corner of the Property is a source zone. AECOM has completed multiple "H" lines of evidence (Keuper and Davies 2009) in this area, including membrane interface probe (MIP) borings every fifty linear feet along the waterfront, UVOST borings every 25 feet along the waterfront, and soil borings and well installation with soil sampling. At two locations, B09D (roughly 45 feet in from the shore), and B10C (roughly 55 feet in from the shore), PCBs were found above the UCL in the top two feet immediately beneath the pavement, but these soils are located in isolated locations within the vadose zone, and lack a driving force to reach groundwater or the river. Boring location MIP-23 did indicate soil concentrations above the UCL from the surface down to the peat layer, and NAPL blebs were observed in the soil interval from 4 to 6 feet bgs, but the explorations surrounding this boring, including the MIP and UVOST borings, did not indicate a widespread or contiguous NAPL area. This DNAPL source zone is confined to a small area isolated above the peat and behind the existing sheet pile wall in the vicinity of MIP-23.
- The northeast corner of the Site is a confirmed source zone. The MIP work, UVOST, MALM, soil borings and wells MW-15D and MW-15B confirm that this source area is confined to a zone approximately sixty to seventy feet in diameter. The shallow soils (fill material above the peat), deep overburden and bedrock in this location contain or suggest the presence of pooled or residual DNAPL.
- North of the former building, the lines of evidence suggest a potential source zone in the vicinity of boring MIP-11 in shallow soils (0-2' bgs, PCBs only) immediately under the pavement and in deep soils (24-27' bgs, CVOCs only). This is within the former northern building ditch area.

• In the central area of the Site, where the former loading dock was located, soil sampling from the area surrounding boring B04B indicates a potential or possibly a historic DNAPL source zone. This area has little overburden (bedrock is shallow), the concentrations drop off moving outward away from this boring, and the potentially-impacted area is roughly fifty feet in diameter.

 Based on the UVOST response at location UV-17 and subsequent sampling at this location, near where the southern building ditch discharged to the river, a small area of roughly 35 feet in diameter and down to the top of the peat layer indicates a probable DNAPL source zone.

#### 4.4 Storm Sewers

As noted in section 2.1.9 above, the assessment of the storm sewers indicates that PCBs are present within the Property sewers, including the main sewer line along Hadley Street which collects storm water runoff from Belleville Avenue, beyond the Site. Specific catch basin and manhole sediment results are provided in **Table 4-1**.

Based on these results, and the structural assessment completed with the televiewer, the storm sewer pathway warrants inclusion in development of response actions to mitigate their potential as a preferential pathway to the River.

## 5 Data Quality and Representativeness

The following text addresses the Representativeness and Data Usability Assessment (REDUA) required under the MCP, including a review of laboratory analytical data for the Site, evaluation of Presumptive Certainty and Data Usability, and evaluation of the representativeness of the dataset.

#### 5.1 Representativeness

The Phase II CSA Scope of Work (Phase II SOW) contained within the Phase I Initial Site Investigation (Phase I ISI) submitted to MassDEP on August 16, 2013 was prepared in response to the Conceptual Site Model also prepared at that time. The Phase II SOW specified the types of investigation and sample analyses to be collected based on the history of the disposal site operations, sources, known geological and hydrogeological setting, known/likely contaminant sources, release locations, and types of contaminants. Therefore, the Phase II SOW was prepared to meet the representativeness requirements outlined in MassDEP's MCP Representativeness Evaluations and Data Usability Assessments (REDUA) guidance document (MassDEP 2007).

According to the REDUA guidance, the representativeness evaluation should include evaluation of the following:

- Use of field screening data;
- Sampling rationale;
- Number and distribution of samples;
- Sample handling, temporal distribution of samples;
- Completeness;
- · Inconsistency and uncertainty; and
- Identification of data that is considered unrepresentative.

#### 5.1.1 Field Screening Data

Field screening of site soils obtained from borings was completed with a photoionization detector solely for the purpose of aiding in selecting samples for submission to the analytical laboratory for analysis. Soil headspace was screened using a photoionization detector with a 10.6 eV lamp as TCE, the main CVOC for the Site, is 9.45 eV. Although PCBs are not considered a VOC, based on the Conceptual Site Model, the history of site activities and previous analytical data for the Site, TCE and PCBs commonly occur together in site media. Soil samples were collected generally following the protocol outlined below.

Geoprobe<sup>™</sup> borings were evaluated for collection of soil samples for every five foot macrocore interval. The macrocore was opened and quickly screened by making an indentation at the inferred center of each foot interval represented in the recovered soil core. The PID was then placed adjacent to the

indentation, and the PID reading noted on the soil boring (refer to the "PID" column of the boring log for these values).

The one foot interval represented by the highest PID screening was placed into a mason-type jar covered with aluminum foil and the jar cover, shaken vigorously and allowed to come to equilibrium. For soil borings where there were no PID readings above 5 ppm, a sample from the bottom two feet of the soil core was placed into the jar for headspace screening. Samples collected during winter months were temporarily placed in a running vehicle to warm the samples. Each jar was opened after a period of time believed to be long enough for the sample to reach equilibrium, and the tip of the PID was placed through the aluminum foil. This PID reading was recorded in the "Headspace PID" column of the boring log. Soil from each interval selected for the soil headspace screening procedure was placed into laboratory jars and placed on ice. If visual evidence of potential DNAPL was observed, a soil sample was collected from the core at the identified location and submitted for laboratory analysis of PCBs and CVOCs. Soil samples were collected from surface soil and every five-foot interval thereafter down to the inferred bedrock surface.

After completion of each boring, the PID headspace readings were reviewed for the soils in laboratory jars (one for each for each of the 5-foot sample intervals). For borings where no headspace readings above 5 ppm were present, the bottom two feet of each 5-foot interval were submitted to the laboratory on hold. Otherwise, the sample depth interval corresponding to the highest headspace reading within a boring was submitted to the laboratory for analysis of PCBs and CVOCs.

For soil samples collected with split spoon samplers, the above described screening and sample collection procedure was completed for two split spoon intervals (a four foot depth interval, instead of a five foot depth interval).

For the Geoprobe<sup>™</sup> investigation completed on a 100 foot by 100 foot grid, completed for the purpose of delineating PCBs in soil above the UCL, a sample was collected from below the asphalt to two feet below the ground surface and analyzed for PCBs.

Screening data was not used for collection of groundwater samples or air samples, other than to note the PID reading at sampling locations for health and safety purposes. Screening data was not used as part of site characterization or calculation of exposure point concentrations.

#### 5.1.2 Sampling Rationale

The sampling locations for the initial field investigation that was specified in the Phase II SOW were based on the potential source areas previously described in the Disposal Site History section of this report. The field screening and soil sample selection procedure described above were used to collect samples from the suspect source areas for potential analysis. Based upon the analytical results of the first samples submitted for analysis form the borings, additional samples from deeper soil boring intervals and/or adjacent borings were removed from laboratory hold and analyzed, enabling lateral and vertical delineation.

Similar to soil sample locations for the initial field investigation, groundwater monitoring wells were sited based on the potential source areas and historic groundwater analytical data for the Site.

Sub-slab soil vapor sample and air sample locations were chosen based on the Interim Final Vapor Intrusion Guidance (MassDEP 2011).

The sampling rationale for subsequent field mobilization and investigation phases was specific to refining the lateral and vertical extent of contamination by stepping in or out from locations with analytical data, again with the objective of refining delineation of site contamination.

#### 5.1.3 Number, Distribution, and Handling of Samples

A total of 302 soil samples were submitted for analysis for PCBs and 110 soil samples were submitted for analysis for CVOCs as part of the Phase II CSA. In addition, a lesser number of soil samples were collected for physical characterization of soils, including analysis for total organic carbon/fraction of organic carbon, grain size analysis, bulk density, specific gravity, moisture content, plasticity and undrained strength.

Soil samples for contaminant delineation purposes were collected at various locations distributed across the Site, and focusing on potential source areas. Samples for physical characterization of soils were collected from various depth intervals throughout the overburden profile.

A total of 201 groundwater samples were analyzed for PCBs and CVOCs. In addition, 140 samples were analyzed for bicarbonate alkalinity, ammonia (as nitrogen), ferrous iron, total iron, nitrate (as nitrogen), phosphorus, sulfate, and total organic carbon. Total suspended solids analysis was run on 177 groundwater samples. These samples were collected from monitoring wells distributed across the Site, in both source areas, and upgradient, crossgradient, and downgradient locations on the Site. Monitoring wells are screened at multiple depth intervals representing groundwater concentrations in the shallow overburden, deep overburden, shallow bedrock and deep bedrock aquifers.

The number and location of indoor air and sub-slab soil vapor samples is deemed to be adequate. These sampling locations were distributed in adjacent and downgradient portions of the buildings where groundwater contamination is present exceeding Method 1 GW-2 standards.

Sample integrity has been maintained, as correct chain-of-custody protocol is documented for samples collected during each phase of work. The samples were stored on ice (as and if required). Chain-of-custody protocols were maintained from the time of sample collection through laboratory analysis.

#### 5.1.4 Temporal Distribution of Samples

Concentrations of contaminants in groundwater samples, sub-slab soil vapor, and indoor air samples are known to vary seasonally. In general, four quarters of groundwater samples are used to evaluate temporal changes in groundwater concentrations. Depending upon which phase of work a given monitoring well was installed, up to four quarterly samples were collected. Monitoring wells installed in the second and third field mobilizations for refinement of contamination boundaries have a lesser number of quarterly samples taken. However, for the purposes of this Phase II CSA, the samples adequately represent the potential variation in concentrations when calculating exposure point concentrations. In general, although some changes in concentration are observed with changing seasons, large variations in concentration from one monitoring round to another were not noted.

MassDEP guidance recommends a minimum of two rounds of sampling for indoor air and sub-slab soil vapor. Two rounds, one during the spring and a second during the winter were conducted for both the Precix and Titleist facilities and are believed to adequately represent the expected temporal variation in concentrations.

#### 5.1.5 Completeness

At the conclusion of Phase II CSA activities, the extent of contamination to the north has not been delineated. AVX has requested permission for installation of a monitoring well on the Coyne Textile Services property north of Precix. As of this time, access has not been granted and therefore the location at which groundwater concentrations are below detectable concentrations to the north has not been defined.

#### 5.1.6 Inconsistency and Uncertainty

In general, inconsistent data was not encountered, with the exception of some Relative Percent Differences (RPDs) between field duplicates and samples. In these cases, validation of the data resulted in qualifying the data as applicable. See section 5.2, the Data Usability section of this report, for further information.

#### 5.1.7 Unrepresentative Data

Historic data collected by former consultants for the former Property owner and EPA were not included in the Method 3 Risk Characterization, as these data are old and have not been provided in validated form. Areas where historic samples indicated the presence of contamination were further investigated as part of the Phase II CSA.

In addition, historic groundwater samples were used to guide placement of some site monitoring wells; however, the Method 3 Risk Characterization includes only the most recent data collected as part of the Phase II CSA (March 2014 through August 2015). Groundwater samples collected from deep bedrock wells (MW-32B, MW-33B, and MW-34B) during installation were used for screening purposes only to aid in evaluation of the borehole for installation of multi-level sampling devices. Although the samples were analyzed by the laboratory, they were not collected using correct purging volumes or low flow sampling procedures. For this reason, the data were not validated and were not included in the Method 3 Risk Characterization.

During the September 2014 groundwater sampling round, a PCB concentration of 5.40 ug/L was detected in monitoring well MW-20D. PCB concentrations in the prior (August) and subsequent (December 2014) were reported as below the laboratory detection limit of 0.250 ug/L. Therefore, the September 2014 PCB concentration in this well is considered anomalous, and may have been the result of improper cleaning of groundwater sampling and water level measurement instrumentation. It is therefore considered unrepresentative.

Lastly, a sample was collected from an undesignated monitoring well (designated as MW-TITL-01 by AECOM) in May 2014. The monitoring well is believed to be MW-01, installed by GHR Engineering in 1985 based on the location. However, the boring log does not match the terminal depth of the monitoring well as measured in the field. The sample was collected for informational purposes only and is not believed to be representative. As such, it has not been included in the Method 3 Risk Characterization.

#### 5.2 Data Usability

Data sets used for determining the nature and extent of contaminants at the Site were validated to evaluate their usability according to the REDUA guidance, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data in Support of Response Actions

Conducted Under the MCP (Compendium of Analytical Methods [CAM] Protocol WSC-CAM-VIIA) (MassDEP 2010), quality assurance and quality control requirements for the appropriate analyses as specified by the CAM, and the Region 1, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses (EPA 1996). The results of Data Validation are summarized below by sample media. Complete data validation memoranda are included in **Appendix S**.

#### 5.2.1 Catch Basin Sediment Samples

Validation of the catch basin sediment data (Alpha, Laboratory ID L1410848) indicates that although the laboratory RPD between primary and confirmation runs for one sample were exceeded and the sample concentration for the Aroclor in question was estimated (J-flagged), there were no data rejected, and the data is considered usable for its intended purpose.

#### 5.2.2 Indoor Air and Sub-slab Soil Vapor Samples

A total of two data packages for indoor air samples and sub-slab soil vapor samples for the Precix facility and two data packages for the sub-slab soil vapor samples for the Titleist facility were validated.

According to the data validation memoranda, the laboratory received all samples in good condition with chain-of-custody seals intact on sample canisters. All samples were analyzed within holding time. In one instance, sample canister identification numbers were incorrectly listed on the chain-of-custody, as well as flow controller. During this same sampling round, two canister pressure gauges did not function properly in the field. However, since a constant offset of the vacuum pressure was observed for the associated sample, the results do not require qualification. However, a constant offset was not observed. Therefore, the sample results were rejected. However, the rejected results were for the ambient air sample, and not indoor air or sub-slab samples, and therefore do not change the conclusions based on the indoor air samples themselves. The relative percent difference between the flow controller in and out readings exceeded the acceptable limits; therefore, the results were qualified as estimated. The data relied upon is scientifically valid and defensible and of a sufficient level of precision, accuracy and completeness for use in this Phase II CSA.

#### 5.2.3 Soil Samples

Fifty-one soil analytical data packages were generated during Phase II CSA activities at the Site. According to the data validation memoranda, soil samples collected for the Phase II CSA were received by the laboratory intact and in good condition under chain-of-custody at required storage temperature. There were no reported issues with sample preservation, and samples were prepared and analyzed within method specified holding times. Contaminants were not reported in sample trip blanks or laboratory method blanks. Other issues identified during data validation include the following:

- Surrogate recoveries did not meet quality control (QC) recovery limits. With limited exception,
  this occurred when high concentrations of target analytes were present in the sample and
  dilution of the sample was required. Consequently, the surrogate(s) were diluted and could not
  be recovered. Qualification of the data was not required under this circumstance. For those few
  occasions where poor surrogate recovery was not the result of sample dilution, the data was
  qualified as estimated.
- Compliance assurance monitoring required reporting limits for non-detected compounds were exceeded due to sample dilution as a result of elevated concentrations of other compounds. Generally, the compounds with elevated reporting limits were not site contaminants of concern.

Continuing calibration verification (CCV) indicated that relative response factors and percent differences did not meet compliance assurance monitoring defined criteria. This issue was generally noted for compounds such as chloromethane, chloroethane, dibromochloromethane, dichlorodifluoromethane, o-chlorotoluene, 1,1,2,2-tetrachlorethane, bromoform, carbon tetrachloride, cis-1,3-dichloropropene, and trans-1,3-dichloropropene which, with the exception of carbon tetrachloride, have not been detected in site media or are not compounds of concern for the Site. In situations where the noted CCV issues resulted in negative bias for these constituents were reported as non-detected, the data were estimated (UJ) as applicable. Compounds for which positive bias was indicated by the CCV results and the compound was detected in batch samples, the data were also estimated (J).

- In some instances, laboratory control spike and laboratory control spike duplicates for both Site
  compounds of concern and contaminants that are not associated with the Site did not meet
  compliance assurance monitoring QC criteria for percent recovery or relative percent difference
  (RPD). In such cases, results were qualified as estimated for associated samples.
- The RPD for a number of sample and sample duplicate pairs exceeded guidelines. Since soil samples are not homogenized prior to collection for CVOCs, this is not an unusual occurrence. Results were qualified as estimates for the duplicate sample analytical results in these cases.
- Percent recoveries and RPDs for laboratory designated matrix spike/matrix spike duplicate pairs did not meet compliance assurance monitoring QC requirements in some instances due to matrix interference.
- Due to elevated concentrations of some COCs in some samples, initial CVOC analytical runs
  resulted in TCE concentrations out of calibration range. In these cases, the laboratory reported
  the result as an estimate, and re-ran the sample within calibration range, also reporting the in
  calibration range result. The estimated values were rejected (R) during the validation process
  and the in calibration result was accepted without qualification.

There were no other instances where data was rejected, and it was concluded that the soil data met data quality objectives, and is good for use as intended.

#### 5.2.4 Groundwater

Twenty-nine groundwater analytical data packages generated during Phase II CSA activities at the Site were validated. Other groundwater samples collected only for screening deep bedrock well intervals to evaluate which depth intervals should be included in multi-level sampling wells, as well as the last groundwater monitoring samples collected from the Site in August 2016 (MW-33B and MW-35B), were not validated. According to the data validation memoranda, groundwater samples collected for the Phase II CSA were received by the laboratory intact and in good condition under chain-of-custody at required storage temperature. Samples were prepared and analyzed within method specified holding times. In several instances, samples for analysis of RSK-175 (methane, ethane, and ethene) were noted upon receipt at the laboratory to have pH values of greater than 2; however, these samples were analyzed within seven days of collection and therefore do not require qualification. Contaminants were not reported in sample trip blanks or laboratory method blanks. Compliance assurance monitoring required method reporting limits were not always achieved; however, qualification of samples was not required as elevated reporting limits were a result of sample dilutions required for elevated target analytes. Issues identified during data validation include the following:

 Surrogate recoveries did not meet QC recovery limits for both CVOCs and PCBs in some sample batches. This occurred when high concentrations of target analytes were present in the sample and dilution of the sample was required. Consequently, the surrogate(s) were diluted and could not be recovered. Qualification of the data was not required under this circumstance.

- Compliance assurance monitoring required reporting limits for non-detected compounds were exceeded due to sample dilution as a result of elevated concentrations of other compounds. Generally, the compounds with elevated reporting limits were not site COCs and were therefore not anticipated to be present in the samples.
- Continuing calibration verification (CCV) indicated that relative response factors and percent differences did not meet compliance assurance monitoring defined criteria for a number of sample batches. This issue was noted for 2-chlorotoluene, 4-chlorotoluene, cis-1,3dichloropropene, 1,1,2,2-tetrachlorethane, 1,2-dichloropropene, trans-1,3-dichloropropene, 1,3-1,2-dichlorobenzene, 1,2,4-trichlorobenzene, dichloropropene, 1,1-dichloroethene, dichloroethene. bromoform, carbon tetrachloride. chloroethane. chloromethane. dichlorodifluoromethane, hexachlorobutadiene, trichloroethene, methylene chloride and vinyl chloride. Of these compounds, 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, 1,1-dichloroethene, 1,2-dichloroethene, chloromethane, trichlorethene, methylene chloride and vinyl chloride were detected in site groundwater samples. For compounds detected in site groundwater samples, same results were qualified as estimated when the compound was not detected in the sample in question (UJ) when a negative bias was indicated by the CCV result, and detections were estimated when a positive bias was indicated by the CCV result.
- In some instances, laboratory control spike and laboratory control spike duplicates for bromoform, trans-1,2-dichloropropene, hexachlorobutadiene, and 1,1,2,2-tetrachloroethane (not site compounds of concern) and 1,2,4-trichlorobenzene, methylene chloride, vinyl chloride, Aroclor 1254, and Aroclor 1260 (detected in site groundwater samples) did not meet compliance assurance monitoring QC criteria for percent recovery and/or relative percent difference (RPD). In such cases, results were qualified (J/UJ) as estimated for associated samples when the LCS/LCSD resulted in negative bias.
- Percent recoveries and/or RPDs for matrix spike/matrix spike duplicate pairs did not meet compliance assurance monitoring QC requirements for trichlorethene, tetrachloroethene, and csi-1,2-DCE in one sample batch each. The detected sample results were qualified as estimated (J).
- Due to elevated concentrations of some contaminants of concern in some samples, initial CVOC analytical runs resulted in detected compound concentrations out of calibration range. In these cases, the laboratory reported the result as an estimate, and re-ran the sample within calibration range, also reporting the in calibration range result. The estimated values were rejected (R) during the validation process and the in calibration result was accepted without qualification. Monitored Natural Attenuation (MNA) parameters (ammonia, bicarbonate alkalinity, ferrous iron, total iron, nitrate nitrogen, sulfate, total organic carbon, total phosphorus and total suspended solids) generally met required QC limits.
- The PCB concentration detected in monitoring well MW-20D during the September 2014 sampling round is considered unrepresentative, as it is believed to have been crosscontaminated.

There were no other instances where data was rejected or is considered unrepresentative, and it was concluded that the groundwater data met data quality objectives, and is good for use as intended.

#### 5.2.5 Screening Data Usability

Field methods, screening and remote sensing methods were utilized during the Phase II CSA to inform subsequent investigation techniques and the selection of locations for sampling and laboratory analysis. The relative usability of these methods is described below.

Seismic surveying techniques. The overall Site seismic refraction survey was useable as a screening tool with moderate accuracy. The general shape of the bedrock surface defined by the seismic survey was for the most part confirmed by subsequent soil boring and monitoring well installation, with only minor inconsistencies. The results provided sufficient and usable information upon which to base the orientation of the soil boring grid and locations of subsequent explorations. The borehole geophysical techniques provided usable information regarding the presence, transmissivity and orientation of fracture zones across the Site. The electrical resistivity used to help define DNAPL extent in the northeast corner of the Property did not yield usable data due to the interference of subsurface foundations and the sheet pile wall. The MALM survey, however, did provide useful information with which to approximate the lateral bounds of potential DNAPL in that area.

**Field Screening (PID) Measurements.** The use of a PID for field screening and jar headspace analysis provided useful and usable data with which to select soil intervals for laboratory analysis. The use of a VOC screening tool, which would ordinarily not provide representative information for PCBs alone, was useful in this instance because of the co-location of PCBs and CVOCs in soil at the Site. The PID was checked and calibrated daily in the field.

**MiHpt and UVOST Tools.** The MiHpt and UVOST tools were applied as a screening tool for use in identifying probable CVOC and PCB source areas. The tools themselves have intrinsic data quality and calibration checks, and were operated in accordance with the manufacturer's SOPs. Soil samples were collected from a number of these locations to correlate to the screening results. Together, these screening tools, visual observations, and analytical data have been useful in defining the potential DNAPL areas in the eastern end of the Site. As such their data quality met the data quality objectives for these investigation tools.

## 6 Exposure Assessment (310 CMR 40.0835(4)(g))

The following sections summarize the identification and characterization of potential human and environmental receptors that could be impacted by the PCBs and CVOCs encountered at or potentially migrating from the Site. The quantification of exposure to these receptors under current and reasonably foreseeable site conditions is provided. Specifically, potential receptors and exposure pathways were identified; exposure routes were evaluated; exposure point concentrations were estimated; and average daily exposure doses or concentrations were calculated. Additional detail regarding the exposure assessment can be found in the Method 3 Risk Assessment for the Site, included in **Appendix T.** 

#### 6.1 Exposure Scenarios

Potential exposure pathways were evaluated for chemicals detected in soil and groundwater. Incomplete exposure pathways are eliminated from further evaluation in the risk assessment. The following criteria must be met for a complete exposure pathway to exist:

- a source and mechanism to release chemicals into the environment,
- an exposure point at which there is a potential for contact with the contaminated medium by a receptor, and
- an exposure route (e.g., ingestion, inhalation or dermal contact) at the exposure point.

If one of these criteria is not met, then the exposure pathway is not complete. In other words, without any exposure, the risk is zero. Thus, incomplete exposure pathways are eliminated from the assessment. The following sections describe: 1) the soil and groundwater categories that are used to evaluate potential exposures to site receptors and the potential need for Activity and Use Limitations; 2) the human receptors likely to be present at this Site; and 3) the complete exposure pathways by which the receptors may come into contact with impacted media.

#### 6.1.1 Identification of Site Soil and Groundwater Categories

Portions of the Site were subdivided into soil categories based on the frequency and intensity of use and soil accessibility as prescribed in the MCP at 310 CMR 40.0933. Under current site conditions the following soil categories apply:

- Category S-3 applies to all soil located within the Property, within Hadley and Graham Street, within the Precix property and within the areas of the Titleist property covered with pavement or buildings, regardless of depth. These soils are beneath pavement or structures and within commercial/industrial properties where they are potentially inaccessible or isolated. The frequency and intensity of children using these areas are both low.
- Category S-2 applies to unpaved landscaped areas within the Titleist property. Surface soil is exposed; however, impacted areas are either fenced or covered with gravel. Security measures are in place and the fence and gravel access areas are regularly inspected and maintained.

Both children (trespassers) and adults (employees) when present are present for limited (low) duration and low intensity use.

Under foreseeable future site conditions the following soil categories apply:

- Category S-3 remains applicable to the soil within the Property. As part of 2010 agreement with AVX, the City has agreed that an Activity and Use Limitation (AUL) will be in place as part of the final response actions for the Site.
- In the absence of an AUL, it is necessary to conservatively assume that soil category S-1 could foreseeably apply to the Precix and Titleist properties, i.e., that adults and children could have routine contact with soil within 15 feet of the ground surface in the future.
- Impacted soil greater than 15 feet bgs is considered to be isolated soil. It was assumed that receptors would not contact isolated soil, and such soil is considered S-3.

Groundwater is categorized based on its current and/or future use as drinking water (GW-1), its potential to act as a source of volatile material to indoor air (GW-2), and its potential to discharge material to surface water (GW-3). The Site is not classified GW-1 because the groundwater is not used as a source or a potential source of drinking water. (It is not located within 500 feet of a private well or within an Interim Wellhead Protection Area; it is not located within a Zone A or within 400 feet of a Zone II, Interim Wellhead Protection Area, or a surface water supply intake, and the Property owner (City) has recorded a groundwater use restriction Groundwater was encountered across the Site between 3 and 8 feet below ground surface, i.e. less than 15 feet below the ground surface. Thus where shallow groundwater impacts were encountered within 30 feet of the existing buildings on the Precix and Titleist properties, GW-2 was considered to apply in those areas. The full Site is also considered to be in a GW-3 category because all groundwater is assumed to eventually discharge to surface water.

## 6.1.2 Potential Receptors and Exposure Pathways

The following potential human and environmental receptors and exposure pathways were identified:

- On the Property, under future conditions, it was assumed that construction workers could have access to surface and subsurface soil. Exposure pathways include incidental ingestion of soil, skin contact with soil and inhalation of particulate matter.
- On the Precix property, exposure to soil is unlikely under current conditions because the soil is
  covered by the building or asphalt. However, to evaluate the need to restrict access to the soil it
  was assumed that the Precix property could be used for residential purposes in the future.
  Therefore, it was assumed that adults and children could have routine contact with soil typical of
  a residential exposure scenario. Exposure pathways include incidental ingestion of soil and skin
  contact with soil.
- On the Titleist property, surface soil is exposed. The area is either fenced or covered with gravel; however, it was assumed that employees and trespassers could contact impacted surface soil under current conditions. Exposure pathways include incidental ingestion of soil and skin contact with soil. Similar to the Precix property, to evaluate the need to restrict access to the soil it was assumed that the Titleist property could also be used for residential purposes in the future. Therefore, it was assumed that adults and children could have routine contact with soil typical of a residential exposure scenario. Exposure pathways include incidental ingestion of soil and skin contact with soil.

• Because the Site is not located in a GW-1 area, direct contact with groundwater is unlikely. Contact with chemicals detected in groundwater (or soil) could, however, occur if the chemicals migrated into soil vapor and subsequently into indoor air. Buildings are not present on the Property and the planned AUL precludes construction of a building without corresponding vapor intrusion pathway mitigation. Soil vapor concentrations were below residential soil vapor screening values on the Titleist property; thus, migration of VOCs into indoor air is unlikely to be of concern on the Titleist property. On the Precix property, several VOCs were detected at concentrations higher than their respective screening values. Thus, inhalation of indoor air was evaluated for the current commercial scenario and future hypothetical residential scenario for the Precix property.

• Contaminant transport through groundwater to the adjacent surface water (Acushnet River) is a potential transport mechanism. Existing levels of contamination in sediment and surface water are being addressed by U.S. EPA under the Superfund program and are not considered part of the Site. However the foreseeable migration of groundwater contaminants to surface water is an exposure pathway to be evaluated for possible effects on environmental aquatic receptors. However, this pathway is valid if and only to the extent that the Site could act as a continuing source to the river after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete, as measured by post-Phase IV confirmatory sampling. Such confirmatory sampling and analysis would need to clearly identify contaminants, if any, as coming from the Site and not from other sources historically or presently impacting the river or from historical conditions in the river that remain after EPA CERCLA response actions are complete.

#### 6.1.3 Exposure Assumptions

Exposure assumptions for each receptor are described below. For all exposure scenarios, the averaging period was equal to the exposure period for exposures to noncarcinogenic chemicals and equal to 70 years for exposures to carcinogenic chemicals (MassDEP, 2014b).

#### 6.1.3.1 Aerovox Property

If construction work is performed on the Site, construction workers could be exposed to impacted surface and subsurface soil during excavation activities. The following exposure assumptions were applied to estimate the average daily doses for ingestion of soil, skin contact with soil and inhalation of soil particulate matter. The duration of exposure was assumed to be eight hours per day. The frequency and period of exposure of a typical construction project is five days per week for 26 weeks, which is approximately 130 days (MassDEP, 2014b). This exposure is considered to be a subchronic exposure. An average body weight of 58 kg was assumed (based on female workers age 18 to 24 years old) (MassDEP, 2014b). A soil ingestion rate of 100 mg/day was used to estimate average daily doses from incidental ingestion of soil (MassDEP, 2014b). For skin exposures, it was assumed that the head, face, forearms, hands, lower legs, and feet (i.e., 5,653.3 cm<sup>2</sup>) could potentially contact the soil during an exposure event (MassDEP, 2014b). A soil adherence factor of 0.19 mg/cm<sup>2</sup> was used to estimate soil adherence during heavy construction work (MassDEP, 2014b). It was assumed that the respirable particulate concentration in air (i.e., PM10 concentration) was 60 µg/m3 and that a worker breathes 20 m<sup>3</sup>/day (MassDEP, 2014b). It was also assumed that 1.5 times the PM10 would be ingested if inhaled particulates were coughed up and swallowed and that 0.5 times the PM10 would enter the lungs (MassDEP, 2014b).

#### 6.1.3.2 Titleist Property

It was assumed that employees working at the Site could potentially be exposed to PCBs detected in surface soil. Exposure pathways include ingestion of soil and skin contact with soil. For exposure to soil, the frequency of exposure was assumed to be 120 days per year and the period of exposure was assumed to be for 27 years (MassDEP, 2014b). It was assumed that adult facility workers weigh 61.1 kg (based on workers age 18 to 45 years old) (MassDEP, 2014b). It was assumed that workers ingest 50 mg of soil per day (MassDEP, 2014b). It was also assumed that they have their head, face, forearms, hands, lower legs, and feet exposed (3,473cm²) (MassDEP, 2014b). In addition, it was assumed that the soil adherence is equal to 0.026 mg/cm² (MassDEP, 2014b).

For the trespasser scenario, it was assumed that older children (greater than seven years of age) and adults could access the Site and contact PCBs detected in surface soil. Exposure pathways include ingestion of soil and skin contact with soil. The frequency of exposure was assumed to be five days per week during the warmer months of the year (June, July and August) and two days per week in April, May, September, and October (i.e., a total of 84 days per year) and the duration of exposure was assumed to be 24 hours per day. The period of exposure was assumed to be 11 years for older children (eight through 18 years) and 12 years as an adult. It was assumed that older children (ages eight through 18 years) weigh 42 kg (Table B-1, MassDEP, 1995) and adults weigh 61.1 kg (MassDEP, 2014b). It was assumed that older children and adults ingest 50 mg of soil per day (MassDEP, 2014b). It was also assumed that they have their forearms, hands and feet exposed (2,928 cm² for an older child) and (3,107 cm² for an adult) (MassDEP, 2002b). In addition, it was assumed that the soil adherence is equal to 0.14 mg/cm² (MassDEP, 2014b).

To estimate average daily exposure doses for hypothetical future residents who could potentially be exposed to PCBs detected in surface and subsurface soil, several assumptions were made. The frequency of exposure was assumed to be 150 days per year and the duration of exposure was assumed to be 24 hours per day (MassDEP, 2014b). The period of exposure was assumed to be for 30 years assuming seven years as a young child (age one through eight) and 23 years as adolescent through adult (MassDEP, 2014b). Average body weights were assumed to be 17 kilograms (kg) for young children up to the age of eight years, 39.9 kg for children ages eight through 15 years, 58.7 kg for adults ages 15 through 31 (MassDEP, 2014b). Young children were assumed to ingest 100 milligrams (mg) of soil per day and older children and adults were assumed to ingest 50 mg of soil per day (MassDEP, 2014b). Skin exposed to soil was assumed to be the head, face, forearms, hands, lower legs, hands, and feet (MassDEP, 2014b). The body surface area exposed to soil was assumed to be 2,431 cm² for young children, 4,427 cm² for adolescents and 5,653 cm² for adults (MassDEP, 2014b). In the calculations, the surface area for a receptor age eight through 31 was time weighted over the 23 years to yield a surface area equal to 5,227 cm². Soil adherence was assumed to be 0.35 mg/cm² for young children and 0.13 mg/cm² for adolescents and adults (MassDEP, 2014b).

#### 6.1.3.3 Precix Property

Surface soil at the Precix property is covered either by the building or asphalt paving, which limits current employees' exposure to soil. VOCs were detected in indoor air. To estimate average exposure concentrations several assumptions were made: the duration of exposure was assumed to be eight hours per day; the frequency of exposure was assumed to be 250 days per year; and the period of exposure was assumed to be 27 years (MassDEP, 2014b).

Under future conditions, it was assumed that hypothetical residents could be exposed to VOCs detected in indoor air via inhalation of indoor air and PCBs and VOCs detected in soil. To estimate average exposure concentrations for indoor air several assumptions were made: the duration of exposure was assumed to be 24 hours per day; the frequency of exposure was assumed to be 365 days per year; and the period of exposure was assumed to be 30 years (MassDEP, 2014a). To estimate average daily doses for soil exposures, the assumptions were the same as discussed for the Titleist property.

#### 6.2 EXPOSURE POINT CONCENTRATIONS

#### 6.2.1 Soil

Exposure point concentrations in soil were based on the average concentrations by depth in an exposure point area. Where contaminant distribution varied significantly, exposure point calculations were completed for portions of the Site with similar levels of impacts.

For soil on the Property, the concentrations of PCBs are highest on the eastern half of the Property along the shoreline and in a small central area centered on boring B04BN; thus, they were considered distinct exposure points. Therefore, three exposure points were considered (eastern area, B04BN area and western area). Refer to **Tables 8 and 9** in **Appendix T** for exposure point (average) and maximum concentrations for shallow and subsurface soil respectively on the Property and the list of soil sample locations included in each calculation.

On the Precix property, the soil samples were collected along the property border between the Precix and Aerovox properties and along the east side of the Precix property. The concentrations of PCBs were fairly consistent in the samples; thus, one exposure point was considered for surface soil and one for subsurface soil. The results from boring MW-24D, which is located on the north side of the Precix property, were much lower; thus, this sample was not included in the average concentrations. **Table 10** in **Appendix T** presents the exposure point concentrations for soil on the Precix property.

On the Titleist property, soil samples were collected along the border between the Property and the Titleist property and on the east side of the Titleist property. The highest concentrations were detected in samples collected on the east side of the Titleist property. Therefore two exposure points were considered for both surface and subsurface soil. **Table 11** in **Appendix T** presents the exposure point concentrations for the Titleist property and the list of soil sample locations included in each calculation.

#### 6.2.2 Indoor Air

For current conditions in the Precix building, exposure point concentrations were based on the average concentrations of VOCs detected in indoor air in each room (see **Appendix T**, **Table 12**). The highest average concentrations were assumed to represent the exposure point concentrations for indoor air exposure under current conditions. Note that the comparison of existing levels in sub slab soil gas and indoor air shows a significant attenuation factor is being provided by the floor slab. This is not surprising, given the thickness of the slab, its excellent condition and the lack of floor penetrations and preferential pathways for vapor migration. Assuming the same attenuation factor for foreseeable residential site uses was not considered sufficiently conservative to meet the risk assessment performance standards in the MCP (applying the assumption that less attenuation may occur for residential slab uses). For future conditions, the exposure point concentrations were estimated using a model based on soil vapor-to-indoor air partitioning in which soil vapor concentrations are used as the

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source term (adopted by MassDEP for the development of GW-2 Standards, MassDEP, 1994a) The soil vapor model uses the following equation to estimate indoor air concentrations:

```
Indoor Air(ug/m^3) = \alpha \times Soil\ Vapor(ug/m^3)
```

where  $\alpha$  equals an attenuation factor that relates the indoor air concentration to the concentration in soil vapor directly above the source. The attenuation factor was assumed to be equal to 70, which is the attenuation factor chosen by MassDEP as a reasonably conservative estimate of sub-slab soil gas attenuation (MassDEP, 2014a). Average soil vapor concentrations detected beneath the building were used as the source concentrations. Refer to **Table 13** in **Appendix T** for the estimated indoor air exposure concentrations.

### 6.2.3 Groundwater

There are no complete exposure pathways to groundwater, so groundwater exposure point concentrations were not calculated for human receptors. To evaluate whether groundwater concentrations could impact the river (if and only to the extent that the Site could act as a continuing source to the river), and potentially effect aquatic receptors potential concentrations of chemicals were estimated for surface water using the average concentrations detected in the subset of groundwater in the monitoring wells located along the east side of the Site near the river. These average concentrations were compared to UCLs and were used with groundwater to surface water attenuation/dilution factors published by MassDEP (MassDEP, 2014b) to derive estimated surface water concentrations. The estimated surface water concentrations are presented in **Appendix T**, Table 71.

### 6.3 ESTIMATION OF AVERAGE DAILY EXPOSURES

Estimated average daily exposure concentrations for inhalation exposures and average daily exposure doses for ingestion of soil and skin contact with soil were calculated using equations adapted from MassDEP guidance (MassDEP, 1995). Refer to Section 4 in **Appendix T** for a complete presentation of these equations and calculations. **Tables 14** through **41** in **Appendix T** present the results of these calculations.

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### 7 Risk Characterization (310 CMR 40.0835(4)(h))

The risk characterization evaluates current and reasonably foreseeable future health risks associated with site conditions. For human receptors, noncarcinogenic effects are characterized in terms of a hazard index. This method assumes that there is an exposure below which adverse effects are not expected to occur (USEPA, 1989a). The hazard index is calculated for each noncarcinogenic COC by dividing the chronic average daily exposure dose (ADD), which is in mg/kg/day by the chemical-specific Reference Dose (RfD) also in mg/kg/day. The potential for carcinogenic health effects is characterized in terms of an incremental lifetime cancer risk (ILCR). Risks are estimates of the incremental lifetime probability of an individual developing cancer above background cancer incidence. An incremental lifetime cancer risk is calculated for each chemical in the ingestion and dermal exposure pathways by multiplying the lifetime ADD in mg/kg/day by the chemical-specific cancer Slope Factor. The specific calculations and additional detail on the calculations of the hazard index and ILCR are provided in **Appendix T**. The following sections summarize the results of the risk characterization.

### 7.1 Human Health

Noncarcinogenic and carcinogenic risks were estimated for construction workers who could work at the Property in the future, employees and trespassers who could work or be present at the Precix and Titleist properties under current conditions and hypothetical residents who could live at the Precix and Titleist properties under future conditions.

- The results show that non-cancer risks are within acceptable limits for future construction work on the west side of the Property but above acceptable limits for future construction work within the eastern half of the Property and in the central area surrounding boring B 04BN. Incremental lifetime carcinogenic risks are also above acceptable limits on the east side of the Property.
- For the Titleist property, under current conditions, non-cancer risks are within acceptable limits for employees; however, incremental lifetime carcinogenic risks are above acceptable limits on the east side of the Titleist property. For trespassers, under current conditions, both non-cancer and cancer risks are within acceptable limits on the west side of the Titleist property; however, non-cancer and cancer risks are above acceptable limits on the east side of the Titleist property. For hypothetical residents under future conditions, non-cancer and cancer risks are above acceptable limits for surface and subsurface soil on the east side of the Titleist property. For the west side of the Titleist property, non-cancer and cancer risks are within acceptable limits for subsurface soil but above acceptable limits for surface soil. For the Precix property, the results show that under current conditions non-cancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees. Under future conditions, non-cancer and cancer risks are above acceptable limits for hypothetical residents who could be exposed to VOCs in indoor air via inhalation. Non-cancer and cancer risks are within acceptable limits for residents who could be exposed to chemicals detected in soil.

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### 7.2 Safety and Public Welfare

The risks associated with exposure to the COCs at the Site were evaluated in terms of safety, public welfare and the environment. Conditions at the Site do not pose a risk to safety. To evaluate potential future harm to public welfare and the environment, concentrations of chemicals detected in soil and groundwater were compared to UCLs. The results indicate that PCBs and TCE are above UCLs in soil in some areas on the Site. The results also indicate that the concentrations of PCBs in groundwater in the vicinity of monitoring well MW-15B also are above the UCL.

### 7.3 Environmental Risk Screening

A Stage I Environmental Risk Assessment was conducted to evaluate the risk of harm to environmental receptors resulting from potential exposure to chemicals detected in soil and groundwater. Because the majority of impacted soil is beneath asphalt pavement or buildings in an industrial area, it is unlikely that terrestrial receptors would be exposed. In addition, the nearest surface water body is the Acushnet River, which is located along the east side of the Site. The risk screening estimated concentrations of chemicals that could foreseeably discharge in the river and compared these levels to MassDEP benchmarks. The majority of constituents are less than water quality benchmarks except for TCE and PCBs; thus, groundwater impacts may pose a risk to aquatic receptors in the Acushnet River (if and only to the extent that the Site could act as a continuing source of these constituents to the river).

### 8 Conclusions and LSP Opinion (310 CMR 40.0835(4)(i))

The following sections present a summary of the Phase II CSA findings, and describe updates to the original Conceptual Site Model that have been made as a result of these findings. The Phase II Completion Statement and LSP opinion regarding the reasoning for and selection of the outcome of the Phase II as prescribed by 310 CMR 40.0840 are also included.

### 8.1 Summary of Phase II Findings and Conclusions

Based on the results of investigations and evaluations undertaken as part of the Phase II CSA, and concurrently as part of the implementation of the IRA for DNAPL found in the northeast corner of the Property, the following findings and conclusions are presented:.

- 1. The primary source of the release of oil and hazardous materials to the environment that is the subject of RTN 4-601 is the historic discharge and spilling of chlorinated solvents and PCB oil used in the manufacture of liquid filled capacitors. These spills occurred at the surface and in the subsurface, in unknown quantities over the course of decades. The evidence suggests that the locations of these releases centered around the previously unpaved area along the shoreline, particularly between the former building and the river, the previously unpaved area along the north side of the building, the two drainage culverts on the north and south sides of the former building and a discrete area within the parking lot between the former boiler house and main building entrance.
- 2. These historic spills have resulted in the classification of the Site as a late-stage release (e.g., environmental impacts). The original released constituents have either migrated down to and into fractured bedrock, dissolved and migrated with groundwater, or collected as DNAPL in one limited area around monitoring well MW-15D. In the case of chlorinated VOCs, the analytical results show that the constituents have also attenuated and degraded into daughter products. Released PCBs remain adsorbed to surface soils along the riverfront and in deep soils and groundwater at the overburden and bedrock interface.
- 3. The nature of the hazardous materials found at the Site include PCBs, specifically Aroclors 1232, 1242, 1248, 1254 and 1260. The most frequently detected were Aroclors 1254 and 1242. The highest concentrations found were of Aroclor 1254. Chlorinated benzenes, common components of the PCB carrier oil were also found with 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene and Chlorobenzene found most frequently. Finally, the nature of hazardous materials found at the Site included chlorinated ethenes, from tetrachloroethene (PCE) and trichloroethene (TCE) down through cis-1,2-dichloroethene and vinyl chloride. TCE and cis-1,2-dichloroethene were found most frequently and at the highest concentrations.
- 4. The extent of soil impacted by PCBs is relatively ubiquitous across the Property and across the riverfront portion of the Titleist property. Shallow soil above the identified peat layer was found to be impacted with PCBs along the riverfront on the Precix and Titleist properties at levels that

exceed UCLs. Deep soils in the vicinity of the identified DNAPL (MW-15D) and a limited area of soils centered around boring B04B also exceeded UCL levels. While the soil sample collected beneath the building slab former pump room location also had significant levels of PCBs, the soil beneath the remainder of the former building slab did not. Significant PCB impacts were not identified north or east of the Precix building, on the western portion of the Property or the north side of the western portion of the Titleist building. The chlorinated benzene detections generally coincided with the PCB impacted locations, but chlorinated benzenes were not found at significant concentration levels or levels approaching the UCLs.

- 5. There are no concentrations of TCE, cis-1,2-dichloroethene and PCE detected in shallow surface soils (< 3 feet bgs) on the Property. Within the soil profile from 3 feet bgs down to 15 feet, chlorinated ethenes are present below the former Aerovox building foundation, in the south central area of the Property near B04B and B04C, at B08B (near MW-10D and MW-27B), at MIP-43, in the UV-17 area, and within the northeast corner of the Property. Inaccessible soils below 15 feet bgs are present more pervasively across the eastern two-thirds of the Property. The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. TCE is the only chlorinated ethene exceeding its UCL, which occurs both in the northeast corner of the Property and in the vicinity of UV-17.</p>
- 6. The extent of PCB impacts to shallow overburden groundwater is limited to a small area along the waterfront centered near where the southern culvert discharge was located. The remaining shallow groundwater results across the Property and the Titleist and Precix properties indicate low or non-detect levels of PCBs. The extent of PCB impacts in deep overburden groundwater extends from midway within the Property out to the shoreline with increasing levels of PCBs closer to the river. PCB impacts in deep overburden groundwater extend partially onto the northeast corner of the Titleist property, and low levels of PCBs in deep overburden groundwater were also found in two wells on the south side of the Precix property. PCB impacts to bedrock groundwater were found in wells across the eastern two thirds of the Property, with the highest concentrations centered around the central (B04B) primary release area and along the waterfront. Bedrock groundwater concentrations in the northeast corner, in the area of identified DNAPL, exceeded the groundwater UCL for PCBs. Bedrock concentrations of PCBs on the Titleist and Precix properties were found only in a single well each, close to the river, and only at low levels.
- 7. The extent of chlorinated ethenes in shallow overburden groundwater extends across all but the western quarter of the Property, the southern and eastern half of the Precix property and in one location along the north side of the Titleist building. Because TCE is the dominant detected chlorinated ethene and has a heightened potential for impacting receptors via indoor air, the presence of TCE in the shallow groundwater gave rise to a vapor intrusion evaluation for the Precix and Titleist properties. The highest levels of TCE in shallow groundwater were found along Graham Street and at the discrete central (B04B) area on the Property. TCE was not found in shallow groundwater along the Aerovox waterfront. The extent of chlorinated ethenes in deep overburden groundwater covers all but the westernmost portion of the Property, the eastern half of the Precix property and the northeastern quarter of the Titleist property. Deep overburden concentrations on average are one to two orders of magnitude higher than shallow overburden concentrations. The highest levels of chlorinated ethenes in deep overburden

groundwater are centered around the Aerovox waterfront and the location of the deeper bedrock trough just inland from the waterfront. Neither shallow nor deep overburden groundwater concentrations for TCE exceed UCL levels.

- 8. The extent of chlorinated ethenes in bedrock groundwater could not be measured to the north of the Site because access to the Coyne property (north of the Precix property) was denied. The inferred extent, based on concentration and bedrock fracture trends would be expected to reach beyond the northern Precix property line. MassDEP assistance in obtaining access has been requested, and once access is provided additional investigation in this direction will be completed. Otherwise, the extent of chlorinated ethene impacts in bedrock extends across all but the westernmost portion of the Property and extends along the waterfront to the southern end of the Titleist property. The highest levels of TCE impacts to bedrock groundwater, above UCL concentrations, were found in the deepest fracture zone encountered at the Site in the center of the Property (MW-26B), in the deep fracture zone of MW-34B in the northeast corner of the Property, and in the shallow bedrock groundwater associated with the DNAPL area (MW-15B). (Note that carbon tetrachloride was also found above UCL levels in the northernmost bedrock well, MW-24B on the Precix property. This is not a constituent related to or originating from the Aerovox releases.)
- 9. A peat layer of varying thickness is present across much of the eastern portions of the Site. The sheet pile wall that defines the edge of the Property and is keyed into this peat impede the flow of contaminants with shallow groundwater and from shallow soils into the river, but constituents in deep groundwater and at the overburden bedrock interface can migrate with tidal flow both toward and away from the river.
- 10. The identified DNAPL area is limited in extent at the northeast corner of the sheet pile wall. It is present only at depth and likely originated both from the northern culvert discharges and from near shore dumping of capacitors. The DNAPL contains both PCBs and chlorinated solvents. Based on soil concentrations and UVOST screening results, DNAPL may also be present in shallow soil above the peat layer near the south culvert, but it has not accumulated to measureable amounts in a well. If DNAPL is present in this location, it is presently contained by the HAC cap and sheet pile wall.
- 11. Groundwater flow in deep overburden and in bedrock is strongly influenced by the tides, and flow direction reverses in response to tidal changes. There is strong interconnection between the shallow overburden, deep overburden and shallow bedrock aquifers and between groundwater and surface water. Vertical groundwater gradients exist at the Site between the three aquifer types, and vary between positive (upward) and negative (downward) across the Site. In portions of the Site where tidal influence on groundwater levels is greatest, reversals in vertical gradient from positive to negative are observed with changing tides. Further inland, vertical gradients are largely upward, with the magnitude of the gradient also changing with the tides. Based on data collected for the multi-level bedrock sampling devices (Water FLUTes), a positive vertical gradient is observed in shallow bedrock, while negative vertical gradients are observed in deeper bedrock sampling intervals.
- 12. A vapor intrusion assessment was completed for both the Titleist and Precix properties. The weight of evidence indicated that vapor intrusion was not a pathway of concern for Titleist. For

Precix, the vapor intrusion pathway is complete but does not present a risk under current site uses. If foreseeable future uses were to include residential use, the vapor intrusion pathway would need to be mitigated.

- 13. A Method 3 Risk Assessment was completed based on the data collected during the Phase II CSA. The Method 3 identified receptors, exposure scenarios and calculated human health risks for current and foreseeable future uses. Risk to public safety and welfare and a Stage 1 environmental risk characterization were also competed. The Method 3 Risk assessment found that:
  - o For the Titleist property, concentrations in surface soil present unacceptable chronic non-cancer and cancer risks for various current (employee, trespasser) and future (potential residential) exposure scenarios. (Note that access control measure, including signage, fencing and gravel coverings were put in place at the outset of the Phase II to limit and control exposure under current site conditions, mitigating any subchronic or acute potential impacts until final response actions can be implemented)
  - o For the Precix property, under current conditions non-cancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees. Under future conditions, noncancer and cancer risks are above acceptable limits for hypothetical residents who could be exposed to VOCs in indoor air via inhalation.
  - For the Property, the results show that non-cancer and cancer risks are within acceptable limits for future construction work on the western side of the Property but above acceptable limits for future construction work within the eastern half of the Property and in the central area surrounding boring B 04BN.
  - A risk to public welfare exists for the Site because PCBs and TCE are above UCLs in soil in some areas on the Property. The results also indicate that the average concentrations of PCBs in groundwater in the vicinity of the DNAPL area (MW-15B) are above the UCL.
  - A Stage I Environmental Screening indicates that groundwater concentrations have the potential to impact surface water above the MassDEP benchmarks. However the foreseeable migration of groundwater contaminants to surface water is valid if and only to the extent that the Site could act as a continuing source to the river after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete. Only clearly identified contaminants, if any, coming from the Site can be compared to these benchmarks, and not contaminants from other sources historically or presently impacting the river or from historical conditions in the river that may remain after EPA CERCLA response actions are complete.

### 8.2 Updated Conceptual Site Model.

The Conceptual Site Model as presented in section 1.3 above is modified as follows.

The Phase II confirmed that the COCs for the Site are PCBs (used as dielectric fluid in the manufacture of liquid filled capacitors) and chlorinated VOCs, including chlorinated benzenes (which were part of the dielectric fluids used in the manufacturing of capacitors) and chlorinated ethenes (PCE and TCE, used as solvents in the capacitor manufacturing process, and daughter products of these due to reductive

dechlorination). Results of the Phase II investigation are consistent with these previously identified presumed primary release scenarios:

- Releases of hazardous materials to the ground surface through the following mechanisms:
  - waste solvents and PCB oils reportedly spilled at the eastern end of the Property between the former building and the River in an area that was previously unpaved;
  - waste solvents and PCB oils reportedly discharged in the previously unpaved ditch along the northern side of the former building and to the north and south drainage culverts that ran along the sides of the building and discharged to the River under an NPDES permit;
  - Solvent and PCB oil products spilled as these materials were delivered to both Aerovox and Precix ASTs with fill ports along the northern side of the building;
  - PCBs stabilized by mixing with asphalt and placement of this asphalt on the parking lot surface: and
  - PCB capacitors discarded just outside the Site boundary in the northeast corner of the Property along the shoreline.
- The Phase II findings did not fully support the identified subsurface release mechanisms identified in the Phase I CSM as noted below:
  - The release or spilling of product and waste solvents and PCB oils inside the building during manufacturing that infiltrated the subsurface through cracks, sumps and penetrations in the floor slab was only partially confirmed. While a small area of sub-slab soil impacts beneath the pump room was identified, soil impacts across the remainder of the building footprint were not confirmed.
  - Infiltration of hazardous materials contained in storm water in contact with the former building through flood and precipitation events was confirmed in that the north and south drainage culverts appear to coincide with areas of higher impacts.
  - Residual hazardous materials left in place in subsurface soil after remediation of the former bunker oil tanks was not confirmed during soil sampling.
  - Erosion and deposition of PCB containing sediment within the catch basin/surface water runoff system was confirmed only to the extent that where sediment was present in catch basins it was found to be impacted.
  - An additional undefined subsurface release was also identified by the Phase II in the central area of the Site surrounding boring B04B. Both PCBs and CVOCs appear to have been released in this vicinity, which is characterized by relatively shallow depth to bedrock. This location lies between what was the former boiler house and the main entrance to the former three story portion of the building. No history or prior investigations indicated what the nature of this release may have been.
- Secondary release mechanisms/contaminant transport mechanisms were confirmed or modified from the Phase I ISI CSM by the Phase II CSA results as follows:
  - Dissolution of hazardous materials from source area soils into groundwater. The primary soil source areas were confirmed to be the eastern third of the Property particularly along the shoreline, and along the north side of the former building along the south side of Graham Street. A significant soil source area was not confirmed beneath the former building slab, but

an additional soil source area was identified in the central B04b area. Additional impacted soils were confirmed beneath the rest of the capped site, but below MCP UCLs.

- Dissolved contaminant migration with shallow and deep overburden groundwater. General migration with groundwater was confirmed to be generally from west to east, but a tidal groundwater divide develops approximately 300 feet, and 500 to 600 feet from shore for the shallow overburden and deep overburden aquifers, respectively. East of this divide water flows both inland (west) and outward (east) depending upon the tide stage, and a northerly/southerly reversing flow component is also indicated in bedrock. Preferential migration along the overburden/bedrock contact was confirmed as the highest deep overburden impacts were identified in the deepest bedrock area. In addition, significant shallow bedrock and deep bedrock fractures were found to be significantly impacted, at levels well above the overburden impacts.
- Although tidal flow provides for migration into and out from the Site, a net discharge of contaminated groundwater from the deep overburden and bedrock to the Acushnet River remains likely given the concentrations found in deep wells immediately adjacent to the shore.
- The Phase II results confirm the likelihood that contaminated storm water and sediment may discharge to the Acushnet River via the subsurface storm sewer system within the Property, and the storm sewer line in Hadley Street.
- The potential for storm water surface runoff to have historically carried PCB impacts onto the adjacent unpaved portions of the Titleist property to the south was confirmed.
- o Phase II results provided additional evidence that VOC impacts in the shallow overburden groundwater in proximity to the Precix building to the north could potentially impact indoor air. The vapor intrusion pathway was confirmed to be complete on the Precix property, but measured indoor air concentrations were not significant. In addition, VOC impacts on the Titleist property in groundwater prompted a vapor intrusion evaluation; however, the vapor intrusion pathway on Titleist was not found to be a pathway of concern.

The Phase II also confirmed that there are no ongoing uncontrolled releases at the Site. The complete updated Conceptual Site Model is provided in **Appendix A**.

### 8.3 Completion Statement and LSP Opinion

This Phase II CSA Report documents completion of the Comprehensive Site Assessment in conformance with the Phase II Performance Standards outlined in the MCP. This report documents:

- a) the source, nature, extent, and potential impacts of releases of oil and/or hazardous material;
- b) the risk of harm posed by the disposal site to health, safety, public welfare and the environment; and
- c) the need to conduct remedial actions at the disposal site.

The Site is presently classified as Tier 1B, and this Phase II CSA has not disclosed new or additional information which may affect the Site's Tier Classification.

Based on the findings of the Phase II CSA described herein, the updated Conceptual Site Model and the results of the Risk Characterization, in the opinion of the Licensed Site Professional of record for the Site, Comprehensive Remedial Actions are necessary at the Site to achieve a Permanent or

Temporary Solution as described in 310 CMR 40.1000. A Phase III study for the identification, evaluation and selection of Comprehensive Remedial Action Alternatives as described in 310 CMR 40.0850 is necessary to select remedial action alternatives. Remedial action alternatives need to be evaluated and comprehensive response actions need to be selected and implemented to address the following conditions and achieve a condition of No Significant Risk:

- Surface/shallow soil on the Titleist property needs to be remediated to address the potential
  long term risks associated with current trespasser and employee uses and foreseeable future
  residential uses. Remedial action alternatives and Activity and Use Limitations will be evaluated
  that will eliminate the exposure pathway or reduce the levels of contaminants to below that
  which gave rise to unacceptable risk levels.
- Storm sewers within the Property and along Hadley Street need to be remediated to provide source control (remove sediments from the lines) and mitigate a potential preferential pathway.
- Currently capped areas within the Property where soil impacts exceed UCL levels will require
  additional remedial action to provide an engineered barrier in place of the existing cap. By
  agreement with the City of New Bedford, any such areas that are immediately adjacent to the
  river will be designed to accommodate both the cap and the City's planned River Walk.
- Groundwater needs to be remediated to address exceedances of UCLs in groundwater in limited locations primarily along the eastern boundary of the Site. Remedial action alternatives for groundwater will be evaluated that will provide source control to the extent feasible, meet groundwater UCL levels at the Site and reduce the average groundwater concentration so that resulting discharges to surface water will meet MassDEP benchmarks.
- Sub slab soil gas concentrations on the Precix property need to be addressed to mitigate risks under foreseeable future use scenarios, and alternatives will consider an Activity and Use Limitation, source removal if feasible and exposure pathway mitigation.
- In accordance with the requirements of the MCP at 310 CMR 40.1003, additional response
  actions will be evaluated to provide source elimination and control, to control subsurface
  migration of PCBs and CVOCs remaining at the Site in soil and groundwater and to eliminate
  non-stable NAPL and remove or contain the identified NAPL if and to the extent feasible.
  Source control remedial action alternatives to be evaluated will include an assessment of a
  variety of containment or combination containment and treatment technologies.

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### 9 Waste Management and Public Notification

### 9.1 Remediation Waste Management

DNAPL, contaminated soil, contaminated groundwater, and contaminated personal protective equipment (PPE) were generated during the Phase II CSA activities (collectively Investigation Derived Waste or IDW). The DNAPL generated from recovery activities is temporarily stored in a covered 5-gallon pail that is stored within a 55-gallon drum in the secure temporary drum storage unit (with integral secondary containment) at the Site. Solids (soil, sample/pump tubing, and PPE) generated as part of the Phase II CSA investigations were stored in separate 55-gallon drums on the Site and regularly transported off site for disposal. When liquids (decontamination water, drilling water, development water and sampling purge water) were generated as part of the Phase II CSA activities (during pump tests and during packer testing), these liquids were temporarily stored in a frac tank on site, and subsequently transported via a tanker truck and disposed off site. Tanks used to store liquids were cleaned and decontaminated prior to being removed from the Site.

All IDW removed from the Site during the Phase II CSA was managed for transportation and disposal by Clean Harbors, Inc. of Braintree, Massachusetts. Wastes were shipped via manifests signed by the City of New Bedford. Refer to **Appendix U** for a copy of the waste manifests.

### 9.2 Public Notification

The MCP (310 CMR 40.1403(3)(e)) requires written notice be made upon the completion of a Phase II Comprehensive Site Assessment. This written notice is to be provided to the Chief Municipal Officer and Board of Health in the community where the site is located. Copies of the written notice letters to public officials are provided in **Appendix V**, and have been sent to the City of New Bedford concurrent with submittal of this Phase II CSA.

The MCP (310 CMR 40.1403(10)) requires written notification to property owners when environmental samples will be collected on their property. In addition, the MCP at 310 CMR 40.1406(1) requires written notification upon submittal of a Phase II Report to owners of properties whose property is found to lie within the boundaries of the disposal site. **Appendix W** includes copies of these notices to property owners.

AECOM 10-1

### 10 References

- AVX Corporation and City of New Bedford, 2010. Cooperation and Settlement Agreement, June 3.
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- Massachusetts Department of Environmental Protection 1994. *Background Documentation for the Development of the MCP Numerical Standards*.
- Massachusetts Department of Environmental Protection 1995. Guidance for Disposal Site Risk Characterization -- In Support of the Massachusetts Contingency Plan.
- Massachusetts Department of Environmental Protection, 2007. MCP Representativeness Evaluations and Data Usability Assessments, Policy #WSC-07-350. September 19.
- Massachusetts Department of Environmental Protection, 2010. Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data in Support of Response Actions Conducted Under the Massachusetts Contingency Plan. July 1, 2010.
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- Massachusetts Department of Environmental Protection, 2014. *Massachusetts Contingency Plan, 310 CMR 40.0000*, June 2014.
- Massachusetts Department of Environmental Protection 2014a. *Public Review Draft Vapor Intrusion Guidance, October 2014, WSC #14-435.*
- Massachusetts Department of Environmental Protection 2014b. MCP Method 1 Numerical Standards Spreadsheets.
- Massachusetts Department of Environmental Protection, 2014c. Fact Sheet, TCE Toxicity Information: Implications for Chronic and Shorter-Term Exposure. August 15.
- United States Environmental Protection Agency, New England, 1996. Region 1, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses July 1996, Revised December 1996.
- United States Environmental Protection Agency 1989a. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A), Interim Final. Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-89/002.

AECOM 10-2

URS Corporation, 2013. MCP-310 CMR 40.0483 Phase I Report, Former Aerovox Facility, 740 Belleville Avenue, New Bedford, MA 02745, RTN 4-0601. August.

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# **Tables**

LOCATION SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft bgs)	Units	MCP S3/GW2	MCP S3/GW3	MCP Soil UCLs	<b>B01A</b> B01A (6-8) 12/17/13 6 - 8	B01A B01A (8-10) 12/17/13 8 - 10	B01A B01A (13-15) 12/17/13 13 - 15	B01A B01A (18-20) 12/17/13 18 - 20	B01A B01A (20-22) 12/17/13 20 - 22	B01B B01B (6.5-8) 12/17/13 6.5 - 8	B01B B01B (13-15) 12/17/13 13 - 15	B01C B01C (9-11) 12/17/13 9 - 11	B01D B01D (2') 12/04/13 2 - 2	<b>B02A</b> B02A (4-6) 12/18/13 4 - 6	B02A B02A (8-10) 12/18/13 8 - 10	<b>B02B</b> B02B (9-11) 12/17/13 9 - 11	B02B B02B (13-15) 12/17/13 13 - 15	B02B B02B (18-20) 12/17/13 18 - 20	B02C B02C (6.5-8) 12/17/13 6.5 - 8	B02D B02D (2') 12/04/13 2 - 2	B03A B03A (4-6) 12/18/13 4 - 6	B03B B03B (7-10) 12/18/13 7 - 10	B03B B03B (10.5) 12/18/13 10.5 - 10.5	B03C B03C (18.5) 12/04/13 18.5 - 18.5	B03C B03C (2') 12/04/13 2 - 2
Volatile Organic Compounds (VO 1,1,1,2-Tetrachloroethane	Cs) (ug/kg)	100	500000	5000000		1.4 U					1.3 U			1.1 U				1.4 U	1		0.88 U		1.4 U	0.68 U	
1,1,1-trichloroethane	(ug/kg)	600000	300000	10000000		1.40					1.3 U			1.1 U				1.4 U			0.88 U		1.4 U	0.68 U	-
1,1,2,2-Tetrachloroethane	(ug/kg)	20	400000	4000000		1.4 U					1.3 U			1.1 U J				1.4 U			0.88 U J		1.4 U	0.68 U	-
1,1,2-Trichloroethane 1,1-Dichloroethane	(ug/kg) (ug/kg)	2000 9000	500000 1000000	5000000 10000000		2.1 U 2.1 U					1.9 U 1.9 U			1.7 U 1.7 U				2.1 U 2.1 U			1.3 U 1.3 U		2.0 U 2.0 U	1. U 1. U	
1,1-Dichloroethene	(ug/kg)	40000	3000000	10000000		1.4 U					1.3 U			1.1 U				1.4 U			0.88 U		1.4 U	0.68 U	
1,2,4-Trichlorobenzene	(ug/kg)	6000	5000000	10000000		5.6 U					5.1 U			4.5 U				5.6 U			3.5 U		5.4 U	2.7 U	-
1,2-Dibromoethane 1,2-Dichlorobenzene	(ug/kg)	100 100000	40000 300000	400000 10000000		5.6 U 5.6 U					5.1 U 5.1 U			4.5 U 4.5 U				5.6 U 5.6 U	-		3.5 U 3.5 U		5.4 U 5.4 U	2.7 U 2.7 U	
1,2-Dichloroethane	(ug/kg) (ug/kg)	100	300000	9000000		1.4 U					1.3 U			1.1 U				1.4 U			0.88 U		1.4 U	0.68 U	
1,2-Dichloropropane	(ug/kg)	100	1000000	10000000		4.9 U					4.4 U		-	3.9 U				5.0 U	-		3.1 U		4.8 U	2.4 U	
1,3-Dichlorobenzene	(ug/kg)	200000	500000	5000000		5.6 U					5.1 U			4.5 U				5.6 U			3.5 U		5.4 U	2.7 U	
1,3-Dichloropropane 1,3-Dichloropropene	(ug/kg) (ug/kg)	NE 400	NE 100000	9000000		5.6 U					5.1 U			4.5 U				5.6 U			3.5 U		5.4 U	2.7 U 	
1,4-Dichlorobenzene	(ug/kg)	1000	2000000	10000000		5.6 U					5.1 U			4.5 U				5.6 U			3.5 U		5.4 U	2.7 U	
Bromodichloromethane	(ug/kg)	100	500000	5000000		1.4 U					1.3 U			1.1 U				1.4 U			0.88 U		1.4 U	0.68 U	
Bromoform Carbon Tetrachloride	(ug/kg) (ug/kg)	1000 5000	800000 1000000	10000000		5.6 U 1.4 U					5.1 U 1.3 U			4.5 U 1.1 U				5.6 U 1.4 U			3.5 U 0.88 U		5.4 U 1.4 U	2.7 U 0.68 U	
Chlorobenzene	(ug/kg)	3000	100000	10000000		1.4 U					1.3 U			1.1 U				1.4 U			0.88 U		1.4 U	0.68 U	
Chloroethane	(ug/kg)	NE	NE	NE		2.8 U J		-			2.5 U J			2.2 U				2.8 U			1.8 U		2.7 U	1.4 U	-
Chloroform	(ug/kg)	200 NE	1000000 NF	10000000 NE		2.1 U 5.6 U					3.9 5.1 U			1.7 U 4.5 U				2.1 U 5.6 U			1.3 U 3.5 U		2.0 U 5.4 U	1. 2.7 U	
Chloromethane cis-1,2-Dichloroethene	(ug/kg) (ug/kg)	100	500000	5000000		12.		-			82.		-	1500.				5.7			78.		49.	22.	-
cis-1,3-Dichloropropene	(ug/kg)	NE	NE	NE		1.4 U					1.3 U			1.1 U				1.4 U			0.88 U		1.4 U	0.68 U	-
Dibromochloromethane	(ug/kg)	30 NE	500000	5000000		1.4 U					1.3 U			1.1 U				1.4 U			0.88 U		1.4 U	0.68 U	
Dichlorodifluoromethane Hexachlorobutadiene	(ug/kg) (ug/kg)	NE 100000	NE 100000	NE 1000000		14. U 5.6 U					13. U 5.1 U			11. U 4.5 U				14. U 5.6 U			8.8 U 3.5 U		14. U 5.4 U	6.8 U 2.7 U	
Methylene Chloride	(ug/kg)	4000	1000000	7000000		14. U					13. U			11. U				14. U			8.8 U		14. U	6.8 U	
o-Chlorotoluene	(ug/kg)	NE NE	NE	NE		5.6 U					5.1 U			4.5 U J				5.6 U J			3.5 U J		5.4 U	2.7 U	
p-Chlorotoluene Tetrachloroethene	(ug/kg) (ug/kg)	NE 10000	NE 1000000	NE 10000000		5.6 U 1.4 U					5.1 U 1.3 U			4.5 U 1.1 U				5.6 U 1.4 U			3.5 U 0.88 U		5.4 U 1.4 U	2.7 U 1.5	
trans-1,2-Dichloroethene	(ug/kg)	1000	3000000	10000000		2.1 U					1.9 U			1.7 U				2.1 U	-		1.3 U		2.0 U	1. U	
trans-1,3-Dichloropropene	(ug/kg)	NE	NE	NE		1.4 U					1.3 U		-	1.1 U				1.4 U	-		0.88 U		1.4 U	0.68 U	-
Trichloroethene Vinyl chloride	(ug/kg) (ug/kg)	300 700	60000 60000	600000		15. 2.8 U					660. 2.5 U			32. 6.5				77. 2.8 U			120. 2.2		200. 4.3	99. 1.4 U	
Polychlorinated Biphenyls (PCBs)	(ug/kg)	700	00000	000000		2.8 0	-				2.5 0			0.5				2.80			2.2		4.3	1.40	
Aroclor 1016	(mg/kg)	NE	NE	NE	0.0417 U	0.112 U	0.0206 U	0.0220 U	0.0208 U	0.0212 U	0.0206 U	0.0212 U	0.0205 U J	22.500 U	0.120 U	1.120 U	0.0218 U	0.0225 U	0.0227 U	0.0211 U J	0.0233 U	0.538 U	0.0213 U		0.0202 U
Aroclor 1221 Aroclor 1232	(mg/kg)	NE NE	NE NE	NE NE	0.0417 U 0.0417 U	0.112 U	0.0206 U 0.0206 U	0.0220 U 0.0220 U	0.0208 U 0.0208 U	0.0212 U 0.0212 U	0.0206 U 0.0206 U	0.0212 U 0.0212 U	0.0205 U J 0.0205 U J	22.500 U 22.500 U	0.120 U 0.120 U	1.120 U 1.120 U	0.0218 U 0.0218 U	0.0225 U 0.0225 U	0.0227 U 0.0227 U	0.0211 U J 0.0211 U J	0.0233 U 0.0233 U	0.538 U 0.538 U	0.0213 U 0.0213 U		0.0202 U 0.0202 U
Aroclor 1242	(mg/kg) (mg/kg)	NE NE	NE NE	NE NE	0.702	0.112 U 0.112 U	0.106	0.0220 U	0.0208 U	0.0212 U	0.0206 U	0.0212 U	0.0205 U J	335.000	0.120 U	14.700	0.0218 0	0.0223 0	0.0227 U	0.0211 U J	0.0233 U	3.190	0.0213 0		0.0202 U
Aroclor 1248	(mg/kg)	NE	NE	NE	0.0278 U	3.250	0.0138 U	0.0270	0.0622	0.0141 U	0.0137 U	0.0142 U	0.0137 U J	15.000 U	0.840	0.744 U	0.0145 U	0.0150 U	0.0151 U	0.0141 U J	0.0156 U	0.359 U	0.0142 U		0.0134 U
Aroclor 1254	(mg/kg)	NE	NE	NE	0.383	1.440	0.0291	0.0220 U	0.0208 U	0.0212 U	0.0206 U	0.0276	0.0205 U J	22.500 U	0.120 U	1.120 U	0.0218 U	0.0225 U	0.0227 U	0.0211 U J	0.0233 U	0.538 U	0.0213 U		0.0209
Aroclor 1260 Aroclor 1262	(mg/kg) (mg/kg)	NE NE	NE NF	NE NE	0.0278 U 0.0139 U	0.101 0.0375 U	0.0138 U 0.00688 U	0.0147 U 0.00734 U	0.0138 U 0.00692 U	0.0141 U 0.00705 U	0.0137 U 0.00687 U	0.0142 U 0.00708 U	0.0137 U J 0.00684 U J	15.000 U 7.490 U	0.0802 U 0.0401 U	0.744 U 0.372 U	0.0145 U 0.00725 U	0.0150 U 0.00749 U	0.0151 U 0.00757 U	0.0141 U J 0.00704 U J	0.0156 U 0.00778 U	0.359 U 0.179 U	0.0142 U 0.00711 U		0.0134 U 0.00673 U
Aroclor 1268	(mg/kg)	NE	NE	NE	0.0139 U	0.0375 U	0.00688 U	0.00734 U	0.00692 U	0.00705 U	0.00687 U	0.00708 U	0.00684 U J	7.490 U	0.0401 U	0.372 U	0.00725 U	0.00749 U	0.00757 U	0.00704 U J	0.00778 U	0.179 U	0.00711 U		0.00673 U
Total PCBs	(mg/kg)	4	4	100.	1.085	4.791	0.1351	0.027	0.0622	0.00705 U	0.00687 U	0.0276	0.00684 U J	[335.]	0.840	14.700	0.069	0.0488	0.00757 U	0.00704 U J	0.00778 U	3.190	0.179		0.0209
Other Analyses Percent moisture	(%)	NF	NF	NE			I																		
Solids, Ash	(%)	NE NE	NE	NE																					
Total Organic Matter	(%)	NE	NE	NE				-																	
Total Organic Carbon  Grain Size	(%)	NE	NE	NE																					
% Clay Fine	(%)	NE	NE	NE																					
% Coarse Gravel	(%)	NE	NE	NE																					
% Coarse Sand	(%)	NE NF	NE NF	NE NF																					
% Fine Gravel % Fine Sand	(%)	NE NE	NE NE	NE NE		-							-												
% Medium Sand	(%)	NE	NE	NE																					
% Silt Fine % Total Fines	(%)	NE NE	NE NE	NE NE																					
% Total Fines % Total Gravel	(%)	NE NE	NE NE	NE NE																				-	
% Total Sand	(%)	NE	NE	NE																					
Cobbles	(%)	NE	NE	NE																					
Notes: (ug/kg) = Micrograms per kilogram (ft bgs) = Feet below ground surfa U = Constituent not detected at li I = Estimated concentration/reo = Not analyzed for this constitu- Sample collection depth in feet be noted in parenthesis in Sample NE = Not Established Total PCBs calculated by summing MCP = Massachusetts Contingenc S3/GW2 = MCP Method 1 Soil Cat UCL = MCP Method 3 Soil Upper (	m sice sted reporting rting limit ent ellow ground su tilD g detected con cy Plan tegory S-3 in a tegory S-3 in a	y limit urface ncentrations GW-2 Area Soil Standai Limit	rds ds	NE	-	-	1	-												-			- 1		
Bold and green shaded value indi *Soil borings that are within the N B06EF, B07EF, B07FG, B07GH, MW-21B, MW-22S, MW-24B, N Bold and yellow shaded value inc	MCP Method 1 B07H, MIP43, I MW-24D and N dicates concen	L defined S3/GW2 area i MW-4S, MW-16S, MW- MW-30B	nclude : B05EF, B06.5H 18D, MW-18S, MW-20E GW3 Standard																						

LOCATION SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft bgs)	Units	MCP S3/GW2	MCP S3/GW3	MCP Soil UCLs	B03C B03C (18-20) 12/04/13 18 - 20	B03D B03D (0-2) 12/05/13 0 - 2	B04.5E B04.5E (0-2) 12/13/13 0 - 2	B04A B04A (0-2) 12/05/13 0 - 2	B04A B04A (8-10) 12/05/13 8 - 10	B04A B04A (15.5) 12/05/13 15.5 - 15.5	B04B B04B (0-2) 12/05/13 0 - 2	B04B B04B (3.5) 12/05/13 3.5 - 3.5	B04B B04B (13) 12/05/13 13 - 13	B04B B04B (13-15) 12/05/13 13 - 15	B04B0.5N B04B0.5N (13-15 07/17/14 13 - 15	B04BN 5 B04BN (11-13) 07/16/14 11 - 13	B04BN B04BN (0-2') 07/16/14 0 - 2	B04BNW 04BNW (11.5-13. 07/17/14 11.5 - 13.5	B04BS B04BS (7) 07/17/14 7 - 7	B04BSS B04BSS (10-11) 07/17/14 10 - 11	B04BSSS B04BSSS (18-20) 07/17/14 18 - 20	B04BW B04BW (13-15 07/16/14 13 - 15	B04BWW B04BWW (10-12) 07/17/14 10 - 12	B04C B04C (0-2) 12/05/13 0 - 2	B04C B04C (3.5) 12/05/13 3.5 - 3.5	B04C B04C (8-9) 12/05/13 8 - 9
Volatile Organic Compounds (VOC 1,1,1,2-Tetrachloroethane	(ug/kg)	100	500000	5000000			-	_		61. U		1800. U	1.1 U		0.61 U	0.64 U	140. U	0.59 U	100. U J	67. U J	0.69 U	60. U	48. U J		75. U	220. U
1,1,1-trichloroethane	(ug/kg)	600000	3000000	10000000			-	-		61. U		2400.	1.1		0.61 U	0.64 U	140. U	0.59 U	100. U	67. U	0.69 U	60. U	48. U		75. U	220. U
1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane	(ug/kg) (ug/kg)	20	400000 500000	4000000 5000000						61. U 91. U		1800. U 2800. U	1.1 U 1.7 U		0.61 U 0.91 U	0.64 U 0.96 U	140. U 220. U	0.59 U 0.89 U	100. U 150. U	67. U 100. U	0.69 U 1.0 U	60. U 91. U	48. U 71. U		75. U 110. U	220. U 320. U
1,1-Dichloroethane	(ug/kg)	9000	1000000	10000000						91. U		2800. U	1.7 U	-	0.91 U	0.96 U	220. U	0.89 U	150. U	100. U	1.0 U	91. U	71. U		110. U	320. U
1,1-Dichloroethene	(ug/kg)	40000	3000000	10000000						61. U		1800. U	1.1 U		0.61 U	0.64 U	140. U	0.59 U	100. U	67. U	0.69 U	60. U	48. U		75. U	220. U
1,2,4-Trichlorobenzene 1,2-Dibromoethane	(ug/kg)	6000 100	5000000 40000	10000000 400000						240. U 240. U		7400. U 7400. U	4.6 U 4.6 U		2.4 U 2.4 U	2.9 2.6 U	580. U 580. U	2.4 U 2.4 U	400. U 400. U	270. U 270. U	2.8 U 2.8 U	240. U 240. U	1000. 190. U		300. U	870. U 870. U
1,2-Dichlorobenzene	(ug/kg) (ug/kg)	100000	300000	1000000		-				240. U		7400. U	4.6 U		2.4 U	2.6 U	580. U	2.4 U	400. U	270. U	2.8 U	240. U	190. U		300. U	870. U
1,2-Dichloroethane	(ug/kg)	100	300000	9000000						61. U		1800. U	1.1 U		0.61 U	0.64 U	140. U	0.59 U	100. U	67. U	0.69 U	60. U	48. U		75. U	220. U
1,2-Dichloropropane	(ug/kg)	100	1000000	10000000						210. U		6400. U	4.0 U		2.1 U	2.2 U	510. U	2.1 U	350. U	230. U	2.4 U	210. U	170. U		260. U	760. U
1,3-Dichlorobenzene 1,3-Dichloropropane	(ug/kg) (ug/kg)	200000 NE	500000 NE	5000000 9000000						240. U 240. U		7400. U 7400. U	4.6 U 4.6 U	-	2.4 U 2.4 U	2.6 U 2.6 U	580. U 580. U	2.4 U 2.4 U	400. U 400. U	270. U 270. U	2.8 U 2.8 U	240. U 240. U	190. U 190. U		300. U	870. U 870. U
1,3-Dichloropropene	(ug/kg)	400	100000	9000000											0.61 U	0.64 U	140. U	0.59 U	100. U	67. U	0.69 U	60. U	48. U			
1,4-Dichlorobenzene	(ug/kg)	1000	2000000	10000000						240. U		7400. U	4.6 U		2.4 U	2.6 U	580. U	2.4 U	400. U	270. U	2.8 U	240. U	190. U		300. U	870. U
Bromodichloromethane Bromoform	(ug/kg) (ug/kg)	100 1000	500000 800000	5000000 10000000						61. U 240. U		1800. U 7400. U	1.1 U 4.6 U		0.61 U 2.4 U	0.64 U 2.6 U	140. U 580. U	0.59 U 2.4 U	100. U 400. U	67. U 270. U	0.69 U 2.8 U	60. U 240. U	48. U 190. U		75. U 300. U	220. U 870. U
Carbon Tetrachloride	(ug/kg)	5000	1000000	10000000						61. U		1800. U	1.1 U		0.61 U	0.64 U	140. U	0.59 U	100. U	67. U	0.69 U	60. U	48. U		75. U	220. U
Chlorobenzene	(ug/kg)	3000	100000	10000000						61. U		1800. U	1.1 U		0.61 U	0.64 U	140. U	0.59 U	100. U	67. U	0.69 U	60. U	48. U		75. U	430.
Chloroethane Chloroform	(ug/kg) (ug/kg)	NE 200	NE 1000000	NE 10000000				-		120. U 91. U		3700. U 2800. U	2.3 U 1.7 U		1.2 U 0.91 U	1.3 U 0.96 U	290. U 220. U	1.2 U 0.89 U	200. U 150. U	130. U 100. U	1.4 U 1.0 U	120. U 91. U	95. U 71. U		150. U 110. U	430. U 320. U
Chloromethane	(ug/kg)	NE	NE NE	NE NE						240. U		7400. U	4.6 U		2.4 U	2.6 U	580. U	2.4 U	400. U	270. U	2.8 U	240. U	190. U		300. U	870. U
cis-1,2-Dichloroethene	(ug/kg)	100	500000	5000000				-		61. U		17000.	23.		16.	180.	220.	9.6	1600.	2600.	20.	200.	200.		280.	220. U
cis-1,3-Dichloropropene Dibromochloromethane	(ug/kg) (ug/kg)	NE 30	NE 500000	NE 5000000						61. U 61. U		1800. U 1800. U	1.1 U 1.1 U		0.61 U 0.61 U	0.64 U 0.64 U	140. U 140. U	0.59 U 0.59 U	100. U 100. U	67. U	0.69 U 0.69 U	60. U	48. U 48. U		75. U 75. U	220. U 220. U
Dichlorodifluoromethane	(ug/kg)	NE NE	NE NE	NE SUCCES						610. U		18000. U	1.1 U		6.1 U	6.4 U	140. U	5.9 U	100. U	67. U	6.9 U	600. U	480. U		750. U	2200. U
Hexachlorobutadiene	(ug/kg)	100000	100000	1000000						240. U		7400. U	4.6 U		2.4 U	2.6 U	580. U	2.4 U	400. U	270. U	2.8 U	240. U	190. U		300. U	870. U
Methylene Chloride o-Chlorotoluene	(ug/kg)	4000 NF	1000000 NE	7000000 NF						610. U 240. U		18000. U 7400. U	11. U 4.6 U		6.1 U 2.4 U	6.4 U 2.6 U	1400. U 580. U	5.9 U 2.4 U	1000. U 400. U	670. U 270. U	6.9 U 2.8 U	600. U 240. U	480. U 190. U		750. U 300. U	2200. U 870. U
p-Chlorotoluene p-Chlorotoluene	(ug/kg) (ug/kg)	NE NE	NE NE	NE NE						240. U		7400. U	4.6 U		2.4 U	2.6 U	580. U	2.4 U	400. U	270. U	2.8 U	240. U	190. U		300. U	870. U
Tetrachloroethene	(ug/kg)	10000	1000000	10000000			-	-		61. U		23000.	1.3		0.61 U	0.64 U	7800.	0.59 U	520.	67. U	0.69 U	60. U	48. U		75. U	220. U
trans-1,2-Dichloroethene	(ug/kg)	1000	3000000	10000000						91. U		2800. U	1.7 U		0.91 U	0.96 U	220. U	0.89 U	150. U	100. U	1.0 U	91. U	71. U		110. U	320. U
trans-1,3-Dichloropropene Trichloroethene	(ug/kg) (ug/kg)	NE 300	NE 60000	NE 600000						61. U 1300.		1800. U 480000.	1.1 U 120.		0.61 U 39.	0.64 U 5.7	140. U 16000.	0.59 U 7.4	100. U 10000.	67. U 67. U	0.69 U 120.	60. U 810.	48. U 48. U		75. U 1300.	220. U 220. U
Vinyl chloride	(ug/kg)	700	60000	600000			-			120. U		3700. U	2.3 U		3.0	41.	290. U	1.2 U	200. U	130. U	1.5	120. U	95. U		150. U	430. U
Polychlorinated Biphenyls (PCBs) Aroclor 1016	(mg/kg)	NE	NE	NE	0.0225 U	0.107 U	0.0219 U	0.0195 U	0.0210 U	0.0223 U	0.0217 U	0.130 U		0.0222 U	0.0213 U J	0.0217 U	21.100 U	0.0215 U J	5.660 U J	0.0216 U J	0.0218 U J	0.0209 U	41.200 U J	0.0208 U	0.246 U	0.100 U
Aroclor 1221	(mg/kg)	NE	NE	NE	0.0225 U	0.107 U	0.0219 U	0.0195 U	0.0210 U	0.0223 U	0.0217 U	0.130 U		0.0222 U	0.0213 U J	0.0217 U	21.100 U	0.0215 U J	5.660 U J	0.0216 U J	0.0218 U J	0.0209 U	41.200 U J	0.0208 U	0.246 U	0.100 U
Aroclor 1232	(mg/kg)	NE NE	NE NE	NE NE	0.0225 U	0.107 U	0.0219 U	0.0195 U	0.0210 U	0.0223 U	0.0217 U	0.130 U	-	0.0222 U	0.0213 U J	0.0217 U	21.100 U	0.0215 U J	5.660 U J	0.0216 U J	0.0218 U J	0.0209 U	41.200 U J	0.0208 U	0.246 U	0.100 U
Aroclor 1242 Aroclor 1248	(mg/kg) (mg/kg)	NE NE	NE NE	NE NE	0.0225 U 0.015 U	0.107 U 0.0716 U	0.0219 U 0.0146 U	0.0195 U 0.0130 U	0.0210 U 0.0140 U	0.0223 U 0.0148 U	0.126 0.0144 U	1.020 0.0867 U		0.291 0.0148 U	0.113 J 0.0142 U J	0.0223 0.0145 U	21.100 U 14.100 U	0.0594 J 0.0143 U J	33.000 J 3.770 U J	0.0936 J 0.0144 U J	0.0218 U J 0.0145 U J	0.108 0.0139 U	745.000 J 27.400 U J	0.0208 U 0.0542	3.130 0.164 U	0.242 0.0667 U
Aroclor 1254	(mg/kg)	NE	NE NE	NE	0.070	1.380 J	0.510	0.242	0.0210 U	0.0287	0.0488	0.291		0.0934	0.0875 J	0.0217 U	273.000	0.0215 U J	7.820 J	0.0301 J	0.0218 U J	0.0612	1140.000 J	0.0575	1.840	0.100 U
Aroclor 1260	(mg/kg)	NE	NE	NE	0.015 U	0.0716 U	0.0146 U	0.0130 U	0.0140 U	0.0148 U	0.0144 U	0.0867 U		0.0148 U	0.0142 U J	0.0145 U	14.100 U	0.0143 U J	3.770 U J	0.0144 U J	0.0145 U J	0.0139 U	27.400 U J	0.0420	0.164 U	0.0667 U
Aroclor 1262 Aroclor 1268	(mg/kg) (mg/kg)	NE NE	NE NE	NE NE	0.00749 U 0.00749 U	0.0358 U 0.0358 U	0.00730 U 0.00730 U	0.00650 U 0.00650 U	0.00702 U 0.00702 U	0.00743 U 0.00743 U	0.00722 U 0.00722 U	0.0433 U 0.0433 U		0.00740 U 0.00740 U	0.00711 U J 0.00711 U J	0.00724 U 0.00724 U	7.050 U 7.050 U	0.00717 U J 0.00717 U J	1.890 U J 1.890 U J	0.00719 U J 0.00719 U J	0.00726 U J 0.00726 U J	0.00696 U 0.00696 U	13.700 U J 13.700 U J	0.00694 U 0.00694 U	0.0819 U 0.0819 U	0.0334 U 0.0334 U
Total PCBs	(mg/kg)	4	4	100.	0.070	1.380 J	0.510	0.242	0.00702 U	0.0287	0.1748	1.311		0.3844	0.201 J	0.0223	[273.]	0.0594 J	40.800 J	0.124 J	0.00726 U J	0.169	[1890.] J	0.1537	4.970	0.242
Other Analyses	(0/)	NF	NF	NF			1		1	l	ı	ı	1		1				ı	1						Ì
Percent moisture Solids, Ash	(%)	NE NF	NE NF	NE NF																						
Total Organic Matter	(%)	NE	NE	NE											-											
Total Organic Carbon	(%)	NE	NE	NE																						
Grain Size % Clay Fine	(%)	NF	NF	NF																						
% Coarse Gravel	(%)	NE	NE NE	NE																						
% Coarse Sand	(%)	NE	NE	NE			-	-							-					-						-
% Fine Gravel % Fine Sand	(%)	NE NE	NE NE	NE NE											-											
% Medium Sand	(%)	NE NE	NE NE	NE NE			-	-		-			-	-	-	-			-	-						-
% Silt Fine	(%)	NE	NE	NE		-													-							
% Total Fines % Total Gravel	(%)	NE NE	NE NE	NE NE																						
% Total Gravei	(%)	NE NE	NE NE	NE NE																						
Cobbles	(%)	NE	NE	NE											-											
% Total Sand	(%) (%) (%)  ree ted reporting limit nt toow ground s ID detected cor Plan eggory S-3 in a	NE NE NE g limit urface ncentrations GW-2 Area Soil Standa GW-3 Area Soil Standa Limit	NE NE	NE											-											
*Soil borings that are within the M B06EF, B07EF, B07FG, B07GH, BI MW-21B, MW-22S, MW-24B, M Bold and yellow shaded value indi Bold, [], and orange shaded value	ICP Method 1 07H, MIP43, IW-24D and I cates concer	1 defined S3/GW2 area MW-4S, MW-16S, MW MW-30B ntration is above the S3	include : B05EF, B06.5H -18D, MW-18S, MW-20 /GW3 Standard																							

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LOCATION SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft bgs)	Units	MCP S3/GW2	MCP S3/GW3	MCP Soil UCLs	B04D B04D (0-2) 12/05/13 0 - 2	B04D B04D (3-5) 12/05/13 3 - 5	B04E B04E (0-2) 02/21/14 0 - 2	B05.5E B05.5E (0-2) 12/13/13 0 - 2	B05A B05A (0-2) 12/05/13 0 - 2	B05A B05A (5.5) 12/05/13 5.5 - 5.5	B05B B05B (0-2) 12/06/13 0 - 2	<b>B05B</b> B05B (8-10) 12/06/13 8 - 10	B05B B05B (15-17) 12/06/13 15 - 17	B05B DUP-01 12/06/13 15 - 17	B05C B05C (0-2) 12/06/13 0 - 2	B05C B05C (3-5) 12/06/13 3 - 5	B05C B05C (13-15) 12/06/13 13 - 15	B05C B05C (21-23) 12/06/13 21 - 23	B05D B05D (0-2) 12/06/13 0 - 2	B05DE 5DE (0-2) 04/28/14 0 - 2	B05DE 5DE (2-4) 04/28/14 2 - 4	B05EF 5EF (0-2) 04/28/14 0 - 2	B06.5E B06.5E (0-2) 12/13/13 0 - 2	<b>B06.5H</b> 6.5H (0-2) 04/29/14 0 - 2	B06.5H 6.5H (2-4) 04/29/14 2 - 4	<b>B06.5H</b> 6.5H (4-6) 04/29/14 4 - 6
Volatile Organic Compounds (VOC				,	Ů -	, , ,	, , ,	0 2	0 2		0 2	0 10	,			3 3	13 13	,		0 2		V 2	0.2	0 2		
1,1,1,2-Tetrachloroethane 1,1,1-trichloroethane	(ug/kg)	100 600000	500000 3000000	5000000 10000000						62. U 62. U			62. U 62. U	72. U 72. U				90. U 90. U								
1,1,2,2-Tetrachloroethane	(ug/kg) (ug/kg)	20	400000	4000000	-			_		62. U			62. U	72. U	-			90. U	_							
1,1,2-Trichloroethane	(ug/kg)	2000	500000	5000000						93. U			94. U	110. U				140. U								
1,1-Dichloroethane	(ug/kg)	9000	1000000	10000000				-		93. U			94. U	110. U	-			140. U	-							
1,1-Dichloroethene 1,2,4-Trichlorobenzene	(ug/kg) (ug/kg)	40000 6000	3000000 5000000	10000000 10000000				-		62. U 250. U			62. U 250. U	72. U 290. U	-			90. U 360. U	-							
1,2-Dibromoethane	(ug/kg)	100	40000	400000						250. U			250. U	290. U	-			360. U								-
1,2-Dichlorobenzene	(ug/kg)	100000	300000	10000000						250. U			250. U	290. U				360. U								
1,2-Dichloroethane 1,2-Dichloropropane	(ug/kg) (ug/kg)	100	300000 1000000	9000000 10000000						62. U 220. U			62. U 220. U	72. U 250. U				90. U 320. U								
1,3-Dichlorobenzene	(ug/kg)	200000	500000	5000000						250. U			250. U	290. U				360. U								
1,3-Dichloropropane	(ug/kg)	NE	NE	9000000			-	-		250. U		-	250. U	290. U	-			360. U	-	-	-				-	-
1,3-Dichloropropene 1,4-Dichlorobenzene	(ug/kg) (ug/kg)	400 1000	100000 2000000	9000000 10000000		-				250. U			 250. U	 290. U				 360. U	-							
Bromodichloromethane	(ug/kg)	100	500000	5000000				-		62. U			62. U	72. U	-			90. U								
Bromoform	(ug/kg)	1000	800000	10000000						250. U			250. U	290. U				360. U								
Carbon Tetrachloride	(ug/kg)	5000	1000000	10000000						62. U			62. U	72. U				90. U								
Chlorobenzene Chloroethane	(ug/kg) (ug/kg)	3000 NF	100000 NE	10000000 NE						62. U 120. U			62. U 120. U	72. U 140. U				90. U 180. U								
Chloroform	(ug/kg)	200	1000000	10000000						93. U			94. U	110. U				140. U								
Chloromethane	(ug/kg)	NE 100	NE 500000	NE FORGOS	-	-	-	-		250. U			250. U	290. U	-			360. U	-							-
cis-1,2-Dichloroethene cis-1,3-Dichloropropene	(ug/kg) (ug/kg)	100 NF	500000 NE	5000000 NE						86. 62. U			1400. 62. U	1500. 72. U				90. U 90. U								
Dibromochloromethane	(ug/kg) (ug/kg)	30	500000	5000000				-		62. U			62. U	72. U	-			90. U	-							
Dichlorodifluoromethane	(ug/kg)	NE	NE	NE	-	-	-	-		620. U			620. U	720. U	-			900. U	-	-	-					-
Hexachlorobutadiene	(ug/kg)	100000	100000	1000000						250. U			250. U	290. U				360. U								
Methylene Chloride o-Chlorotoluene	(ug/kg) (ug/kg)	4000 NE	1000000 NE	7000000 NE			-			620. U 250. U			620. U 250. U	720. U 290. U				900. U 360. U								
p-Chlorotoluene	(ug/kg)	NE	NE NE	NE						250. U			250. U	290. U				360. U								
Tetrachloroethene	(ug/kg)	10000	1000000	10000000			-	-		62. U		-	62. U	72. U	-			90. U	-	-	-				-	-
trans-1,2-Dichloroethene trans-1,3-Dichloropropene	(ug/kg) (ug/kg)	1000 NF	3000000 NF	10000000 NF						93. U 62. U			94. U 62. U	110. U 72. U				140. U 90. U								
Trichloroethene	(ug/kg)	300	60000	600000	-			_		62. U			240.	280.	-			2400.	_							
Vinyl chloride	(ug/kg)	700	60000	600000						120. U			120. U	140. U				180. U								
Polychlorinated Biphenyls (PCBs)	( (1)	NF	l NE	NF	0.444.11	0.0200.11	0.0420.11	146011	0.020411	0.020411	0.0472.11	0.0705.11	0.0246.11	0.022211	4.400.11	0.0405.11	0.0225.11	0.0247.11	0.0205.11	0.072.11	0.0202.11	0.024711	4.070.11	4 400 11	0.454.11	0.0224.11
Aroclor 1016 Aroclor 1221	(mg/kg) (mg/kg)	NE NF	NE NE	NE NE	0.411 U 0.411 U	0.0209 U 0.0209 U	0.0429 U 0.0429 U	4.160 U 4.160 U	0.0204 U 0.0204 U	0.0204 U 0.0204 U	0.0472 U 0.0472 U	0.0705 U 0.0705 U	0.0216 U 0.0216 U	0.0232 U 0.0232 U	4.180 U 4.180 U	0.0196 U 0.0196 U	0.0235 U 0.0235 U	0.0217 U 0.0217 U	0.0206 U 0.0206 U	0.872 U 0.872 U	0.0202 U 0.0202 U	0.0217 U 0.0217 U	1.070 U 1.070 U	1.100 U 1.100 U	0.451 U 0.451 U	0.0221 U 0.0221 U
Aroclor 1232	(mg/kg)	NE	NE	NE	0.411 U	0.0209 U	0.0429 U	4.160 U	0.0204 U	0.0204 U	0.0472 U	0.0705 U	0.0216 U	0.0232 U	4.180 U	0.0196 U	0.0235 U	0.0217 U	0.0206 U	0.872 U	0.0202 U	0.0217 U	1.070 U	1.100 U	0.451 U	0.0221 U
Aroclor 1242	(mg/kg)	NE	NE	NE	0.411 U	0.0209 U	0.0429 U	4.160 U	0.0204 U	0.0204 U	0.0472 U	0.0705 U	0.0216 U	0.0232 U	4.180 U	0.0196 U	0.0235 U	0.0217 U	0.0206 U	0.872 U	0.0202 U	0.0513	1.070 U	1.100 U	1.690	0.0221 U
Aroclor 1248 Aroclor 1254	(mg/kg) (mg/kg)	NE NE	NE NE	NE NF	0.274 U 6.680	0.0139 U 0.0209 U	0.0286 U 0.826	33.600 26.100	0.0136 U 0.151	0.0562 0.0846	0.0315 U 1.020	0.0470 U 0.0705 U	0.0144 U 0.0216 U	0.0155 U 0.0232 U	2.780 U 26.600	0.0131 U 0.0196 U	0.0156 U 0.0235 U	0.0145 U 0.0217 U	0.0138 U 0.0206 U	0.581 U 14.600	0.0135 U 0.0203	0.0145 U 0.369	0.715 U 6.750	0.731 U 15.800	0.301 U 7.740	0.0148 U 0.478
Aroclor 1260	(mg/kg)	NE NE	NE NE	NE	0.274 U	0.0139 U	0.0286 U	5.410	0.0136 U	0.0194 J	0.425	0.0470 U	0.0144 U	0.0155 U	2.780 U	0.0131 U	0.0156 U	0.0145 U	0.0138 U	0.581 U	0.0135 U	0.0145 U	0.715 U	0.731 U	0.301 U	0.0148 U
Aroclor 1262	(mg/kg)	NE	NE	NE	0.137 U	0.00697 U	0.0143 U	1.390 U	0.00679 U	0.00680 U	0.0157 U	0.0235 U	0.00719 U	0.00774 U	1.390 U	0.00655 U	0.00782 U	0.00724 U	0.00688 U	0.291 U	0.00674 U	0.00725 U	0.357 U	0.366 U	0.150 U	0.00738 U
Aroclor 1268	(mg/kg)	NE 4	NE 4	NE 100.	0.137 U 6.680	0.00697 U 0.00697 U	0.0143 U	1.390 U 65.110	0.00679 U	0.00680 U	0.0157 U	0.0235 U	0.00719 U	0.00774 U 0.00774 U	1.390 U 26.600	0.00655 U	0.00782 U	0.00724 U	0.00688 U 0.00688 U	0.291 U 14.600	0.00674 U	0.00725 U	0.357 U	0.366 U	0.150 U	0.00738 U 0.478
Total PCBs Other Analyses	(mg/kg)	4	4	100.	0.080	0.00097 0	0.826	65.110	0.151	0.1602 J	1.445	0.0235 U	0.00719 U	0.00774 0	26.600	0.00655 U	0.00782 U	0.00724 U	0.00688 0	14.600	0.0203	0.420	6.750	15.800	9.430	0.478
Percent moisture	(%)	NE	NE	NE																						
Solids, Ash	(%)	NE NF	NE NE	NE NE																						
Total Organic Matter Total Organic Carbon	(%) (%)	NE NE	NE NE	NE NE																						
Grain Size	(/-/	· · ·				1												l .	1		1					
% Clay Fine	(%)	NE	NE	NE																						
% Coarse Gravel % Coarse Sand	(%) (%)	NE NF	NE NE	NE NE																						
% Fine Gravel	(%)	NE NE	NE NE	NE NE																						
% Fine Sand	(%)	NE	NE	NE																						
% Medium Sand % Silt Fine	(%) (%)	NE NE	NE NE	NE NE																						
% Sitt Fine % Total Fines	(%)	NE NE	NE NE	NE NE																						
% Total Gravel	(%)	NE	NE	NE	-	-	-	-					-	-	-				-	-	-					-
% Total Sand Cobbles	(%) (%)	NE NE	NE NE	NE NE				-																		
Notes:  (ug/kg) = Micrograms per kilogram (ft bgs) = Feet below ground surf( t) = Constituent not detected at list J = Estimated concentration/report = Not analyzed for this constitue Sample collection depth in feet bel noted in parenthesis in Sample I NE = Not Established Total PCBs calculated by summing MCP = Massachusetts Contingency S3/GW2 = MCP Method 1 Soil Cate S3/GW3 = MCP Method 1 Soil Cate CL = MCP Method 3 Soil Upper Cc Bold and green shaded value indic *Soil borings that are within the M B06EF, B07EF, B07FG, B07GH, B MW-21B, MW-22B, MW-24B, MW-22B, MW-24B, MW-22B, MW-24B, MW-22B, MW-24B, MW-22B, MW-24B, MW-22B, MW-24B, MW-	ted reporting cing limit int ow ground so D detected con Plan agory S-3 in a spory S-1 in a tes concent CP Method 107H, MIP43,	urface  GW-2 Area Soil Standa GW-3 Area Soil Standa Limit ration is above the S3/ defined S3/GW2 area MW-4S, MW-16S, MW	ords GW2 Standard* include : B05EF, B06.5H																							

1g/kg)	100 600000 20 20 2000 9000 40000 100 100 100 100 200000 NE 400 1000 1000 1000 1000 1000 1000 1000	\$00000 3000000 400000 500000 1000000 3000000 40000 3000000 1000000 5000000 NE 100000 2000000 5000000 \$000000 \$000000 \$000000 \$000000 \$000000	UCLS  5000000 10000000 4000000 50000000 10000000 10000000 400000 400000 10000000 10000000 5000000 5000000 9000000 9000000	0 · 2			0 - 2	2 - 4		8 - 10     	25 - 27 0.45 U 0.45 U 0.45 U 0.68 U	0 - 2  	3 - 5  	8 - 10  		0.55 U 0.55 U	0 - 2  	3 - 5  	0.68 U 0.68 U 0.68 U	0 - 2  	49. U 49. U 49. U	  	0 - 2  	2 - 4	0 - 2  
12/kg)	600000 20 2000 9000 40000 6000 100 100 0000 100 200000 NE 400 1000 1000 1000 1000 3000	3000000 400000 500000 10000000 3000000 5000000 40000 300000 300000 1000000 NE 100000 500000 500000 500000	10000000 4000000 5000000 10000000 10000000 10000000 400000 10000000 9000000 10000000 5000000 9000000						  		0.45 U 0.45 U					0.55 U		-	0.68 U		49. U				
12/kg)	20 2000 9000 40000 6000 100 100 100 200000 NE 400 1000 1000 1000 1000 1000 3000	400000 500000 3000000 3000000 5000000 40000 3000000 3000000 1000000 NE 1000000 20000000 5000000	4000000 5000000 10000000 10000000 10000000 400000 9000000 10000000 5000000 9000000								0.45 U							-							
18/kg)	9000 40000 6000 100 100000 100 200000 NE 400 1000 1000 1000 3000	1000000 3000000 5000000 40000 300000 300000 1000000 NE 1000000 20000000 500000	1000000 1000000 1000000 400000 1000000 9000000 10000000 5000000 9000000	  	    											0.55 U									
1g/kg)	40000 6000 100 100000 100 100 200000 NE 400 1000 1000 1000 3000	3000000 5000000 40000 300000 300000 1000000 NE 1000000 20000000 500000	10000000 10000000 400000 10000000 9000000 10000000 5000000 9000000	  										-		0.83 U			1.0 U		73. U				
1g/kg)	6000 100 100000 100 100 200000 NE 400 1000 1000 1000 5000 3000	5000000 40000 300000 300000 1000000 500000 NE 1000000 20000000 500000	10000000 400000 10000000 9000000 10000000 5000000 9000000	  							0.68 U					0.83 U			2.0		73. U				
1g/kg)	100 100000 100 100 200000 NE 400 1000 1000 1000 3000	40000 300000 300000 1000000 500000 NE 1000000 2000000 500000	40000 1000000 900000 1000000 500000 900000			1					0.46 1.8 U					0.55 U 2.2 U	-		1.3 2.7 U		49. U 200. U				
1g/kg)	100 100 200000 NE 400 1000 1000 5000 3000	300000 1000000 500000 NE 100000 2000000 500000	9000000 10000000 5000000 9000000								1.8 U					2.2 U			2.7 U		200. U				
Ig/kg)	100 200000 NE 400 1000 1000 1000 5000 3000	1000000 500000 NE 100000 2000000 500000	10000000 5000000 9000000								1.8					2.2 U			2.7 U		200. U				
ig/kg)	200000  NE  400  1000  1000  1000  5000  3000	500000 NE 100000 2000000 500000	5000000 9000000								0.45 U			-		0.55 U			0.68 U		49. U				
ig/kg)	NE 400 1000 100 1000 5000 3000	NE 100000 2000000 500000	9000000								1.6 U 1.8 U					1.9 U 2.2 U			2.4 U 2.7 U		170. U 200. U				
ug/kg) ug/kg) ug/kg) ug/kg) ug/kg) ug/kg) ug/kg) ug/kg) ug/kg)	1000 100 1000 5000 3000	2000000 500000	9000000								1.8 U					2.2 U			2.7 U		200. U				
ig/kg) ig/kg) ig/kg) ig/kg) ig/kg) ig/kg) ig/kg)	100 1000 5000 3000	500000																							
ig/kg) ig/kg) ig/kg) ig/kg) ig/kg)	1000 5000 3000		10000000 5000000								1.8 U 0.45 U					2.2 U 0.55 U			2.7 U 0.68 U		200. U 49. U				
ıg/kg) ıg/kg) ıg/kg) ıg/kg)	3000		10000000								1.8 U					2.2 U			2.7 U		200. U				
ıg/kg) ıg/kg)		1000000	10000000								2.9					0.55 U			0.68 U		49. U				
ıg/kg)		100000 NE	10000000 NE		-						0.45 U			-		0.55 U			0.68 U		49. U				-
	200	1000000	10000000								0.91 U 0.68 U					1.1 U 0.83 U			1.4 U 1.0 U		98. U 73. U				
	NE NE	NE NE	NE								1.8 U					2.2 U			2.7 U		200. U				
ıg/kg)	100	500000	5000000								83.			_		89.		-	890.	-	1400.			-	
ıg/kg)	NE 30																		0.68 U		49. U				
ig/kg) ig/kg)	NE	NE	NE								4.5 U					5.5 U			6.8 U		49. U				
ıg/kg)	100000	100000	1000000								1.8 U			-		2.2 U		-	2.7 U		200. U				
ıg/kg)	4000	1000000	7000000								4.5 U					5.5 U			6.8 U		490. U				
ıg/kg) ıg/kg)																									
ıg/kg)	10000	1000000	10000000								1.3			-		0.76			0.68 U		49. U				
ıg/kg)	1000	3000000	10000000								0.68 U					0.83 U			1.3		73. U				
ıg/kg)	NE 200																								
ig/kg) ig/kg)																									
-6/ 1.6/	700	00000	000000		1						7.0					3.3			170.3		30. 0	\			
ng/kg)	NE	NE	NE	2.180 U	21.600 U	1.100 U	1.030 U	0.0208 U	0.0201 U	0.0226 U	0.0219 U	10.500 U	0.0225 U	0.0977 U	0.0222 U	0.0230 U	0.408 U	0.0210 U	0.0240 U	0.203 U	0.0238 U	0.456 U	5.320 U	0.0208 U	23.000 U
ng/kg)																									23.000 U 23.000 U
ng/kg)	NE NE	NE NE	NE NE																						23.000 U
ng/kg)	NE	NE	NE	1.450 U	14.400 U	0.733 U	0.689 U	0.0138 U	0.0134 U	0.0150 U	0.0146 U	74.400	0.0150 U	0.299	0.0148 U	0.0153 U	0.272 U	0.0140 U	0.0160 U	0.135 U	0.0159 U	0.304 U	3.540 U	0.0138 U	15.300 U
ng/kg)	NE	NE	NE	46.800	276.000	28.400	8.770	0.286	0.0277	0.0226 U	0.0219 U	72.000	0.0741	0.307	0.0222 U	0.0230 U	7.030	0.0210 U	0.0240 U	1.590	0.0238 U	11.900 J	51.000 J	0.112	237.000
ng/kg)																									15.300 U 7.660 U
ng/kg)	NE NE	NE NE	NE NE																						7.660 U
ng/kg)	4	4	100.	46.800	[276.]	28.400	8.770	0.286	0.0277	0.00752 U	0.00731 U	[146.4]	0.0741	0.606	0.00741 U	0.00765 U	7.030	0.00699 U	0.00801 U	1.590	0.00794 U	11.900 J	51.000 J	0.112	[237.]
(24)							ı					ı													
. ,				1		1																			
(%)	NE NE	NE	NE NE																						
(%)	NE	NE	NE																						
(0()	NE	NE	N.F		1		ı					ı		l	1										
(%)	NE NF																								
(%)	NE NE	NE	NE NE																-						-
(%)	NE	NE	NE											-											
(%)																		-	-						
(%)	NE NE	NE NE	NE NE																-						-
(%)	NE	NE	NE																-						-
(%)	NE NE	NE NE	NE											-				-	-	-				-	
(%)																									
ground su  ected conc  y S-3 in a 0  y S-3 in a 0  entration L  concentr  Method 1 0  , MIP43, N	rface centrations GW-2 Area Soil Standar GW-3 Area Soil Standar Limit ation is above the S3/C defined S3/GW2 area i MW-4S, MW-16S, MW-	rds GW2 Standard* include : B05EF, B06.5H																							
18/1k/18/18/18/18/18/18/18/18/18/18/18/18/18/	g) g	30   30   NE	S	30	30	30   5000000   5000000           80   NE	30	30	20	30   300   3000000   50000000	0	20	S   NE	S   30   1500000   5000000	1	20   35   500000   5000000	0   0   0   0   0   0   0   0   0   0	10   10   10   10   10   10   10   10	1	## 10 990700 990000	10   10   2000	10	1	18 12 9 50000 50000 50000 1	1

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LOCATION SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft bgs)	Units	MCP S3/GW2	MCP S3/GW3	MCP Soil UCLs	B07.5BC B07.5BC (3-5) 12/18/13 3 - 5	B07.5BC B07.5BC (8-10) 12/18/13 8 - 10	B07.5BC B07.5BC (13-15) 12/18/13 13 - 15	B07.5BC B07.5BC (17-19) 12/18/13 17 - 19	B07.5E B07.5E (0-2) 12/13/13 0 - 2	B07.5F B07.5F (0-2) 12/13/13 0 - 2	<b>B07.5F</b> DUP-03 12/13/13 0 - 2	B07A B07A (0-2) 12/09/13 0 - 2	B07A B07A (2.5) 12/09/13 2.5 - 2.5	B07A B07A (8-10) 12/09/13 8 - 10	B07B B07B (0-2) 12/10/13 0 - 2	B07B B07B (3-5) 12/10/13 3 - 5	B07B B07B (8-10) 12/10/13 8 - 10	B07B B07B (13-15) 12/10/13 13 - 15	B07C B07C (0-2) 12/10/13 0 - 2	B07C B07C (3-5) 12/10/13 3 - 5	B07C B07C (8-10) 12/10/13 8 - 10	B07C B07C (28-30) 12/10/13 28 - 30	B07D B07D (0-2) 12/10/13 0 - 2	B07D B07D (3-5) 12/10/13 3 - 5	B07D B07D (5.5) 12/10/13 5.5 - 5.5	B07D B07D (8-1 12/10/1 8 - 10
olatile Organic Compounds (VOC 1,1,2-Tetrachloroethane	-	100	500000	5000000				1					0.80 U			1		1.1 U				1.1 U			82. U	
1,1-trichloroethane	(ug/kg) (ug/kg)	600000	300000	1000000			-	-					0.80 U		-			1.1 U	-			1.1 U			82. U	-
1,2,2-Tetrachloroethane	(ug/kg)	20	400000	4000000			-						0.80 U		-			1.1 U	1			1.1 U			82. U	
1,2-Trichloroethane 1-Dichloroethane	(ug/kg) (ug/kg)	2000 9000	500000 1000000	5000000 10000000				-					1.2 U 1.2 U					1.6 U 1.6 U	-			1.6 U 1.6 U			120. U 120. U	
1-Dichloroethene	(ug/kg)	40000	3000000	10000000									0.80 U					1.1 U	-			1.1 U			82. U	
2,4-Trichlorobenzene	(ug/kg)	6000	5000000	10000000			-						3.2 U		-			4.2 U	1			4.4 U			330. U	
2-Dibromoethane 2-Dichlorobenzene	(ug/kg) (ug/kg)	100 100000	40000 300000	400000 10000000			-						3.2 U 3.2 U					4.2 U 4.2 U	-			4.4 U 4.4 U			330. U 330. U	-
2-Dichloroethane	(ug/kg)	100	300000	9000000									0.80 U		-			1.1 U	-			1.1 U			82. U	
2-Dichloropropane	(ug/kg)	100	1000000	10000000			-						2.8 U		-			3.7 U	1			3.9 U			280. U	
3-Dichlorobenzene 3-Dichloropropane	(ug/kg) (ug/kg)	200000 NF	500000 NE	5000000 900000									3.2 U 3.2 U					4.2 U 4.2 U	-			4.4 U 4.4 U			330. U 330. U	
3-Dichloropropene	(ug/kg)	400	100000	9000000											-				-							
4-Dichlorobenzene	(ug/kg)	1000	2000000	10000000									3.2 U					4.2 U	-			4.4 U			330. U	
omodichloromethane omoform	(ug/kg) (ug/kg)	100 1000	500000 800000	5000000 10000000									0.80 U 3.2 U		-			1.1 U 4.2 U	-			1.1 U 4.4 U			82. U 330. U	
rbon Tetrachloride	(ug/kg)	5000	1000000	10000000									0.80 U					1.1 U	1			1.1 U			82. U	
lorobenzene	(ug/kg)	3000	100000	10000000									0.80 U					1.1 U				1.1 U			82. U	
lloroethane lloroform	(ug/kg) (ug/kg)	NE 200	NE 1000000	NE 10000000									1.6 U 1.2 U					2.1 U 1.6 U	-			2.2 U 1.6 U			160. U 120. U	
loromethane	(ug/kg)	NE	NE	NE									3.2 U					4.2 U	-			4.4 U			330. U J	-
-1,2-Dichloroethene	(ug/kg)	100	500000	5000000									0.80 U					85.	-			220.			82. U	
i-1,3-Dichloropropene bromochloromethane	(ug/kg) (ug/kg)	NE 30	NE 500000	NE 5000000			-						0.80 U 0.80 U					1.1 U 1.1 U	-			1.1 U 1.1 U			82. U 82. U	
chlorodifluoromethane	(ug/kg)	NE NE	NE NE	NE NE									8.0 U J					11. U J				11. U J			820. U J	
exachlorobutadiene	(ug/kg)	100000	100000	1000000									3.2 U					4.2 U	-			4.4 U			330. U	
ethylene Chloride Chlorotoluene	(ug/kg) (ug/kg)	4000 NE	1000000 NE	7000000 NE			-						8.0 U 3.2 U					11. U 4.2 U	-			11. U 4.4 U			820. U 330. U	
Chlorotoluene	(ug/kg)	NE	NE NE	NE			-						3.2 U					4.2 U	-			4.4 U			330. U	-
trachloroethene	(ug/kg)	10000	1000000	10000000									0.80 U					1.1 U	-			1.1 U			82. U	
ans-1,2-Dichloroethene ans-1,3-Dichloropropene	(ug/kg) (ug/kg)	1000 NE	3000000 NE	10000000 NE			-						1.2 U 0.80 U					1.6 U 1.1 U				8.7 1.1 U			120. U 82. U	
ichloroethene	(ug/kg)	300	60000	600000									0.96					1.1 U	-			180.			82. U	
nyl chloride	(ug/kg)	700	60000	600000									1.6 U					100.				9.7			160. U	
olychlorinated Biphenyls (PCBs) oclor 1016	(mg/kg)	NE	NE	NE	11.000 U	0.156 U	10.800 U	0.0521	56.800 U	11.200 U	10.900 U	0.0205 U	0.0201 U	0.0214 U	0.200 U	0.199 U	0.0213 U	0.0224 U	2.050 U	0.540 U	0.117 U	0.0218 U	1.090 U	0.0225 U	0.0239 U	0.0231 U
oclor 1221	(mg/kg)	NE	NE	NE	11.000 U	0.156 U	10.800 U	0.0203 U	56.800 U	11.200 U	10.900 U	0.0205 U	0.0201 U	0.0214 U	0.200 U	0.199 U	0.0213 U	0.0224 U	2.050 U	0.540 U	0.117 U	0.0218 U	1.090 U	0.0225 U	0.0239 U	0.0231 เ
oclor 1232 oclor 1242	(mg/kg) (mg/kg)	NE NE	NE NE	NE NE	11.000 U 11.000 U	0.156 U 0.156 U	10.800 U 10.800 U	0.0203 U 0.0203 U	56.800 U 56.800 U	11.200 U 11.200 U	10.900 U 10.900 U	0.0205 U 0.0205 U	0.0201 U 0.176	0.0214 U 0.0214 U	0.200 U 2.840	0.199 U 0.199 U	0.0213 U 0.0213 U	0.0224 U 0.0224 U	2.050 U 2.050 U	0.540 U 0.540 U	0.117 U 0.117 U	0.0218 U 0.0218 U	1.090 U 1.090 U	0.0225 U 0.0225 U	0.0239 U 0.0239 U	0.0231 U
oclor 1248	(mg/kg)	NE NE	NE NE	NE	58.600	1.280	90.300	0.0135 U	37.900 U	7.450 U	7.280 U	0.0137 U	0.0134 U	0.0143 U	0.134 U	2.380	0.0142 U	0.0149 U	1.370 U	0.360 U	0.0777 U	0.0145 U	0.724 U	0.0150 U	0.0159 U	0.0154 U
oclor 1254	(mg/kg)	NE	NE	NE	19.800	1.100	81.400	0.0203 U	363.000	245.000	160.000	0.238	0.103	0.0214 U	2.910	2.230	0.0213 U	0.0224 U	48.200	0.540 U	0.117 U	0.0218 U	9.620	0.0225 U	0.0239 U	0.0231 U
oclor 1260 oclor 1262	(mg/kg) (mg/kg)	NE NE	NE NE	NE NE	7.370 U 3.680 U	0.104 U 0.0520 U	7.230 U 3.620 U	0.0135 U 0.00677 U	37.900 U 18.900 U	7.450 U 3.720 U	7.280 U 3.640 U	0.0137 U 0.00684 U	0.0134 U 0.00671 U	0.0143 U 0.00714 U	0.134 U 0.0668 U	0.132 U 0.0663 U	0.0142 U 0.00711 U	0.0149 U 0.00747 U	1.370 U 0.684 U	0.360 U 0.180 U	0.0777 U 0.0389 U	0.0145 U 0.00726 U	0.724 U 0.362 U	0.0150 U 0.00751 U	0.0159 U 0.00796 U	0.0154 U
oclor 1268	(mg/kg)	NE	NE	NE	3.680 U	0.0520 U	3.620 U	0.00677 U	18.900 U	3.720 U	3.640 U	0.00684 U	0.00671 U	0.00714 U	0.0668 U	0.0663 U	0.00711 U	0.00747 U	0.684 U	0.180 U	0.0389 U	0.00726 U	0.362 U	0.00751 U	0.00796 U	0.00771
tal PCBs	(mg/kg)	4	4	100.	78.400	2.380	[171.7]	0.0521	[363.]	[245.]	[160.]	0.238	0.279	0.00714 U	5.750	4.610	0.00711 U	0.00747 U	48.200	0.180 U	0.0389 U	0.00726 U	9.620	0.00751 U	0.00796 U	0.00771
ther Analyses recent moisture	(%)	NE	NE	NE				-																		
lids, Ash	(%)	NE	NE	NE			-	-							-				-						1	
ital Organic Matter ital Organic Carbon	(%) (%)	NE NE	NE NE	NE NE			-	-											-						-	
rain Size	(70)	NE	NE	IVE.				1		·						1	1					1				
Clay Fine	(%)	NE NE	NE NE	NE NE															-							
Coarse Gravel Coarse Sand	(%) (%)	NE NE	NE NE	NE NE																					-	
Fine Gravel	(%)	NE NE	NE NE	NE NE																						
Fine Sand	(%)	NE NE	NE NE	NE NE											-											
Medium Sand Silt Fine	(%) (%)	NE NE	NE NE	NE NE			-	-					-	-					-						-	-
Total Fines	(%)	NE	NE	NE			-	-					-		-				-	-					-	
Total Gravel	(%)	NE NE	NE NE	NE NE			-								-			-	-						-	
obbles	(%)	NE NE	NE NE	NE NE			-						-		-				-						-	
Total Sand	e ed reporting inig limit to but ground so D detected con Plan gory S-3 in a	NE NE Imit urface acentrations GW-2 Area Soil Standa	NE NE	NE															-						-	
MCP Method 3 Soil Upper Co and green shaded value indica borings that are within the Mu	ncentration ates concent CP Method 1	Limit cration is above the S3/0 L defined S3/GW2 area	GW2 Standard*																							

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LOCATION SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft bgs)	Units	MCP S3/GW2	MCP S3/GW3	MCP Soil UCLs	B07DE 7DE (0-2) 04/28/14 0 - 2	B07DE 7DE (2-4) 04/28/14 2 - 4	B07EF 7EF (0-2) 04/28/14 0 - 2	B07EF DUP-01 04/28/14 0 - 2	807EF 7EF (2-4) 04/28/14 2 - 4	<b>B07EF</b> 7EF (4-5) 04/28/14 4 - 5	<b>B07FG</b> 7FG (0-2) 04/28/14 0 - 2	B07FG 7FG (2-4) 04/28/14 2 - 4	B07G B07G (0-2) 12/13/13 0 - 2	<b>B07GH</b> 7GH (0-2) 04/28/14 0 - 2	B07GH 7GH (2-4) 04/28/14 2 - 4	B07H B08H (0-2) 12/13/13 0 - 2	<b>B071</b> 71 (0-2) 04/29/14 0 - 2	<b>B071</b> 71 (2-4) 04/29/14 2 - 4	808.5DE 8.5DE (0-2) 04/28/14 0 - 2	808.5DE 8.5DE (2-4) 04/28/14 2 - 4	B08.5E B08.5E (0-2) 12/13/13 0 - 2	808.5EF 8.5EF (0-2) 04/28/14 0 - 2	B08.5EF DUP-04 04/28/14 0 - 2	808.5EF 8.5EF (2-4) 04/28/14 2 - 4	<b>B08.5EF</b> 8.5EF (4-6) 04/28/14 4 - 6	8.5EF (6-8) 04/28/14 6 - 8
Volatile Organic Compounds (VOC 1,1,1,2-Tetrachloroethane	.s) (ug/kg)	100	500000	5000000		-		-						-												-
1,1,1-trichloroethane	(ug/kg)	600000	3000000	10000000			-				-				-				-	-	-	~			-	
1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane	(ug/kg)	20 2000	400000 500000	4000000 5000000																						
1,1-Dichloroethane	(ug/kg) (ug/kg)	9000	1000000	1000000																						
1,1-Dichloroethene	(ug/kg)	40000	3000000	10000000																						
1,2,4-Trichlorobenzene	(ug/kg)	6000	5000000	10000000		-	-	-	-	-	1				-				-	-					-	
1,2-Dibromoethane	(ug/kg)	100 100000	40000 300000	400000 10000000		-														-						
1,2-Dichlorobenzene 1,2-Dichloroethane	(ug/kg) (ug/kg)	100	300000	9000000				-																		
1,2-Dichloropropane	(ug/kg)	100	1000000	10000000																						-
1,3-Dichlorobenzene	(ug/kg)	200000	500000	5000000		-	-	-	-	-	1				-				-	-					-	-
1,3-Dichloropropane 1,3-Dichloropropene	(ug/kg) (ug/kg)	NE 400	NE 100000	9000000																						-
1,4-Dichlorobenzene	(ug/kg)	1000	2000000	10000000				-																	-	
Bromodichloromethane	(ug/kg)	100	500000	5000000							-															
Bromoform	(ug/kg)	1000	800000	10000000															-							-
Carbon Tetrachloride Chlorobenzene	(ug/kg) (ug/kg)	5000 3000	1000000 100000	10000000 10000000							-				-											
Chloroethane	(ug/kg)	NE	NE	NE																						_
Chloroform	(ug/kg)	200	1000000	10000000																						
Chloromethane	(ug/kg)	NE 100	NE F00000	NE F000000											-				-	-						
cis-1,2-Dichloroethene cis-1,3-Dichloropropene	(ug/kg) (ug/kg)	100 NE	500000 NE	5000000 NE																						
Dibromochloromethane	(ug/kg)	30	500000	5000000			-																			
Dichlorodifluoromethane	(ug/kg)	NE	NE	NE							1															
Hexachlorobutadiene Methylene Chloride	(ug/kg) (ug/kg)	100000 4000	100000 1000000	1000000 7000000		-																				
o-Chlorotoluene	(ug/kg) (ug/kg)	NE	NE	NE		-														-						
p-Chlorotoluene	(ug/kg)	NE	NE	NE											-											
Tetrachloroethene	(ug/kg)	10000	1000000	10000000															-							
trans-1,2-Dichloroethene trans-1,3-Dichloropropene	(ug/kg) (ug/kg)	1000 NE	3000000 NF	10000000 NF																						
Trichloroethene	(ug/kg)	300	60000	600000																						
Vinyl chloride Polychlorinated Biphenyls (PCBs)	(ug/kg)	700 NE	60000 NE	600000 NF	2 400 11																					
Aroclor 1016 Aroclor 1221	(mg/kg) (mg/kg)	NE NE	NE NF	NE NF	2.180 U 2.180 U	0.0210 U 0.0210 U	0.461 U 0.461 U	0.468 U 0.468 U	10.600 U 10.600 U	0.118 U 0.118 U	1.040 U 1.040 U	0.0203 U 0.0203 U	10.700 U 10.700 U	0.435 U 0.435 U	0.0212 U 0.0212 U	9.010 U 9.010 U	0.110 U 0.110 U	0.0208 U 0.0208 U	5.530 U 5.530 U	0.0209 U 0.0209 U	8.670 U 8.670 U	11.600 U 11.600 U	11.200 U 11.200 U	0.223 U 0.223 U	0.448 U 0.448 U	0.0222 U J 0.0222 U J
Aroclor 1232	(mg/kg)	NE	NE	NE	2.180 U	0.0210 U	0.461 U	0.468 U	10.600 U	0.118 U	1.040 U	0.0203 U	10.700 U	0.435 U	0.0212 U	9.010 U	0.110 U	0.0208 U	5.530 U	0.0209 U	8.670 U	11.600 U	11.200 U	0.223 U	0.448 U	0.0222 U J
Aroclor 1242	(mg/kg)	NE	NE	NE	2.180 U	0.0210 U	0.461 U	0.468 U	10.600 U	0.118 U	1.040 U	0.0203 U	10.700 U	0.435 U	0.0212 U	9.010 U	0.110 U	0.0208 U	5.530 U	0.0209 U	8.670 U	11.600 U	11.200 U	0.223 U	0.448 U	0.0222 U J
Aroclor 1248 Aroclor 1254	(mg/kg)	NE NE	NE NF	NE NF	1.450 U 27.500	0.0140 U 0.0210 U	0.307 U 11.500	0.312 U 9.290	7.080 U 93.000	0.0785 U 1.790	0.695 U 15.100	0.0136 U 0.0810	7.110 U 295.000	0.290 U 4.170	0.0142 U 0.278	6.010 U 198.000	0.0736 U 1.020	0.0139 U 0.182	3.680 U 63.300	0.0139 U 0.0209 U	5.780 U 77.200	7.730 U 188.000	7.490 U 139.000	0.149 U 4.880	0.299 U 5.480	0.0148 U J 0.0222 U J
Aroclor 1260	(mg/kg) (mg/kg)	NE	NE	NE NE	1.450 U	0.0140 U	0.307 U	0.312 U	7.080 U	0.0785 U	0.695 U	0.0136 U	7.110 U	0.290 U	0.0142 U	6.010 U	0.0736 U	0.0139 U	3.680 U	0.0139 U	5.780 U	7.730 U	7.490 U	0.149 U	0.299 U	0.0148 U J
Aroclor 1262	(mg/kg)	NE	NE	NE	0.726 U	0.00701 U	0.154 U	0.156 U	3.540 U	0.0392 U	0.347 U	0.00678 U	3.560 U	0.145 U	0.00708 U	3.000 U	0.0368 U	0.00694 U	1.840 U	0.00697 U	2.890 U	3.860 U	3.740 U	0.0744 U	0.149 U	0.00740 U J
Aroclor 1268 Total PCBs	(mg/kg) (mg/kg)	NE 4	NE 4	NE 100.	0.726 U <b>27.500</b>	0.00701 U 0.00701 U	0.154 U 11.500	0.156 U 9.290	3.540 U 93.	0.0392 U 1.790	0.347 U <b>15.100</b>	0.00678 U 0.0810	3.560 U [295.]	0.145 U <b>4.170</b>	0.00708 U 0.278	3.000 U [198.]	0.0368 U 1.020	0.00694 U 0.182	1.840 U 63.300	0.00697 U 0.00697 U	2.890 U 77.200	3.860 U [188.]	3.740 U [139.]	0.0744 U 4.880	0.149 U 5.480	0.00740 U J 0.00740 U J
Other Analyses	(1116/116/	·		100.	27.500	0.007010	11.500	3.230		1.750	25.200	0.0010	[255.]		0.270	[250.]	1.020	0.102	03.300	0.00037 0	77.200	[200.]	[200.]	41000	31400	0.007.007
Percent moisture	(%)	NE	NE	NE							-								-						-	
Solids, Ash Total Organic Matter	(%) (%)	NE NE	NE NE	NE NE				-																		-
Total Organic Carbon	(%)	NE	NE NE	NE NE																						
Grain Size																								,		
% Clay Fine	(%)	NE	NE	NE NE			-								-			-	-	-					-	
% Coarse Gravel % Coarse Sand	(%) (%)	NE NE	NE NE	NE NE																						-
% Fine Gravel	(%)	NE	NE NE	NE																						
% Fine Sand	(%)	NE NE	NE	NE NE		-		-			-				-				-	-	-				-	
% Medium Sand % Silt Fine	(%) (%)	NE NE	NE NE	NE NE															-							-
% Total Fines	(%)	NE	NE NE	NE NE				-					-													-
% Total Gravel	(%)	NE	NE	NE		-	-				1				-				-	-	-				-	
% Total Sand Cobbles	(%) (%)	NE NE	NE NE	NE NE																						
Notes: (ug/kg) = Micrograms per kilogram (ft bgs) = Feet below ground surfac U = Constituent not detected at list J = Estimated concentration/report - = Not analyzed for this constituer Sample collection depth in feet belinoted in parenthesis in Sample I NE = Not Established Total PCBs calculated by summing of MCP = Massachusetts Contingency S3/GW2 = MCP Method 1 Soil Cate UCL = MCP Method 1 Soil Opper CS3/GW3 = MCP Method 1 Soil Opper CS0 Bold and green shaded value indicates - Soil borings that are within the MI B06EF, B07EF, B07FG, B07GH, BI MW-21B, MW-22B, MW-24B, MW-22B, MW-24B, MW-22B, MW-24B, MW-22B, MW-24B,	tee ted reporting ting limit int low ground so lib detected con relations of the report of the repor	urface  GW-2 Area Soil Standa GW-3 Area Soil Standa Limit ration is above the S3/ defined S3/GW2 area MW-4S, MW-16S, MW	rds GW2 Standard* include : B05EF, B06.5H																							
MW-21B, MW-22S, MW-24B, M Bold and yellow shaded value indic Bold, [], and orange shaded value	cates concen	tration is above the S3,																								

LOCATION SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft bgs)	Units	MCP S3/GW2	MCP S3/GW3	MCP Soil UCLs	B08.5F B08.5F (0-2) 12/13/13 0 - 2	B08A B08A (5-7) 12/12/13 5 - 7	B08A B08A (28-30) 12/12/13 28 - 30	B08A DUP-02 12/12/13 28 - 30	B08B B08B (0-2) 12/11/13 0 - 2	B08B B08B (3-5) 12/11/13 3 - 5	B08B B08B (8-10) 12/11/13 8 - 10	B08B B08B (26.5) 12/11/13 26.5 - 26.5	B08B B08B (2.5-3') 07/16/14 2.5 - 3	B08B B08B (2.5-3') 07/16/14 2.5 - 3	B08B B08B (4.5') 07/16/14 4.5 - 4.5	B08B B08B (4.5') 07/16/14 4.5 - 4.5	B08B B08B (8') 07/16/14 8 - 8	B08B B08B (8') 07/16/14 8 - 8	B08B B08B (12') 07/16/14 12 - 12	B08B B08B (12') 07/16/14 12 - 12	B08B B08B (22') 07/16/14 22 - 22	B08B B08B (22') 07/16/14 22 - 22	B08B B08B (28') 07/16/14 28 - 28	B08B B08B (28') 07/16/14 28 - 28	B08BC B08BC (0-2) 12/20/13 0 - 2	B08BC (5- 12/20/1 5 - 6
olatile Organic Compounds (VOCs ,1,1,2-Tetrachloroethane	(ug/kg)	100	500000	5000000		-	1.1 U	1.0 U				0.77 U			-				-	-						7.4 U
,1,1-trichloroethane	(ug/kg)	600000	3000000	10000000			1.1 U	1.0 U				0.77 U			-											7.4 L
1,2,2-Tetrachloroethane 1.2-Trichloroethane	(ug/kg)	20	400000	4000000		-	1.1 U	1.0 U				0.77 U			-			-								7.4 U
1-Dichloroethane	(ug/kg) (ug/kg)	2000 9000	500000 1000000	5000000 10000000		-	1.7 U	1.5 U 1.5 U				1.2 U 1.2 U			-			-								11. (
I-Dichloroethene	(ug/kg)	40000	3000000	10000000			1.1 U	1.0 U				1.8														7.4 (
2,4-Trichlorobenzene	(ug/kg)	6000	5000000	10000000			4.9	4.4				3.1 U														30. 1
2-Dibromoethane 2-Dichlorobenzene	(ug/kg) (ug/kg)	100 100000	40000 300000	400000 10000000			4.5 U 4.5 U	4.0 U 4.0 U				3.1 U 3.1 U			-				-						-	30. (
2-Dichloroethane	(ug/kg)	100	300000	9000000			1.1 U	1.0 U				0.77 U			-											7.4
2-Dichloropropane	(ug/kg)	100	1000000	10000000			4.0 U	3.6 U				2.7 U		-	1			-	-						-	26.
3-Dichlorobenzene 3-Dichloropropane	(ug/kg)	200000 NF	500000 NE	5000000 9000000			4.5 U 4.5 U	4.0 U 4.0 U				3.1 U 3.1 U			-											30. 30.
,3-Dichloropropene	(ug/kg) (ug/kg)	400	100000	9000000			4.5 0	4.00							-											
4-Dichlorobenzene	(ug/kg)	1000	2000000	10000000			4.5 U	4.0 U				3.1 U			-											30.
romodichloromethane	(ug/kg)	100	500000	5000000			1.1 U	1.0 U	-			0.77 U			-									-		7.4
romoform arbon Tetrachloride	(ug/kg) (ug/kg)	1000 5000	800000 1000000	10000000			4.5 U 1.1 U	4.0 U 1.0 U				3.1 U 0.77 U													-	30. 7.4
hlorobenzene	(ug/kg)	3000	100000	10000000			1.1 U	1.0 U				0.77 U			-			-								7.4
hloroethane	(ug/kg)	NE	NE	NE			2.3 U J	2.0 U J				1.5 U														15.
Chloroform Chloromethane	(ug/kg) (ug/kg)	200 NF	1000000 NE	10000000 NE			1.7 U 4.5 U	1.5 U 4.0 U				1.2 U 3.1 U			-				-							11. 30.
s-1,2-Dichloroethene	(ug/kg)	100	500000	5000000			42.	42.				210.														7.4
s-1,3-Dichloropropene	(ug/kg)	NE 20	NE FORGO	NE FORGORA			1.1 U	1.0 U				0.77 U			-					-						7.4
Dibromochloromethane Dichlorodifluoromethane	(ug/kg)	30 NE	500000 NE	5000000 NF			1.1 U 11. U	1.0 U 10. U				0.77 U 7.7 U														7.4
lexachlorobutadiene	(ug/kg) (ug/kg)	100000	100000	1000000		-	4.5 U	4.0 U			-	3.1 U	-	-	-			-	-		-				-	30. 1
Methylene Chloride	(ug/kg)	4000	1000000	7000000		-	11. U	10. U				7.7 U			-				-	-					-	74. l
-Chlorotoluene -Chlorotoluene	(ug/kg)	NE NE	NE NE	NE NE			4.5 U 4.5 U	4.0 U 4.0 U				3.1 U 3.1 U														30. U
etrachloroethene	(ug/kg) (ug/kg)	10000	1000000	10000000			1.1 U	1.0 U				48.			-											7.4 (
rans-1,2-Dichloroethene	(ug/kg)	1000	3000000	10000000			1.7 U	1.5 U				25.			-			-								11. l
rans-1,3-Dichloropropene	(ug/kg)	NE 300	NE 60000	NE 600000			1.1 U	1.0 U				0.77 U 220.			-											7.4 L 26.
richloroethene inyl chloride	(ug/kg) (ug/kg)	700	60000	600000			78. 2.3 U	73. 2.0 U				35.														15. l
olychlorinated Biphenyls (PCBs)	, , ,																									
roclor 1016	(mg/kg)	NE NE	NE NF	NE NF	52.600 U 52.600 U	0.0210 U	0.0224 U	0.0221 U	42.600 U 42.600 U	0.0232 U	0.0250 U	0.0240 U			-				-						2.050 U	0.0668
roclor 1221 roclor 1232	(mg/kg) (mg/kg)	NE NE	NE NE	NE NE	52.600 U	0.0210 U 0.0210 U	0.0224 U 0.0224 U	0.0221 U 0.0221 U	42.600 U 42.600 U	0.0232 U 0.0232 U	0.0250 U 0.0250 U	0.0240 U 0.0240 U													2.050 U 2.050 U	0.0668
oclor 1242	(mg/kg)	NE	NE	NE	52.600 U	0.0210 U	0.275	0.174	42.600 U	0.0232 U	0.0250 U	0.0447			-			-							2.050 U	1.76
roclor 1248	(mg/kg)	NE	NE NE	NE NE	35.100 U	0.0140 U	0.0149 U	0.0147 U	28.400 U	0.0155 U	0.0166 U	0.0160 U			-										1.370 U	0.0446
roclor 1254 roclor 1260	(mg/kg) (mg/kg)	NE NE	NE NF	NE NF	533.000 35.100 U	0.0210 U 0.0140 U	0.0224 U 0.0149 U	0.0221 U 0.0147 U	1000.000 28.400 U	0.145 0.0155 U	0.0250 U 0.0166 U	0.0240 U 0.0160 U			-										24.000 1.370 U	0.873
roclor 1262	(mg/kg)	NE	NE	NE	17.600 U	0.00700 U	0.00746 U	0.00736 U	14.200 U	0.00774 U	0.00832 U	0.00800 U			-										0.684 U	0.0223
roclor 1268	(mg/kg)	NE	NE	NE 100	17.600 U	0.00700 U	0.00746 U	0.00736 U	14.200 U	0.00774 U	0.00832 U	0.00800 U													0.684 U	0.0223
otal PCBs Other Analyses	(mg/kg)	4	4	100.	[533.]	0.00700 U	0.275	0.174	[1000.]	0.145	0.00832 U	0.0447								-					24.	2.63
ercent moisture	(%)	NE	NE	NE									20.1		18.0		78.6		9.30		15.5		8.90			
olids, Ash	(%)	NE	NE NE	NE NE		-							86.		92.		40.	-	100.		100.		100.			-
otal Organic Matter otal Organic Carbon	(%) (%)	NE NE	NE NE	NE NE		-	-	-					14. 18.9	22.9	9.42	9.73	60. 20.6	21.3	0.10 0.159	0.165	0.30 0.050 U	0.050 U	0.10 U 0.050 U	0.050 U		
Grain Size	(,-)																									
6 Clay Fine	(%)	NE NE	NE NE	NE NE																						
6 Coarse Gravel 6 Coarse Sand	(%) (%)	NE NE	NE NE	NE NE			-																			
Fine Gravel	(%)	NE NE	NE NE	NE NE			-																			
S Fine Sand	(%)	NE	NE	NE		-	-	-					-	-	-			-	-	-	-				-	-
Medium Sand Silt Fine	(%) (%)	NE NE	NE NE	NE NE			-								-											
5 Total Fines	(%)	NE NE	NE NE	NE NE									-		-					-						-
Total Gravel	(%)	NE	NE	NE																						-
Total Sand obbles	(%) (%)	NE NE	NE NE	NE NE		-									-											
Olds:  (J/kg) = Micrograms per kilogram;  (J/kg) = Feet below ground surface;  (E) = Constituent not detected at list:  Estimated concentration/reporti  Not analyzed for this constituen  Imple collection depth in feet belo  In ote of the stablished  Ital PCBs calculated by summing of  CP = Massachusetts Contingency  JGW2 = MCP Method 1 Soil Cate  JGW3 = MCP Method 1 Soil Cate  CL = MCP Method 3 Soil Upper Co  Id and green shaded value indicated  BOGEF, BO7EF, BO7FG, BO7GH, BC  BO7EF, BO7FF, BO7	ed reporting ng limit it bw ground su ) letected con- Plan gory S-3 in a gory S-3 in a ncentration ites concents	centrations GW-2 Area Soil Standar GW-3 Area Soil Standar Limit ation is above the S3/C defined S3/GW2 area i	rds GW2 Standard* include : B05EF, B06.5H																							
MW-21B, MW-22S, MW-24B, MV d and yellow shaded value indic d, [], and orange shaded value	N-24D and Nates concent	1W-30B tration is above the S3/	GW3 Standard																							

										0.73 U 0.73 U 0.73 U 1.1 U 1.1 U 0.73 U 3.8 2.9 U 2.9 U 0.73 U 2.6 U 2.9 U 0.73 U 2.9 U 1.1 U 0.73 U 2.9 U 0.73 U 2.9 U 0.73 U			
										0.73 U 0.73 U 1.1 U 1.1 U 0.73 U 3.8 2.9 U 2.9 U 0.73 U 2.9 U 0.73 U 2.9 U 0.73 U 2.9 U 1.1 U 1.1 U 1.1 U 1.1 U 0.73 U 2.9 U 0.73 U			
										1.1 U 1.1 U 1.1 U 1.1 U 0.73 U 3.8 2.9 U 0.73 U 2.9 U 2.9 U 2.9 U 2.9 U 2.9 U 0.73 U 2.9 U 1.1 U 2.9 U 0.73 U 2.9 U 0.73 U 2.9 U 0.73 U 0.73 U 0.73 U 1.1 U 2.9 U 80. 0.73 U			
										1.1 U 0.73 U 2.9 U 3.0 C 3.0 U			
										0.73 U 3.8 2.9 U 2.9 U 0.73 U 2.6 U 2.9 U 2.9 U 0.73 U 2.6 U 2.9 U 0.73 U 1.1 U 2.9 U 0.73 U 1.1 U 2.9 U 0.73 U			
										2.9 U 2.9 U 2.9 U 2.6 U 2.9 U 2.9 U 2.9 U 0.73 U 2.9 U 0.73 U 0.73 U 0.73 U 1.1 U 2.9 U 0.73 U 0.73 U			
										2.9 U 0.73 U 2.6 U 2.9 U 2.9 U 2.9 U 0.73 U 2.9 U 0.73 U 1.1 U 2.9 U 0.73 U 1.4 U J 1.1 U 2.9 U			
										0.73 U 2.6 U 2.9 U 2.9 U 2.9 U 0.73 U 2.9 U 0.73 U 0.73 U 1.1 U 2.9 U 0.73 U 0.73 U 0.73 U 0.73 U 0.73 U			
										2.9 U 2.9 U 			
										2.9 U			
										2.9 U 0.73 U 2.9 U 0.73 U 0.73 U 1.4 U J 1.1 U 2.9 U 80. 0.73 U			
							   			0.73 U 2.9 U 0.73 U 0.73 U 1.1 U 2.9 U 80. 0.73 U			
							   			2.9 U 0.73 U 0.73 U 1.4 U J 1.1 U 2.9 U 80. 0.73 U			
							   			0.73 U 0.73 U 1.4 U J 1.1 U 2.9 U 80. 0.73 U		   	
							   			1.4 U J 1.1 U 2.9 U 80. 0.73 U			
										1.1 U 2.9 U 80. 0.73 U		  	
          22.400 U										2.9 U 80. 0.73 U			
										0.73 U			
        22.400 U													
        22.400 U													
      22.400 U							-			0.73 U 7.3 U			
     22.400 U										2.9 U			
     22.400 U			-					-		7.3 U 2.9 U		-	-
    22.400 U	  									2.9 U			
   22.400 U										0.73 U			
  22.400 U										1.1 U			
22.400 U										0.73 U 450.			
										3.4			
	4.400.11	0.0244.11	22 400 11	0.000011	1 024411	0.0244.11	0.0200.11	0.0222.11	0.0244.11	0.0222.11	1.050.11	0.424.11	0.024
42.400 U	1.100 U 1.100 U	0.0241 U 0.0241 U		0.0208 U 1.040 U 0.0208 U 1.040 U	0.214 U 0.214 U	0.0211 U 0.0211 U	0.0209 U 0.0209 U	0.0223 U 0.0223 U	0.0211 U 0.0211 U	0.0222 U 0.0222 U	4.050 U 4.050 U	0.124 U 0.124 U	0.0212 0.0212
22.400 U	1.100 U	0.0241 U	22.400 U 0	0.0208 U 1.040 U	0.214 U	0.0211 U	0.0209 U	0.0223 U	0.0211 U	0.0222 U	4.050 U	0.124 U	0.0212
22.400 U	1.100 U	0.0241 U		0.0208 U 1.040 U	0.214 U	0.0211 U	0.0209 U	0.0223 U	0.0211 U	0.0222 U	4.050 U	0.124 U	0.0212
14.900 U 325.000	0.734 U 11.100	0.0160 U 0.331		0.0139 U 0.696 U 0.182 11.300	0.142 U 2.300	0.0141 U 0.0211 U	0.0139 U 0.0228	0.0149 U 0.0223 U	0.0141 U 0.0211 U	0.0148 U 0.0222 U	93.200 104.000	1.500 0.530	0.0142
14.900 U	0.734 U	0.0160 U		0.0139 U 0.696 U	0.142 U	0.0141 U	0.0139 U	0.0149 U	0.0141 U	0.0148 U	2.700 U	0.0824 U	0.0142
						0.00703 U	0.00697 U		0.00703 U		1.350 U		0.00708
													0.00708
	-	-	-			-	-						
1					1	1	Ī		1			ı	_
													-
							-	-				-	-
								-				-	-
													-
	7.460 U 7.460 U [325.]	7.460 U 0.367 U 7.460 U 0.367 U [325.] 11.100	7.460 U 0.367 U 0.00803 U 7.460 U 0.367 U 0.00803 U [325.] 11.100 0.331	7.460 U 0.367 U 0.00803 U 7.480 U 7.460 U 0.367 U 0.00803 U 7.480 U 1.400 U 1.	7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.348 U 0.367 U 0.348 U 0.331 [234.] 0.182 11.300 11	7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 1.100	7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00703 U 0.3712 U 0.00703 U 0.007	7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00697 U 7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00697 U 0.00697 U 0.328.    11.100	7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00697 U 0.00743 U 7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00697 U 0.00743 U 1.100 U 0.331	7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00697 U 0.00743 U 0.00703 U 7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00697 U 0.00743 U 0.00703 U 0.00	7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00697 U 0.00743 U 0.00703 U 0.00704 U 0.00740 U 0.00740 U 0.00703 U 0.00697 U 0.00703 U 0.007	7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00697 U 0.00743 U 0.00703 U 0.00740 U 1.350 U 7.460 U 0.367 U 0.00803 U 7.480 U 0.00695 U 0.348 U 0.0712 U 0.00703 U 0.00697 U 0.00743 U 0.00703 U 0.00740 U 1.350 U	7.460   0.367   0.00803   7.480   0.00695   0.348   0.0712   0.00703   0.00697   0.00743   0.00703   0.00703   0.00740   1.350   0.0112   0.00740   1.350   0.0012   0.00745   0.00745   0.00703   0.00745   0.00703   0.00740   0.00745   0.00703   0.00740   0.00745   0.00703   0.00740   0.00745   0.00703   0.00740   0.00745   0.00745   0.00703   0.00745   0.00745   0.00703   0.00703   0.00745   0.00703   0.00745   0.00703   0.00745   0.00703   0.00745   0.00703

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Units	MCP S3/GW2	MCP S3/GW3	MCP Soil UCLs	B09B B09B (20.5) 12/12/13 20.5 - 20.5	B09B B09B (4') 07/16/14 4 - 4	B09B B09B (4') 07/16/14 4 - 4	B09B B09B (6') 07/16/14 6 - 6	B09B B09B (6') 07/16/14 6 - 6	B09B B09B (10') 07/16/14 10 - 10	B09B B09B (10') 07/16/14 10 - 10	B09B B09B (16.5') 07/16/14 16.5 - 16.5	B09B B09B (16.5') 07/16/14 16.5 - 16.5	B09B B09B (27') 07/16/14 27 - 27	B09B B09B (27') 07/16/14 27 - 27	B09B B09B (33') 07/16/14 33 - 33	B09B B09B (33') 07/16/14 33 - 33	B09C B09C (0-2) 12/13/13 0 - 2	B09C B09C (3-5) 12/13/13 3 - 5	B09C B09C (8-10) 12/13/13 8 - 10	B09C B09C (23-25) 12/13/13 23 - 25	B09D B09D (0-2) 12/13/13 0 - 2	B09D B09D (3-5) 12/13/13 3 - 5	B09D B09D (8-10) 12/13/13 8 - 10	B09D B09D (13-15) 12/13/13 13 - 15	B10A B10A (0-2 12/16/13 0 - 2
(ug/kg)	100	500000	5000000	81. U																1.1 U				2.4 U	
(ug/kg)	600000	3000000	10000000	81. U	1															1.1 U	1			2.4 U	
	9000	1000000	10000000	120. U																1.6 U				3.6 U	
(ug/kg)	40000	3000000	10000000	81. U																1.1 U				2.4 U	-
(ug/kg)	6000	5000000	10000000	320. U																4.3 U				9.5 U	
	100	300000	9000000	81. U																1.1 U				2.4 U	-
(ug/kg)	100	1000000	10000000	280. U																3.8 U				8.3 U	
	400	100000	9000000	320. 0																4.5 0				9.5 0	
(ug/kg)	1000	2000000	10000000	320. U	-															4.3 U	-			9.5 U	
(ug/kg)	100	500000	5000000	81. U																1.1 U				2.4 U	
														-											
	3000	100000	10000000	81. U																1.1 U				2.4 U	-
(ug/kg)	NE	NE	NE	160. U J																2.2 U J	-			4.7 U J	-
(ug/kg)	200	1000000	10000000	120. U														-		1.6 U				3.6 U	
	NE 100	NE 500000	NE 5000000	320. U 150.																4.3 U 16.	-			9.5 U 110.	
(ug/kg)	NE NE	NE NE	NE NE	81. U																1.1 U				2.4 U	
(ug/kg)	30	500000	5000000	81. U	1									-				-	-	1.1 U	1			2.4 U	-
(ug/kg)	NE	NE	NE	810. U										-			-	-	-	11. U				24. U	
	100000 4000	100000	700000																	4.3 U 11. U				9.5 U 24. U	-
(ug/kg)	NE NE	NE NE	NE NE	320. U																4.3 U	-			9.5 U	-
(ug/kg)	NE	NE	NE	320. U	-															4.3 U	-			9.5 U	-
	NE	NE	NE	81. U																1.1 U				2.4 U	
(ug/kg)	300	60000	600000	840.	1															130.				2.4 U	-
(ug/kg)	700	60000	600000	160. U																2.2 U				79.	
(mg/kg)	NF	NF	NE	0.023511		1 -		1				1		- 1			2 000 11	0.494.11	0.123	0.020811	54 600 11	0.022511	0.068811	0.0359.11	0.210 U
	NE NE	NE NE	NE	0.0235 U			-						-	-			2.000 U	0.494 U	0.123 U	0.0208 U	54.600 U	0.0225 U	0.0688 U	0.0359 U	0.210 U
(mg/kg)	NE	NE	NE	0.0235 U													2.000 U	0.494 U	0.123 U	0.0208 U	54.600 U	0.0225 U	0.0688 U	0.0359 U	0.210 U
					-		-						-	-											0.210 U
	NE NE	NE NE	NE NE																						4.040 4.140
(mg/kg)	NE	NE	NE	0.0653	1									-			1.330 U	4.180	0.0818 U	0.0176	96.000	0.0150 U	0.0459 U	0.0240 U	0.140 U
(mg/kg)	NE	NE	NE	0.00783 U													0.666 U	0.164 U	0.0409 U	0.00693 U	18.200 U	0.00752 U	0.0229 U	0.0120 U	0.0698 U
					-			+						-											0.0698 L 8.180
(1116/116)	-	-	100.	0.2303		1	1										30.200	3.770	0.0403 0	0.0170	[1333.]	0.240	0.0223 0	0.0120 0	0.100
(%)	NE	NE	NE		19.1 J		82.7		17.1		21.1		19.5		21.3										
					65.		40.																		
						9 18				0.050.11		0.050.11		0.050 II		0.050 II		-							
(,0)	112	112			3.33	3.20	25.5	22.0	0.27	0.030 0	0.030 0	0.030 0	0.030 0	0.050 0	0.030 0	0.030 0				1					1
(%)	NE	NE	NE																						
(%)	NE NE		NE NE										-												
	NE NE	NE NE	NE NE				-																		
(%)	NE	NE	NE																						
(%)	NE NE	NE NE	NE		-	-								-							-			-	
(%)	NE NE	NE NE	NE NE		-		-														-				
(%)	NE	NE	NE		-																-				
rting limit ent elow ground s ID g detected cor y Plan egory S-3 in a egory S-3 in a Concentration	surface ncentrations a GW-2 Area Soil Standa a GW-3 Area Soil Standa	ards																							
	(ug/kg) (ug/kg	(ug/kg)	Cug/kg  100   500000   1000000   (ug/kg  20   400000   10000000   (ug/kg  300000   10000000   (ug/kg  40000   3000000   (ug/kg  40000   3000000   (ug/kg  10000   3000000   (ug/kg  10000   300000   (ug/kg  10000   300000   (ug/kg  10000   300000   (ug/kg  10000   300000   (ug/kg  1000   300000   (ug/kg  1000   500000   (ug/kg  NE NE NE NE (ug/kg  1000   500000   (ug/kg  NE	Soil   UCLs	Units	Units	Units	Units   MCP \$3/6W2   MCP \$3/6W3   Sel   12/12/13   37/16/14   37/16/14   4.4   6.6	Units   MCP SJ/GW2	Deck   MOP SUGWAY   MOP SUGWAY   Sept   Se	Section   More   More   More   More   Septe   Septe	Mort   Mort	Section   March   Ma	Note   May 3, 1999	Second   March   March   March   Second   Seco	Column   C	United No. 1997   1997	See No. 1962	Month   Mont	The Management of the Control of the	March   Marc	Second   S	Supplies	The part of the pa	March   Marc

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LOCATION SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft bgs)	Units	MCP S3/GW2	MCP S3/GW3	MCP Soil UCLs	B10A B10A (3-5) 12/16/13 3 - 5	B10A B10A (8-10) 12/16/13 8 - 10	B10A B10A (17-18) 12/16/13 17 - 18	B10A B10A (23) 12/16/13 23 - 23	B10B B10B (0-2) 12/16/13 0 - 2	B10B B10B (3-5) 12/16/13 3 - 5	B10B B10B (25.5) 12/16/13 25.5 - 25.5	<b>B10B</b> DUP-04 12/16/13 25.5 - 25.5	B10C B10C (0-2) 12/16/13 0 - 2	B10C B10C (3-5) 12/16/13 3 - 5	B10C B10C (8-10) 12/16/13 8 - 10	B10C B10C (11.5) 12/16/13 11.5 - 11.5	B15 B15 (22-24) 02/20/14 22 - 24	B15GS B15GS (15-17) 04/21/15 15 - 17	B15GS B15GS (22-24) 04/21/15 22 - 24	B15GS B15GS (25-29) 04/21/15 25 - 29	<b>B15GS</b> B15GS (30-32) 04/21/15 30 - 32	B29 B-29 (8-10) 07/30/14 8 - 10	B29 B-29 (22.5-24.5) 07/30/14 22.5 - 24.5	MIP03 MIP03 (0-2) 12/19/13 0 - 2	MIP03 MIP03 (3-5) 12/19/13 3 - 5	MIP03 MIP03 (12.5- 12/19/13 12.5 - 13.
latile Organic Compounds (VOC: 1,1,2-Tetrachloroethane	s) (ug/kg)	100	500000	5000000				46. U			0.64 U	0.61 U				9.2 U	72. U						0.78 U			54. U
1,1-trichloroethane	(ug/kg)	600000	3000000	10000000				46. U			0.64 U	0.61 U		-		9.2 U	72. U				-		0.78 U			54. U
1,2,2-Tetrachloroethane	(ug/kg)	20	400000	4000000				46. U			0.64 U	0.61 U		-		9.2 U	72. U				-		0.78 U			54. U
1,2-Trichloroethane 1-Dichloroethane	(ug/kg) (ug/kg)	2000 9000	500000 1000000	5000000 10000000				69. U			1.1 0.96 U	2.0 0.91 U		-		14. U 14. U	110. U 110. U				-		1.2 U 1.2 U			81. U 81. U
1-Dichloroethene	(ug/kg)	40000	3000000	10000000				46. U			0.64 U	0.61 U				9.2 U	72. U						0.78 U			54. U
2,4-Trichlorobenzene	(ug/kg)	6000	5000000	10000000				180. U			2.6	3.1		-		37. U	290. U				-		3.1 U			800.
2-Dibromoethane 2-Dichlorobenzene	(ug/kg) (ug/kg)	100 100000	40000 300000	400000 10000000				180. U 180. U			2.6 U 2.6 U	2.4 U 2.4 U		-		37. U 37. U	290. U 290. U		-		-		3.1 U 3.1 U		-	220. U 220. U
2-Dichloroethane	(ug/kg)	100	300000	9000000				46. U			0.64 U	0.61 U				9.2 U	72. U						0.78 U			54. U
2-Dichloropropane	(ug/kg)	100	1000000	10000000				160. U			2.2 U	2.1 U		1		32. U	250. U				-		2.7 U			190. U
3-Dichlorobenzene	(ug/kg)	200000 NF	500000 NE	5000000 9000000				180. U 180. U			2.6 U 2.6 U	2.4 U 2.4 U				37. U 37. U	290. U						3.1 U 3.1 U			220. U
3-Dichloropropane 3-Dichloropropene	(ug/kg) (ug/kg)	400	100000	9000000							2.6 0						290. U 						0.78 U			
1-Dichlorobenzene	(ug/kg)	1000	2000000	10000000				180. U			2.6 U	2.4 U		1		37. U	290. U				1		3.1 U			220. L
omodichloromethane	(ug/kg)	100	500000	5000000				46. U			0.64 U	0.61 U				9.2 U	72. U						0.78 U			54. U
omoform rbon Tetrachloride	(ug/kg) (ug/kg)	1000 5000	800000 1000000	10000000				180. U 46. U			2.6 U 0.64 U	2.4 U 0.61 U				37. U 9.2 U	290. U 72. U						3.1 U 0.78 U			220. U
lorobenzene	(ug/kg)	3000	100000	10000000				46. U			0.64 U	0.61 U				9.2 U	72. U						0.78 U			54. U
loroethane	(ug/kg)	NE	NE	NE				92. U			1.3 U	1.2 U		-	-	18. U	140. U				1		1.6 U			110. U
loroform loromethane	(ug/kg)	200 NF	1000000 NE	10000000 NE				69. U 180. U			0.96 U 2.6 U	0.91 U 2.4 U			-	14. U 37. U	110. U 290. U			-			1.2 U 3.1 U			81. U 220. U
-1,2-Dichloroethene	(ug/kg) (ug/kg)	100	500000	5000000				140.			28. J	69. J				18.	150.						5.1			54. l
-1,3-Dichloropropene	(ug/kg)	NE NE	NE	NE				46. U			0.64 U	0.61 U		-		9.2 U	72. U		-	-	-		0.78 U			54. L
bromochloromethane	(ug/kg)	30	500000	5000000				46. U			0.64 U	0.61 U		1	-	9.2 U	72. U				-		0.78 U			54. L
chlorodifluoromethane exachlorobutadiene	(ug/kg) (ug/kg)	NE 100000	NE 100000	NE 1000000				460. U 180. U			6.4 U 2.6 U	6.1 U 2.4 U				92. U 37. U	720. U 290. U						7.8 U 3.1 U			540. l
ethylene Chloride	(ug/kg)	4000	100000	7000000			-	460. U			6.4 U	6.1 U	-	_		92. U	720. U			-	-	-	7.8 U			540. 1
Chlorotoluene	(ug/kg)	NE	NE	NE				180. U			2.6 U	2.4 U		-		37. U	290. U				-		3.1 U			220. l
Chlorotoluene	(ug/kg)	NE	NE	NE				180. U			2.6 U	2.4 U				37. U	290. U						3.1 U			220. l
trachloroethene ns-1,2-Dichloroethene	(ug/kg) (ug/kg)	10000 1000	1000000 3000000	10000000 10000000				46. U 69. U			0.64 U 0.96 U	0.95 0.91 U				9.2 U 14. U	72. U 110. U				-		0.78 U 1.2 U			54. U 81. U
ns-1,3-Dichloropropene	(ug/kg)	NE NE	NE NE	NE				46. U			0.64 U	0.61 U				9.2 U	72. U						0.78 U			54. U
chloroethene	(ug/kg)	300	60000	600000				1800.			490. J	650.		-		9.2 U	860.				-		15.			54. U
nyl chloride	(ug/kg)	700	60000	600000				92. U			1.3 U J	4.2 J				18. U	140. U						1.6 U			110. l
oclor 1016	(mg/kg)	NE	NE	NE	22.100 U	0.0230 U	0.0225 U	0.0224 U	11.200 U	0.0215 U	0.0233 U	0.0251 U	21.300 U	10.800 U	0.0248 U	0.0986 U	0.0237 U J					0.0217 U	0.0214 U	20.600 U	0.0369 U	0.0210
oclor 1221	(mg/kg)	NE NE	NE	NE NE	22.100 U	0.0230 U	0.0225 U	0.0224 U	11.200 U	0.0215 U	0.0233 U	0.0251 U	21.300 U	10.800 U	0.0248 U	0.0986 U	0.0237 U				-	0.0217 U	0.0214 U	20.600 U	0.0369 U	0.0210
oclor 1232	(mg/kg)	NE	NE NE	NE NE	22.100 U	0.0230 U	0.0225 U	0.0224 U	11.200 U	0.0215 U	0.0233 U	0.0251 U	21.300 U	10.800 U	0.0248 U	0.0986 U	0.0237 U				-	0.0217 U	0.0214 U	20.600 U	0.0369 U	0.0210
oclor 1242 oclor 1248	(mg/kg)	NE NF	NE NE	NE NE	22.100 U 104.000	0.0230 U 0.226	0.0615 0.0150 U	0.0454 0.0149 U	11.200 U 7.480 U	0.0215 U 0.0143 U	0.0488 0.0156 U	0.0301 0.0167 U	21.300 U 141.000	10.800 U 49.200	0.0248 U 0.179	0.0986 U 0.0657 U	0.110 0.0158 U			-	-	0.0217 U 0.0144 U	0.0214 U 0.0142 U	20.600 U 13.800 U	0.0369 U 0.0246 U	0.0210
oclor 1254	(mg/kg) (mg/kg)	NE NE	NE NE	NE NE	104.000	0.226	0.0150 U	0.0149 U 0.0224 U	288.000	0.0143 U 0.0215 U	0.0156 U	0.0167 U 0.0251 U J	158.000	49.200	0.179	0.0657 0	0.0158 0				-	0.0144 0	0.0142 0	192.000	0.0246 0	0.014
oclor 1260	(mg/kg)	NE	NE	NE	14.800 U	0.0154 U	0.0150 U	0.0149 U	7.480 U	0.0143 U	0.0156 U	0.0167 U	14.200 U	7.230 U	0.0165 U	0.0657 U	0.0158 U				-	0.0144 U	0.0142 U	13.800 U	0.0246 U	0.0140
oclor 1262	(mg/kg)	NE NF	NE NE	NE NE	7.380 U 7.380 U	0.00769 U 0.00769 U	0.00750 U	0.00747 U	3.740 U	0.00715 U	0.00778 U	0.00835 U	7.110 U	3.610 U	0.00827 U	0.0328 U	0.00790 U					0.00722 U 0.00722 U	0.00713 U	6.880 U 6.880 U	0.0123 U 0.0123 U	0.00701
oclor 1268 tal PCBs	(mg/kg) (mg/kg)	NE 4	NE 4	100.	[213.]	0.00769 0	0.00750 U 0.0615	0.00747 U 0.0454	3.740 U [288.]	0.00715 U 0.00715 U	0.00778 U 0.0999	0.00835 U 0.0301	7.110 U [299.]	3.610 U 97.800	0.00827 U 0.415	0.0328 U 0.968	0.00790 U 0.1396		-			0.00722 0	0.00713 U 0.0318	[192.]	0.0123 0	0.0070
her Analyses	(01101					2.312		2.2.0.	[-00.]		2.2333		,,		2.725	2.500								,,	1.200	0.014
rcent moisture	(%)	NE	NE	NE																	-					
lids, Ash tal Organic Matter	(%)	NE NE	NE NE	NE NE										-							-					
tal Organic Matter	(%)	NE NE	NE NE	NE NE										-					-	-	-					
ain Size						' '													' '				•			
Clay Fine	(%)	NE NE	NE NE	NE NE			-	-						-				0.100 U	0.100 U	0.100 U	0.100 U					-
Coarse Gravel Coarse Sand	(%) (%)	NE NE	NE NE	NE NE										-				0.100 U 27.1 J	0.100 U 2.40	4.30 23.5	31.6 7.00					
Fine Gravel	(%)	NE NE	NE NE	NE NE			-	-					-	-				16.3 J	0.100 U	11.4	6.80					-
Fine Sand	(%)	NE	NE	NE														9.20 J	56.7	15.3	21.5					
Medium Sand Silt Fine	(%) (%)	NE NE	NE NE	NE NE				-						-				46.2 J	37.6	40.8 4.70	26.4 6.70					-
Silt Fine Total Fines	(%)	NE NE	NE NE	NE NE										-				1.20 1.20	3.30 3.30	4.70	6.70				-	
Total Gravel	(%)	NE	NE	NE														16.3 J	0.100 U	15.7	38.4					
Total Sand bbles	(%)	NE NE	NE NE	NE NE														82.5 0.100 U	96.7 0.100 U	79.6 0.100 U	54.9 0.100 U					
es:  (kg) = Micrograms per kilogram (ggs) = Feet below ground surfac Constituent not detected at list Estimated concentration/report Not analyzed for this constituer nple collection depth in feet bele noted in parenthesis in Sample III = Not Established al PCBs calculated by summing (a = Not Established al PCBs calculated by summing (a E MCP Method 1 Soil Cate, GW3 = MCP Method 1 Soil Cate, and MCP Method 3 Soil Upper Co d and green shaded value indica iil borings that are within the Mi SIOGEF, BO7EF, BO7EG, BO7GH, BU WW-21B, MW-22B, MW-22B, MW-24B, M d and yellow shaded value indica	e ed reporting ing limit tt tow ground st D detected con Plan gory S-3 in a gory S-3 in a nneentration attes concent CP Method I 77H, MIP43, W-24D and N	centrations  GW-2 Area Soil Standar  GW-3 Area Soil Standar  Limit  ration is above the S3/C  defined S3/GW2 area i  WW-45, MW-165, MW-  W-30B	rds GW2 Standard* include : B05EF, B06.5H -18D, MW-18S, MW-20I																							

\$00000 \$000000 \$000000 \$10000000 \$400000 \$4000000 \$500000 \$5000000 \$000000 \$10000000 \$000000 \$10000000 \$500000 \$10000000 \$500000 \$10000000 \$40000 \$400000 \$300000 \$900000 \$1000000 \$000000 \$500000 \$500000 \$500000 \$500000 \$1000000 \$9000000 \$1000000 \$9000000 \$1000000 \$9000000 \$1000000 \$9000000	10000000 4000000 5000000 10000000 10000000 10000000 10000000 10000000 9000000 10000000 5000000			440. U 440. U 440. U 670. U 670. U 440. U 1800. U	320. U 320. U 320. U 490. U 490. U	220. U 220. U 220. U	130. U					24 - 24	24 - 24	12/19/13 26 - 26	12/19/13 28 - 30	12/20/13 0 - 2	12/20/13 4 - 5	MIP23 (5-6) 12/20/13 5 - 6	MIP23 (5-6) 12/20/13 5 - 6	MIP23 (8-10) 12/20/13 8 - 10	12/20/13 13 - 15	MIP23 (26 12/20/13 26 - 26
3000000         10000000           400000         4000000           500000         500000           1000000         10000000           3000000         10000000           40000         400000           300000         10000000           300000         10000000           300000         9000000           1000000         10000000           500000         5000000           NE         9000000           100000         9000000	10000000 4000000 5000000 10000000 10000000 10000000 10000000 10000000 9000000 10000000 5000000			440. U 440. U 670. U 670. U 440. U	320. U 320. U 490. U	220. U	130. U		260 11	2011		42000 11	200 11				720.11	400 11				
500000         5000000           1000000         10000000           3000000         10000000           5000000         10000000           40000         400000           300000         900000           1000000         9000000           500000         5000000           NE         9000000           100000         9000000	5000000 10000000 10000000 10000000 400000 400000 9000000 10000000 10000000 5000000			670. U 670. U 440. U	490. U		130. U		260. U 260. U	2.8 U 2.8 U		12000. U 12000. U	290. U 290. U		-		720. U 720. U	100. U 100. U			-	
1000000         10000000           3000000         10000000           5000000         10000000           40000         400000           300000         10000000           1000000         900000           1000000         500000           NE         9000000           100000         9000000	10000000 10000000 10000000 400000 10000000 9000000 10000000 5000000			670. U 440. U		220.0	130. U		260. U	2.8 U		12000. U	290. U J	ı	ı		720. U	100. U				
3000000         10000000           5000000         10000000           40000         400000           300000         10000000           300000         9000000           1000000         10000000           500000         5000000           NE         9000000           100000         9000000	10000000 10000000 400000 10000000 9000000 10000000 5000000			440. U	490 11	330. U	190. U		380. U	4.2 U		18000. U	430. U	-	1		1100. U	160. U				
5000000         10000000           40000         400000           300000         10000000           300000         9000000           1000000         10000000           500000         5000000           NE         9000000           100000         9000000	10000000 400000 10000000 9000000 10000000 5000000					330. U	190. U		380. U	4.2 U		18000. U	430. U		-		1100. U	160. U				
40000         400000           300000         10000000           300000         9000000           1000000         1000000           500000         5000000           NE         9000000           100000         9000000	400000 10000000 9000000 10000000 5000000				320. U 1300. U	220. U 890. U	130. U 510. U		260. U 1000. U	2.8 U 11. U	-	12000. U 120000. J	290. U 6100. J		-		720. U 2900. U	100. U 420. U				
300000         9000000           1000000         1000000           500000         5000000           NE         9000000           100000         9000000	9000000 10000000 5000000			1800. U	1300. U	890. U	510. U		1000. U	11. U	-	47000. U	1200. U		-		2900. U	420. U				
1000000         1000000           500000         500000           NE         900000           100000         9000000	10000000 5000000			1800. U	1300. U	890. U	510. U		1000. U	11. U		47000. U	1200. U	ı	ı		2900. U	420. U				
500000         5000000           NE         9000000           100000         9000000	5000000			440. U	320. U	220. U	130. U		260. U	2.8 U	-	12000. U	290. U	-	-		720. U	100. U				
NE 9000000 100000 9000000				1600. U	1100. U	780. U	450. U		900. U	9.8 U		41000. U	1000. U				2500. U	370. U				
				1800. U 1800. U	1300. U 1300. U	890. U 890. U	510. U 510. U		1000. U 1000. U	11. U 11. U		47000. U 47000. U	1200. U 1200. U				10000. 2900. U	860. 420. U				
	9000000			-		220. U	130. U			-	-			-	-							
	10000000			1800. U	1300. U	890. U	510. U		1000. U	11. U	-	47000. U	1200. U	-	-		32000.	2400.				
500000 5000000 800000 10000000				440. U	320. U 1300. U	220. U	130. U		260. U	2.8 U		12000. U	290. U		-		720. U	100. U				
				1800. U 440. U		890. U 220. U	510. U		1000. U 260. U	11. U 2.8 U		47000. U 12000. U	1200. U 290. U				2900. U 720. U	420. U 100. U				
100000 10000000				440. U	320. U	220. U	130. U		260. U	2.8 U		12000. U	290. U				56000.	4100.				
NE NE	NE			890. U	650. U	440. U	260. U		510. U	5.6 U		24000. U	580. U				1400. U	210. U				
1000000 10000000				670. U	490. U	330. U	190. U		380. U	4.2 U		18000. U	430. U				1100. U	160. U				
110	1112														-							
NE NE				440. U	320. U	220. U	130. U		260. U	2.8 U		12000. U	290. U				720. U	100. U				
500000 5000000	5000000		-	440. U	320. U	220. U	130. U		260. U	2.8 U		12000. U	290. U	-	-		720. U	100. U			-	-
NE NE			-	4400. U	3200. U	2200. U	1300. U		2600. U	28. U		120000. U	2900. U	-	-		7200. U	1000. U				
			-	1800. U		890. U				11. U	-			-	-						-	
1000000 7000000 NE NE											-				-							
NE NE				1800. U	1300. U	890. U	510. U		1000. U	11. U		47000. U	1200. U	-	-		2900. U	420. U			-	-
1000000 10000000	10000000			440. U	320. U	220. U	130. U		260. U	2.8 U		450000. J	6900. J		-		720. U	100. U				
3000000 10000000				670. U	490. U	330. U	190. U		380. U	4.2 U		18000. U	430. U		-		1100. U	160. U				
																						-
60000 600000			-	890. U	650. U	440. U	260. U		510. U	5.6 U		24000. U	580. U		-		1400. U	210. U				
		į.									,											
	112 2001			0.0240 U		0.0221 U		8.240 U	0.0415 U J		112.000 U		521.000 U		11.100 U	118.000 U	30.100 U	24.800 U	93.500 U	0.0476 U	0.0360 U	0.0238 U
NE NE																						0.0238 U 0.0238 U
NE NE				0.0240 U	0.0221 U	0.0221 U J	0.0255 U	8.240 U	0.0415 U J	0.0329 U	1240.000	6710.000	5560.000	964.000	141.000	1220.000	633.000	422.000	1010.000	0.520	0.0360 0	0.0238 0
NE NE				0.0160 U	0.0147 U	0.0148 U	0.0156 U	5.500 U	0.0276 U J	0.0219 U	75.000 U	280.000 U	347.000 U	38.800 U	7.380 U	78.500 U	20.100 U	16.600 U	62.400 U	0.0317 U	0.0240 U	0.0159 U
NE NE	112 551			0.210	0.205	0.0221 U J	0.0501 J	150.000	0.0415 U J	0.0329 U	405.000	2330.000	1920.000	354.000	48.800	246.000	119.000	111.000	299.000	0.177	0.0740	0.0238 U
																						0.0159 U 0.00793 L
***																						0.00793 U
4 100.				0.210	0.205	0.00738 U J	0.160 J	[150.]	0.0138 U J	0.0110 U	[1645.]	[9040.]	[7480.]	[1318.]	[189.8]	[1466.]	[752.]	[533.]	[1309.]	0.697	0.311	0.0442
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	NE 1000000 NE 500000 NE 500000 NE 1000000 NE 1000000 NE NE 1000000 NE NE NE NE NE 1000000 NE	100000 10000000	100000	100000	100000	100000	1000000	1000000	100000	1000000	1000000   10000000	1000000   10000000         440 U   320 U   220 U   240 U   380 U     260 U   2.8 U     1000000   10000000         1800 U   300 U   300 U   300 U     260 U   2.8 U     380 U   4.9 U     380	1000000   10000000         440.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     1000000   10000000         890.U   1300.U   330.U   190.U     380.U   4.2 U     1800.U     1000000   10000000         1800.U   1300.U   380.U   151.U     1000.U   11.U     4700.U     500000   5000000         440.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     500000   5000000         440.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     500000   5000000         440.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     500000   5000000         440.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     500000   5000000         440.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     500000   7000000         4400.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     500000   7000000         4400.U   320.U   320.U   320.U     260.U   2.8 U     12000.U     500000   7000000         4400.U   320.U   320.U   320.U     260.U   2.8 U     12000.U     500000   7000000         4400.U   320.U   320.U   320.U     260.U   2.8 U     12000.U     500000   7000000         4400.U   320.U   320.U   330.U     260.U   2.8 U     12000.U     500000   5000000         440.U   320.U   380.U   510.U     1000.U   11.U     47000.U     500000   5000000         440.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     500000   5000000         440.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     500000   5000000         440.U   320.U   220.U   130.U     260.U   2.8 U     12000.U     500000   5000000         440.U   320.U   220.U   130.U     380.U   4.2 U     18000.U     500000   5000000         440.U   220.U   330.U   380.U   30.U     260.U   2.8 U     12000.U     500000   5000000         440.U   220.U	1000000   10000000       440 U   320 U   220 U   130 U     280 U   28 U     12000 U   280 U   1000000         880 U   560 U   440 U   260 U     380 U   4.2 U     1200 U   430 U   1200 U   12	10000000   100000000	1000000   10000000	1000000   1000000		1,000   1,00		1,000000   1,000000   1,00000   1,00000   1,00000   1,00000   1,00000   1,00000   1,00000   1,00000   1,00000   1,00000   1,00000   1,00000   1,0000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,0000000   1,0000000   1,0000000   1,0000000   1,0000000000	150000   1500000         1500   1500   1500   1500     1500   1500     1500   1500     1500   1500     1500   1500     1500   1500       1500   1500       1500   1500         1500   1500         1500   1500         1500   1500           1500   1500             1500   1500

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MCP S3/GW3         MCP Soil UCLs           500000         5000000           3000000         10000000           400000         4000000           500000         5000000           500000         10000000           3000000         10000000           5000000         10000000           40000         400000           300000         10000000           300000         9000000           1000000         5000000           NE         90000000           100000         90000000	Soil UCLS  5000000 10000000 4000000 10000000 10000000 10000000 1000000	12/20/13 12/ 0 - 2 2 2 11 11 11 11 11 44 44 44	P43 (4) MIP-45 (3-1) /20/13 07/18/14 4 - 4 3 - 5  1.10. U 110. U J 10. U J 160. U 110. U J 130. U 130. U 130. U 130. U 130. U	07/18/14 18 - 20 58. U 58. U 58. U 87. U 87. U 58. U 230. U	MIP-45 (26.5-28.5 07/18/14 26.5 - 28.5	MIP-46 (5-7) 07/18/14 5 - 7	MIP-46 (20-22) 07/18/14 20 - 22 71. U 71. U 71. U 110. U	VIP-46 (25.5-27.5 07/18/14 25.5 - 27.5	MIP-47 (3-5) 07/18/14 3 - 5	MIP-47 (23-25) 07/18/14 23 - 25	DUP-01 07/18/14 23 - 25	MIP-48 (8-10) 07/21/14 8 - 10	MIP-48 (22.5) 07/21/14 22.5 - 22.5	DUP-02 07/21/14	MIP-48 (30-31) 07/21/14	MIP-49 (5-7) 07/21/14	MIP-49 (23-25) 07/21/14	MIP-49 (25-27)	MIP-50E (5-7)	MIP-50E (22-24)	MIP-50E (30-31) 07/21/14	MIP-53 (3
500000         500000           3000000         10000000           400000         400000           500000         5000000           1000000         10000000           3000000         10000000           5000000         10000000           40000         400000           300000         10000000           1000000         9000000           1000000         500000           NE         90000000	5000000 10000000 4000000 5000000 10000000 10000000 400000 10000000 9000000 10000000 50000000	1: 11 11 11 11 11 12 44 44 11	.110. U110. U110. U10. U J160. U10. U110. U130. U	58. U 58. U 58. U 87. U 87. U 58. U 230. U			71. U 71. U 71. U		3 - 5		23 - 25	8 - 10	22.5 - 22.5	225 225				07/21/14	07/21/14	07/21/14		07/30/1
3000000 10000000 400000 4000000 500000 5000000 10000000 10000000 3000000 10000000 5000000 10000000 400000 400000 300000 10000000 300000 10000000 10000000 10000000 5000000 10000000 1000000 10000000 NE 9000000	10000000 4000000 5000000 10000000 10000000 10000000 400000 10000000 9000000 10000000 5000000	1: 11 11 1: 1: 1: 4: 4: 1:	.10. U 10. U J 16.0. U 110. U J 110. U 130. U 130. U	58. U 58. U 87. U 87. U 58. U 230. U			71. U 71. U							22.5 - 22.5	30 - 31	5 - 7	23 - 25	25 - 27	5 - 7	22 - 24	30 - 31	3 - 5
3000000 10000000 400000 4000000 500000 5000000 10000000 10000000 3000000 10000000 5000000 10000000 400000 400000 300000 10000000 300000 10000000 10000000 10000000 5000000 10000000 1000000 10000000 NE 9000000	10000000 4000000 5000000 10000000 10000000 10000000 400000 10000000 9000000 10000000 5000000	1: 11 11 1: 1: 1: 4: 4: 1:	.10. U 10. U J 16.0. U 110. U J 110. U 130. U 130. U	58. U 58. U 87. U 87. U 58. U 230. U			71. U 71. U				240 11	1	52.11	72.11	44000 11		60.11				220 11	07.11
400000	400000 500000 1000000 1000000 1000000 40000 1000000 900000 1000000 500000	11 10 11 11 13 44 44 11	10. U J 160. U 160. U 110. U 130. U 130. U	58. U 87. U 87. U 58. U 230. U			71. U			450. U 450. U	210. U 210. U		53. U 53. U	73. U 73. U	11000. U 11000. U		60. U 60. U			69. U 69. U	320. U 320. U	87. U 87. U
1000000 10000000 3000000 100000000 5000000 10000000 400000 400000 300000 10000000 10000000 10000000 1000000 10000000 NE 9000000	10000000 10000000 10000000 400000 10000000 9000000 10000000 5000000	10 13 43 44 43 13	.60. U .10. U .30. U .30. U	87. U 58. U 230. U			110. U			450. U	210. U		53. U	73. U	11000. U		60. U			69. U	320. U	87. U
3000000 100000000 5000000 100000000 400000 400000 3000000 100000000 3000000 9000000 10000000 10000000 5000000 5000000 NE 90000000	10000000 10000000 400000 10000000 9000000 10000000 5000000	1: 4: 4: 4: 1:	.10. U 130. U 130. U	58. U 230. U						680. U	320. U		80. U	110. U	17000. U		89. U			100. U	480. U	130. U
\$000000 10000000 400000 400000 300000 10000000 300000 9000000 1000000 10000000 \$00000 5000000 NE 9000000	10000000 400000 10000000 9000000 10000000 5000000	4: 4: 1:	130. U 130. U	230. U			110. U			680. U	320. U		80. U	110. U	17000. U		89. U			100. U	480. U	130. U
40000 400000 300000 10000000 300000 9000000 1000000 10000000 5000000 5000000 NE 9000000	400000 10000000 9000000 10000000 5000000	43 43 13	30. U				71. U 2100.			450. U 54000. J	210. U 20000. J		53. U 210. U J	73. U 6800. J	11000. U 230000.		60. U 240. U			69. U 270. U	320. U 65000.	87. U 1100.
300000 9000000 1000000 10000000 500000 5000000 NE 9000000	9000000 10000000 5000000	4: 1:		230. U			280. U			1800. U	850. U		210. U	290. U	46000. U		240. U			270. U	1300. U	350. U
1000000 10000000 500000 5000000 NE 9000000	10000000 5000000			230. U			280. U			1800. U	850. U		210. U	290. U	46000. U		240. U			270. U	1300. U	350. U
500000 5000000 NE 9000000	5000000	39	.10. U	58. U			71. U			450. U	210. U		53. U	73. U	11000. U	-	60. U	-	1	69. U	320. U	87. U
NE 9000000			380. U	200. U			250. U			1600. U	740. U		180. U	250. U	40000. U		210. U			240. U	1100. U 1300. U	300. U
	MURRICHULL		130. U 130. U	230. U 230. U			280. U 280. U			1800. U 1800. U	850. U 850. U		210. U 210. U	290. U 290. U	46000. U 46000. U		240. U 240. U			270. U 270. U	1300. U	350. U 350. U
	9000000			58. U			71. U			450. U	210. U		53. U	73. U	11000. U		60. U			69. U	320. U	87. U
2000000 10000000	10000000	43	30. U	230. U			280. U			7200. J	2000. J		210. U J	900. J	46000. U		240. U			270. U	6500.	350. U
500000 5000000			10. U	58. U			71. U			450. U	210. U		53. U	73. U	11000. U		60. U			69. U	320. U	87. U
800000 10000000			130. U	230. U			280. U			1800. U	850. U		210. U	290. U	46000. U		240. U			270. U	1300. U	350. U 3300.
																						87. U
NE NE				120. U			140. U			900. U	420. U		110. U	140. U	23000. U		120. U			140. U	640. U	170. U
1000000 10000000	10000000	10	.60. U	87. U			110. U			680. U	320. U		80. U	110. U	17000. U		89. U			100. U	480. U	130. U
NE NE				230. U J			280. U J			1800. U J	850. U J		210. U	290. U	46000. U		240. U			270. U	1300. U	350. U
																						240. 87. U
500000 5000000				58. U			71. U			450. U	210. U		53. U	73. U	11000. U		60. U			69. U	320. U	87. U
NE NE	NE	11	100. U	580. U			710. U			4500. U	2100. U		530. U	730. U	110000. U		600. U			690. U	3200. U	870. U
100000 1000000				230. U			280. U			1800. U	850. U		210. U	290. U	46000. U		240. U			270. U	1300. U	350. U
							710. U			4500. U		-							-	690. U		870. U
NE NE																						350. U
1000000 10000000				58. U			71. U			450. U	210. U		53. U	73. U	11000.		60. U			69. U	430.	130.
3000000 10000000		10	.60. U	87. U			110. U			680. U	320. U		80. U	110. U	17000. U		89. U			100. U	480. U	130. U
NE NE				58. U			71. U			450. U	210. U		53. U	73. U	11000. U		60. U			69. U	320. U	87. U
																						3400. 170. U
55555	000000	2.		120.0			140.0			500. 0	720.0		110.0	170.0	23000.0		120.0		-	140.0	0 <del>1</del> 0. 0	170.0
NE NE	NE	2.020 U 0.0	0428 U 28.000 U	0.0234 U	0.0221 U	23.700 U	23.900 U	0.0227 U	24.000 U	104.000 U	53.800 U	0.0424 U	21.800 U	120.000 U	592.000 U	64.400 U	0.0233 U	0.0475 U	0.300 U	0.0231 U	232.000 U	1140.000
NE NE				0.0234 U	0.0221 U	23.700 U	23.900 U	0.0227 U	24.000 U	104.000 U	53.800 U	0.0424 U	21.800 U	120.000 U	592.000 U	64.400 U	0.0233 U	0.0475 U	0.300 U	0.0231 U	232.000 U	1140.000
NE NE				0.0234 U	0.0221 U	23.700 U	23.900 U	0.0227 U	24.000 U	104.000 U	53.800 U	0.0424 U	21.800 U	120.000 U	592.000 U	64.400 U	0.0233 U	0.0475 U	0.300 U	0.0231 U	232.000 U	1140.000
																						760.000
NE NE				0.0156 0	0.0147 0	280.000	77.900	0.0151 0	330.000	2400.000 J	680.000 J	0.708	14.500 U 113.000 J	357.000 J	1890.000	511.000	0.106	0.0316 0	3.040	0.0134 U	2220.000	20500.00
NE NE				0.0156 U	0.0147 U	15.800 U	16.000 U	0.0151 U	16.000 U	69.700 U	35.900 U	0.0283 U	14.500 U	80.200 U	395.000 U	42.900 U	0.0156 U	0.0316 U	3.740	0.0154 U	155.000 U	760.000 L
NE NE				0.00779 U	0.00736 U	7.900 U	7.980 U	0.00757 U	7.990 U	34.800 U	17.900 U	0.0141 U	7.250 U	40.100 U	197.000 U	21.500 U	0.00778 U	0.0158 U	0.0999 U	0.00769 U	77.500 U	380.000
																						380.000 [20500.]
4 100.	100.	23.000 0	J.000 [2 <b>99.</b> ]	0.444	0.108	[280.]	[204.]	0.255	[330.]	[5000.] ]	[1520.] J	1.070	[113.] J	[1150.] J	[5000.]	[1400.]	0.455	2.100	0.780	0.0032	[0130.]	[20500.
NE NE	NE		-   -				-									-		-		<u></u>		
NE NE				-			-				-				-	-		-	-			
NE NE				-							-											
NE NE	NE			-							-											
NE NE	NE			-							-		1									
NE NE	NE														-				-			
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NE NE																						
	1000000 100000 NE 100000 NE 500000 NE 500000 NE 1000000 NE 1000000 NE 1000000 NE 1000000 NE NE NE 1000000 NE	1000000	1000000	1000000	1000000	1000000	1000000	1000000   100000000	1000000	1000000	10000000	10000000   100000000     110. U     \$8. U       71. U     450. U   220. U   NE   NE     220. U     120. U     450. U   220. U   NE   NE     220. U     120. U       340. U       590. U   420. U   A20. U	1000000   10000000	1000000	1000000   10000000	1000000   10000000		1900/0000   1900/0000   110	1000000   10000000   116 U	1900000   19000000	1999-00   1999	

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LOCATION					MIP53	MIP53	MIP53	MIP54	MIP54	MIP54	MIP54	MIP55S	MIP55S	MIP55S	MW-2B	MW-2B	MW-4S	MW-4S	MW-4S	MW-4S	MW-6B	MW-7B	MW-7B	MW-10D	MW-10D	MW-10D
SAMPLE ID	Units	MCP S3/GW2	MCP S3/GW3	МСР	MIP-53 (10-12)		MIP-53 (21-21.5)	MIP-54 (3-5)	MIP-54 (7)	MIP-54 (13-15)	MIP-54 (25-27)	MIP-55S (5-7)		/IP-55S (25.5-27.	MW02B (4-6)	MW 2B (24-26)	MW-4S (0-2)	MW-4S (2-4)	MW-4S (4-5)	MW4S (11-13)		MW 7B (20-22)		MW-10D (16-18)		
SAMPLE DATE				Soil	07/30/14	07/30/14	07/30/14	07/22/14	07/22/14	07/22/14	07/22/14	07/22/14	07/22/14	07/22/14	02/12/14	02/14/14	02/03/14	02/03/14	02/03/14	02/06/14	02/04/14	02/18/14	02/19/14	02/11/14	02/11/14	02/11/14
SAMPLE DEPTH (ft bgs)				UCLs	10 - 12	13 - 15	21 - 21.5	3 - 5	7 - 7	13 - 15	25 - 27	5 - 7	18 - 20	25.5 - 27.5	4 - 6	24 - 26	0 - 2	2 - 4	4 - 5	11 - 13	41 - 43	20 - 22	26 - 28	16 - 18	26 - 28	36 - 37
Volatile Organic Compounds (VO	1		, ,	,		,		,			,					, ,						,				
1,1,1,2-Tetrachloroethane	(ug/kg)	100	500000	5000000	0.73 U	0.69 U		100. U	190. U	0.65 U		0.89 U	65. U		55. U	44. U				91. U	0.86 U	44. U	85. U	0.66 U	90. U	0.50 U
1,1,1-trichloroethane	(ug/kg)	600000	3000000 400000	10000000	0.73 U	0.69 U		100. U 100. U	190. U	0.65 U		0.89 U	65. U		55. U 55. U	44. U				91. U 91. U	0.86 U 0.86 U	44. U 44. U	85. U 85. U	0.66 U 0.66 U	90. U	0.50 U
1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane	(ug/kg) (ug/kg)	20 2000	500000	4000000 5000000	0.73 U 1.1 U	0.69 U 1.0 U		160. U	280. U	0.65 U 0.97 U		0.89 U J 1.3 U	65. U 97. U		83. U	44. U 66. U				91. U	1.3 U	66. U	130. U	1.0 U	90. U 130. U	0.50 U 0.74 U
1.1-Dichloroethane	(ug/kg)	9000	1000000	1000000	1.1 U	1.0 U		160. U	280. U	0.97 U		1.3 U	97. U		83. U	66. U				140. U	1.3 U	66. U	130. U	1.0 U	130. U	0.74 U
1,1-Dichloroethene	(ug/kg)	40000	3000000	10000000	0.73 U	0.69 U		100. U	190. U	0.65 U		0.89 U	65. U		55. U	44. U				91. U	0.86 U	44. U	85. U	0.66 U	90. U	0.50 U
1,2,4-Trichlorobenzene	(ug/kg)	6000	5000000	10000000	19.	2.8 U		4200.	46000.	2.6 U		3.6 U	260. U		220. U	180. U				360. U	3.4 U	180. U	340. U	2.6 U	360. U	2.0 U
1,2-Dibromoethane	(ug/kg)	100	40000	400000	2.9 U	2.8 U		410. U	760. U	2.6 U		3.6 U	260. U		220. U	180. U				360. U	3.4 U	180. U	340. U	2.6 U	360. U	2.0 U
1,2-Dichlorobenzene	(ug/kg)	100000	300000	10000000	2.9 U	2.8 U		410. U	790.	2.6 U		3.6 U	260. U		220. U	180. U				360. U	3.4 U	180. U	340. U	2.6 U	360. U	2.0 U
1,2-Dichloroethane	(ug/kg)	100	300000	9000000	0.73 U	0.69 U		100. U	190. U	0.65 U		0.89 U	65. U		55. U	44. U				91. U	0.86 U	44. U	85. U	0.66 U	90. U	0.50 U
1,2-Dichloropropane	(ug/kg)	100	1000000	10000000	2.6 U	2.4 U		360. U	660. U	2.3 U		3.1 U	230. U		190. U	150. U				320. U	3.0 U	150. U	300. U	2.3 U	310. U	1.7 U
1,3-Dichlorobenzene 1,3-Dichloropropane	(ug/kg)	200000 NF	500000 NF	9000000	26. 2.9 U	3.7 2.8 U		2400. 410. U	7500. 760. U	2.6 U 2.6 U		14. 3.6 U	260. U 260. U		220. U 220. U	180. U 180. U			-	360. U 360. U	3.4 U 3.4 U	180. U 180. U	340. U 340. U	3.6 2.6 U	360. U 360. U	2.0 U 2.0 U
1,3-Dichloropropene	(ug/kg) (ug/kg)	400	100000	9000000	0.73 U	0.69 U		100. U	190. U	0.65 U		0.89 U	65. U							300. 0	3.4 0		340. 0	2.00		2.00
1,4-Dichlorobenzene	(ug/kg)	1000	2000000	10000000	86.	18.		890.	9200.	2.6 U		6.6	260. U		460.	180. U				360. U	3.4 U	180. U	340. U	2.6 U	360. U	2.0 U
Bromodichloromethane	(ug/kg)	100	500000	5000000	0.73 U	0.69 U		100. U	190. U	0.65 U		0.89 U	65. U		55. U	44. U				91. U	0.86 U	44. U	85. U	0.66 U	90. U	0.50 U
Bromoform	(ug/kg)	1000	800000	10000000	2.9 U	2.8 U		410. U	760. U	2.6 U		3.6 U	260. U		220. U	180. U				360. U	3.4 U	180. U	340. U	2.6 U	360. U	2.0 U
Carbon Tetrachloride	(ug/kg)	5000	1000000	10000000	12.	0.69 U		100. U	24000.	0.65 U		0.89 U	65. U		55. U	44. U				91. U	0.86 U	44. U	85. U	0.66 U	90. U	0.50 U
Chlorobenzene	(ug/kg)	3000	100000	10000000	51.	3.6		100. U	660.	0.65 U		0.89 U	65. U		190.	44. U				91. U	0.86 U	44. U	85. U	0.66 U	90. U	0.50 U
Chloroethane	(ug/kg)	NE 200	NE 1000000	NE 10000000	1.5 U	1.4 U 1.0 U		210. U	380. U 760.	1.3 U		1.8 U J	130. U 97. U		110. U 83. U	88. U 66. U				180. U	1.7 U	88. U 66. U	170. U	1.3 U	180. U	0.99 U
Chloroform Chloromethane	(ug/kg) (ug/kg)	200 NF	1000000 NE	10000000 NF	12. 2.9 U	1.0 U		410. U	760. U	0.97 U 2.6 U		1.3 U 3.6 U	97. U		83. U 220. U	180. U			-	360. U	1.3 U 3.4 U	180. U	340. U	1.0 U 2.6 U	360. U	0.74 U 2.0 U
cis-1,2-Dichloroethene	(ug/kg)	100	500000	5000000	8.6	20.	-	510.	630.	64.		4.6	180.		130.	44. U				91. U	14.	84.	90.	5.6 J	90. U	65.
cis-1,3-Dichloropropene	(ug/kg)	NE	NE	NE	0.73 U	0.69 U		100. U	190. U	0.65 U		0.89 U	65. U		55. U	44. U				91. U	0.86 U	44. U	85. U	0.66 U	90. U	0.50 U
Dibromochloromethane	(ug/kg)	30	500000	5000000	0.73 U	0.69 U		100. U	190. U	0.65 U		0.89 U	65. U		55. U	44. U				91. U	0.86 U	44. U	85. U	0.66 U	90. U	0.50 U
Dichlorodifluoromethane	(ug/kg)	NE	NE	NE	7.3 U	6.9 U		1000. U	1900. U	6.5 U		8.9 U	650. U		550. U	440. U				910. U	8.6 U	440. U J	850. U	6.6 U	900. U	5.0 U
Hexachlorobutadiene	(ug/kg)	100000	100000	1000000	2.9 U	2.8 U		410. U	760. U	2.6 U		3.6 U	260. U		220. U	180. U				360. U	3.4 U	180. U	340. U	2.6 U	360. U	2.0 U
Methylene Chloride	(ug/kg)	4000 NF	1000000 NF	7000000 NF	7.3 U	6.9 U		1000. U	1900. U	6.5 U		8.9 U	650. U		550. U	440. U				910. U	8.6 U	440. U	850. U	6.6 U	900. U	5.0 U
o-Chlorotoluene p-Chlorotoluene	(ug/kg) (ug/kg)	NE NF	NE NF	NE NF	2.9 U	2.8 U	-	410. U 410. U	760. U	2.6 U 2.6 U	-	3.6 U J	260. U 260. U		220. U 220. U	180. U			-	360. U	3.4 U	180. U	340. U	2.6 U 2.6 U	360. U	2.0 U 2.0 U
Tetrachloroethene	(ug/kg)	10000	1000000	10000000	5.6	0.69 U		140.	190. U	0.65 U		0.89 U	65. U		55. U	44. U				91. U	0.86 U	44. U	85. U	0.66 U	90. U	2.4
trans-1,2-Dichloroethene	(ug/kg)	1000	3000000	10000000	1.1 U	2.0		160. U	280. U	5.3		1.3 U	97. U		83. U	66. U				140. U	1.3 U	66. U	130. U	1.0 U	130. U	0.74 U
trans-1,3-Dichloropropene	(ug/kg)	NE	NE	NE	0.73 U	0.69 U	-	100. U	190. U	0.65 U		0.89 U	65. U		55. U	44. U			-	91. U	0.86 U	44. U	85. U	0.66 U	90. U	0.50 U
Trichloroethene	(ug/kg)	300	60000	600000	27.	0.69 U		4200.	6100.	60.		2.0	3300.		91.	760.				91. U	27.	1300.	1300.	0.66 U	6200.	250.
Vinyl chloride	(ug/kg)	700	60000	600000	3.2	3.4		210. U	380. U	9.9		2.1	130. U		110. U	88. U				180. U	1.7 U	88. U	170. U	4.1	180. U	7.1
Polychlorinated Biphenyls (PCBs)	1 ((1)	NF	NF	NF.	44.000.11	0.0220.11	0.0222.11	2500 000 11	404 000 11	0.022011	0.24411	204.000.11	0.022411	0.022611	1		4.050.11	0.445.11	0.0482 U	0.0000.11	0.022611	0.0202.11	0.022411	0.022011	0.0245.11	0.0245.11
Aroclor 1016 Aroclor 1221	(mg/kg) (mg/kg)	NE NF	NE NF	NE NF	11.000 U 11.000 U	0.0229 U 0.0229 U	0.0222 U 0.0222 U	2690.000 U 2690.000 U	191.000 U 191.000 U	0.0230 U 0.0230 U	0.244 U 0.244 U	291.000 U 291.000 U	0.0234 U 0.0234 U	0.0226 U 0.0226 U		-	1.050 U	0.115 U 0.115 U	0.0482 U	0.0236 U 0.0236 U	0.0226 U 0.0226 U	0.0203 U 0.0203 U	0.0224 U 0.0224 U	0.0238 U 0.0238 U	0.0245 U 0.0245 U	0.0216 U 0.0216 U
Aroclor 1232	(mg/kg)	NF.	NE NE	NE NE	11.000 U	0.0229 U	0.0222 U	2690.000 U	191.000 U	0.0230 U	0.244 U	291.000 U	0.546	0.0226 U			1.050 U	0.115 U	0.0482 U	0.0236 U	0.0226 U	0.0203 U	0.0224 U	0.161	0.147	0.0216 U
Aroclor 1242	(mg/kg)	NE	NE	NE	11.000 U	0.0229 U	0.0222 U	2690.000 U	191.000 U	0.0230 U	0.244 U	2580.000	0.0234 U	0.0378			1.050 U	0.115 U	0.0482 U	0.0236 U	0.0226 U	0.0203 U	0.0224 U	0.0238 U	0.0245 U	0.0519
Aroclor 1248	(mg/kg)	NE	NE	NE	7.370 U	0.0152 U	0.0148 U	1800.000 U	128.000 U	0.0153 U	0.163 U	194.000 U	0.0156 U	0.0151 U			0.703 U	0.0768 U	0.0321 U	0.0157 U	0.136	0.0136 U	0.215	0.0158 U	0.0163 U	0.0144 U
Aroclor 1254	(mg/kg)	NE	NE	NE	214.000	0.0932	0.126	30500.000	5460.000	0.278	7.120	404.000	0.0234 U	0.0226 U			12.100	1.380	0.298	0.0498	0.168	0.0391	0.373	0.0238 U	0.0245 U	0.0216 U
Aroclor 1260	(mg/kg)	NE	NE NE	NE	7.370 U	0.0152 U	0.0148 U	1800.000 U	128.000 U	0.0153 U	0.163 U	194.000 U	0.0156 U	0.0151 U			0.703 U	0.0768 U	0.0321 U	0.0157 U	0.0150 U	0.0136 U	0.0149 U	0.0158 U	0.0163 U	0.0144 U
Aroclor 1262	(mg/kg)	NE NE	NE NE	NE NE	3.680 U 3.680 U	0.00762 U 0.00762 U	0.00740 U 0.00740 U	898.000 U 898.000 U	63.800 U 63.800 U	0.00766 U 0.00766 U	0.0814 U 0.0814 U	96.900 U 96.900 U	0.00779 U 0.00779 U	0.00754 U 0.00754 U			0.352 U 0.352 U	0.0384 U 0.0384 U	0.0160 U 0.0160 U	0.00787 U 0.00787 U	0.00752 U 0.00752 U	0.00678 U 0.00678 U	0.00747 U 0.00747 U	0.00792 U 0.00792 U	0.00817 U 0.00817 U	0.00718 U 0.00718 U
Aroclor 1268 Total PCBs	(mg/kg) (mg/kg)	NE 4	NE 4	NE 100.	3.680 U	0.00762 0	0.00740 0	898.000 U	63.800 U	0.00766 0	7.120	96.900 U	0.00779 0	0.00754 0			0.352 U 12.100	1.380	0.0160 0	0.00787 0	0.00752 0	0.00678 0	0.00747 0	0.00792 0	0.00817 0	0.00718 0
Other Analyses	(1116/116)	7	T T	100.	[227.]	0.0332	0.120	[30300.]	[5400.]	0.270	7.120	[2300.]	0.540	0.0370	·		12.100	1.500	0.250	0.0450	0.304	0.0331	0.500	0.101	0.147	0.0313
Percent moisture	(%)	NE	NE	NE																						
Solids, Ash	(%)	NE	NE	NE				-																		-
Total Organic Matter	(%)	NE	NE	NE			-	-																		-
Total Organic Carbon	(%)	NE	NE	NE																						
Grain Size	(0/)	NF	NF	NF.		1		ı		1	ı	1	1	I	ı	1			ı	1		ı	1	1		
% Clay Fine % Coarse Gravel	(%) (%)	NE NF	NE NE	NE NF		_		-					-		-				-	-						
% Coarse Sand	(%)	NE NE	NE NE	NE NE											-						-					
% Fine Gravel	(%)	NE	NE NE	NE NE			-								-											
% Fine Sand	(%)	NE	NE	NE			-	-	-								-		-		-				-	
% Medium Sand	(%)	NE	NE	NE																						
% Silt Fine	(%)	NE	NE	NE			-								-											
% Total Fines	(%)	NE	NE NE	NE		-		-					-								-					<del>-</del>
% Total Gravel % Total Sand	(%)	NE NF	NE NE	NE NF																						
% rotal sand Cobbles	(%)	NE NF	NE NE	NE NE																						
0000.03	(70)	146	INC	INE	_1	1				1	1	1	1	l	1	1		1	l	1	1	1	1	1		

Notes:

(ug/kg) = Micrograms per kilogram
(ft bgs) = Feet below ground surface
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit
--- Not analyzed for this constituent
Sample collection depth in feet below ground surface
noted in parenthesis in Sample ID
NE = Not Established
Total PCBs calculated by summing detected concentrations
MCP = Massachusetts Contingency Plan
S3/GW2 = MCP Method 1 Soil Category S-3 in a GW-2 Area Soil Standards
S3/GW3 = MCP Method 1 Soil Category S-3 in a GW-3 Area Soil Standards
UCL = MCP Method 3 Soil Upper Concentration Limit
Bold and green shaded value indicates concentration is above the S3/GW2 standard\*
\*Soil borings that are within the MCP Method 1 defined S3/GW2 area include: B0SEF, B06.5H,
B06EF, B07EF, B07FG, B07GH, B07H, MIP43, MW-45, MW-165, MW-18D, MW-185, MW-20B
MW-21B, MW-22S, MW-24B, MW-24D and MW-30B
Bold and yellow shaded value indicates concentration is above the S3/GW3 Standard
Bold, [], and orange shaded value indicates concentration is above the UCL

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MCP S3/GW3 MCP   Soil UCLs	02/03/14 02 8 - 9 0.76 U 0.76 U 0.76 U 1.1 U 1.1 U 0.76 U 3.0 U 3.0 U 0.76 U 3.0 U 2.6 U	V-130 (6-8) MW130 (10-1) 12/04/14	(2) MW15D (20-22) 02/20/14 20 - 22 54. U 54. U 54. U 80. U 80. U 54. U 5000. 210. U 210. U	MWI5D (26-28) 02/20/14 26 - 28   7200. U   7200. U   7200. U   11000. U   11000. U   7200. U   1200000.   29000. U	5000. U 5000. U 5000. U 5000. U 7500. U 7500. U 7500. U 740000. U 740000. U	02/10/14 9 - 11 77. U 77. U 77. U 110. U 110. U 177. U 310. U	02/12/14 20 - 22 59. U 59. U 59. U 89. U 89. U 59. U	MW 17D (26-28) 02/14/14 26 - 28 74. U 74. U 74. U 110. U 110. U 74. U	MW-18D (0-2) 02/03/14 0 - 2	MW-18D (2-4) 02/03/14 2 - 4	MW-18D (4-5) 02/03/14 4 - 5	02/07/14 21 - 23 0.78 U 0.78 U 0.78 U 1.2 U	MW-18S (0-2) 02/03/14 0 - 2	MW-18S (4-5) 02/03/14 4 - 5	MW-18S (2-4) 02/03/14 2 - 4	MW19D(4-6) 02/10/14 4 - 6 130. U 130. U 130. U 200. U	MW19D (22-24) 02/10/14 22 - 24 53. U 53. U 53. U 80. U	MW-208 (11.5) 07/23/14 11.5 - 11.5	MW-21B (20-22) 07/10/14 20 - 22	MW-22S (11-13) 07/29/14 11 - 13 0.68 U J 0.68 U J 0.68 U J	MW23B (32 07/26/1- 32 - 34
\$00000 \$000000 \$000000 \$000000 \$000000 \$000000	0.76 U 0.76 U 0.76 U 1.1 U 1.1 U 0.76 U 3.0 U 3.0 U 0.76 U 2.6 U	1.1U 1.1U 1.1U 1.6U 2.8 1.1U 4.3U 4.3U 4.3U 1.1U 1.1U	54. U 54. U 54. U 80. U 80. U 54. U 5000. 210. U 210. U	7200. U 7200. U 7200. U 11000. U 11000. U 7200. U 1200000. 29000. U	5000. U 5000. U 5000. U 5000. U 7500. U 7500. U 5000. U 740000.	77. U 77. U 77. U 110. U 110. U 17. U 310. U	59. U 59. U 59. U 89. U 89. U	74. U 74. U 74. U 110. U		  		0.78 U 0.78 U 0.78 U 1.2 U				130. U 130. U 130. U	53. U 53. U 53. U			0.68 U J 0.68 U J	,
3000000 10000000 400000 4000000 500000 5000000 10000000 10000000 3000000 10000000 40000 400000 300000 10000000 300000 10000000 300000 10000000 300000 10000000 500000 5000000 NE 9000000	0.76 U 0.76 U 1.1 U 1.1 U 0.76 U 3.0 U 3.0 U 3.0 U 3.0 U 2.6 U	1.1U 1.1U 1.6U 2.8 1.1U 4.3U 4.3U 4.3U 1.1U 1.1U	54. U 54. U 80. U 80. U 54. U 5000. 210. U 210. U	7200. U 7200. U 11000. U 11000. U 7200. U 1200000. 29000. U	5000. U 5000. U 7500. U 7500. U 5000. U 740000.	77. U 77. U 110. U 110. U 77. U 310. U	59. U 59. U 89. U 89. U 59. U	74. U 74. U 110. U 110. U	   			0.78 U 0.78 U 1.2 U				130. U 130. U	53. U 53. U	  		0.68 U J	0.42 U
400000 4000000 500000 5000000 1000000 10000000 3000000 10000000 5000000 10000000 40000 400000 300000 10000000 300000 9000000 10000000 10000000 500000 5000000 NE 9000000	0.76 U 1.1 U 1.1 U 0.76 U 3.0 U 3.0 U 0.76 U	1.1 U 1.6 U 2.8 1.1 U 4.3 U 4.3 U 1.1 U 1.1 U	54. U 80. U 80. U 54. U 5000. 210. U 210. U	7200. U 11000. U 11000. U 7200. U 1200000. 29000. U	5000. U 7500. U 7500. U 5000. U 740000.	77. U 110. U 110. U 77. U 310. U	59. U 89. U 89. U 59. U	74. U 110. U 110. U	  			0.78 U 1.2 U				130. U	53. U				
500000         500000           1000000         10000000           3000000         10000000           5000000         10000000           40000         400000           300000         1000000           300000         9000000           1000000         1000000           500000         5000000           NE         9000000	1.1 U 1.1 U 0.76 U 3.0 U 3.0 U 3.0 U 0.76 U	1.6 U 2.8 1.1 U 4.3 U 4.3 U 4.3 U 1.1 U	80. U 80. U 54. U 5000. 210. U 210. U	11000. U 11000. U 7200. U 1200000. 29000. U	7500. U 7500. U 5000. U 740000.	110. U 110. U 77. U 310. U	89. U 89. U 59. U	110. U				1.2 U								0.00 0 0	0.42 U 0.42 U
3000000 10000000 5000000 10000000 40000 400000 300000 10000000 300000 9000000 1000000 10000000 500000 5000000 NE 9000000	0.76 U 3.0 U 3.0 U 3.0 U 3.0 U 0.76 U 2.6 U	1.1 U 4.3 U 4.3 U 4.3 U 1.1 U	54. U 5000. 210. U 210. U	7200. U 1200000. 29000. U	5000. U 740000.	77. U 310. U	59. U					1 2 11								1.0 U J	0.64 U
5000000         10000000           40000         400000           300000         10000000           300000         9000000           1000000         10000000           500000         5000000           NE         90000000	3.0 U 3.0 U 3.0 U 0.76 U 2.6 U	4.3 U 4.3 U 1.1 U	5000. 210. U 210. U	1200000. 29000. U	740000.	310. U		74 II				1.2 U				200. U	80. U			1.0 U J	0.64 U
40000 400000 300000 100000000 300000 9000000 1000000 10000000 500000 5000000 NE 9000000	3.0 U 3.0 U 0.76 U 2.6 U	4.3 U 4.3 U 1.1 U	210. U 210. U	29000. U				300. U				0.78 U 3.1 U				130. U 520. U	53. U 210. U			0.68 U J 2.7 U J	0.42 U 1.7 U
300000 9000000 1000000 10000000 500000 5000000 NE 9000000	0.76 U 2.6 U	1.1 U		29000. U		310. U	240. U 240. U	300. U				3.1 U				520. U	210. U			2.7 U J	1.7 U
1000000 10000000 500000 5000000 NE 9000000	2.6 U		54. U		20000. U	310. U	240. U	300. U				3.1 U				520. U	210. U			2.7 U J	1.7 U
500000 5000000 NE 9000000		3.7 U		7200. U	5000. U	77. U	59. U	74. U				0.78 U				130. U	53. U			0.68 U J	0.42 U
NE 9000000		4.3 U	190. U 210. U	25000. U 29000. U	18000. U 20000. U	270. U 310. U	210. U 240. U	260. U 300. U				2.7 U 3.1 U				460. U 520. U	180. U 210. U			2.4 U J 2.7 U J	1.5 U 1.7 U
100000 9000000	3.0 U	4.3 U	210. U	29000. U	20000. U	310. U	240. U	300. U				3.1 U				520. U	210. U			2.7 U J	1.7 U
																				0.68 U J	0.42 U
2000000 10000000 500000 5000000		4.3 U 1.1 U	440. 54. U	48000. 7200. U	42000. 5000. U	310. U 77. U	240. U 59. U	300. U 74. U				3.1 U 0.78 U				520. U 130. U	210. U 53. U			2.7 U J 0.68 U J	1.7 U 0.42 U
800000 10000000		4.3 U	210. U	29000. U	20000. U	310. U	240. U	300. U				3.1 U				520. U	210. U			2.7 U J	1.7 U
1000000 10000000		1.1 U	54. U	7200. U	5000. U	77. U	59. U	74. U	-			0.78 U		-		130. U	53. U			0.68 U J	0.42 U
																					0.42 U
																					0.85 L
NE NE			210. U	29000. U	20000. U	310. U	240. U	300. U				3.1 U				520. U	210. U			2.7 U J	1.7 U
500000 5000000	0.76 U	19	120.	300000.	270000.	77. U	340.	350.		-		3.0				130. U	200.			0.68 U J	1.7
11.0																					0.42 t
NE NE			540. U	7200. U J	5000. U J	77. U	590. U	74. U	-	-		7.8 U		-		1300. U	530. U			6.8 U J	4.2 U
100000 1000000			210. U	29000. U	20000. U	310. U	240. U	300. U				3.1 U				520. U	210. U			2.7 U J	1.7 L
1000000 7000000			540. U	72000. U	50000. U	770. U	590. U	740. U				7.8 U				1300. U	530. U			6.8 U J	4.2 U 1.7 U
																					1.7 U
1000000 10000000			120.	1200000.	950000.	77. U	59. U	74. U				0.78 U				130. U	53. U			0.68 U J	0.42 L
3000000 10000000	1.1 U	2.2	80. U	11000. U	7500. U	110. U	89. U	110. U	-			1.2 U		-		200. U	80. U			1.0 U J	0.64 U
				_																	0.42 U 1.4
					[=======																0.85 U
								,													
NE NE			11.700 U J		55.300 U	0.0240 U	0.112 U	0.0232 U	1.050 U	0.0437 U	0.0199 U	0.0234 U	0.106 U	0.0209 U		0.0205 U	0.0231 U	0.0215 U	0.0215 U	0.0211 U	0.0211
																					0.0211 U
NE NE			180.000	6290.000 J	638.000 J	0.0240 U	0.112 U	0.0363	1.050 U	0.0437 U	0.0199 U	0.0234 U	0.106 U	0.0209 U	0.0223 U	0.0205 U	0.0231 U	0.0215 U	0.0215 U	0.0211 U	0.0211 (
NE NE			7.780 U	351.000 U	36.800 U	0.0160 U	0.0746 U	0.0155 U	5.860	0.0291 U	0.0314	0.0156 U	0.0706 U	0.0139 U	0.0149 U	0.0137 U	0.0154 U	0.0144 U	0.0143 U	0.0141 U	0.0140 L
			66.500	2890.000 J			1.200						1.080								0.0211 U
NE NE			3.890 U	176.000 U	18.400 U	0.00800 U	0.0373 U	0.00774 U	0.350 U	0.0146 U	0.00663 U	0.00779 U	0.0353 U	0.00696 U	0.00744 U	0.00685 U	0.00769 U	0.00718 U	0.00716 U	0.00704 U	0.00702
NE NE	0.00729 U 0.0	.00987 U 0.00759 U	3.890 U	176.000 U	18.400 U	0.00800 U	0.0373 U	0.00774 U	0.350 U	0.0146 U	0.00663 U	0.00779 U	0.0353 U	0.00696 U	0.00744 U	0.00685 U	0.00769 U	0.00718 U	0.00716 U	0.00704 U	0.00702
4 100.	0.00729 U	0.848 0.00759 U	[246.5]	[9180.]	[995.]	0.00800 U	1.200	0.0679	13.610	0.716	0.0687	0.00779 U	1.080	0.00696 U	0.00744 U	0.00685 U	0.00769 U	0.00718 U	0.00716 U	0.00704 U	0.00702
NF NF																					
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	S00000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE NE 15U 21U - 150U 15000 1500000 150000 11U 15U - 90U 1500U 1500U 1500U 150U 150U 112U 12U	NE	March   Marc	March   Marc	N	N

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LOCATION		ı			MW-24B	MW-24D	MW-24D	MW-25D	MW-25D	MW-26B	MW-26B	MW-27B	MW-28B	MW-28B	MW-30B	MW-30B	MW-31B	PC-UV-02	PC-UV-05	PC-UV-08	UV-17	UV-17	UV-17	UV-17	UV-17
SAMPLE ID	Units	MCP S3/GW2	MCP S3/GW3	МСР	MW-24B (25-27)	MW-24D (0-2)	MW-24D (3-5)	MW-25D (6-8)	MW-25D (8-9)	MW26B (4-5)	MW26B (18-20)		MW-28B (14-16)	MW-28B (28-30		MW-30B (23-25)	MW-31B (8-10)	PC-UV-02/4-5	PC-UV-05/0-2	PC-UV-08/0-2	UV-17/5-6	UV-17/6-7	UV-17/7-8	UV-17/8-9	UV-17/9-10
SAMPLE DATE				Soil	07/24/14	07/01/14	07/01/14	07/23/14	07/23/14	07/14/14	07/14/14	07/17/14	07/29/14	07/29/14	04/20/15	04/20/15	04/20/15	03/23/15	03/23/15	03/24/15	04/01/15	04/01/15	04/01/15	04/01/15	04/01/15
SAMPLE DEPTH (ft bgs)				UCLs	25 - 27	0 - 2	3 - 5	6 - 8	8 - 9	4 - 5	18 - 20	26 - 26.5	14 - 16	28 - 30	1 - 3	23 - 25	8 - 10	4 - 5	0 - 2	0 - 2	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10
Volatile Organic Compounds (VO	Cs)																								
1,1,1,2-Tetrachloroethane	(ug/kg)	100	500000	5000000	0.64 U			120. U	110. U	0.70 U J	0.90 U J	0.64 U	98. U	0.73 U		0.64 U	53. U	50. U			2300. U	1500. U	17000. U	23000. U	58000. U J
1,1,1-trichloroethane	(ug/kg)	600000	3000000	10000000	0.64 U			120. U	110. U	0.70 U	0.90 U	0.64 U	98. U	0.73 U		0.64 U	53. U	50. U	-		2300. U	1500. U	17000. U	23000. U	58000. U J
1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane	(ug/kg) (ug/kg)	2000	400000 500000	4000000 5000000	0.64 U 0.97 U			120. U 180. U	110. U 160. U	0.70 U 1.0 U	0.90 U 1.4 U	0.64 U 0.96 U	98. U 150. U	0.73 U 1.1 U		0.64 U 0.96 U	53. U 80. U	50. U 75. U		-	2300. U 3400. U	1500. U 2200. U	17000. U 26000. U	23000. U 34000. U	58000. U J 87000. U J
1,1-Dichloroethane	(ug/kg)	9000	1000000	1000000	0.97 U			180. U	160. U	1.0 U	1.4 U	0.96 U	150. U	1.1 U		0.96 U	80. U	75. U			3400. U	2200. U	26000. U	34000. U	87000. U J
1.1-Dichloroethene	(ug/kg)	40000	3000000	10000000	0.64 U			120. U	110. U	0.70 U	0.90 U	1.0	98. U	0.73 U		0.64 U	53. U	50. U			2300. U	1500. U	17000. U	23000. U	58000. U J
1,2,4-Trichlorobenzene	(ug/kg)	6000	5000000	10000000	2.6 U			480. U	440. U	2.8 U	3.6 U	2.6 U	390. U	2.9 U		2.6 U	210. U	500.			50000.	87000.	78000.	610000.	230000. U J
1,2-Dibromoethane	(ug/kg)	100	40000	400000	2.6 U			480. U	440. U	2.8 U	3.6 U	2.6 U	390. U	2.9 U		2.6 U	210. U	200. U			9200. U	6000. U	68000. U	91000. U	230000. U J
1,2-Dichlorobenzene	(ug/kg)	100000	300000	10000000	2.6 U			620.	440. U	2.8 U	3.6 U	2.6 U	390. U	2.9 U		2.6 U	210. U	200. U			9200. U	6000. U	68000. U	91000. U	230000. U J
1,2-Dichloroethane	(ug/kg)	100	300000	9000000	0.64 U			120. U	110. U	0.70 U	0.90 U	0.64 U	98. U	0.73 U		0.64 U	53. U	50. U			2300. U	1500. U	17000. U	23000. U	58000. U J
1,2-Dichloropropane	(ug/kg)	100	1000000	10000000	2.2 U			420. U	380. U	2.5 U	3.2 U	2.2 U	340. U	2.6 U		2.2 U	190. U	180. U			8100. U	5200. U	60000. U	80000. U	200000. U J
1,3-Dichlorobenzene 1.3-Dichloropropane	(ug/kg)	200000 NF	500000 NF	5000000 9000000	2.6 U 2.6 U			480. U 480. U	440. U 440. U	2.8 U 2.8 U	3.6 U 3.6 U	2.6 U 2.6 U	390. U 390. U	2.9 U 2.9 U		2.6 U 2.6 U	210. U 210. U	620. 200. U			12000. 9200. U	6000. U 6000. U	68000. U 68000. U	91000. U 91000. U	230000. U J 230000. U J
1.3-Dichloropropene	(ug/kg) (ug/kg)	400	100000	9000000	0.64 U	-		120. U	110. U	0.70 U	0.90 U	0.64 U	98. U	0.73 U		0.64 U	53. U	50. U			2300. U	1500. U	17000. U	23000. U	58000. U J
1,4-Dichlorobenzene	(ug/kg)	1000	2000000	10000000	2.6 U			480.	440. U	2.8 U	3.6 U	2.6 U	390. U	2.9 U		2.6 U	210. U	1600.			79000.	6000. U	68000. U	91000. U	230000. U J
Bromodichloromethane	(ug/kg)	100	500000	5000000	0.64 U			120. U	110. U	0.70 U	0.90 U	0.64 U	98. U	0.73 U		0.64 U	53. U	50. U			2300. U	1500. U	17000. U	23000. U	58000. U J
Bromoform	(ug/kg)	1000	800000	10000000	2.6 U	-		480. U	440. U	2.8 U	3.6 U	2.6 U	390. U	2.9 U		2.6 U	210. U	200. U			9200. U	6000. U	68000. U	91000. U	230000. U J
Carbon Tetrachloride	(ug/kg)	5000	1000000	10000000	0.64 U			120. U	110. U	0.70 U	0.90 U	0.64 U	98. U	0.73 U		0.64 U	53. U	58.	-		2300. U	1500. U	17000. U	23000. U	58000. U J
Chlorobenzene	(ug/kg)	3000	100000	10000000	0.64 U			120. U	110. U	0.70 U	0.90 U	0.64 U	170.	0.73 U		0.64 U	53. U	250.			4200.	1500. U	17000. U	23000. U	58000. U J
Chloroethane	(ug/kg)	NE 200	NE	NE 10000000	1.3 U	-		240. U	220. U	1.4 U	1.8 U	1.3 U	200. U	1.5 U		1.3 U	110. U	100. U			4600. U	3000. U	34000. U	46000. U	120000. U J
Chloroform Chloromethane	(ug/kg)	200 NF	1000000 NF	10000000 NF	0.97 U 2.6 U			180. U 480. U	160. U 440. U	1.0 U 2.8 U	1.4 U 3.6 U	0.96 U 2.6 U	150. U 390. U	1.1 U 2.9 U		0.96 U 2.6 U J	80. U 210. U	75. U 200. U			3400. U 9200. U	2200. U 6000. U	26000. U 68000. U	34000. U 91000. U	87000. U J 230000. U J
cis-1.2-Dichloroethene	(ug/kg) (ug/kg)	100	500000	5000000	0.64 U			480. U	110. U	0.70 U	3.6 U	130.	6600.	2.9 0		2.6 0 3	53. U	64.			560000.	2200000.	1600000.	280000. U	[530000. U J
cis-1,3-Dichloropropene	(ug/kg)	NE NE	NE	NE NE	0.64 U	-		120. U	110. U	0.70 U	0.90 U	0.64 U	98. U	0.73 U		0.64 U	53. U	50. U			2300. U	1500. U	17000. U	23000. U	58000. U J
Dibromochloromethane	(ug/kg)	30	500000	5000000	0.64 U			120. U	110. U	0.70 U	0.90 U	0.64 U	98. U	0.73 U		0.64 U	53. U	50. U			2300. U	1500. U	17000. U	23000. U	58000. U J
Dichlorodifluoromethane	(ug/kg)	NE	NE	NE	6.4 U			1200. U	1100. U	7.0 U	9.0 U	6.4 U	980. U	7.3 U		6.4 U	530. U	500. U			23000. U	15000. U	170000. U	230000. U	580000. U J
Hexachlorobutadiene	(ug/kg)	100000	100000	1000000	2.6 U			480. U	440. U	2.8 U	3.6 U	2.6 U	390. U	2.9 U		2.6 U	210. U	200. U			9200. U	6000. U	68000. U	91000. U	230000. U J
Methylene Chloride	(ug/kg)	4000	1000000	7000000	6.4 U			1200. U	1100. U	7.0 U	9.0 U	6.4 U	980. U	7.3 U		6.4 U	530. U	500. U			23000. U	15000. U	170000. U	230000. U	580000. U J
o-Chlorotoluene	(ug/kg)	NE NE	NE NE	NE NE	2.6 U	-		480. U 480. U	440. U 440. U	2.8 U	3.6 U	2.6 U	390. U	2.9 U		2.6 U	210. U 210. U	200. U 200. U			9200. U 9200. U	6000. U	68000. U 68000. U	91000. U 91000. U	230000. U J 230000. U J
p-Chlorotoluene Tetrachloroethene	(ug/kg) (ug/kg)	10000	1000000	10000000	0.64 U	-		480. U	110. U	0.70 U	0.90 U	0.86	390. U 98. U	0.73 U		0.64 U	53. U	50. U			2300. U	8600.	17000. U	35000.	58000. U J
trans-1.2-Dichloroethene	(ug/kg)	1000	3000000	10000000	0.97 U			180. U	160. U	1.0 U	1.4 U	4.2	150. U	1.1 U		0.96 U	80. U	75. U			5100.	6900.	26000. U	34000. U	87000. U J
trans-1,3-Dichloropropene	(ug/kg)	NE	NE	NE	0.64 U			120. U	110. U	0.70 U	0.90 U	0.64 U	98. U	0.73 U		0.64 U	53. U	50. U			2300. U	1500. U	17000. U	23000. U	58000. U J
Trichloroethene	(ug/kg)	300	60000	600000	0.64 U			120. U	110. U	1.5	8.7	100.	98. U	380.		7.7	53. U	3500.			2300. U	[4200000.]	[4000000.]	[14000000.]	[4700000.] J
Vinyl chloride	(ug/kg)	700	60000	600000	1.3 U			240. U	220. U	1.4 U	1.8 U	16.	440.	1.5 U		1.3 U	110. U	100. U			210000.	160000.	180000.	240000.	310000. J
Polychlorinated Biphenyls (PCBs)	1											1			1			1							
Aroclor 1016 Aroclor 1221	(mg/kg)	NE NF	NE NE	NE NF	0.0207 U 0.0207 U	0.0198 U 0.0198 U	0.0210 U 0.0210 U	0.0208 U 0.0208 U	0.0205 U 0.0205 U	0.0220 U 0.0220 U	0.0215 U 0.0215 U	0.0218 U J 0.0218 U J	0.0487 U 0.0487 U	0.0227 U 0.0227 U		0.0215 U 0.0215 U	0.0220 U 0.0220 U	47.400 U 47.400 U	0.0217 U 0.0217 U	0.0218 U 0.0218 U	51.900 U 51.900 U	71.500 U 71.500 U	128.000 U 128.000 U	99.800 U	1.090 U J
Aroclor 1232	(mg/kg) (mg/kg)	NE NF	NE NF	NE NF	0.0207 U	0.0198 U	0.0210 U	0.0208 U	0.0205 U	0.0220 U	0.0215 U	0.0218 U J	0.0487 U	0.0227 U		0.0215 U	0.0220 U	47.400 U	0.0217 U	0.0218 U	51.900 U	71.500 U	128.000 U	99.800 U	1.090 U J 1.090 U J
Aroclor 1242	(mg/kg)	NE NE	NE NE	NE NE	0.0207 U	0.0198 U	0.0210 U	0.313	0.170	0.0220 U	0.0222	0.0218 U J	0.950	0.294		0.0215 U	0.0220 U	47.400 U	0.144	0.0218 U	887.000	1250.000	2140.000	1780.000	15.500 J
Aroclor 1248	(mg/kg)	NE	NE	NE	0.0138 U	0.0132 U	0.0140 U	0.0138 U	0.0137 U	0.0146 U	0.0143 U	0.0145 U J	0.0325 U	0.0151 U		0.0143 U	0.0146 U	31.600 U	0.0145 U	0.0145 U	34.600 U	47.600 U	85.400 U	66.600 U	0.725 U J
Aroclor 1254	(mg/kg)	NE	NE	NE	0.0207 U	0.0198 U	0.0210 U	0.0208 U	0.0205 U	0.228	0.0215 U	0.0258 J	0.909	0.275		0.0215 U	0.0725	1140.000	0.646	0.0357	1350.000	1570.000	2990.000	2540.000	21.400 J
Aroclor 1260	(mg/kg)	NE	NE	NE	0.0138 U	0.0132 U	0.0140 U	0.0138 U	0.0137 U	0.0146 U	0.0143 U	0.0145 U J	0.0325 U	0.0151 U	-	0.0143 U	0.0146 U	31.600 U	0.0800	0.0145 U	34.600 U	47.600 U	85.400 U	66.600 U	0.725 U J
Aroclor 1262	(mg/kg)	NE NE	NE	NE NE	0.00689 U	0.00659 U	0.00701 U	0.00692 U	0.00684 U	0.00733 U	0.00717 U	0.00726 U J	0.0162 U	0.00757 U		0.00717 U	0.00732 U	15.800 U	0.00725 U	0.00726 U	17.300 U	23.800 U	42.700 U	33.300 U	0.362 U J
Aroclor 1268 Total PCBs	(mg/kg)	NE 4	NE 4	NE 100.	0.00689 U 0.00689 U	0.00659 U 0.00659 U	0.00701 U 0.00701 U	0.00692 U 0.313	0.00684 U 0.170	0.00733 U 0.228	0.00717 U 0.0222	0.00726 U J	0.0162 U 1.860	0.00757 U 0.569		0.00717 U 0.00717 U	0.00732 U 0.0725	15.800 U [1140.]	0.00725 U 0.870	0.00726 U 0.0357	17.300 U [2240.]	23.800 U [2820.]	42.700 U	33.300 U [4320.]	0.362 U J 36.900 J
Other Analyses	(mg/kg)	4	4	100.	0.000000	0.00059 0	0.00701 0	0.515	0.170	0.220	0.0222	0.0258 J	1.000	0.369		0.007170	0.0723	[1140.]	0.870	0.0557	[2240.]	[2020.]	[5130.]	[4320.]	30.900 J
Percent moisture	(%)	NE	NE	NE																					
Solids, Ash	(%)	NE	NE	NE													-								-
Total Organic Matter	(%)	NE	NE	NE																					
Total Organic Carbon	(%)	NE	NE	NE																					
Grain Size	1 (20)			1		1			1			1						ı							
% Clay Fine % Coarse Gravel	(%)	NE NF	NE NF	NE NF											0.300 0.100 U										
% Coarse Gravei % Coarse Sand	(%)	NE NF	NE NF	NE NE									<del>-</del>		5.40		-		-						
% Fine Gravel	(%)	NF	NF.	NF.									<del>-</del>		4.80				-						
% Fine Sand	(%)	NE NE	NE NE	NE NE		-									52.0		_		-						
% Medium Sand	(%)	NE NE	NE NE	NE NE											19.7										
% Silt Fine	(%)	NE	NE	NE							-	-	-		17.8		-		-				-		
% Total Fines	(%)	NE	NE	NE			-			-	-		-		18.1		-		-						-
% Total Gravel	(%)	NE	NE	NE											4.80										
% Total Sand	(%)	NE NE	NE	NE NE							-	-	-	-	77.1		-		-						-
Cobbles	(%)	NE	NE	NE											0.100 U										
i																									

Notes:

(ug/kg) = Micrograms per kilogram

(ft bgs) = Feet below ground surface

U = Constituent not detected at listed reporting limit

J = Estimated concentration/reporting limit

-- Not analyzed for this constituent

-- = Not analyzed for this constituent
Sample collection depth in feet below ground surface
noted in parenthesis in Sample ID
NE = Not Established
Total PCBs calculated by summing detected concentrations
MCP = Massachusetts Contingency Plan
S3/GW2 = MCP Method 1 Soil Category S-3 in a GW-2 Area Soil Standards
S3/GW3 = MCP Method 1 Soil Category S-3 in a GW-3 Area Soil Standards
UCL = MCP Method 3 Soil Upper Concentration Limit
Bold and green shaded value indicates concentration is above the S3/GW2 Standard\*
"Soil borings that are within the MCP Method 1 defined S3/GW2 area include : B05EF, B06.5H,
B06EF, B07EF, B07FG, B07GH, B07H, MIP43, MW-45, MW-16S, MW-18D, MW-18S, MW-20E
MW-21B, MW-22S, MW-24B, MW-24D and MW-30B
Bold and yellow shaded value indicates concentration is above the S3/GW3 Standard
Bold, [], and orange shaded value indicates concentration is above the UCL

Table 2-2

Bedrock Borehole Activities

Aerovox Facility, 740 Belleville Avenue, New Bedford, Massachusetts

Borehole	Downhole Geophysics	Profiling	Multi-Port Liner Installed	Notes
MW-29B	Yes	No	No	(a)
MW-30B	Yes	No	No	(a)
MW-31B	Yes	No	No	(a)
MW-32B	Yes	No	Yes	(b)
MW-33B	Yes	No	No	(c)
MW-34B	Yes	No	Yes	(b)

- (a) Conventional 2-inch diameter PVC well installed.
- (b) FLUTe well installed.
- (c) FLUTe well installation was unsucessful. Therefore, a conventional 2 inch diameter monitoring well was installed.

Table 2-3 Summary of Borehole Geophysical Tests Conducted on the Deep Bedrock Boreholes

Geophysical Test	Description (a)	Borehole (b) MW-29B MW-30B MW-31B MW-32B MW-33B MW-34B								
Geophysical Test	ρεσοτιμαίοι (a)	MW-29B	MW-30B	MW-31B	MW-32B	MW-33B	MW-34B			
Fluid Temperature	Temperature logs record the water temperature in the borehole. Temperature logs are useful for delineating water-bearing zones and identifying vertical flow in the borehole between zones of differing hydraulic head penetrated by wells. Borehole flow between zones is indicated by temperature gradients that are less than the regional geothermal gradient, which is about 1 degree Fahrenheit per 100 feet of depth.	Х	x	х	х	х	x			
Fluid Resistivity/Conductivity	Fluid-resistivity logs record the electric resistivity of water in the borehole. Changes in fluid resistivity reflect differences in dissolved-solids concentration of water. Fluid-resistivity logs are useful for delineating water-bearing zones and identifying vertical flow in the borehole. Conductivity is the inverse of the resistivity value.	X	х	х	Х	X	х			
Optical Televiewer (OTV)	Optical-televiewer (OTV) logging records a continuous, magnetically oriented, and digitized 360° color image of the borehole wall. The images permit the direct inspection of the borehole, which can be examined for fractures, changes in lithology, water level, bottom of casing, and borehole enlargements. Fracture characteristics such as the presence of iron oxidation or fracture filling can be visually confirmed.	X	Х	Х	×	X	х			
Natural Gamma Ray	Gamma logs record the amount of natural gamma radiation emitted by the rocks surrounding the borehole. The most significant naturally occurring sources of gamma radiation are potassium-40 and daughter products of the uranium- and thorium-decay series. Clay- and shale-bearing rocks commonly emit relatively high gamma radiation because they include weathering products of potassium feldspar and mica and tend to concentrate uranium and thorium by ion absorption and exchange.	Х	Х	х	Х	Х	х			
Normal Resistivity	Normal-resistivity logs record the electrical resistivity of the borehole environment and surrounding rocks and water as measured by variably spaced potential electrodes on the logging probe. Typical spacing for potential electrodes are 16 inches for short-normal resistivity and 64 inches for long-normal resistivity. Normal-resistivity logs are affected by bed thickness, borehole diameter, and borehole fluid and can only be collected in water- or mud-filled open holes.	X	Х	Х	Х	X	Х			
Single Point Resistence (SPR	Single-point resistance logs record the electrical resistance from points within the borehole to an electrical ground at land surface. In general, resistance increases with increasing grain size and decreases with increasing borehole diameter, fracture density, and dissolved-solids concentration of the water. Single-point resistance logs are useful in the determination of lithology, water quality, and location of fracture zones.	X	х	х	X	X	х			
Spontaneous Potential (SP)	Spontaneous-potential logs record potentials or voltages developed between the borehole fluid and the surrounding rock and fluids. Spontaneous-potential logs can be used in the determination of lithology and water quality. Collection of spontaneous-potential logs is limited to water- or mud-filled open holes.	x	х	х	x	X	x			
Acoustic Televiewer (ATV)	Acoustic-televiewer logs record a magnetically oriented, photographic image of the acoustic reflectivity of the borehole wall. Televiewer logs indicate the location and strike and dip of fractures and lithologic contacts. Collection of televiewer logs is limited to water- or mud-filled open holes. The ATV tool emits a narrow acoustic beam that rotates 360° and is focused at the borehole wall. A fracture reduces the amplitude of the return signal due to acoustic scattering. The travel time of the acoustic signal is increased where the distance to the borehole wall is increased for any reason, such as by open fractures.	Х	Х	х	Х	Х	х			
Acoustic Caliper	The travel time of the ATV acoustic signal can be displayed in the form of an acoustic caliper log that shows the cross-sectional dimensions of the borehole.		Х	Х	Х	Х	Х			
Three-arm Caliper	A mechanical devise that continuously measures the borehole diameter with changes in depth.	Х				1				
Heat-Pulse Flowmeter	Flowmeter logs record the direction and rate of vertical flow in the borehole. Borehole-flow rates can be calculated from downhole-velocity measurements and borehole diameter recorded by the caliper log. Flowmeter logs can be collected under non-pumping and(or) pumping conditions. Impeller flowmeters are the most widely used but they generally cannot resolve velocities of less than 5 ft/min. Heat-pulse and electromagnetic flowmeters can resolve velocities of less than 0.1 ft/min.	Х	х	х	х	х	х			

<sup>(</sup>a) http://ny.water.usgs.gov/projects/bgag/intro.text.html (b) 'X' = Test was conducted.

Table 2-4

Bedrock Borehole Fracture Frequencies and Orientations

Aerovox Facility, 740 Belleville Avenue, New Bedford, Massachusetts

Boring	Count (a)	Mean Dip	Mean Dip Angle	Percent of
Domig	` ,	Azimuth (b)	(c)	Fractures (d)
		Fracture Rank 1 (e	/	
MW-29B	24	355	61	73%
MW-30B	12	353	48	44%
MW-31B	9	39	63	23%
MW-32B	101	23	56	44%
MW-33B	135	355	57	50%
MW-34B	70	320	56	39%
		Fracture Rank 2		
MW-29B	6	290	44	18%
MW-30B	12	333	37	44%
MW-31B	29	66	52	74%
MW-32B	123	27	55	53%
MW-33B	117	3	54	43%
MW-34B	101	7	55	56%
		Fracture Rank 3		
MW-29B	3	202	32	9%
MW-30B	3	16	48	11%
MW-31B	1	44	40	3%
MW-32B	6	52	52	3%
MW-33B	17	13	48	6%
MW-34B	9	271	49	5%
		Fracture Summar	у	
MW-29B	33	342	56	
MW-30B	27	351	43	
MW-31B	39	59	54	
MW-32B	230	26	55	
MW-33B	269	359	55	
MW-34B	180	340	55	

- (a) Number of fractures
- (b) Compass bearing direction toward which the fracture dips. Zero or  $360^{\circ}$  = north;  $90^{\circ}$  = east;  $180^{\circ}$  = south;  $270^{\circ}$  = west. Plus or minus  $90^{\circ}$  from any dip angle azimith is the fracture strike azimuth.
- (c) Angle at which the fracture dips toward the azimuth bearing. A dip of 90° is vertical and 0° is horizontal.
- (d) The summed percentages for a particular borehole equals 100 percent. Thus, 73% of the MW-29B fractures are Rank 1, 18% are Rank 2, etc.
- (e) Fracture Ranks: Fracture Rank 1 describes minor fractures that are not distinct and may not be continuous around the borehole. Fracture Rank 2 describes intermediate fractures that are distinct and continuous around the borehole with little or no apparent aperture. Fracture Rank 3 describes intermediate fractures that are distinct and continuous around the borehole with some apparent aperture. Fracture Rank 4 describes major fractures that are distinct with continuous apparent aperture around the borehole. None of the fractures observed were classified as Fracture Rank 4.

Table 2-5

Bedrock Borehole Fracture Classification

Aerovox Facility, 740 Belleville Avenue, New Bedford, Massachusetts

Classification	Count (a)	Mean Dip Azimuth (b)	Mean Dip Angle (c)	Percent of Fractures (d)
		MW-29B	(6)	Fractures (u)
Foliation	20	354	61	61%
Fracture 1	9	205	39	27%
Fracture 2	0			0%
Others	4			12%
		MW-30B		
Foliation	18	350	50	67%
Fracture 1	9	167	29	33%
Fracture 2	0			0%
Others	0			0%
		MW-31B		
Foliation	11	359	55	28%
Fracture 1	5	175	43	13%
Fracture 2	7	80	56	18%
Others	16			41%
		MW-32B		
Foliation	75	353	55	33%
Fracture 1	0			0%
Fracture 2	53	75	59	23%
Others	102			44%
		MW-33B		
Foliation	165	345	57	61%
Fracture 1	16	134	59	6%
Fracture 2	22	83	55	8%
Others	66			25%
		MW-34B		
Foliation	47	293	54	26%
Fracture 1	32	150	55	18%
Fracture 2	20	78	65	11%
Others	81			45%

<sup>(</sup>a) Number of fractures

<sup>(</sup>b) Compass bearing direction toward which the fracture dips. Zero or  $360^{\circ}$  = north;  $90^{\circ}$  = east;  $180^{\circ}$  = south;  $270^{\circ}$  = west. Plus or minus  $90^{\circ}$  from any dip angle azimith is the fracture strike azimuth.

<sup>(</sup>c) Angle at which the fracture dips toward the azimuth bearing. A dip of 90 ° is vertical and 0° is horizontal.

<sup>(</sup>d) The summed percentages for a particular borehole equals 100 percent.

Table 2-6
Bedrock Borehole Fracture Frequencies Normalized by Borehole Length
Aerovox Facility, 740 Belleville Avenue, New Bedford, Massachusetts

	Lo	ogged Interv	val	Borehole	Fracture Frequencies (fractures / 1 ft.) (b)								
Borehole	Top (ft. bgs)	Bottom (ft. bgs)	Length (ft.)	Bottom (ft. bgs)	30-60 ft. bgs	60-120 ft. bgs	120-180 ft. bgs	180-240 ft. bgs	240-290 ft. bgs				
MW-29B	41.5	61.9	20.4	62	1.6		-	-					
MW-30B	32.5	49.4	16.9	52	1.6		-	-					
MW-31B	37.7	58.8	21.0	60	1.9								
MW-32B	45.0	182.5	137.6	183	2.3	1.7	1.5						
MW-33B	31.9	288.6	256.7	290	1.5	1.7	1.0	0.5	0.6				
MW-34B	37.2	195.3	158.1	197	1.3	1.0	1.3	1.1					

<sup>(</sup>a) Fracture Frequencies (fractures / 1 ft.)

Table 2-7
Heat Pulse Flow Meter Results
Aerovox Facility, 740 Belleville Avenue, New Bedford, Massachusetts

				Flow Co	nditions	Cumulative	
Borehole	Casing Depth, ft. bgs.	Boring Depth ft. bgs.	Test Depth, ft. bgs.	Ambient	Pumping	Flow Up the Borehole, gpm	Comments
Dorenole	it. bgs.	it. bys.	39.5-44	N	Y umping	0.38	Comments
			44-54.5	N	Y	0.38	
MW-29B	39.5	62	54.5-55	N	Y	0.32	
			55-62	N	Y	NA	No flow
			32.5-33	N	Y	0.70	INO HOW
MW-30B	32.5	53	33-53	N	Y	NA	No flow
			37.5-38	N	Y	0.04	INO HOW
			38-53	N	Y	0.03	
MW-31B	37.5	60	53-57	N	Y	0.02	
			57-60	N	Y	NA	No flow
			45-64	N	Y	0.3	140 11011
			64-141	N	Y	0.21	
MW-32B	45	193	141-157	N	Y	0.12	
			159-193	N	Y	NA	No flow
			32-44	N	Υ	0.72	
			44-62	N	Υ	0.17	
MW-33B	32	290	62-140	N	Υ	0.04	
			140-180	N	Υ	0.02	
			185-290	N	Υ	NA	No flow
			<37	N	Υ	0.6	
			37-71	N	Υ	0.5	
			71-77	N	Υ	0.45	
MW-34B	37	197	77-94	N	Υ	0.38	
10100-340	31	197	94-110	N	Υ	0.35	
			110-125	N	Υ	0.34	
			125-176	N	Υ	0.25	
			176-195	N	Υ	0.04	

ft. bgs. = feet below ground surface gpm = gallons per minute

Location		1	1	MCP	C7 001	GZ-001	GZ-001	GZ-002	C7 003	C7 003	GZ-004A	GZ-004A	GZ-004A	GZ-004A	GZ-101D	GZ-101D
Location Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	<b>GZ-001</b> AX-GW-GZ1-031714	AX-GW-GZ1-062414	AX-GW-GZ1-092214	AX-GW-GZ2-031914	<b>GZ-002</b> AX-GW-GZ2-120814	<b>GZ-003</b> AX-GW-GZ3-031914	AX-GW-GZ4A-031814	AX-GW-GZ4A-062314	AX-GW-GZ4A-092214	AX-GW-GZ4A-120814	AX-GW-GZ101D-031814	AX-GW-GZ101D-062414
Sample Date	Oilles	IVICE GVV-2	IVICE GW-3	UCLs	03/17/14	06/24/14	09/22/14	03/19/14	12/08/14	03/19/14	03/18/14	06/23/14	09/22/14	12/08/14	03/18/14	06/24/14
Volatile Organic Compounds				UCLS	03/17/14	00/24/14	03/22/14	03/13/14	12/00/14	03/13/14	03/18/14	00/23/14	03/22/14	12/00/14	03/18/14	00/24/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	8.0 U	4.0 U	8.0 U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	8.0 U	4.0 U	8.0 U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	8.0 U	4.0 U	8.0 U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.		0.50 U	0.50 U		0.50 U			1.0 U	0.50 U	2.0 U		2.0 U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
Bromoform	(ug/l)	700.	50000.	100000.	2.0 U	2.0 U J	2.0 U	2.0 U	2.0 U J	2.0 U	4.0 U	4.0 U J	2.0 U	8.0 U J	4.0 U	8.0 U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
Chlorobenzene	(ug/l)	200.	1000.	10000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
Chloroethane	(ug/l)	NE 50	NE 20000	NE 400000	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	8.0 U	4.0 U	8.0 U
Chloroform	(ug/l)	50.	20000.	100000.	1.0 U	1.0 U	1.4	1.0 U	1.0 U	2.6	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
Chloromethane	(ug/l)	NE 20.	NE 50000.	NE 100000.	2.0 U	2.0 U 1.0 U	2.0 U J 1.0 U	2.0 U 1.0 U	2.0 U	2.0 U	4.0 U J 40.	4.0 U 34.	2.0 U J 36.	8.0 U	4.0 U J 47.	8.0 U
cis-1,2-Dichloroethene cis-1,3-Dichloropropene	(ug/l)	ZU.	50000. NF	100000. NF	1.0 U 0.50 U	0.50 U	0.50 U	0.50 U	1.0 U 0.50 U	1.0 U 0.50 U	40. 1.0 U	1.0 U	0.50 U	150. 2.0 U	47. 1.0 U	23. 2.0 U
Dibromochloromethane	(ug/l) (ug/l)	20.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	2.0 U J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	8.0 U	4.0 U	8.0 U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	1.2 U	1.2 U	0.60 U	2.4 U	1.2 U	2.4 U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	8.0 U	4.0 U	8.0 U
o-Chlorotoluene	(ug/l)	NE NE	NE	NE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	8.0 U	4.0 U	8.0 U
p-Chlorotoluene	(ug/l)	NE	NE	NE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	8.0 U	4.0 U	8.0 U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	4.0 U	2.0 U	4.0 U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U J	1.0 U	0.50 U	2.0 U	1.0 U J	2.0 U
Trichloroethene	(ug/l)	5.	5000.	50000.	5.3	3.9	2.0	1.0 U	1.0 U	1.0 U	140.	160.	72.	400.	180.	180.
Vinyl chloride	(ug/l)	2.	50000.	100000.	1.0 U	1.0 U	1.0 U J	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	6.1 J	4.0 U	2.0 U	4.0 U
Total CVOCs	(ug/l)	NE	NE	NE	5.3	3.9	3.4	N D	N D	2.6	180.	194.	114.1	550.	227.	203.
Polychlorinated BiPhenyls											,					
Aroclor 1016	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1232	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1242	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1248	(ug/l)	NE	NE	NE NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1254	(ug/l)	NE	NE	NE NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1260	(ug/l)	NE NE	NE	NE NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1262	(ug/l)	NE NE	NE NF	NE NF	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U 0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1268 Total PCBs	(ug/l)	NE 5	NE 10.	NE 100.	0.250 U	0.250 U	0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U
Dissolved Gases	(ug/l)	5.	10.	100.	0.250 U	0.250 U	0.250 U	U.25U U	U.25U U	U.25U U	U.25U U	U.25U U	U.25U U	U.25U U	U.25U U	U.25U U
Ethane	(ug/l)	NF.	NF	NF		0.500 U	0.500 U		0.500 U			0.500 U	0.500 U	0.500 U		0.500 U
Ethene	(ug/I) (ug/I)	NE NE	NE NE	NE NE		0.500 U	0.500 U		0.500 U			0.500 U	0.500 U	0.500 U		0.500 U
Methane	(ug/I) (ug/I)	NF	NF.	NF.		5.00 U	13.4		1550.		-	14.7	22.3	5.43		5.00 U
ivietilalie	(ug/1)	INE	INE	INE		3.00 0	13.4		1330.			14./	22.3	3.43		3.00 0

Location				MCP	GZ-001	GZ-001	GZ-001	GZ-002	GZ-002	GZ-003	GZ-004A	GZ-004A	GZ-004A	GZ-004A	GZ-101D	GZ-101D
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-GZ1-031714	AX-GW-GZ1-062414	AX-GW-GZ1-092214	AX-GW-GZ2-031914	AX-GW-GZ2-120814	AX-GW-GZ3-031914	AX-GW-GZ4A-031814	AX-GW-GZ4A-062314	AX-GW-GZ4A-092214	AX-GW-GZ4A-120814	AX-GW-GZ101D-031814	AX-GW-GZ101D-062414
Sample Date				UCLs	03/17/14	06/24/14	09/22/14	03/19/14	12/08/14	03/19/14	03/18/14	06/23/14	09/22/14	12/08/14	03/18/14	06/24/14
MNA Parameters																
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE		67.8	42.4		277.			74.6	98.3	75.7		37.1
Ammonia (as N)	(mg/l)	NE	NE	NE		0.075 U	0.075 U		1.69			0.090	0.075 U	0.075 U		0.075 U
Ferrous Iron	(mg/l)	NE	NE	NE		0.50 U	0.50 U	-	19.			0.50 U	0.50 U	0.50 U		0.50 U
Total Iron	(mg/l)	NE	NE	NE	-	0.05 U	0.14	-	30.			0.63	0.16	0.31		0.25
Nitrate (as N)	(mg/l)	NE	NE	NE	-	4.84	4.60	-	0.500 U			2.89	1.65	1.70		3.91
Phosphorus	(mg/l)	NE	NE	NE	-	0.023	0.012	-	0.344			0.017	0.010 U	0.010 U		0.010 U
Sulfate	(mg/l)	NE	NE	NE		16.	150.	-	13.			37.	48.	40.		15.
Total Organic Carbon	(mg/l)	NE	NE	NE		3.0	2.5	-	5.5			2.4	3.4	1.4		1.2
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U	5.6	6.9	8.5	70.	5.0 U	20.	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Field Parameters																
Dissolved Oxygen	(mg/l)	NE	NE	NE	4.12	0.86	2.23	0.17	0.21	2.60	1.17	0.86	0.19	0.53	1.51	0.98
ORP	(mv)	NE	NE	NE	176.0	-52.2	144.6	35.4	-44.7	170.7	83.4	-87.4	78.7	165.2	249.2	-33.0
Specific Conductivity	(ms/cm)	NE	NE	NE	0.982	0.580	0.517	4.695	2.239	0.510	1.624	1.193	1.271	1.704	0.866	0.937
Temperature	(c)	NE	NE	NE	11.40	21.85	24.26	7.57	10.67	18.02	13.06	16.22	21.97	16.13	11.95	18.50
Turbidity	(ntu)	NE	NE	NE	0.95	4.33	28.7	1.55	131.0	1.38	0.95	2.00	1.35	1.79	0.09	2.86
pH	(su)	NE	NE	NE	6.26	6.08	5.89	6.15	6.40	6.01	6.14	6.33	6.10	7.28	5.32	5.52

Notes:
(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit
ND = Not detected

ND = Not detected NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
--= Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and yellow shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S

MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).

MW-2UD, MW-21D, MW-22S, G2-UD1, G2-UD3, and MW-3 (Precx).

Total CVOCs and Total PCBs calculated by: summing detected concentrations
MCP = Massachsetts Contingency Plan
MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards
MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

Location	11-14-	Mach City 2	MACD CIAL 2	MCP	GZ-101D	GZ-101D	GZ-101S	GZ-101S	GZ-101S	GZ-101S	GZ-102D	GZ-102S	GZ-102S	GZ-103D	GZ-103D
Sample ID Sample Date	Units	MCP GW-2	MCP GW-3	Groundwater UCLs	AX-GW-GZ101D-092214 09/22/14	AX-GW-GZ101D-120814 12/08/14	AX-GW-GZ101S-031714 03/17/14	AX-GW-GZ101S-062414 06/24/14	AX-GW-GZ101S-092214 09/22/14	AX-GW-GZ101S-120814 12/08/14	AX-GW-GZ102D-031814 03/18/14	AX-GW-GZ102S-031814 03/18/14	AX-GW-GZ102S-062414 06/24/14	AX-GW-GZ103D-031914 03/19/14	AX-GW-GZ103D-062514 06/25/14
Volatile Organic Compounds				UCLS	09/22/14	12/06/14	03/17/14	06/24/14	09/22/14	12/08/14	03/16/14	03/18/14	06/24/14	03/19/14	06/25/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	(ug/l)	9	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U J
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
1.1-Dichloroethene	(ug/l)	80.	30000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	20. U	8.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40. U	2.0 U	2.0 U	10. U	10. U J
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	20. U	8.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40. U	2.0 U	2.0 U	10. U	10. U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40. U	2.0 U	2.0 U	10. U	10. U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	5.0 U	2.0 U	-	0.50 U	0.50 U	0.50 U			0.50 U		2.5 U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
Bromoform	(ug/l)	700.	50000.	100000.	20. U	8.0 U J	2.0 U	2.0 U J	2.0 U	2.0 U J	40. U J	2.0 U	2.0 U J	10. U J	10. U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
Chlorobenzene	(ug/l)	200.	1000.	10000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
Chloroethane	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40. U	2.0 U	2.0 U	10. U	10. U
Chloroform	(ug/l)	50.	20000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
Chloromethane	(ug/l)	NE	NE	NE	20. U J	8.0 U	2.0 U	2.0 U	2.0 U J	2.0 U	40. U	2.0 U	2.0 U	10. U	10. U
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	140.	70.	4.2	4.6	7.4	4.9	1500.	1.0 U	17.	240.	250.
cis-1,3-Dichloropropene	(ug/l)	NE	NE	NE	5.0 U	2.0 U	0.50 U	0.50 U	0.50 U	0.50 U	10. U	0.50 U	0.50 U	2.5 U	2.5 U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U J	2.0 U	2.0 U	2.0 U	40. U	2.0 U	2.0 U	10. U	10. U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	6.0 U	2.4 U	0.60 U	0.60 U	0.60 U	0.60 U	12. U	0.60 U	0.60 U	3.0 U	3.0 U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	20. U	8.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40. U	2.0 U	2.0 U	10. U	10. U
o-Chlorotoluene	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40. U	2.0 U	2.0 U	10. U	10. U
p-Chlorotoluene	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40. U	2.0 U	2.0 U	10. U	10. U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	10. U	4.0 U	4.2	1.8	1.5	1.4	20. U	1.0 U	1.2	5.0 U	5.0 U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20. U	1.0 U	1.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	5.0 U	2.0 U	0.50 U	0.50 U	0.50 U	0.50 U	10. U	0.50 U	0.50 U	2.5 U	2.5 U J
Trichloroethene	(ug/l)	5.	5000.	50000.	550.	420.	17.	9.9	11.	14.	1900.	27.	78.	550.	640.
Vinyl chloride	(ug/l)		50000.	100000.	10. U J 690.	4.0 U 490.	1.0 U 25.4	1.0 U 16.3	1.0 U J 19.9	1.0 U 20.3	79. 3479.	1.0 U 27.	1.0 U	29.	16. 906.
Total CVOCs Polychlorinated BiPhenyls	(ug/l)	NE	NE	NE	690.	490.	25.4	10.5	19.9	20.3	3479.	27.	96.2	819.	906.
Aroclor 1016	(ug/I)	NF	NF	NF.	0.250 U	2.50 U	0.250 U	0.250 U	0.250 U	0.250 U					
Aroclor 1016 Aroclor 1221	(ug/l) (ug/l)	NE NE	NE NE	NE NE	0.250 U	2.50 U	0.250 U	0.250 U	0.250 U	0.250 U					
Aroclor 1221 Aroclor 1232		NE NE	NE NE	NF.	0.250 U	2.50 U	0.250 U	0.250 U	0.250 U	0.250 U					
Aroclor 1232 Aroclor 1242	(ug/l) (ug/l)	NF	NF	NF	0.250 U	0.896	0.250 U	0.250 U	0.250 U	0.250 U	14.0	0.250 U	0.250 U	0.250 0	0.250 U
Aroclor 1242 Aroclor 1248	(ug/l)	NE NE	NE NE	NE NE	0.250 U	0.896 0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	0.250 U	0.250 U	0.464 0.250 U	0.250 U
Aroclor 1248	(ug/I)	NF	NF.	NF.	0.250 U	1.15	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	0.250 U	1.15	0.250 U	0.250 U
Aroclor 1254	(ug/l)	NE NE	NE NE	NF.	0.250 U	2.50 U	0.250 U	0.250 U	0.250 U	0.250 U					
Aroclor 1262	(ug/l)	NE NE	NE NE	NF.	0.250 U	2.50 U	0.250 U	0.250 U	0.250 U	0.250 U					
Aroclor 1268	(ug/l)	NE NE	NE NE	NE NE	0.250 U	2.50 U	0.250 U	0.250 U	0.250 U	0.250 U					
Total PCBs	(ug/l)	5.	10.	100.	0.250 U	2.05	0.250 U	0.250 U	0.250 U	0.250 U	[14.0]	0.250 U	1.15	0.464	0.250 U
Dissolved Gases	1,19,11		1 20.	100.	3.250 0			1.2500	1.2500			3.2300			
Ethane	(ug/l)	NE	NE	NE	0.500 U	0.500 U		0.500 U	0.500 U	0.500 U			0.500 U		2.59
Ethene	(ug/l)	NE NE	NE NE	NE NE	0.500 U	0.500 U	-	0.500 U	0.500 U	0.500 U			0.500 U		6.68
Methane	(ug/l)	NE NE	NE NE	NE	0.500 U	0.500 U	-	5.00 U	0.500 U	0.500 U			5.00 U		127.
c	//8∞/				0.500 0	0.500 0	l .	3.000	0.500 0	0.500 0	l .	l .	5.00 0	1	

Location				MCP	GZ-101D	GZ-101D	GZ-101S	GZ-101S	GZ-101S	GZ-101S	GZ-102D	GZ-102S	GZ-102S	GZ-103D	GZ-103D
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-GZ101D-092214	AX-GW-GZ101D-120814	AX-GW-GZ101S-031714	AX-GW-GZ101S-062414	AX-GW-GZ101S-092214	AX-GW-GZ101S-120814	AX-GW-GZ102D-031814	AX-GW-GZ102S-031814	AX-GW-GZ102S-062414	AX-GW-GZ103D-031914	AX-GW-GZ103D-062514
Sample Date				UCLs	09/22/14	12/08/14	03/17/14	06/24/14	09/22/14	12/08/14	03/18/14	03/18/14	06/24/14	03/19/14	06/25/14
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	40.5	40.0		46.0	49.9	54.5			70.2		61.8
Ammonia (as N)	(mg/l)	NE	NE	NE	0.075 U	0.075 U		0.075 U	0.075 U	0.075 U			0.075 U		0.555
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U	0.50 U		0.50 U	0.50 U	0.50 U			0.50 U		14.
Total Iron	(mg/l)	NE	NE	NE	0.05 U	0.05 U		0.06	0.40	0.05 U			0.05 U		17.
Nitrate (as N)	(mg/l)	NE	NE	NE	3.72	2.98		3.18	2.81	2.61			2.88		0.122
Phosphorus	(mg/l)	NE	NE	NE	0.010 U	0.010 U		0.010 U	0.010 U	0.010 U			0.018		0.038
Sulfate	(mg/l)	NE	NE	NE	17.	14.		10. U	11.	11.			19.		140.
Total Organic Carbon	(mg/l)	NE	NE	NE	1.6	0.71		1.2	1.6	1.0 U			3.2		7.3
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U	56.	23.								
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	1.10	1.00	4.33	3.71	2.00	1.98	0.22	6.00	1.55	0.11	0.04
ORP	(mv)	NE	NE	NE	137.7	133.8	230.9	129.7	123.9	146.2	30.4	1.312	122.2	-3.5	-2.9
Specific Conductivity	(ms/cm)	NE	NE	NE	0.959	1.083	1.234	2.668	2.016	1.928	3.394	1.907	1.077	3.152	2.551
Temperature	(c)	NE	NE	NE	20.26	15.40	7.80	17.02	21.66	13.49	13.67	8.40	18.41	13.24	18.57
Turbidity	(ntu)	NE	NE	NE	1.25	1.94	1.72	1.56	3.86	4.02	1.42	0.47	0.67	17.7	36.3
pH	(su)	NE	NE	NE	5.46	5.91	6.25	6.15	6.04	5.99	6.07	6.17	6.57	6.04	5.91

Notes:
(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit
ND = Not detected

ND = Not detected NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Wethod 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total (VOCs and Total PCRs calculated by sumpine detected concentrations

MW-2UD, MW-21D, MW-22S, G2-U01, G2-U03, and MW-3 (Precix).

Total CVOCs and Total PCBs calculated by: summing detected concentrations

MCP = Massachsetts Contingency Plan

MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards

MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

	_				07.400	07.400	07.4000	07.1000	07.1000	07.1000					
Location	11-24-	MCD CIM 2	146D CW 2	MCP	GZ-103D	GZ-103D	GZ-103S	GZ-103S	GZ-103S	GZ-103S	MW-1	MW-2	MW-2	MW-2	MW-2
Sample ID Sample Date	Units	MCP GW-2	MCP GW-3	Groundwater UCLs	AX-GW-GZ103D-092314 09/23/14	AX-GW-GZ103D-120814 12/08/14	AX-GW-GZ103S-031914 03/19/14	AX-GW-GZ103S-062514 06/25/14	AX-GW-GZ103S-092314 09/23/14	AX-GW-GZ103S-120814 12/08/14	AX-GW-MW1-031814 03/18/14	AX-GW-MW2-032114 03/21/14	AX-GW-DUP2-032114 03/21/14	AX-GW-MW2-062714 06/27/14	AX-GW-MW2-092514 09/25/14
Volatile Organic Compounds				UCLS	09/23/14	12/06/14	03/19/14	00/25/14	09/23/14	12/08/14	03/18/14	03/21/14	03/21/14	06/27/14	09/25/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
1.1.2.2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U J	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	10. U J	10. U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
1.1-Dichloroethene	(ug/l)	80.	30000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	20. U	8.0 U	2.0 U	2.0 U J	2.0 U	2.0 U	2.0 U	10. U	10. U	20. U	20. U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	20. U	8.0 U	2.0 U	10. U	10. U	20. U	20. U				
1.2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	10. U	4.0 U	1.0 U	7.9	8.4	14.	14.				
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	2.1	1.0 U	1.0 U	34.	35.	44.	52.
1,3-Dichloropropane	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U	10. U	10. U	20. U	20. U				
1,3-Dichloropropene	(ug/I)	10.	200.	2000.	5.0 U	2.0 U		0.50 U	0.50 U	0.50 U				5.0 U	5.0 U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	10. U	4.0 U	1.3	1.0 U	2.3	1.4	1.0 U	72.	74.	110.	120.
Bromodichloromethane	(ug/l)	6.	50000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
Bromoform	(ug/l)	700.	50000.	100000.	20. U	8.0 U	2.0 U J	2.0 U J	2.0 U J	2.0 U J	2.0 U	10. U J	10. U J	20. U J	20. U
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	10. U	4.0 U	1.0 U	5.0 U J	5.0 U J	10. U	10. U				
Chlorobenzene	(ug/l)	200.	1000.	10000.	10. U	4.0 U	4.0	3.9	6.4	5.5	1.0 U	450.	460.	940.	910.
Chloroethane	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U	10. U	10. U	20. U	20. U				
Chloroform	(ug/l)	50.	20000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
Chloromethane	(ug/l)	NE	NE	NE	20. U J	8.0 U	2.0 U	10. U	10. U	20. U	20. U				
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	330.	610.	44.	47.	110.	38.	1.0 U	5.0 U	5.0 U	10. U	10. U
cis-1,3-Dichloropropene	(ug/l)	NE	NE	NE	5.0 U	2.0 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	2.5 U	2.5 U	5.0 U	5.0 U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U	10. U	10. U	20. U	20. U				
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	6.0 U	2.4 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	3.0 U	3.0 U	6.0 U	6.0 U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	20. U	8.0 U	2.0 U	10. U	10. U	20. U	20. U				
o-Chlorotoluene	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U	10. U	10. U	20. U	20. U				
p-Chlorotoluene	(ug/l)	NE	NE	NE	20. U	8.0 U	2.0 U	10. U	10. U	20. U	20. U				
Tetrachloroethene	(ug/l)	50.	30000.	100000.	10. U	4.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U				
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	10. U	4.0 U	1.0 U	1.0 U	1.2	1.0 U	1.0 U	5.0 U	5.0 U	10. U	10. U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	5.0 U	2.0 U	0.50 U	0.50 U J	0.50 U	0.50 U	0.50 U	2.5 U J	2.5 U J	5.0 U	5.0 U
Trichloroethene	(ug/l)	5.	5000.	50000.	550.	560.	16.	5.8	6.4	11.	1.0 U	5.0 U	5.0 U	10. U	10. U
Vinyl chloride	(ug/l)	2.	50000.	100000.	50. J	240.	3.6	3.7	18.	8.5	1.0 U	5.0 U	5.0 U	10. U	10. U
Total CVOCs	(ug/l)	NE	NE	NE	930.	1410.	68.9	60.4	146.4	64.4	N D	563.9	577.4	1108.	1096.
Polychlorinated BiPhenyls		_													
Aroclor 1016	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.500 U	0.500 U	1.25 U	1.25 U					
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.500 U	0.500 U	1.25 U	1.25 U					
Aroclor 1232	(ug/l)	NE.	NE	NE	0.250 U	0.250 U	0.500 U	0.500 U	1.25 U	1.25 U					
Aroclor 1242	(ug/l)	NE	NE	NE	0.348	0.253	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	9.50	9.73	7.68	15.6
Aroclor 1248	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.500 U	0.500 U	1.25 U	1.25 U					
Aroclor 1254	(ug/l)	NE	NE	NE	0.250 U	0.250 U	1.38	1.33	2.48	3.13 J					
Aroclor 1260	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.500 U	0.500 U	1.25 U	1.25 U					
Aroclor 1262	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.500 U	0.500 U	1.25 U	1.25 U					
Aroclor 1268	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.500 U	0.500 U	1.25 U	1.25 U					
Total PCBs	(ug/l)	5.	10.	100.	0.348	0.253	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	[10.88]	[11.06]	[10.16]	[18.7]
Dissolved Gases		1	1	1			T			1					
Ethane	(ug/l)	NE	NE	NE	8.16	7.77		2.21	3.29	2.97				481.	451.
Ethene	(ug/l)	NE	NE	NE	39.1	37.4		0.500 U	0.611	0.620				4.70	7.75
Methane	(ug/l)	NE	NE	NE	304.	268.		4170.	2770.	5120.				7100.	6150.

Location				MCP	GZ-103D	GZ-103D	GZ-103S	GZ-103S	GZ-103S	GZ-103S	MW-1	MW-2	MW-2	MW-2	MW-2
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-GZ103D-092314	AX-GW-GZ103D-120814	AX-GW-GZ103S-031914	AX-GW-GZ103S-062514	AX-GW-GZ103S-092314	AX-GW-GZ103S-120814	AX-GW-MW1-031814	AX-GW-MW2-032114	AX-GW-DUP2-032114	AX-GW-MW2-062714	AX-GW-MW2-092514
Sample Date				UCLs	09/23/14	12/08/14	03/19/14	06/25/14	09/23/14	12/08/14	03/18/14	03/21/14	03/21/14	06/27/14	09/25/14
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	68.3	82.1		128.	151.	206.				245.	259.
Ammonia (as N)	(mg/l)	NE	NE	NE	0.389	0.321		4.89	4.56	4.78				4.06	4.22
Ferrous Iron	(mg/l)	NE	NE	NE	13.	16.		40.	32.	24.				8.0	5.6
Total Iron	(mg/l)	NE	NE	NE	13.	14.		46.	34.	26.				8.2	7.8
Nitrate (as N)	(mg/l)	NE	NE	NE	0.100 U	0.500 U		0.205	0.100 U	0.500 U				0.100 U	0.100 U
Phosphorus	(mg/l)	NE	NE	NE	0.030	0.034		0.082	0.068	0.092				0.210	0.260
Sulfate	(mg/l)	NE	NE	NE	130.	140.		23.	51.	27.				39.	32.
Total Organic Carbon	(mg/l)	NE	NE	NE	3.6	2.2		9.1	6.4	9.2				11.	12.
Total Suspended Solids	(mg/l)	NE	NE	NE	6.3	5.1	7.1	54.	22.	5.0 U	8.2	6.3	5.4	18.	11.
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.15	6.90	0.19	0.04	0.20	0.50	0.14	0.06		0.11	0.09
ORP	(mv)	NE	NE	NE	4.7	-18.9	-32.4	-42.0	-5.4	-79.8	-48.3	-85.8		-94.1	-30.1
Specific Conductivity	(ms/cm)	NE	NE	NE	2.823	2.773	3.229	3.992	2.829	1.956	0.801	2.265		4.014	3.552
Temperature	(c)	NE	NE	NE	19.45	12.02	11.26	18.97	20.50	15.68	8.38	11.40		17.86	19.42
Turbidity	(ntu)	NE	NE	NE	4.29	3.61	3.40	12.57	3.44	0.79	6.23	1.22		0.52	1.15
pH	(su)	NE	NE	NE	6.31	6.17	6.08	5.90	6.41	6.25	6.15	6.11		6.37	6.58

Notes:

(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter

(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

J = Estimated concentration/reporting limit
ND = Not detected
NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CVOCs and Total PCBs calculated by: summing detected concentrations
MCP = Massachsetts Contingency Plan

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Location				МСР	MW-2	MW-2A	MW-2B	MW-2B	MW-2B	MW-2B	MW-3	MW-3 (PRECIX)	MW-3A	MW-4	MW-4	MW-4A
Sample ID Sample Date	Units	MCP GW-2	MCP GW-3	Groundwater UCLs	AX-GW-MW2-121114 12/11/14	AX-GW-MW2A-032114 03/21/14	AX-GW-MW2B-032114 03/21/14	AX-GW-MW2B-063014 06/30/14	AX-GW-MW2B-093014 09/30/14	AX-GW-MW2B-121114 12/11/14	AX-GW-MW3-032414 03/24/14	AX-GW-MW3-031914 03/19/14	AX-GW-MW3A-032114 03/21/14	AX-GW-MW4-032014 03/20/14	AX-GW-MW4-092514 09/25/14	AX-GW-MW4A-032014 03/20/14
Volatile Organic Compounds				UCLS	12/11/14	03/21/14	03/21/14	00/30/14	09/30/14	12/11/14	03/24/14	03/19/14	03/21/14	03/20/14	09/25/14	03/20/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	2.0 U	1.0 U	100. U	50. U J	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	2.0 U	1.0 U	100. U	50. U J	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	4.0 U	2.0 U	200. U	100. U	100. U	50. U	4.0 U	2.0 U	2.0 U	10. U	10. U	2.0 U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	4.0 U	2.0 U	200. U	100. U	100. U	50. U	4.0 U	2.0 U	2.0 U	10. U	10. U	2.0 U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	5.6	1.0 U	100. U	50. U	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	23.	5.7	100. U	50. U	50. U	25. U	3.9	1.0 U	1.4	9.6	5.8	1.0 U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	4.0 U	2.0 U	200. U	100. U J	100. U	50. U	4.0 U	2.0 U	2.0 U	10. U	10. U	2.0 U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	1.0 U	-		25. U	25. U	12. U			-		2.5 U	
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	45.	8.6	100. U	50. U	50. U	25. U	7.1	1.0 U	2.6	21.	11.	1.0 U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
Bromoform	(ug/l)	700.	50000.	100000.	4.0 U J	2.0 U	200. U J	100. U J	100. U	50. U J	4.0 U J	2.0 U	2.0 U	10. U	10. U	2.0 U
Carbon Tetrachloride	(ug/l)	200.	5000. 1000.	50000. 10000.	2.0 U 220.	1.0 U 38.	100. U J 100. U	50. U 50. U	50. U 50. U	25. U 25. U	2.0 U J 170.	1.0 U 1.0 U	1.0 U 99.	5.0 U 22.	5.0 U 24.	1.0 U 1.0 U
Chlorobenzene Chloroethane	(ug/l) (ug/l)	NE	NE	10000. NE	4.0 U	2.0 U	200. U	100. U	100. U	25. U	4.0 U	2.0 U	2.0 U	10. U	24. 10. U	2.0 U
Chloroform	(ug/I)	50.	20000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	25. U	2.0 U	7.6	1.0 U	5.0 U	5.0 U	1.0 U
Chloromethane	(ug/l)	NE	NE	NE	4.0 U	2.0 U	200. U	100. U	100. U J	50. U	4.0 U	2.0 U	2.0 U	10. U	10. U	2.0 U
cis-1.2-Dichloroethene	(ug/l)	20.	50000.	100000.	2.0 U	8.9	1400.	1800.	2200. J	2600.	2.0 U	1.0 U	1.0 U	6.1	580.	5.5
cis-1,3-Dichloropropene	(ug/l)	NE	NF	NF	1.0 U	0.50 U	50. U	25. U J	25. U	12. U	1.0 U	0.50 U	0.50 U	2.5 U	2.5 U	0.50 U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	2.0 U	1.0 U	100. U	50. U J	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	4.0 U	2.0 U	200. U	100. U	100. U J	50. U	4.0 U	2.0 U	2.0 U	10. U	10. U	2.0 U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	1.2 U	0.60 U	60. U	30. U	30. U	15. U	1.2 U	0.60 U	0.60 U	3.0 U	3.0 U	0.60 U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	4.0 U	2.0 U	200. U	100. U	100. U	50. U	4.0 U	2.0 U	2.0 U	10. U J	10. U	2.0 U
o-Chlorotoluene	(ug/l)	NE	NE	NE	4.0 U	2.0 U	200. U	100. U	100. U	50. U	4.0 U	2.0 U	2.0 U	10. U	10. U	2.0 U
p-Chlorotoluene	(ug/l)	NE	NE	NE	4.0 U	2.0 U	200. U	100. U	100. U	50. U	4.0 U	2.0 U	2.0 U	10. U	10. U	2.0 U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	27.	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	2.0 U	1.0 U	100. U	50. U	50. U	25. U	2.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	1.0 U	0.50 U	50. U J	25. U J	25. U	12. U	1.0 U J	0.50 U	0.50 U	2.5 U	2.5 U	0.50 U
Trichloroethene	(ug/l)	5.	5000.	50000.	2.0 U	1.0 U	3800.	3600.	3700. J	3200.	2.0 U	1.0 U	1.0 U	5.0 U	390.	15.
Vinyl chloride	(ug/l)	2.	50000.	100000.	2.0 U	10. J	160.	160.	93.	160.	2.0	1.0 U	1.1 J	29.	32.	1.5
Total CVOCs	(ug/l)	NE	NE	NE	293.6	71.2	5360.	5560.	5993.	5987.	183.	7.6	104.1	87.7	1042.8	22.
Polychlorinated BiPhenyls	(··-/I)	NF.	NF	NF.	4.25.11	0.350.11	2.50.11	2.50.11	2.50.11	5.00.11	0.350.11	0.350.11	0.350.11	0.25011	0.262.11	0.250 U
Aroclor 1016 Aroclor 1221	(ug/l)	NE NE	NE NE	NE NE	1.25 U 1.25 U	0.250 U 0.250 U	2.50 U 2.50 U	2.50 U 2.50 U	2.50 U 2.50 U	5.00 U 5.00 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.263 U 0.263 U	0.250 U
Aroclor 1221 Aroclor 1232	(ug/l)	NF.	NF.	NF.	1.25 U		2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.263 U	0.250 U
Aroclor 1232 Aroclor 1242	(ug/l)	NE NF	NE NF	NE NF	17.3	0.250 U 5.20	33.2	2.50 U 35.8	30.4	24.6	0.250 U	0.250 U	0.250 U	0.250 U	0.263 U	0.250 U
Aroclor 1242 Aroclor 1248	(ug/l)	NE NE	NE NE	NE NE	17.3 1.25 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.263 U	0.250 0
Aroclor 1248 Aroclor 1254	(ug/l) (ug/l)	NF.	NE NF	NF	1.90	0.250 0	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.284	0.250 U	0.263 U	0.520
Aroclor 1254 Aroclor 1260	(ug/I)	NF.	NF.	NF.	1.25 U	0.277 0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.263 U	0.497 0.250 U
Aroclor 1260	(ug/l)	NE NE	NF.	NE NE	1.25 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.263 U	0.250 U
Aroclor 1268	(ug/l)	NE NE	NE NE	NE NE	1.25 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.263 U	0.250 U
Total PCBs	(ug/l)	5.	10.	100.	[19.2]	5.477	[33.2]	[35.8]	[30.4]	[24.6]	0.250 U	0.250 U	0.284	0.250 U	0.263 U	1.017
Dissolved Gases	(* 3, 7	1	·	1												
Ethane	(ug/l)	NE	NE	NE	144.			4.88	4.91	4.32					21.4	
Ethene	(ug/I)	NE	NE	NE	15.1			4.39	4.14	3.52					2.62	
Methane	(ug/l)	NE	NE	NE	1930.			176.	203.	180.			-		3920.	
<u> </u>		•	1		•		•			•						

Location				MCP	MW-2	MW-2A	MW-2B	MW-2B	MW-2B	MW-2B	MW-3	MW-3 (PRECIX)	MW-3A	MW-4	MW-4	MW-4A
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW2-121114	AX-GW-MW2A-032114	AX-GW-MW2B-032114	AX-GW-MW2B-063014	AX-GW-MW2B-093014	AX-GW-MW2B-121114	AX-GW-MW3-032414	AX-GW-MW3-031914	AX-GW-MW3A-032114	AX-GW-MW4-032014	AX-GW-MW4-092514	AX-GW-MW4A-03201
Sample Date				UCLs	12/11/14	03/21/14	03/21/14	06/30/14	09/30/14	12/11/14	03/24/14	03/19/14	03/21/14	03/20/14	09/25/14	03/20/14
/INA Parameters																
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	113.			38.6	35.3	37.1					172.	
Ammonia (as N)	(mg/l)	NE	NE	NE	1.85			0.502	0.426	0.405					4.79	
Ferrous Iron	(mg/l)	NE	NE	NE	0.82			0.61	0.95	1.1					13.	
Total Iron	(mg/l)	NE	NE	NE	1.0			0.53	0.98	0.98					16.	
Nitrate (as N)	(mg/l)	NE	NE	NE	0.100 U			0.100 U	0.100 U	0.100 U					0.100 U	
Phosphorus	(mg/l)	NE	NE	NE	0.057			0.010 U	0.011	0.010 U					0.067	
Sulfate	(mg/l)	NE	NE	NE	32.			170.	180.	170.					66.	
Total Organic Carbon	(mg/l)	NE	NE	NE	4.4			15.	7.6	6.0					28.	
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U	11.	5.0 U	5.0 U	5.0 U	5.0 U	44.	5.0 U	13.	36.	15.	11.
ield Parameters																
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.34	0.31	0.13	0.82	0.31	1.56	0.16	4.76	0.10	0.12	0.16	0.63
ORP	(mv)	NE	NE	NE	-25.8	-5.6	190.7	148.4	-0.4	-21.4	-44.2	153.9	-13.9	-74.5	-76.0	232.6
Specific Conductivity	(ms/cm)	NE	NE	NE	1.337	0.786	2.425	2.074	1.963	1.800	1.436	0.384	1.086	0.675	1.967	0.300
Temperature	(c)	NE	NE	NE	14.70	7.21	12.02	17.98	17.88	14.02	7.76	15.41	9.01	13.50	17.61	9.02
Turbidity	(ntu)	NE	NE	NE	0.00	6.22	3.69	1.37	1.82	0.07	16.9	3.01	1.30	3.18	1.34	12.2
Ha	(su)	NF	NF	NF	6.39	5 99	5.04	5 71	5.61	5.42	5.87	6.16	6.01	6.01	6.43	4 73

Notes:
(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit
ND = Not detected

ND = Not detected NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
--- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*

\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S

MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix). Total CVOCs and Total PCBs calculated by: summing detected concentrations

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Location				MCP	MW-4B	MW-4B	MW-4B	MW-4S	MW-4S	MW-4S	MW-5	MW-5	MW-5	MW-6	MW-6	MW-6
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW4B-031914	AX-GW-MW4B-062414	AX-GW-MW4B-120914	AX-GW-MW4S-031814	AX-GW-MW4S-092314	AX-GW-MW4S-120814	AX-GW-MW5-031914	AX-GW-MW5-092414	AX-GW-MW5-121114	AX-GW-MW6-032014	AX-GW-DUP1-032014	AX-GW-MW6-062514
Sample Date Volatile Organic Compounds				UCLs	03/19/14	06/24/14	12/09/14	03/18/14	09/23/14	12/08/14	03/19/14	09/24/14	12/11/14	03/20/14	03/20/14	06/25/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
1,1,1-trichloroethane	(ug/I)	4000.	20000.	100000.	33.	100. U	40. U	1.0 U	20. U	20. U	20. U					
1,1,2,2-Tetrachloroethane	(ug/I)	9	50000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U J					
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	25. U	100. U	40. U	1.5	1.1	1.3	1.0 U	1.0 U	1.0 U	20. U	20. U	20. U
1.1-Dichloroethene	(ug/l)	80.	30000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	50. U	200. U	80. U	2.0 U	40. U	40. U	40. U J					
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	50. U	200. U	80. U	2.0 U	40. U	40. U	40. U					
1.2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
1,3-Dichloropropane	(ug/l)	NE	NE	NE	50. U	200. U	80. U	2.0 U	40. U	40. U	40. U					
1,3-Dichloropropene	(ug/l)	10.	200.	2000.		50. U	20. U		0.50 U	0.50 U		0.50 U	0.50 U			10. U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
Bromodichloromethane	(ug/l)	6.	50000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
Bromoform	(ug/l)	700.	50000.	100000.	50. U	200. U J	80. U J	2.0 U J	2.0 U	2.0 U J	2.0 U	2.0 U	2.0 U J	40. U	40. U	40. U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
Chlorobenzene	(ug/l)	200.	1000.	10000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
Chloroethane	(ug/l)	NE	NE	NE	50. U	200. U	80. U	2.0 U	40. U	40. U	40. U					
Chloroform	(ug/l)	50.	20000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
Chloromethane	(ug/l)	NE	NE	NE	50. U	200. U	80. U	2.0 U	2.0 U J	2.0 U	2.0 U	2.0 U J	2.0 U	40. U	40. U	40. U
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	220.	290.	230.	18.	13.	30.	1.0 U	1.0 U	1.0 U	700.	720.	1000.
cis-1,3-Dichloropropene	(ug/l)	NE	NE	NE	12. U	50. U	20. U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	10. U	10. U	10. U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	25. U	100. U	40. U	1.0 U	20. U	20. U	20. U					
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	50. U	200. U	80. U	2.0 U	40. U	40. U	40. U					
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	15. U	60. U	24. U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	12. U	12. U	12. U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	50. U	200. U	80. U J	2.0 U	40. U	40. U	40. U					
o-Chlorotoluene	(ug/l)	NE	NE	NE	50. U	200. U	80. U	2.0 U	40. U	40. U	40. U					
p-Chlorotoluene	(ug/l)	NE	NE	NE	50. U	200. U	80. U	2.0 U	40. U	40. U	40. U					
Tetrachloroethene	(ug/l)	50.	30000.	100000.	30.	100. U	40. U	1.0 U	20. U	20. U	20. U					
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	25. U	100. U	40. U	1.4	1.0 U	1.4	1.0 U	1.0 U	1.0 U	20. U	20. U	20. U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	12. U	50. U	20. U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	10. U	10. U	10. U J
Trichloroethene	(ug/l)	5.	5000.	50000.	[6200.]	[5200.]	[5400.]	36.	20.	47.	1.0 U	1.0 U	1.0 U	1500.	1600.	1800.
Vinyl chloride	(ug/l)	2.	50000.	100000.	25. U	100. U	40. U	17.	8.7 J	2.5	1.0 U	1.0 U J	1.0 U	39.	41.	60.
Total CVOCs	(ug/l)	NE	NE	NE	6483.	5490.	5630.	73.9	42.8	82.2	N D	N D	N D	2239.	2361.	2860.
Polychlorinated BiPhenyls	t. 10	1		1	0.350	0.350	0.350	0.250	0.350	0.250	0.250	0.252.1	0.350	4.25.11	4.25	4.25.11
Aroclor 1016	(ug/l)	NE	NE	NE NE	0.250 U	1.25 U	1.25 U	1.25 U								
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	1.25 U	1.25 U	1.25 U								
Aroclor 1232	(ug/l)	NE	NE	NE NF	0.250 U	1.25 U	1.25 U	1.25 U								
Aroclor 1242	(ug/l)	NE	NE		2.04	0.250 U	1.92	0.250 U	10.5	13.4	6.58					
Aroclor 1248	(ug/l)	NE NF	NE NF	NE NF	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	1.25 U 1.25 U	1.25 U 1.25 U	1.25 U 1.25 U
Aroclor 1254 Aroclor 1260	(ug/l)	NE NE	NE NF	NE NE	0.250 U 0.250 U	1.25 U	1.25 U 1.25 U	1.25 U								
Aroclor 1260 Aroclor 1262	(ug/l)	NE NF	NE NE	NE NE	0.250 U 0.250 U	0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U	0.250 U	1.25 U 1.25 U	1.25 U	1.25 U
Aroclor 1262 Aroclor 1268	(ug/l)	NE NF	NE NF	NE NF	0.250 U	1.25 U	1.25 U	1.25 U								
Total PCBs	(ug/l)	NE 5	10.	100.	2.04	0.250 U	1.92	0.250 U	[10.5]	[13.4]	6.58					
Dissolved Gases	(ug/l)	٥.	10.	100.	2.04	U.25U U	1.92	U.23U U	0.230 0	U.25U U	0.250 0	U.23U U	U.23U U	[10.5]	[13.4]	0.38
Ethane	(ug/l)	NF	NF	NF.		1.80	0.943		0.500 U	0.500 U		0.500 U	0.500 U	-		1.87
Ethene	(ug/I)	NE NE	NE NE	NE NE		1.80	1.04		1.70	0.500 U		0.500 U	0.500 U			0.813
Methane	(ug/I)	NE NF	NE NF	NE NF	-	1.88	1.04		616.	11.9		0.500 U	0.500 U		-	0.813
Wethane	(ug/1)	INE	INE	INE		1/0.	1/2.		010.	11.9		0.500 0	0.500 0			14.1

					î.											
Location	I			MCP	MW-4B	MW-4B	MW-4B	MW-4S	MW-4S	MW-4S	MW-5	MW-5	MW-5	MW-6	MW-6	MW-6
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW4B-031914	AX-GW-MW4B-062414	AX-GW-MW4B-120914	AX-GW-MW4S-031814	AX-GW-MW4S-092314	AX-GW-MW4S-120814	AX-GW-MW5-031914	AX-GW-MW5-092414	AX-GW-MW5-121114	AX-GW-MW6-032014	AX-GW-DUP1-032014	AX-GW-MW6-062514
Sample Date				UCLs	03/19/14	06/24/14	12/09/14	03/18/14	09/23/14	12/08/14	03/19/14	09/24/14	12/11/14	03/20/14	03/20/14	06/25/14
MNA Parameters																
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE		8.80	8.70		99.6	151.		34.4	42.9			74.1
Ammonia (as N)	(mg/l)	NE	NE	NE		0.278	0.332		0.456	0.102		0.075 U	0.075 U			0.108
Ferrous Iron	(mg/l)	NE	NE	NE		8.0	20.		1.8	0.50 U		0.50 U	0.50 U	-		0.50 U
Total Iron	(mg/l)	NE	NE	NE		5.4	9.9		1.5	0.12		0.10 U	0.05 U	-		0.06
Nitrate (as N)	(mg/l)	NE	NE	NE		0.100 U	0.100 U		0.100 U	1.16		3.84	5.22	-		0.882
Phosphorus	(mg/l)	NE	NE	NE		0.010 U	0.010 U		0.054	0.037		0.010 U	0.010 U			0.010 U
Sulfate	(mg/l)	NE	NE	NE		60.	51.		150.	120.		11.	140.			120.
Total Organic Carbon	(mg/l)	NE	NE	NE		2.4	2.0		7.3	4.0		1.4	1.2			3.4
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U					
Field Parameters																
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.24	0.27	0.16	0.39	0.26	1.20	3.73	6.36	5.04	0.19		0.20
ORP	(mv)	NE	NE	NE	227.8	-81.6	202.3	128.9	13.9	149.2	225.6	154.8	91.9	202.5		-97.0
Specific Conductivity	(ms/cm)	NE	NE	NE	1.981	1.936	1.706	2.828	5.000	4.339	0.650	0.707	0.636	4.174		2.403
Temperature	(c)	NE	NE	NE	13.74	18.91	13.61	11.33	23.34	14.29	10.64	16.89	13.69	12.71		19.38
Turbidity	(ntu)	NE	NE	NE	1.22	0.68	1.34	0.64	1.24	2.95	1.87	1.22	3.81	1.59		1.80
pH	(su)	NE	NE	NE	4.58	4.80	4.78	6.22	6.37	7.36	5.21	5.86	5.70	5.86		6.14

Notes:

(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter

(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

ND = Not detected

NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CVG/CS and Total PCRs calculated by sumpine detected concentrations

Total CVOCs and Total PCBs calculated by: summing detected concentrations

	1			1100									1 mu co			
Location	11-14-	14CD C14/ 2	14CD C11/ 2	MCP	MW-6	MW-6	MW-6A	MW-6A	MW-6B	MW-6B	MW-6B	MW-6B	MW-6B	MW-6B	MW-7	MW-7
Sample ID Sample Date	Units	MCP GW-2	MCP GW-3	Groundwater UCLs	AX-GW-MW6-121114 12/11/14	AX-GW-DUP4-121114 12/11/14	AX-GW-MW6A-032014 03/20/14	AX-GW-MW6A-121114 12/11/14	AX-GW-MW6B-032014 03/20/14	AX-GW-MW6B-062514 06/25/14	AX-GW-DUP2-062514 06/25/14	AX-GW-MW6B-092514 09/25/14	AX-GW-DUP3-092514 09/25/14	AX-GW-MW6B-121114 12/11/14	AX-GW-MW7-032414 03/24/14	AX-GW-MW7-062714 06/27/14
Volatile Organic Compounds				UCLS	12/11/14	12/11/14	03/20/14	12/11/14	03/20/14	06/25/14	00/25/14	09/25/14	09/25/14	12/11/14	03/24/14	06/27/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
1,1,2,2-Tetrachloroethane	(ug/l)	9	50000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U J	20. U J	50. U	50. U	20. U	200. U	200. U J
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	10. U	10. U	2.0 U	2.0 U	80. U	40. U J	40. U J	100. U	100. U	40. U	400. U	400. U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	10. U	10. U	2.0 U	2.0 U	80. U	40. U	40. U	100. U	100. U	40. U	400. U	400. U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	10. U	10. U	2.0 U	2.0 U	80. U	40. U	40. U	100. U	100. U	40. U	400. U	400. U J
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	2.5 U	2.5 U		0.50 U		10. U	10. U	25. U	25. U	10. U		100. U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
Bromoform	(ug/l)	700.	50000.	100000.	10. U J	10. U J	2.0 U	2.0 U J	80. U	40. U J	40. U J	100. U	100. U	40. U J	400. U J	400. U
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U J	200. U
Chlorobenzene	(ug/l)	200.	1000.	10000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
Chloroethane	(ug/l)	NE	NE	NE	10. U	10. U	2.0 U	2.0 U	80. U	40. U	40. U	100. U	100. U	40. U	400. U	400. U
Chloroform	(ug/l)	50.	20000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
Chloromethane	(ug/l)	NE	NE	NE	10. U	10. U	2.0 U	2.0 U	80. U	40. U	40. U	100. U	100. U	40. U	400. U	400. U
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	300.	320.	6.3	13.	900.	1600.	1600.	1800.	1900.	1400.	1600.	14000. J
cis-1,3-Dichloropropene	(ug/l)	NE	NE	NE	2.5 U	2.5 U	0.50 U	0.50 U	20. U	10. U	10. U	25. U	25. U	10. U	100. U	100. U J
Dibromochloromethane	(ug/l)	20.	50000.	100000.	5.0 U	5.0 U	1.0 U	1.0 U	40. U	20. U	20. U	50. U	50. U	20. U	200. U	200. U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	10. U	10. U	2.0 U	2.0 U	80. U	40. U	40. U	100. U	100. U	40. U	400. U	400. U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	3.0 U	3.0 U	0.60 U	0.60 U	24. U	12. U	12. U	30. U	30. U	12. U	120. U	120. U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	10. U	10. U	2.0 U	2.0 U	80. U	40. U	40. U	100. U	100. U	40. U	400. U	400. U
o-Chlorotoluene	(ug/l)	NE	NE	NE	10. U	10. U	2.0 U	2.0 U	80. U	40. U 40. U	40. U	100. U	100. U 100. U	40. U	400. U 400. U	400. U
p-Chlorotoluene	(ug/l)	NE 50	NE 30000.	NE 100000	10. U	10. U	2.0 U	2.0 U	80. U 40. U	40. U	40. U	100. U	100. U	40. U	400. U	400. U
Tetrachloroethene trans-1,2-Dichloroethene	(ug/l)	50. 80.	50000.	100000. 100000.	5.0 U 5.0 U	5.0 U 5.0 U	1.7 1.0 U	2.4 1.0 U	40. U	20. U	20. U 20. U	50. U 50. U	50. U	20. U 20. U	200. U	200. U J 200. U
trans-1,3-Dichloropropene	(ug/l) (ug/l)	NE	NE	100000. NE	2.5 U	2.5 U	0.50 U	0.50 U	40. U	20. U J	10. U J	25. U	25. U	20. U	100. U J	100. U J
Trichloroethene	(ug/I)	5	5000.	50000.	610.	650.	21.	42.	2200.	2100.	2100.	3700.	3800.	1500.	[27000.]	[18000.]
Vinyl chloride	(ug/I)	2.	50000.	100000.	7.6	8.3	1.0 U	1.0 U	68.	89.	95.	50. U	50. U	26.	200. U	400.
Total CVOCs	(ug/I)	NE	NF	NE	917.6	978.3	29.	57.4	3168.	3789.	3795.	5500.	5700.	2926.	28600.	32400.
Polychlorinated BiPhenyls	(46/1)	INC	INE	INC	317.0	370.5	23.	37.4	3100.	3703.	3733.	3300.	3700.	2520.	20000.	32400.
Aroclor 1016	(ug/l)	NF	NF	NF	0.250 U	0,250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	1.25 U	2.50 U	1.25 U
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	1.25 U	2.50 U	1.25 U
Aroclor 1232	(ug/l)	NE NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	1.25 U	2.50 U	1.25 U
Aroclor 1242	(ug/l)	NE	NE	NE	6.24	5.01	0.250 U	0.250 U	17.4	16.7	15.9	22.0	23.9	11.6	22.7	8.52
Aroclor 1248	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	1.25 U	2.50 U	1.25 U
Aroclor 1254	(ug/l)	NE	NE	NE	0.250 U	0.250 U	1.25	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	1.25 U	2.50 U	1.25 U
Aroclor 1260	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	1.25 U	2.50 U	1.25 U
Aroclor 1262	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	1.25 U	2.50 U	1.25 U
Aroclor 1268	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	2.50 U	1.25 U	2.50 U	1.25 U
Total PCBs	(ug/l)	5.	10.	100.	6.24	5.01	1.25	0.250 U	[17.4]	[16.7]	[15.9]	[22.0]	[23.9]	[11.6]	[22.7]	8.52
Dissolved Gases		· '														
Ethane	(ug/l)	NE	NE	NE	0.657			0.500 U		7.53		12.6		6.70		65.0
Ethene	(ug/l)	NE	NE	NE	0.500 U			0.500 U		5.44		8.92		4.14		17.2
Methane	(ug/l)	NE	NE	NE	2.35			0.500 U		24.3		15.9		7.72		6720.

Location				MCP	MW-6	MW-6	MW-6A	MW-6A	MW-6B	MW-6B	MW-6B	MW-6B	MW-6B	MW-6B	MW-7	MW-7
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW6-121114	AX-GW-DUP4-121114	AX-GW-MW6A-032014	AX-GW-MW6A-121114	AX-GW-MW6B-032014	AX-GW-MW6B-062514	AX-GW-DUP2-062514	AX-GW-MW6B-092514	AX-GW-DUP3-092514	AX-GW-MW6B-121114	AX-GW-MW7-032414	AX-GW-MW7-062714
Sample Date				UCLs	12/11/14	12/11/14	03/20/14	12/11/14	03/20/14	06/25/14	06/25/14	09/25/14	09/25/14	12/11/14	03/24/14	06/27/14
MNA Parameters																
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	58.4			37.5		68.7		65.6		61.3		162.
Ammonia (as N)	(mg/l)	NE	NE	NE	0.075 U			0.075 U		0.194		0.140		0.141		8.92
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U			0.50 U		0.89		1.5		0.97		1.3
Total Iron	(mg/l)	NE	NE	NE	0.20			0.31		0.89		1.3		0.96		1.8
Nitrate (as N)	(mg/l)	NE	NE	NE	2.26			1.41		0.213		0.736		1.41		0.100 U
Phosphorus	(mg/l)	NE	NE	NE	0.018			0.010 U		0.010 U		0.010 U		0.010 U		0.077
Sulfate	(mg/l)	NE	NE	NE	370.			10. U		120.		140.		240.		94.
Total Organic Carbon	(mg/l)	NE	NE	NE	2.7			2.0		3.7		8.1 J		5.0 U		17.
Total Suspended Solids	(mg/l)	NE	NE	NE	15.		5.0 U	5.0 U	5.0 U	5.0 U		5.0 U		5.0 U	5.0 U	5.0 U
Field Parameters																
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.19		0.28	4.01	0.12	0.15		0.09		0.06	0.11	0.06
ORP	(mv)	NE	NE	NE	189.5		238.4	131.0	101.1	-80.4		57.5		111.9	78.6	19.6
Specific Conductivity	(ms/cm)	NE	NE	NE	7.535		0.537	0.161	3.598	2.578		4.241		6.347	1.889	1.672
Temperature	(c)	NE	NE	NE	13.99		7.69	13.48	13.12	17.73		18.82		12.81	14.05	18.73
Turbidity	(ntu)	NE	NE	NE	11.3		0.77	4.61	0.54	3.16		0.88		0.93	0.83	2.14
pH	(su)	NE	NE	NE	5.78		4.89	5.88	6.01	6.04		6.12		5.86	5.91	6.13

Notes:
(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit
ND = Not detected

ND = Not detected NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CWGCs and Total PCRs calculated by summing detected concentrations

MW-2UD, MW-21D, MW-22S, G2-UO1, G2-UO3, and MW-3 (Precix).

Total CVOCs and Total PCBs calculated by: summing detected concentrations

MCP = Massachsetts Contingency Plan

MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards

MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

Location				МСР	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7A	MW-7A	MW-7A	MW-7B	MW-7B	MW-7B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater UCLs	AX-GW-DUP3-062714	AX-GW-MW7-092514	AX-GW-DUP2-092514	AX-GW-MW7-120914	AX-GW-DUP2-120914	AX-GW-MW7A-032414	AX-GW-MW7A-062714	AX-GW-MW7A-092414	AX-GW-MW7B-032414	AX-GW-MW7B-062714	AX-GW-MW7B-093014
Sample Date				UCLS	06/27/14	09/25/14	09/25/14	12/09/14	12/09/14	03/24/14	06/27/14	09/24/14	03/24/14	06/27/14	09/30/14
Volatile Organic Compounds 1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
1,1,1-trichloroethane	(ug/I)	4000.	20000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
1,1,2,2-Tetrachloroethane		9	50000.	100000.	200. U J	500. U	500. U	250. U	250. U	1.0 U	1.0 U J	1.0 U	100. U	200. U J	100. U
1,1,2,7-retrachioroethane	(ug/l) (ug/l)	900.	50000.	100000.	200. U J	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
1.1-Dichloroethane	(ug/l)	80.	30000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	400. U	1000. U	1000. U	500. U	500. U	2.0 U	2.0 U	2.0 U	200. U	400. U	200. U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	400. U	1000. U	1000. U	500. U	500. U	2.0 U	2.0 U	2.0 U	200. U	400. U	200. U
1.2-Dishorhoethane		8000.	2000.	80000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
1,2-Dichloroethane	(ug/l) (ug/l)	5.	2000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U J	100. U	200. U	100. U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	400. U J	1000. U	1000. U	500. U	500. U	2.0 U	2.0 U	2.0 U	200. U	400. U	200. U
1,3-Dichloropropane	(ug/l)	10.	200.	2000.	100. U	250. U	250. U	120. U	120. U	2.0 0	0.50 U	0.50 U	200. 0	100. U	50. U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
Bromoform	(ug/l)	700.	50000.	100000.	400. U J	1000. U	1000. U	500. U J	500. U J	2.0 U J	2.0 U J	2.0 U	200. U	400. U J	200. U
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	200. U	500. U	500. U	250. U	250. U	1.0 U J	1.0 U	1.0 U	100. U	200. U	100. U
Chlorobenzene	(ug/l)	200.	1000.	10000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
Chloroethane	(ug/l)	NE	NE	NF	400. U	1000. U	1000. U	500. U	500. U	2.0 U	2.0 U	2.0 U	200. U	400. U	200. U
Chloroform	(ug/l)	50.	20000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
Chloromethane	(ug/l)	NE	NE	NE	400. U	1000. U	1000. U	500. U	500. U	2.0 U	2.0 U	2.0 U	200. U	400. U	200. U J
cis-1.2-Dichloroethene	(ug/l)	20.	50000.	100000.	23000. J	2600.	2700.	2600.	2700.	1.0 U	1.0 U	1.0 U	710.	720.	1200. J
cis-1,3-Dichloropropene	(ug/l)	NF	NE	NF	100. U	250. U	250. U	120. U	120. U	0.50 U	0.50 U	0.50 U	50. U	100. U	50. U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
Dichlorodifluoromethane	(ug/l)	NE NE	NE	NF	400. U	1000. U	1000. U	500. U	500. U	2.0 U	2.0 U	2.0 U	200. U	400. U	200. U J
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	120. U	300. U	300. U	150. U	150. U	0.60 U	0.60 U	0.60 U	60. U	120. U	60. U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	400. U	1000. U	1000. U	500. U	500. U	2.0 U	2.0 U	2.0 U	200. U	400. U	200. U
o-Chlorotoluene	(ug/l)	NF	NE	NF.	400. U	1000. U	1000. U	500. U	500. U	2.0 U	2.0 U	2.0 U	200. U	400. U	200. U
p-Chlorotoluene	(ug/l)	NE	NE	NE	400. U	1000. U	1000. U	500. U	500. U	2.0 U	2.0 U	2.0 U	200. U	400. U	200. U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	200. U	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	100. U J	250. U	250. U	120. U	120. U	0.50 U J	0.50 U J	0.50 U	50. U	100. U J	50. U
Trichloroethene	(ug/l)	5.	5000.	50000.	[22000.]	[29000.]	[29000.]	[22000.]	[23000.]	1.0 U	1.0 U	1.0 U	[16000.]	[13000.]	[14000.] J
Vinyl chloride	(ug/l)	2.	50000.	100000.	620.	500. U	500. U	250. U	250. U	1.0 U	1.0 U	1.0 U	100. U	200. U	100. U
Total CVOCs	(ug/l)	NE	NE	NE	45620.	31600.	31700.	24600.	25700.	N D	N D	N D	16710.	13720.	15200.
Polychlorinated BiPhenyls								·							
Aroclor 1016	(ug/l)	NE	NE	NE	1.25 U	2.50 U	2.50 U	5.00 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1221	(ug/l)	NE	NE	NE	1.25 U	2.50 U	2.50 U	5.00 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1232	(ug/l)	NE	NE	NE	1.25 U	2.50 U	2.50 U	5.00 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1242	(ug/l)	NE	NE	NE	7.06	22.4	21.5	24.4	23.8	0.493	0.250 U	0.419	1.51	0.536	0.919
Aroclor 1248	(ug/l)	NE	NE	NE	1.25 U	2.50 U	2.50 U	5.00 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1254	(ug/l)	NE	NE	NE	1.25 U	2.50 U	2.50 U	5.00 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1260	(ug/l)	NE	NE	NE	1.25 U	2.50 U	2.50 U	5.00 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1262	(ug/l)	NE	NE	NE	1.25 U	2.50 U	2.50 U	5.00 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1268	(ug/l)	NE	NE	NE	1.25 U	2.50 U	2.50 U	5.00 U	5.00 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Total PCBs	(ug/l)	5.	10.	100.	7.06	[22.4]	[21.5]	[24.4]	[23.8]	0.493	0.250 U	0.419	1.51	0.536	0.919
Dissolved Gases															
Ethane	(ug/l)	NE	NE	NE		38.4		47.8			8.12	9.27		4.98	4.83
Ethene	(ug/l)	NE	NE	NE		12.8		10.9		-	0.500 U	0.500 U		9.50	11.0
Methane	(ug/l)	NE	NE	NE		3600.		4400.			7890.	9460.		58.2	62.2

Location				MCP	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7A	MW-7A	MW-7A	MW-7B	MW-7B	MW-7B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-DUP3-062714	AX-GW-MW7-092514	AX-GW-DUP2-092514	AX-GW-MW7-120914	AX-GW-DUP2-120914	AX-GW-MW7A-032414	AX-GW-MW7A-062714	AX-GW-MW7A-092414	AX-GW-MW7B-032414	AX-GW-MW7B-062714	AX-GW-MW7B-093014
Sample Date				UCLs	06/27/14	09/25/14	09/25/14	12/09/14	12/09/14	03/24/14	06/27/14	09/24/14	03/24/14	06/27/14	09/30/14
INA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE		114.		112.			335.	377.		67.2	71.5
Ammonia (as N)	(mg/l)	NE	NE	NE		5.19		4.99			16.2	14.1		0.075 U	0.075 U
Ferrous Iron	(mg/l)	NE	NE	NE		1.4		0.99			14.	18.		0.50 U	0.50 U
Total Iron	(mg/l)	NE	NE	NE		1.3		1.1			32.	43.		0.05 U	0.05 U
Nitrate (as N)	(mg/l)	NE	NE	NE		0.100 U		0.100 U			0.100 U	0.100 U		0.100 U	0.100 U
Phosphorus	(mg/l)	NE	NE	NE		0.047		0.043			0.604	0.773		0.025	0.026
Sulfate	(mg/l)	NE	NE	NE		130.		140.			10. U	10. U		310.	350.
Total Organic Carbon	(mg/l)	NE	NE	NE		12.		11.			16.	4.0		3.2	2.8
Total Suspended Solids	(mg/l)	NE	NE	NE		5.0 U		5.0 U		26.	66.	30.	5.0 U	6.7	7.6
ield Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE		0.11		0.06		0.17	0.06	0.0	0.35	0.07	0.40
ORP	(mv)	NE	NE	NE		62.0		113.4		-110	-114.0	-106.4	33.4	35.5	-0.8
Specific Conductivity	(ms/cm)	NE	NE	NE		1.774		1.808		2.483	1.678	4.487	10.17	8.017	9.554
Temperature	(c)	NE	NE	NE		17.56		14.81		7.84	20.63	23.55	14.21	19.37	17.30
Turbidity	(ntu)	NE	NE	NE		1.82		2.01		1.30	3.34	3.01	0.77	3.14	2.66
Ha	(su)	NE	NE	NF		6.07		5.94		6.39	6.50	6.78	6.83	7.62	7.74

Notes:

(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter

(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

ND = Not detected

NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Hethod 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-2DD, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).

MW-2UD, MW-21D, MW-22S, GZ-0U3, GZ-0U3, and MW-3 (Precix).

Total CVOCs and Total PCBs calculated by: summing detected concentrations

MCP = Massachsetts Contingency Plan

MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards

MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

Location	1			MCP	MW-7B	MW-8S	MW-8S	MW-8S	MW-10D	MW-10D	MW-10D	MW-10D	MW-11B	MW-11B	MW-11B
Location Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW7B-120914	AX-GW-MW8S-032014	AX-GW-MW8S-092514	AX-GW-MW8S-120914	AX-GW-MW10D-032014	AX-GW-MW10D-062614	AX-GW-MW10D-092514	AX-GW-MW10D-121114	AX-GW-MW11B-031914	AX-GW-MW11B-062514	AX-GW-MW11B-093014
Sample Date	Units	IVICP GW-2	IVICP GW-3	UCLs	12/09/14	03/20/14	09/25/14	12/09/14	03/20/14	06/26/14	09/25/14	12/11/14	03/19/14	06/25/14	09/30/14
Volatile Organic Compounds				OCLS	12/03/14	03/20/14	03/23/14	12/03/14	03/20/14	00/20/14	03/23/14	12/11/14	03/13/14	00/23/14	03/30/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50, U	5.0 U	1.0 U	1.0 U
1.1.1-trichloroethane	(ug/l)	4000.	20000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U J	100. U	50. U	5.0 U	1.0 U J	1.0 U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U J	100. U	50. U	5.0 U	1.0 U	1.0 U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	15.	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	20. U	200. U	200. U	200. U	400. U	400. U	200. U	100. U	10. U	2.0 U J	2.0 U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	20. U	200. U	200. U	200. U	400. U	400. U	200. U	100. U	10. U	2.0 U	2.0 U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	20. U	200. U	200. U	200. U	400. U	400. U J	200. U	100. U	10. U	2.0 U	2.0 U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	5.0 U		50. U	50. U		100. U	50. U	25. U		0.50 U	0.50 U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.5
Bromodichloromethane	(ug/l)	6.	50000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
Bromoform	(ug/l)	700.	50000.	100000.	20. U J	200. U	200. U	200. U J	400. U J	400. U J	200. U	100. U J	10. U J	2.0 U J	2.0 U
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	10. U	100. U	100. U	100. U	200. U J	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
Chlorobenzene	(ug/l)	200.	1000.	10000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
Chloroethane Chloroform	(ug/l)	NE 50.	NE 20000.	NE 100000.	20. U 10. U	200. U 100. U	200. U 100. U	200. U 100. U	400. U 200. U	400. U 200. U	200. U 100. U	100. U 50. U	10. U 5.0 U	2.0 U 1.0 U	2.0 U 1.0 U
	(ug/l)	NE	20000. NF		10. U	200. U	100. U	200. U	200. U 400. U	200. U 400. U	100. U 200. U	100. U	5.0 U	2.0 U	2.0 U J
Chloromethane cis-1.2-Dichloroethene	(ug/l)	NE 20.	50000.	NE 100000.	610.	6600.	13000.	8300.	3500.	400. U 4100.	2600.	2200.	10. U 5.0 U	4.1	6.3 J
cis-1,2-Dichloropropene	(ug/l) (ug/l)	NF	NF	NF	5.0 U	50. U	50. U	50. U	100. U	100. U	50. U	25. U	2.5 U	0.50 U	0.50 U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	20. U	200. U	200. U	200. U	400. U	400. U	200. U	100. U	10. U	2.0 U	2.0 U J
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	6.0 U	60. U	60. U	60. U	120. U	120. U	60. U	30. U	3.0 U	0.60 U	0.60 U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	20. U J	200. U	200. U	200. U J	400. U	400. U	200. U	100. U	10. U	2.0 U	2.0 U
o-Chlorotoluene	(ug/l)	NE NE	NE	NE	20. U	200. U	200. U	200. U	400. U	400. U	200. U	100. U	10. U	2.0 U	2.0 U
p-Chlorotoluene	(ug/l)	NE	NE	NE	20. U	200. U	200. U	200. U	400. U	400. U	200. U	100. U	10. U	2.0 U	2.0 U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	56.	220.	180. J	140.
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	10. U	100. U	100. U	100. U	200. U	200. U	100. U	50. U	5.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	5.0 U	50. U	50. U	50. U	100. U J	100. U J	50. U	25. U	2.5 U	0.50 U J	0.50 U
Trichloroethene	(ug/l)	5.	5000.	50000.	[14000.]	100. U	100. U	140.	[11000.]	[13000.]	[7700.]	[6800.]	11.	9.4	10. J
Vinyl chloride	(ug/l)	2.	50000.	100000.	35.	1800.	3700.	4200.	510.	510.	230.	290.	5.0 U	1.0 U	1.0 U
Total CVOCs	(ug/l)	NE	NE	NE	14660.	8400.	16700.	12640.	15010.	17610.	10530.	9346.	231.	193.5	157.8
Polychlorinated BiPhenyls		1	1	1		1	1	1	1			1	1		
Aroclor 1016	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	5.00 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	5.00 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U
Aroclor 1232	(ug/l)	NE	NE	NE NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	5.00 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U
Aroclor 1242 Aroclor 1248	(ug/l)	NE NF	NE NF	NE NF	0.436 0.250 U	1.08 0.250 U	0.447 0.250 U	0.713 0.250 U	43.9 2.50 U	49.1 5.00 U	24.3 2.50 U	22.3 5.00 U	0.250 U 0.250 U	0.250 U 0.250 U	1.02 0.250 U
Aroclor 1248 Aroclor 1254	(ug/l) (ug/l)	NE NE	NE NF	NE NE	0.250 U 0.250 U	0.250 U 0.606	0.250 U 0.250 U	0.250 U	2.50 U	5.00 U	2.50 U 2.50 U	5.00 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U
Aroclor 1254 Aroclor 1260	(ug/I) (ug/I)	NE NE	NE NF	NE NF	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	5.00 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U
Aroclor 1260 Aroclor 1262	(ug/I)	NE NE	NF.	NE NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	5.00 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U
Aroclor 1262 Aroclor 1268	(ug/l)	NE NE	NE NE	NE NE	0.250 U	0.250 U	0.250 U	0.250 U	2.50 U	5.00 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U
Total PCBs	(ug/l)	5.	10.	100.	0.436	1.686	0.447	0.713	[43.9]	[49.1]	[24.3]	[22.3]	0.250 U	0.250 U	1.02
Dissolved Gases	(46/1/	J. J.	10.	100.	0.430	1.000	0.777	0.713	[20,0]	[77.2]	[27.7]	[EE.V]	0.230 0	0.250 0	1.02
Ethane	(ug/l)	NE	NE	NE	3.71		6.31	4.50		16.0	12.8	8.89		0.500 U	0.500 U
Ethene	(ug/l)	NE NE	NE	NE NE	14.9		232.	325.		4.57	4.30	3.42		0.500 U	0.500 U
Methane	(ug/l)	NE NE	NE	NE	44.3		444.	333.		320.	303.	237.		5.00 U	15.0
	101.1					i .			I.				i .		

Location				MCP	MW-7B	MW-8S	MW-8S	MW-8S	MW-10D	MW-10D	MW-10D	MW-10D	MW-11B	MW-11B	MW-11B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW7B-120914	AX-GW-MW8S-032014	AX-GW-MW8S-092514	AX-GW-MW8S-120914	AX-GW-MW10D-032014	AX-GW-MW10D-062614	AX-GW-MW10D-092514	AX-GW-MW10D-121114	AX-GW-MW11B-031914	AX-GW-MW11B-062514	AX-GW-MW11B-093014
Sample Date				UCLs	12/09/14	03/20/14	09/25/14	12/09/14	03/20/14	06/26/14	09/25/14	12/11/14	03/19/14	06/25/14	09/30/14
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	72.9		230.	229.		112.	102.	106.		91.7	89.1
Ammonia (as N)	(mg/l)	NE	NE	NE	0.075 U		1.28	0.910		1.50	1.47	1.39		0.251	0.275
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U		17.	11.		0.50 U	0.50 U	0.50 U		0.50 U	0.50 U
Total Iron	(mg/l)	NE	NE	NE	0.05 U		5.9	6.1		0.32	0.39	0.25		0.05 U	0.05 U
Nitrate (as N)	(mg/l)	NE	NE	NE	0.100 U		0.100 U	0.100 U	-	0.100 U	0.100 U	0.100 U		2.95	2.82
Phosphorus	(mg/l)	NE	NE	NE	0.029		0.102	0.094	-	0.010 U	0.015	0.010 U		0.010 U	0.010
Sulfate	(mg/l)	NE	NE	NE	320.		350.	360.		160.	180.	160.		15.	15.
Total Organic Carbon	(mg/l)	NE	NE	NE	1.7		26.	9.0		13.	26.	3.8 J		2.0	2.9
Total Suspended Solids	(mg/l)	NE	NE	NE	6.1	16.	13.	8.5	5.0 U						
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.17	0.28	0.10	0.24	0.13	0.13	0.10	0.06	0.22	0.23	0.22
ORP	(mv)	NE	NE	NE	-108.1	-68.0	-89.2	-82.5	78.0	-52.7	48.7	98.5	-7.9	-139.7	-11.0
Specific Conductivity	(ms/cm)	NE	NE	NE	9.227	4.551	3.741	4.763	1.531	1.411	1.832	1.631	0.595	0.640	0.809
Temperature	(c)	NE	NE	NE	11.08	9.75	22.57	13.67	14.94	17.96	17.72	12.71	10.98	17.21	19.34
Turbidity	(ntu)	NE	NE	NE	0.51	2.69	1.74	6.81	0.22	0.37	1.36	0.63	1.89	0.65	2.18
Ha	(su)	NE	NF	NE	8.22	6.71	6.99	6.83	6.12	6.00	6.14	6.01	9.01	6.32	6.32

Notes:
(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit
ND = Not detected

J = Estimated concentration/reporting limit
ND = Not detected
NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CVOCs and Total PCBs calculated by: summing detected concentrations

MW-2UD, MW-21D, MW-22S, G2-U01, G2-U03, and MW-3 (Precix).
Total CVOCs and Total PCBs calculated by: summing detected concentrations
MCP = Massachsetts Contingency Plan
MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards
MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

				1.00	1001445			200/420		100/400	100		100,400	100 400	
Location Sample ID	Units	MCP GW-2	MCP GW-3	MCP Groundwater	<b>MW-11B</b> AX-GW-MW11B-121014	<b>MW-12S</b> AX-GW-MW12S-031914	MW-12S AX-GW-MW12S-062614	MW-13B AX-GW-MW13B-032014	<b>MW-13B</b> AX-GW-MW13B-062614	MW-13B AX-GW-MW13B-092414	MW-13B AX-GW-MW13B-121014	<b>MW-13D</b> AX-GW-MW13D-032014	MW-13D AX-GW-MW13D-062614	<b>MW-13D</b> AX-GW-MW13D-121014	<b>MW-15B</b> AX-GW-MW15B-032414
Sample Date	Units	IVICP GVV-2	IVICP GW-3	UCLs	12/10/14	03/19/14	06/26/14	03/20/14	06/26/14	09/24/14	12/10/14	03/20/14	06/26/14	12/10/14	03/24/14
Volatile Organic Compounds				OCES	12/10/14	03/13/14	00/20/14	03/20/14	00/20/14	03/24/14	12/10/14	03/20/14	00/20/14	12/10/14	03/24/14
1,1,1,2-Tetrachloroethane	(ug/I)	10.	50000.	100000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	1.0 U	1.0 U	1.0 U	400. U	200. U	170.	220.	3.3	5.2	2.0 U	400. U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	1.0 U	1.0 U	1.0 U J	400. U	200. U J	50. U	100. U	1.0 U	1.0 U J	2.0 U	400. U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	1.0 U	1.0 U	1.0 U J	400. U	200. U J	50. U	100. U	1.0 U	1.0 U J	2.0 U	400. U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	1.0 U	3.0	5.0	400. U	200. U	50. U	100. U	1.9	3.3	5.8	400. U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	2.0 U	2.0 U	2.0 U	800. U	400. U	100. U	200. U	2.0 U	2.0 U	4.0 U	800. U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	2.0 U	2.0 U	2.0 U	800. U	400. U	100. U	200. U	2.0 U	2.0 U	4.0 U	800. U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	2.0 U	2.0 U	2.0 U J	800. U	400. U J	100. U	200. U	2.0 U	2.0 U J	4.0 U	800. U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	0.50 U		0.50 U		100. U	25. U	50. U	-	0.50 U	1.0 U	
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	1.0	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
Bromoform	(ug/l)	700.	50000.	100000.	2.0 U J	2.0 U	2.0 U J	800. U	400. U J	100. U J	200. U J	2.0 U J	2.0 U J	4.0 U J	800. U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U J	1.0 U	2.0 U	400. U J
Chlorobenzene	(ug/l)	200.	1000.	10000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
Chloroethane	(ug/l)	NE	NE	NE	2.0 U	2.0 U	2.0 U	800. U	400. U	100. U	200. U	2.0 U	2.0 U	4.0 U	800. U
Chloroform	(ug/l)	50.	20000.	100000.	1.0 U	1.0 U	1.0 U	400. U	200. U	50. U	100. U	1.0 U	1.0 U	2.0 U	400. U
Chloromethane	(ug/l)	NE	NE 50000	NE	2.0 U	2.0 U	2.0 U	800. U	400. U	100. U	200. U	2.0 U	2.0 U	4.0 U	800. U
cis-1,2-Dichloroethene	(ug/l)	20. NF	50000. NF	100000. NF	3.0	37.	38.	3200.	4400.	3700.	3700.	18.	30.	250.	22000.
cis-1,3-Dichloropropene Dibromochloromethane	(ug/l) (ug/l)	20.	50000.	100000.	0.50 U 1.0 U	0.50 U 1.0 U	0.50 U 1.0 U	200. U 400. U	100. U 200. U	25. U 50. U	50. U 100. U	0.50 U 1.0 U	0.50 U 1.0 U	1.0 U 2.0 U	200. U 400. U
Dichlorodifluoromethane	(ug/I)	NF	NE	NE	2.0 U	2.0 U	2.0 U	800. U	400. U	100. U	200. U	2.0 U	2.0 U	4.0 U	800. U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	0.60 U	0.60 U	0.60 U	240. U	120. U	30. U	60. U	0.60 U	0.60 U	1.2 U	240. U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	2.0 U	2.0 U	2.0 U	800. U	400. U	100. U	200. U	2.0 U	2.0 U	4.0 U	800. U
o-Chlorotoluene	(ug/l)	NF	NE	NF	2.0 U	2.0 U	2.0 U	800. U	400. U	100. U	200. U	2.0 U	2.0 U	4.0 U	800. U
p-Chlorotoluene	(ug/l)	NF	NE NE	NF	2.0 U	2.0 U	2.0 U	800. U	400. U	100. U	200. U	2.0 U	2.0 U	4.0 U	800. U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	110.	1.0 U	1.0 U	400. U	200. U	76.	100. U	1.9	1.8	2.0 U	400. U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	1.0 U	1.0 U	1.0	400. U	200. U	50. U	100. U	1.0 U	1.1	2.0	400. U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	0.50 U	0.50 U	0.50 U J	200. U	100. U J	25. U	50. U	0.50 U	0.50 U J	1.0 U	200. U J
Trichloroethene	(ug/l)	5.	5000.	50000.	8.7	10.	5.2	[16000.]	[15000.]	[15000.]	[23000.]	20.	21.	47.	[90000.]
Vinyl chloride	(ug/l)	2.	50000.	100000.	1.0 U	1.7	3.0	620.	560.	730.	620.	3.9	2.6	530.	400. U
Total CVOCs	(ug/l)	NE	NE	NE	122.7	51.7	52.2	19820.	19960.	19676.	27540.	49.	65.	834.8	112000.
Polychlorinated BiPhenyls															
Aroclor 1016	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	5.00 U
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	5.00 U
Aroclor 1232	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	5.00 U
Aroclor 1242	(ug/l)	NE	NE	NE	0.530	0.250 U	0.250 U	22.7	33.4	27.4	35.2	0.250 U	0.250 U	0.250 U	49.8
Aroclor 1248	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	5.00 U
Aroclor 1254	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	5.00 U
Aroclor 1260	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	5.00 U
Aroclor 1262	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	5.00 U
Aroclor 1268	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	5.00 U	0.250 U	0.250 U	0.250 U	5.00 U
Total PCBs	(ug/l)	5.	10.	100.	0.530	0.250 U	0.250 U	[22.7]	[33.4]	[27.4]	[35.2]	0.250 U	0.250 U	0.250 U	[49.8]
Dissolved Gases	(··(1)	NE	l NE	l NE	0.500.11		2.44		1.00	1 442	2.00		0.500.11	4.70	
Ethane	(ug/l)	NE	NE NE	NE NF	0.500 U		2.44 0.500 U		1.06	4.43	2.89 57.2		0.500 U	1.78	
Ethene Methane	(ug/l)	NE NF	NE NE	NE NF	0.500 U 8.45		0.500 U 386.		40.3 80.4	71.2 134.	57.2 155.	-	0.500 U 136.	66.3 312.	
wietnane	(ug/l)	NE	INE	NE	8.45		38b.		80.4	154.	155.		136.	312.	

Location				MCP	MW-11B	MW-12S	MW-12S	MW-13B	MW-13B	MW-13B	MW-13B	MW-13D	MW-13D	MW-13D	MW-15B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW11B-121014	AX-GW-MW12S-031914	AX-GW-MW12S-062614	AX-GW-MW13B-032014	AX-GW-MW13B-062614	AX-GW-MW13B-092414	AX-GW-MW13B-121014	AX-GW-MW13D-032014	AX-GW-MW13D-062614	AX-GW-MW13D-121014	AX-GW-MW15B-032414
Sample Date				UCLs	12/10/14	03/19/14	06/26/14	03/20/14	06/26/14	09/24/14	12/10/14	03/20/14	06/26/14	12/10/14	03/24/14
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	89.6		152.		72.5	148.	185.		271.	272.	
Ammonia (as N)	(mg/l)	NE	NE	NE	0.075 U		0.386		0.440	0.620	0.390		0.449	0.486	
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U		7.0		0.50 U	0.50 U	0.50 U		0.50 U	0.50 U	
Total Iron	(mg/l)	NE	NE	NE	0.05 U		11.		0.14	0.96	0.07		0.80	0.39	
Nitrate (as N)	(mg/l)	NE	NE	NE	1.88		0.100 U		0.100 U	0.100 U	0.100 U		0.100 U	0.100 U	
Phosphorus	(mg/l)	NE	NE	NE	0.010 U		0.885		0.632	0.500	0.576		0.087	0.062	
Sulfate	(mg/l)	NE	NE	NE	18.		13.		190.	330.	260.		40.	31.	
Total Organic Carbon	(mg/l)	NE	NE	NE	1.2		12.		13.	4.0	13.		4.1	4.2	
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U	27.	21.	46.	9.0	5.3	5.0 U	5.0 U	5.0 U	5.0 U	7.7
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.33	0.12	0.16	1.56	0.11	0.14	0.11	0.13	0.11	0.08	0.21
ORP	(mv)	NE	NE	NE	38.1	30.7	-232.3	-56.9	-77.7	39.5	118.2	88.3	-43.1	96.2	65.2
Specific Conductivity	(ms/cm)	NE	NE	NE	0.681	0.498	0.741	3.047	2.438	4.945	4.173	1.579	1.130	1.484	5.650
Temperature	(c)	NE	NE	NE	15.78	9.52	18.48	12.94	18.48	20.13	15.58	10.38	19.18	15.66	11.32
Turbidity	(ntu)	NE	NE	NE	1.58	8.20	1.84	8.99	3.15	3.28	17.3	1.82	2.01	2.48	4.13
pH	(su)	NE	NE	NE	6.20	5.82	5.97	11.40	10.60	8.87	8.88	6.90	6.87	6.80	6.57

Notes: (ug/l) = Micrograms per liter (mg/l) = Milligrams per liter (mv) = Millivolts

(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

ND = Not detected

NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Hethod 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-45, MW-165, MW-185
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CVGCs and Total PCRs calculated by summing detected concentrations

Total CVOCs and Total PCBs calculated by: summing detected concentrations

Location	1			MCD	MANA 1ED	NAVA 1 E D	MAN 1FD	MAN 1FD	MW 1FD	MW 1FD	MW 1FD	MW 1FD	MW 1FD	MW 1FD	DAVA 1CC
Location Sample ID	Units	MCP GW-2	MCP GW-3	MCP Groundwater	<b>MW-15B</b> AX-GW-MW15B-062714	MW-15B AX-GW-MW15B-092614	MW-15B AX-GW-MW15B-121114	MW-15B AX-GW-MW15B-080715	MW-15D AX-GW-MW15D-032414	MW-15D AX-GW-DUP4-032414	<b>MW-15D</b> AX-GW-MW15D-062714	MW-15D AX-GW-MW15D-092614	MW-15D AX-GW-MW15D-121114	<b>MW-15D</b> AX-GW-MW15D-080715	<b>MW-16S</b> AX-GW-MW16S-031814
Sample Date	Units	IVICP GVV-2	IVICP GVV-3	UCLs	06/27/14	09/26/14	12/11/14	08/07/15	03/24/14	03/24/14	06/27/14	09/26/14	12/11/14	08/07/15	03/18/14
Volatile Organic Compounds				UCLS	00/27/14	03/20/14	12/11/14	08/07/13	03/24/14	03/24/14	00/27/14	03/20/14	12/11/14	08/07/13	03/18/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
1,1,1-trichloroethane	(ug/I)	4000.	20000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
1.1.2.2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	2500. U J	2000. U	1000. U	500. U	40. U	40. U	50. U J	100. U	100. U	50. U	2.0 U
1,1,2-Trichloroethane	(ug/I)	900.	50000.	100000.	2500. U J	2000. U	1000. U	500. U	40. U	40. U	50. U J	100. U	100. U	50. U	2.0 U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	5000. U	4000. U	2000. U	1000. U J	80. U	80. U	100. U	200. U	200. U	100. U J	4.0 U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	5000. U	4000. U	2000. U	1000. U	80. U	80. U	100. U	200. U	200. U	100. U	4.0 U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	5000. U J	4000. U	2000. U	1000. U	80. U	80. U	100. U J	200. U	200. U	100. U	4.0 U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	1200. U	1000. U	500. U	250. U			25. U	50. U	50. U	25. U	
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
Bromoform	(ug/l)	700.	50000. 5000.	100000. 50000.	5000. U J 2500. U	4000. U	2000. U J 1000. U	1000. U J	80. U 40. U	80. U 40. U	100. U J	200. U	200. U J	100. U J 50. U	4.0 U J
Carbon Tetrachloride	(ug/l)	200.	1000.	10000.	2500. U	2000. U 2000. U	1000. U	500. U 500. U	40. U	40. U	50. U 50. U	100. U 100. U	100. U 100. U	50. U	2.0 U 2.0 U
Chlorobenzene Chloroethane	(ug/l)	NF	NE	10000. NE	5000. U	4000. U	2000. U	1000. U	40. U	40. U	100. U	200. U	200. U	100. U	2.0 U
Chloroform	(ug/l) (ug/l)	50.	20000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	100. U	4.0 U
Chloromethane	(ug/I)	NE	20000. NE	NE	5000. U	4000. U	2000. U	1000. U	40. U	40. U	100. U	200. U	200. U	100. U	4.0 U
cis-1,2-Dichloroethene	(ug/I)	20.	50000.	100000.	32000. 0	44000.0	43000.	[92000.]	990.	980.	1300.	1400.	1400.	1200.	140.
cis-1,3-Dichloropropene	(ug/I)	NF	NF	NF	1200. U	1000. U	500. U	250. U	20. U	20. U	25. U	50. U	50. U	25. U	1.0 U
Dibromochloromethane	(ug/I)	20.	50000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U	100. U	100. U	50. U	2.0 U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	5000. U	4000. U	2000. U	1000. U	80. U	80. U	100. U	200. U	200. U	100. U	4.0 U
Hexachlorobutadiene	(ug/I)	50.	3000.	30000.	1500. U	1200. U	600. U	300. U J	24. U	24. U	30. U	60. U	60. U	30. U J	1.2 U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	5000. U	4000. U	2000. U	1000. U	80. U	80. U	100. U	200. U	200. U	100. U	4.0 U
o-Chlorotoluene	(ug/l)	NE	NE	NE	5000. U	4000. U	2000. U	1000. U	80. U	80. U	100. U	200. U	200. U	100. U	4.0 U
p-Chlorotoluene	(ug/l)	NE	NE	NE	5000. U	4000. U	2000. U	1000. U	80. U	80. U	100. U	200. U	200. U	100. U	4.0 U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	2500. U	2000. U	1000. U	500. U	47.	61.	180.	160.	100.	72.	2.0 U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	2500. U	2000. U	1000. U	500. U	40. U	40. U	50. U J	100. U	100. U	50. U	2.0 U
trans-1,3-Dichloropropene	(ug/I)	NE	NE	NE	1200. U J	1000. U	500. U	250. U	20. U	20. U	25. U	50. U	50. U	25. U	1.0 U
Trichloroethene	(ug/l)	5.	5000.	50000.	[110000.]	[110000.] J	[88000.]	[33000.]	3800.	3900.	[6800.]	[6800.] J	[5600.]	3900.	250.
Vinyl chloride	(ug/l)	2.	50000.	100000.	2500. U	2000. U	1000. U	500. U	74. J	66. J	79.	100. U	100. U	50. U	2.2
Total CVOCs	(ug/l)	NE	NE	NE	142000.	154000.	131000.	125000.	4911.	5007.	8359.	8360.	7100.	5172.	392.2
Polychlorinated BiPhenyls	(r = ft)	NF	NF	NF	F 0011	25.011	25.011		F 0011	F 00 !!	F 00 !!	12.5.11	13.5.11		0.35011
Aroclor 1016	(ug/l)	NE NE	***		5.00 U	25.0 U	25.0 U		5.00 U	5.00 U	5.00 U	12.5 U	12.5 U		0.250 U
Arodor 1221	(ug/l)	NE NF	NE NE	NE NE	5.00 U 5.00 U	132. 25.0 U	25.0 U 25.0 U		5.00 U 5.00 U	5.00 U 5.00 U	5.00 U	44.2	12.5 U		0.250 U 0.250 U
Aroclor 1232 Aroclor 1242	(ug/l)	NE NF	NE NF	NE NF	5.00 U 69.3	25.0 U 82.8	25.0 U 183.		5.00 U 45.2	5.00 U 44.8	5.00 U 55.0	12.5 U 42.0	12.5 U 56.6		0.250 U
Aroclor 1242 Aroclor 1248	(ug/l)	NE NF	NE NE	NE NE	5.00 U	82.8 25.0 U	25.0 U		45.2 5.00 U	44.8 5.00 U	55.0 5.00 U	42.0 12.5 U	12.5 U		0.250 U
Aroclor 1248 Aroclor 1254	(ug/l) (ug/l)	NF NF	NE NE	NF.	11.8	25.0 U	25.0 U		5.00 U	5.00 U	12.6	12.5 U	12.5 U	-	0.250 U
Aroclor 1254 Aroclor 1260	(ug/I)	NF.	NE NE	NF.	5.00 U	25.0 U	25.0 U		5.00 U	5.00 U	5.00 U	12.5 U	12.5 U	-	0.250 U
Aroclor 1262	(ug/l)	NF.	NE NE	NE NE	5.00 U	25.0 U	25.0 U		5.00 U	5.00 U	5.00 U	12.5 U	12.5 U		0.250 U
Aroclor 1268	(ug/l)	NE	NE NE	NE NE	5.00 U	25.0 U	25.0 U		5.00 U	5.00 U	5.00 U	12.5 U	12.5 U		0.250 U
Total PCBs	(ug/l)	5.	10.	100.	[81.1]	[215.]	[183.]		[45.2]	[44.8]	[67.6]	[86.2]	[56.6]		0.250 U
Dissolved Gases	(-0/-/					,,					1	[]	1		
Ethane	(ug/l)	NE	NE	NE	3.82	8.77	20.8				2.34	2.29	2.53		
Ethene	(ug/l)	NE	NE	NE	25.0	35.6	43.8				4.59	4.00	3.79		
Methane	(ug/l)	NE	NE	NE	79.5 J	102.	97.9				48.9	42.2	55.9		
	101.1							l.	I .	1					

Location				МСР	MW-15B	MW-15B	MW-15B	MW-15B	MW-15D	MW-15D	MW-15D	MW-15D	MW-15D	MW-15D	MW-16S
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW15B-062714	AX-GW-MW15B-092614	AX-GW-MW15B-121114	AX-GW-MW15B-080715	AX-GW-MW15D-032414	AX-GW-DUP4-032414	AX-GW-MW15D-062714	AX-GW-MW15D-092614	AX-GW-MW15D-121114	AX-GW-MW15D-080715	AX-GW-MW16S-031814
Sample Date				UCLs	06/27/14	09/26/14	12/11/14	08/07/15	03/24/14	03/24/14	06/27/14	09/26/14	12/11/14	08/07/15	03/18/14
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	42.6	45.4	40.5				23.8	21.9	25.1		
Ammonia (as N)	(mg/l)	NE	NE	NE	0.208	0.075 U	0.075 U				0.482	0.367	0.287		
Ferrous Iron	(mg/l)	NE	NE	NE	9.7	12.	19.				0.50 U	0.50 U	0.50 U		
Total Iron	(mg/l)	NE	NE	NE	8.2	11.	14.				0.09	0.07	0.08		
Nitrate (as N)	(mg/l)	NE	NE	NE	0.117	0.100 U	0.100 U				0.200	0.148	0.201		
Phosphorus	(mg/l)	NE	NE	NE	0.021	0.010 U	0.010 U				0.010 U	0.010 U	0.010 U		
Sulfate	(mg/l)	NE	NE	NE	290.	260.	510.				200.	200.	420.		
Total Organic Carbon	(mg/l)	NE	NE	NE	8.3	1.5	2.4				5.5	1.0	3.6		
Total Suspended Solids	(mg/l)	NE	NE	NE	32.	12.	11.		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.14	0.18	0.39	0.20	0.17		0.17	0.11	0.40	0.12	0.63
ORP	(mv)	NE	NE	NE	-109.1	-12.6	-72.4	-115.9	176.2		-65.3	91.2	101.0	29.4	134.4
Specific Conductivity	(ms/cm)	NE	NE	NE	8.177	7.951	8.141	7.581	3.364		3.608	3.965	3.785	3.482	4.857
Temperature	(c)	NE	NE	NE	16.58	17.89	13.95	19.55	11.86		16.76	17.82	12.96	17.91	9.33
Turbidity	(ntu)	NE	NE	NE	4.27	1.36	7.65	4.39	0.50		0.61	2.17	1.53	0.76	0.43
pH	(su)	NE	NE	NE	6.73	6.76	6.09	5.78	5.21		5.35	5.70	5.19	5.34	6.13

Notes:
(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit
ND = Not detected

J = Estimated concentration/reporting limit
ND = Not detected
NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CVOCs and Total PCBs calculated by: summine detected concentrations

MW-2UD, MW-21D, MW-22S, G2-U01, G2-U03, and MW-3 (Precix).

Total CVOCs and Total PCBs calculated by: summing detected concentrations

MCP = Massachsetts Contingency Plan

MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards

MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

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Location				МСР	MW-16S	MW-16S	MW-16S	MW-17B	MW-17B	MW-17B	MW-17B	MW-17B	MW-17B	MW-17D	MW-17D
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW16S-062514	AX-GW-MW16S-092214	AX-GW-MW16S-120814	AX-GW-MW17B-032114	AX-GW-MW17B-062614	AX-GW-MW17B-092414	AX-GW-DUP1-092414	AX-GW-MW17B-120914	AX-GW-DUP1-120914	AX-GW-MW17D-032114	AX-GW-DUP3-032114
Sample Date				UCLs	06/25/14	09/22/14	12/08/14	03/21/14	06/26/14	09/24/14	09/24/14	12/09/14	12/09/14	03/21/14	03/21/14
Volatile Organic Compounds 1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
1,1,1-trichloroethane	(ug/I) (ug/I)	4000.	20000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
1,1,2,2-Tetrachloroethane	( 0, )	9.	50000.	100000.	2.5 U J	5.0 U	1.0 U	50. U	100. U J	50. U	50. U	40. U	40. U	50. U	50. U
1,1,2,2-Tetrachioroethane	(ug/l) (ug/l)	900.	50000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U J	50. U	50. U	40. U	40. U	50. U	50. U
1,1-Dichloroethane	(ug/I)	2000.	20000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
1.1-Dichloroethane	(ug/I)	80.	30000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
1,2,4-Trichlorobenzene	(ug/I)	200.	50000.	100000.	5.0 U J	10. U	2.0 U	100. U	200. U	100. U	100. U	80. U	80. U	100. U	100. U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	5.0 U	10. U	2.0 U	100. U	200. U	100. U	100. U	80. U	80. U	100. U	100. U
1.2-Dishorhoethane	(ug/I)	8000.	2000.	80000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	5.0 U	10. U	2.0 U	100. U	200. U J	100. U	100. U	80. U	80. U	100. U	100. U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	1.2 U	2.5 U	0.50 U		50. U	25. U	25. U	20. U	20. U		
1.4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
Bromoform	(ug/l)	700.	50000.	100000.	5.0 U J	10. U	2.0 U J	100. U J	200. U J	100. U J	100. U J	80. U J	80. U J	100. U J	100. U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	2.5 U	5.0 U	1.0 U	50. U J	100. U	50. U	50. U	40. U	40. U	50. U J	50. U J
Chlorobenzene	(ug/l)	200.	1000.	10000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
Chloroethane	(ug/l)	NE	NE	NE	5.0 U	10. U	2.0 U	100. U	200. U	100. U	100. U	80. U	80. U	100. U	100. U
Chloroform	(ug/l)	50.	20000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
Chloromethane	(ug/l)	NE	NE	NE	5.0 U	10. U J	2.0 U	100. U	200. U	100. U	100. U	80. U	80. U	100. U	100. U
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	190.	280.	130.	1900.	3100.	4400.	4500.	3500.	3000.	1600.	2000.
cis-1,3-Dichloropropene	(ug/l)	NE	NE	NE	1.2 U	2.5 U	0.50 U	25. U	50. U	25. U	25. U	20. U	20. U	25. U	25. U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	2.5 U	5.0 U	1.0 U	50. U	100. U	50. U	50. U	40. U	40. U	50. U	50. U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	5.0 U	10. U	2.0 U	100. U	200. U	100. U	100. U	80. U	80. U	100. U	100. U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	1.5 U	3.0 U	0.60 U	30. U	60. U	30. U	30. U	24. U	24. U	30. U	30. U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	5.0 U	10. U	2.0 U	100. U	200. U	100. U	100. U	80. U J	80. U J	100. U	100. U
o-Chlorotoluene	(ug/l)	NE	NE	NE	5.0 U	10. U	2.0 U	100. U	200. U	100. U	100. U	80. U	80. U	100. U	100. U
p-Chlorotoluene	(ug/l)	NE	NE	NE	5.0 U	10. U	2.0 U	100. U	200. U	100. U	100. U	80. U	80. U	100. U	100. U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	2.5 U	5.0 U	1.2	65.	100. U	50. U	50. U	40. U	40. U	50. U	68.
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	2.5 U	5.0 U	1.8	50. U	100. U	61.	64.	67.	70.	50. U	50. U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	1.2 U J	2.5 U	0.50 U	25. U J	50. U J	25. U	25. U	20. U	20. U	25. U J	25. U J
Trichloroethene	(ug/l)	5.	5000.	50000.	380.	280.	170.	4600.	[5100.]	3600.	3600.	2900.	3000.	4200.	4700.
Vinyl chloride	(ug/l)	2.	50000.	100000.	3.3	5.0 U J	1.6	250.	240.	350.	350.	340.	370.	190. J	260. J
Total CVOCs	(ug/l)	NE	NE	NE	573.3	560.	304.6	6815.	8440.	8411.	8514.	6807.	6440.	5990.	7028.
Polychlorinated BiPhenyls	, 10	1	1	1	0.055	0.055	0.05***	0.55	1 2500	1 25					
Aroclor 1016	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	5.00 U	5.00 U	2.50 U	2.50 U
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	5.00 U	5.00 U	2.50 U	2.50 U
Aroclor 1232	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	5.00 U	5.00 U	2.50 U	2.50 U
Aroclor 1242	(ug/l)	NE NE	NE	NE	0.250 U	0.250 U	0.250 U	30.4	28.0	21.7	21.3	22.9	23.6	37.6	34.5
Aroclor 1248	(ug/l)	NE NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	5.00 U	5.00 U	2.50 U	2.50 U
Aroclor 1254	(ug/l)	NE NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	5.00 U	5.00 U	2.50 U	2.50 U
Aroclor 1260	(ug/l)	NE NE	NE	NE	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	5.00 U	5.00 U	2.50 U	2.50 U
Aroclor 1262 Aroclor 1268	(ug/l)	NE NE	NE NF	NE NF	0.250 U	0.250 U	0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	5.00 U	5.00 U	2.50 U	2.50 U
Arocior 1268 Total PCBs	(ug/l)				0.250 U	0.250 U	0.250 U 0.250 U	2.50 U	2.50 U	2.50 U	2.50 U	5.00 U	5.00 U	2.50 U	2.50 U
	(ug/l)	5.	10.	100.	0.250 U	0.250 U	U.25U U	[30.4]	[28.0]	[21.7]	[21.3]	[22.9]	[23.6]	[37.6]	[34.5]
Dissolved Gases Ethane	(/I)	NF.	NF	NF	0.942	2.81	0.965		10.6	15.7		32.3		_	-
Ethane	(ug/l)	NE NE	NE NE	NE NE	0.942 0.500 U	2.81 0.500 U	0.965 0.500 U		10.6 4.28	3.48		32.3 5.06			
Methane	(ug/l)	NE NF	NE NF	NE NF	0.500 U 40.1	0.500 U 217.	0.500 U 47.7		4.28	3.48 461.		937.			
ivietnane	(ug/l)	NE	INE	NE	40.1	217.	47.7		304.	461.		937.			

Location				MCP	MW-16S	MW-16S	MW-16S	MW-17B	MW-17B	MW-17B	MW-17B	MW-17B	MW-17B	MW-17D	MW-17D
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW16S-062514	AX-GW-MW16S-092214	AX-GW-MW16S-120814	AX-GW-MW17B-032114	AX-GW-MW17B-062614	AX-GW-MW17B-092414	AX-GW-DUP1-092414	AX-GW-MW17B-120914	AX-GW-DUP1-120914	AX-GW-MW17D-032114	AX-GW-DUP3-032114
Sample Date				UCLs	06/25/14	09/22/14	12/08/14	03/21/14	06/26/14	09/24/14	09/24/14	12/09/14	12/09/14	03/21/14	03/21/14
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	66.9	79.9	76.2		134.	139.		126.			
Ammonia (as N)	(mg/l)	NE	NE	NE	0.138	0.083	0.075 U		0.873	1.08		1.58			
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U	0.50 U	0.50 U		0.50 U	0.50 U		0.61			
Total Iron	(mg/l)	NE	NE	NE	0.0500 U	0.08	0.05 U		0.18	1.1		0.58			
Nitrate (as N)	(mg/l)	NE	NE	NE	0.762	0.792	0.372		0.100 U	0.100 U		0.100 U			
Phosphorus	(mg/l)	NE	NE	NE	0.016	0.010 U	0.010 U		0.046	0.028		0.011			
Sulfate	(mg/l)	NE	NE	NE	450.	520.	300.		190.	180.		210.			
Total Organic Carbon	(mg/l)	NE	NE	NE	3.9	5.0	0.57		11.	4.0		7.9			
Total Suspended Solids	(mg/l)	NE	NE	NE	7.5	6.9	5.0 U	5.0 U	5.0 U	5.0 U		5.0 U		5.0 U	5.0 U
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.08	0.15	1.19	0.11	0.06	0.00		0.07		0.11	
ORP	(mv)	NE	NE	NE	127.1	64.5	135.4	119.9	31.2	-15.5		-11.7		130.0	
Specific Conductivity	(ms/cm)	NE	NE	NE	12.61	13.69	8.192	2.218	1.972	2.768		4.090		2.590	
Temperature	(c)	NE	NE	NE	19.73	24.57	13.93	13.92	17.47	18.32		11.71		12.93	
Turbidity	(ntu)	NE	NE	NE	1.02	0.62	2.06	0.86	0.99	1.75		1.88		3.63	
pH	(su)	NE	NE	NE	6.01	6.18	6.09	7.50	6.73	6.58		6.24		5.69	

Notes: (ug/l) = Micrograms per liter (mg/l) = Milligrams per liter (mv) = Millivolts

(ms/cm) = Microsiemens per centimeter

(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

ND = Not detected

NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CWGCs and Total PCRs calculated by sumping detected concentrations

Total CVOCs and Total PCBs calculated by: summing detected concentrations

La cadica.				MCP	MW-17D	MW-17D	1414.470	MW-18D	NAW 40D	NAW 40D	NAM 40D	NAMA 4.00	NAME 400	MW-18S	MW-18S
Location	11-24-	14CD C14/ 2	MCD CIM 2				MW-17D		MW-18D	MW-18D	MW-18D	MW-18S	MW-18S		
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW17D-062614	AX-GW-MW17D-092414	AX-GW-MW17D-120914	AX-GW-MW18D-031814	AX-GW-MW18D-062414	AX-GW-MW18D-092214	AX-GW-MW18D-121014	AX-GW-MW18S-031814	AX-GW-MW18S-062414	AX-GW-DUP1-062414	AX-GW-MW18S-092214
Sample Date				UCLs	06/26/14	09/24/14	12/09/14	03/18/14	06/24/14	09/22/14	12/10/14	03/18/14	06/24/14	06/24/14	09/22/14
Volatile Organic Compounds	, n	1									1	1			T
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	100. U J	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	100. U J	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	200. U	100. U	80. U	40. U	80. U	40. U	80. U	20. U	20. U	20. U	40. U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	200. U	100. U	80. U	40. U	80. U	40. U	80. U	20. U	20. U	20. U	40. U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
1,2-Dichloropropane	(ug/l)	6000.	50000.	100000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U 10. U	20. U
1,3-Dichlorobenzene	(ug/l)	6000. NF	50000.	100000.	100. U	50. U 100. U	40. U 80. U	20. U	40. U 80. U	20. U	40. U	10. U	10. U		20. U
1,3-Dichloropropane	(ug/l)		NE 200	NE 2000	200. U J			40. U		40. U	80. U	20. U	20. U	20. U	40. U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	50. U	25. U	20. U		20. U	10. U	20. U		5.0 U	5.0 U	10. U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
Bromoform	(ug/l)	700.	50000.	100000.	200. U J	100. U J	80. U J	40. U	80. U J	40. U	80. U	20. U	20. U J	20. U J	40. U
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
Chlorobenzene	(ug/l)	200.	1000.	10000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
Chloroethane	(ug/l)	NE .	NE 20000.	NE 100000	200. U	100. U	80. U	40. U	80. U 40. U	40. U	80. U 40. U	20. U	20. U	20. U	40. U
Chloroform	(ug/l)	50.		100000.	100. U	50. U	40. U	20. U		20. U		10. U	10. U	10. U	20. U
Chloromethane	(ug/l)	NE	NE	NE	200. U	100. U	80. U	40. U J	80. U	40. U J	80. U	20. U	20. U	20. U	40. U J
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	4800.	3200.	2600.	1800.	960.	770.	1100.	330.	250.	250.	690.
cis-1,3-Dichloropropene	(ug/l)	NE	NE	NE	50. U	25. U	20. U	10. U	20. U	10. U	20. U	5.0 U	5.0 U	5.0 U	10. U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	100. U	50. U	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
Dichlorodifluoromethane	(ug/l)	NE FO	NE 2000	NE	200. U	100. U	80. U	40. U	80. U	40. U	80. U	20. U	20. U	20. U	40. U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	60. U	30. U	24. U	12. U	24. U	12. U	24. U	6.0 U	6.0 U	6.0 U	12. U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	200. U	100. U	80. U J	40. U	80. U	40. U	80. U	20. U J	20. U	20. U	40. U
o-Chlorotoluene	(ug/l)	NE	NE	NE	200. U	100. U	80. U	40. U	80. U	40. U	80. U	20. U	20. U	20. U	40. U
p-Chlorotoluene	(ug/l)	NE 50.	NE 20000	NE 100000	200. U	100. U	80. U	40. U	80. U	40. U	80. U	20. U	20. U	20. U	40. U
Tetrachloroethene	(ug/l)		30000.	100000.	100. U	64.	40. U	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	100. U	71.	59.	20. U	40. U	20. U	40. U	10. U	10. U	10. U	20. U
trans-1,3-Dichloropropene	(ug/l)	NE 5	NE .	NE	50. U J	25. U	20. U	10. U J	20. U	10. U	20. U	5.0 U	5.0 U	5.0 U	10. U
Trichloroethene	(ug/l)	5. 2.	5000.	50000.	4400.	4600.	3200.	2700.	1600.	1800.	2100.	950.	640.	630.	1500.
Vinyl chloride	(ug/l)		50000.	100000.	290.	360.	350.	230.	59.	20. U J	73.	10. U	10. U	10. U	20. U J
Total CVOCs	(ug/l)	NE	NE	NE	9490.	8295.	6209.	4730.	2619.	2570.	3273.	1280.	890.	880.	2190.
Polychlorinated BiPhenyls	(· · = /I)	NF	NE	NE	3.50.11	2.5011	5.00.11	4.35.11	0.500 U	0.500.11	4.25.11	0.350.11	0.35011	0.350.11	0.350.11
Aroclor 1016 Aroclor 1221	(ug/l)	NE NE	NE NE	NE NE	2.50 U 2.50 U	2.50 U 2.50 U	5.00 U 5.00 U	1.25 U 1.25 U	0.500 U	0.500 U 0.500 U	1.25 U 1.25 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U
	(ug/l)														
Aroclor 1232	(ug/l)	NE	NE	NE	2.50 U	2.50 U	5.00 U	1.25 U	0.500 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1242	(ug/l)	NE	NE	NE	24.3	23.7	34.1	9.58	9.97	5.54	12.8	0.250 U	0.250 U	0.250 U	1.76
Aroclor 1248	(ug/l)	NE NE	NE	NE	2.50 U	2.50 U	5.00 U	1.25 U	0.500 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1254	(ug/l)	NE NF	NE	NE NF	2.50 U	2.50 U	5.00 U 5.00 U	1.25 U	0.500 U 0.500 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U 0.250 U	0.250 U 0.250 U
Aroclor 1260	(ug/l)	110	NE NF	110	2.50 U	2.50 U		1.25 U		0.500 U	1.25 U	0.250 U	0.250 U		
Aroclor 1262	(ug/l)	NE NE		NE	2.50 U	2.50 U	5.00 U	1.25 U	0.500 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1268	(ug/l)	NE	NE 10	NE	2.50 U	2.50 U	5.00 U	1.25 U	0.500 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U	0.250 U
Total PCBs	(ug/l)	5.	10.	100.	[24.3]	[23.7]	[34.1]	9.58	9.97	5.54	[12.8]	0.250 U	0.250 U	0.250 U	1.76
Dissolved Gases	, 10	1	1 115	1	0.01	40.0	22.0		2.55	0.502	1 444		0.700		4.00
Ethane	(ug/l)	NE	NE	NE	8.94	19.9	22.9		2.65	0.603	1.11		0.792	-	1.00
Ethene	(ug/l)	NE	NE	NE	3.92	3.16	3.35		0.823	0.500 U	0.701		0.500 U		0.500 U
Methane	(ug/l)	NE	NE	NE	257.	574.	693.		24.0	0.500 U	9.34		5.00 U		1.72

Location				МСР	MW-17D	MW-17D	MW-17D	MW-18D	MW-18D	MW-18D	MW-18D	MW-18S	MW-18S	MW-18S	MW-18S
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW17D-062614	AX-GW-MW17D-092414	AX-GW-MW17D-120914	AX-GW-MW18D-031814	AX-GW-MW18D-062414	AX-GW-MW18D-092214	AX-GW-MW18D-121014	AX-GW-MW18S-031814	AX-GW-MW18S-062414	AX-GW-DUP1-062414	AX-GW-MW18S-092214
Sample Date				UCLs	06/26/14	09/24/14	12/09/14	03/18/14	06/24/14	09/22/14	12/10/14	03/18/14	06/24/14	06/24/14	09/22/14
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	68.9	65.9	58.5		63.8	62.7	62.8		58.6		68.5
Ammonia (as N)	(mg/l)	NE	NE	NE	1.02	1.25	1.44		0.167	0.100	0.087		0.092		0.075 U
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U	1.2	0.50 U		0.50 U	0.50 U	0.50 U		0.50 U		0.50 U
Total Iron	(mg/l)	NE	NE	NE	0.96	3.5	0.45		0.09	0.05 U	0.05 U		0.05 U		0.37
Nitrate (as N)	(mg/l)	NE	NE	NE	0.100 U	0.100 U	0.100 U		0.796	4.49	0.912		2.95		2.30
Phosphorus	(mg/l)	NE	NE	NE	0.010 U	0.015	0.010 U		0.013	0.010 U	0.010 U		0.010		0.013
Sulfate	(mg/l)	NE	NE	NE	180.	180.	220.		110.	210.	120.		30.		95.
Total Organic Carbon	(mg/l)	NE	NE	NE	9.6	6.3	7.6		3.0	3.1	3.2		2.2		3.7
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U	5.0 U	12.	5.0 U		5.0					
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.05	2.45	0.18	0.14	0.07	0.47	0.29	3.06	0.50		0.15
ORP	(mv)	NE	NE	NE	32.0	35.0	88.6	92.3	140.1	97.4	91.4	214.4	98.4		83.7
Specific Conductivity	(ms/cm)	NE	NE	NE	1.756	2.554	3.695	1.325	2.445	5.402	2.551	0.546	0.847		2.931
Temperature	(c)	NE	NE	NE	17.48	19.10	13.96	13.85	18.44	22.00	16.85	11.60	20.58		23.92
Turbidity	(ntu)	NE	NE	NE	2.15	4.98	7.12	1.27	1.00	1.35	0.83	1.47	1.91		3.86
pH	(su)	NE	NE	NE	5.80	5.88	5.50	6.07	6.07	6.23	5.92	6.08	6.24		6.36

Notes:

(ug/l) = Micrograms per liter

(mg/l) = Milligrams per liter

(mv) = Millivolts

(ms/cm) = Microsiemens per centimeter

(c) = Celsius degrees

(ntu) = Nephelometric units

(su) = Standard units

U = Constituent not detected at listed reporting limit

J = Estimated concentration/reporting limit

ND = Not detected

J = Estimated concentration/reporting limit
ND = Not detected
NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
--- Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CVOCs and Total PCBs calculated by: summing detected concentrations

MW-2UD, MW-21D, MW-22S, G2-UD1, G2-UD3, and MW-3 [PFCCX].

Total CVOCs and Total PCBs calculated by: summing detected concentrations

MCP = Massachsetts Contingency Plan

MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards

MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

Location		1		MCP	MW-18S	MW-19D	MW-19D	MW-19D	MW-19D	MW-19S	MW-19S	MW-19S	MW-20B	MW-20B	MW-20B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW18S-120814	AX-GW-MW19D-032114	AX-GW-MW19D-062614	AX-GW-MW19D-092314	AX-GW-MW19D-120914	AX-GW-MW19S-032114	AX-GW-MW19S-062614	AX-GW-MW19S-120914	AX-GW-MW20B-080614	AX-GW-MW20B-092914	AX-GW-MW20B-121014
Sample Date	05			UCLs	12/08/14	03/21/14	06/26/14	09/23/14	12/09/14	03/21/14	06/26/14	12/09/14	08/06/14	09/29/14	12/10/14
Volatile Organic Compounds				7 9.10	==, ==, = :	33/ = 2/ = 3	22, 23, 21		==, ==, = :	33/22/2	00/20/2	,,	33,33,2		==, ==, = :
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	1.0 U	50. U	100. U J	50. U	40. U	1.0 U	2.0 U J	2.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	1.0 U	50. U	100. U J	50. U	40. U	1.0 U	2.0 U J	2.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U J
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	2.0 U	100. U	200. U	100. U	80. U	2.0 U	4.0 U	4.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	2.0 U	100. U	200. U	100. U	80. U	2.0 U	4.0 U	4.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	2.0 U	100. U	200. U J	100. U	80. U	2.0 U	4.0 U J	4.0 U	2.0 U	2.0 U	2.0 U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	0.50 U		50. U	25. U	20. U		1.0 U	1.0 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
Bromoform	(ug/l)	700.	50000.	100000.	2.0 U J	100. U J	200. U J	100. U	80. U J	2.0 U	4.0 U J	4.0 U J	2.0 U	2.0 U	2.0 U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	1.0 U	50. U J	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	(ug/l)	200.	1000.	10000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	(ug/l)	NE FO	NE 20000	NE 100000	2.0 U	100. U	200. U	100. U	80. U	2.0 U	4.0 U	4.0 U	2.0 U	2.0 U	2.0 U
Chloroform	(ug/l)	50.	20000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.4	1.0 U	1.0 U
Chloromethane cis-1.2-Dichloroethene	(ug/l)	NE 20	NE 50000.	NE 100000.	2.0 U <b>53.</b>	100. U 2500.	200. U 4600.	100. U J 3700.	80. U 3100.	2.0 U 120.	4.0 U 150.	4.0 U 210.	2.0 U J 1.0 U	2.0 U 1.0 U	2.0 U 1.0 U
cis-1,3-Dichloropropene	(ug/l)	20. NF	50000. NE	100000. NF	0.50 U	2500. 25. U	4600. 50. U	3700. 25. U	20. U	0.50 U	150. 1.0 U	210. 1.0 U	0.50 U	0.50 U	0.50 U
Dibromochloromethane	(ug/l) (ug/l)	20.	50000.	100000.	1.0 U	23. U	100. U	25. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	2.0 U	100. U	200. U	100. U	80. U	2.0 U	4.0 U	4.0 U	2.0 U J	2.0 U	2.0 U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	0.60 U	30. U	60. U	30. U	24. U	0.60 U	1.2 U	1.2 U	0.60 U	0.60 U	0.60 U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	2.0 U	100. U	200. U	100. U	80. U J	2.0 U	4.0 U	4.0 U J	2.0 U	2.0 U	2.0 U
o-Chlorotoluene	(ug/l)	NE	NE	NE	2.0 U	100. U	200. U	100. U	80. U	2.0 U	4.0 U	4.0 U	2.0 U	2.0 U	2.0 U
p-Chlorotoluene	(ug/l)	NF	NE NE	NF.	2.0 U	100. U	200. U	100. U	80. U	2.0 U	4.0 U	4.0 U	2.0 U	2.0 U	2.0 U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	1.6	50. U	100. U	50. U	40. U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	1.0 U	50. U	100. U	50. U	40. U	1.4	2.9	5.2	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	0.50 U	25. U J	50. U J	25. U	20. U	0.50 U	1.0 U J	1.0 U	0.50 U	0.50 U	0.50 U
Trichloroethene	(ug/l)	5.	5000.	50000.	200.	3700. J	[7300.]	[5800.]	2700.	17.	28.	26.	1.0 U	1.0 U	1.0 U
Vinyl chloride	(ug/l)	2.	50000.	100000.	1.0 U	110.	210.	110. J	100.	4.6 J	2.0 U	3.7	1.0 U	1.0 U	1.0 U
Total CVOCs	(ug/l)	NE	NE	NE	254.6	6310.	12110.	9610.	5900.	143.	180.9	244.9	1.4	N D	N D
Polychlorinated BiPhenyls															
Aroclor 1016	(ug/l)	NE	NE	NE	0.250 U	0.500 U	1.25 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	0.500 U	1.25 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1232	(ug/l)	NE	NE	NE	0.250 U	0.500 U	1.25 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1242	(ug/l)	NE	NE	NE	0.250 U	8.02	12.1	8.84	7.55	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1248	(ug/l)	NE	NE	NE	0.250 U	0.500 U	1.25 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1254	(ug/l)	NE	NE	NE	0.250 U	0.500 U	1.25 U	0.500 U	1.25 U	0.250 U	0.250 U	0.257	0.250 U	0.250 U	0.250 U
Aroclor 1260 Aroclor 1262	(ug/l)	NE NE	NE NE	NE NE	0.250 U 0.250 U	0.500 U 0.500 U	1.25 U 1.25 U	0.500 U 0.500 U	1.25 U 1.25 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U	0.250 U J 0.250 U	0.250 U 0.250 U	0.250 U 0.250 U
Aroclor 1262 Aroclor 1268	(ug/l)	NE NE	NE NE	NE NE	0.250 U	0.500 U	1.25 U	0.500 U	1.25 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Total PCBs	(ug/l)	NE 5.	10.	100.	0.250 U	8.02	[12.1]	0.500 U 8.84	7.55	0.250 U	0.250 U	0.250 0	0.250 U	0.250 U	0.250 U
Dissolved Gases	(ug/l)	٥.	10.	100.	U.25U U	8.02	[12.1]	0.04	7.55	U.25U U	U.25U U	0.237	U.25U U	U.25U U	U.25U U
Ethane	(ug/l)	NF	NE	NE	0.500 U		5.61	6.49	4.67		0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Ethane	(ug/I) (ug/I)	NF NF	NE NE	NE NE	0.500 U		8.87	9.85	4.53		0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Methane	(ug/I)	NF.	NE NE	NE NE	0.500 U		549.	597.	4.53		8.89	2.30	0.531	0.500 U	0.500 U
INICUIDITE	(ug/1)	INL	INL	INL	0.300 0		343.	331.	440.		0.03	2.30	0.331	0.300 0	0.500 0

Location				MCP	MW-18S	MW-19D	MW-19D	MW-19D	MW-19D	MW-19S	MW-19S	MW-19S	MW-20B	MW-20B	MW-20B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW18S-120814	AX-GW-MW19D-032114	AX-GW-MW19D-062614	AX-GW-MW19D-092314	AX-GW-MW19D-120914	AX-GW-MW19S-032114	AX-GW-MW19S-062614	AX-GW-MW19S-120914	AX-GW-MW20B-080614	AX-GW-MW20B-092914	AX-GW-MW20B-121014
Sample Date				UCLs	12/08/14	03/21/14	06/26/14	09/23/14	12/09/14	03/21/14	06/26/14	12/09/14	08/06/14	09/29/14	12/10/14
MNA Parameters		•													
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	103.		44.8	45.4	50.2		30.4	33.4	48.2	43.6	44.9
Ammonia (as N)	(mg/l)	NE	NE	NE	0.075 U		1.03	0.662	0.936		0.093	0.075 U	0.075 U	0.078	0.075 U
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U		3.8	0.55	1.4		0.50 U				
Total Iron	(mg/l)	NE	NE	NE	0.05 U		3.8	0.65	1.3		0.06	0.14	0.16	0.10 U	0.05 U
Nitrate (as N)	(mg/l)	NE	NE	NE	4.40		0.100 U	0.100 U	0.100 U		7.69	6.56	4.22	5.47	3.19
Phosphorus	(mg/l)	NE	NE	NE	0.010 U		0.010 U	0.010 U	0.010 U		0.010 U	0.017	0.010 U	0.010 U	0.010 U
Sulfate	(mg/l)	NE	NE	NE	15.		590.	560.	600.		24.	22.	14.	13.	14.
Total Organic Carbon	(mg/l)	NE	NE	NE	1.3		7.6	2.6	6.5		2.6	4.0	1.8	0.80	2.5 U
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U	5.0 U	10.	6.1	11.	5.0 U	5.0 U	11.	5.0 U	5.0 U	5.0 U
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	1.49	0.25	0.05	0.33	0.08	1.20	1.59	7.09	1.06	0.94	1.41
ORP	(mv)	NE	NE	NE	192.6	120.2	52.0	-20.0	123.1	254.6	216.2	250.0	34.8	88.3	59.2
Specific Conductivity	(ms/cm)	NE	NE	NE	0.526	12.18	10.99	12.81	13.91	0.321	0.386	0.343	0.417	0.414	0.434
Temperature	(c)	NE	NE	NE	15.30	12.76	18.30	18.54	13.96	8.16	17.94	14.56	18.59	16.62	13.86
Turbidity	(ntu)	NE	NE	NE	4.11	2.21	2.70	1.11	3.19	6.91	0.52	2.01	1.18	1.34	1.29
На	(su)	NE	NE	NE	7.38	5.55	5.42	5.95	5.46	4.91	5.48	5.66	6.67	5.96	5.95

Notes: (ug/l) = Micrograms per liter (mg/l) = Milligrams per liter (mv) = Millivolts

(ms/cm) = Microsiemens per centimeter

(c) = Celsius degrees (ntu) = Nephelometric units

(Su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

ND = Not detected NE = Not established

Sample collection depth interval in feet below ground surface

Sample collection depth interval in feet below ground surface noted in parenthesis in Sample ID

-- = Not analyzed for this constituent

Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard

Bold, [], and pink shaded value indicates concentration is above UCI.

Bold and green shaded value indicates concentration is above Wethod 1 GW-2 standard\*

\*Monitoring wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S

MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).

Total CVOCs and Total PCBs calculated by: summing detected concentrations

	1											1			
Location				МСР	MW-20D	MW-20D	MW-20D	MW-21B	MW-21B	MW-21B	MW-21D	MW-21D	MW-21D	MW-21D	MW-22S
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW20D-080614	AX-GW-MW20D-092914	AX-GW-MW20D-121014	AX-GW-MW21B-080614	AX-GW-MW21B-092914	AX-GW-MW21B-121014	AX-GW-MW21D-080614	AX-GW-MW21D-092914	AX-GW-MW21D-121014	AX-GW-MW21D-052915	AX-GW-MW22S-080614
Sample Date				UCLs	08/06/14	09/29/14	12/10/14	08/06/14	09/29/14	12/10/14	08/06/14	09/29/14	12/10/14	05/29/15	08/06/14
Volatile Organic Compounds 1,1,1,2-Tetrachloroethane	(1.00/1)	10.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,1,1,2-Tetrachioroethane	(ug/l) (ug/l)	4000.	20000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,1,2,2-Tetrachloroethane	( 0. )	4000.	50000.	100000.						1.0 U		1.0 U		1.0 U	
1,1,2,2-Tetrachioroethane	(ug/l)	900.	50000.	100000.	1.0 U 1.0 U	1.0 U 1.0 U	1.0 U 1.0 U	1.0 U	1.0 U 1.0 U	1.0 U	1.0 U	1.0 U	1.0 U 1.0 U	1.0 U	1.0 U 1.0 U
1,1,2-1richloroethane	(ug/l)	2000.	20000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U 1.0 U	1.0 U	1.0 U	1.0 U 1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1.1-Dichloroethane	(ug/l)	80.	30000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
1,2,4-Tricfiloroberizerie	(ug/l) (ug/l)	200.	50000.	100000.	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
1,2-Distribution and		8000.	2000.	80000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,2-Dichloroethane	(ug/l)	5	2000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
1,3-Dichloropenzene	(ug/l) (ug/l)	NE	NE	100000. NE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
1,3-Dichloropropane	(ug/I)	10.	200.	2000.	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U						
1,4-Dichlorobenzene		10. 60.	8000.	80000.	0.50 U	0.50 U	0.50 U	1.0 U	0.50 U	0.50 U	1.0 U	1.0 U	0.50 U	1.0 U	0.50 U
1,4-Dichlorobenzene Bromodichloromethane	(ug/l)	60.	8000. 50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
Bromoform	(ug/l)	700.	50000.	100000.	2.0 U	2.0 U	2.0 U J	2.0 U	2.0 U	2.0 U J	2.0 U	2.0 U	2.0 U J	2.0 U	2.0 U
Carbon Tetrachloride	(ug/l)	700.	5000.	50000.	2.0 U	2.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	(ug/l)	200.	1000.	10000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
Chlorosthana	(ug/l)	NF	NE	10000. NF	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
Chloroethane Chloroform	(ug/l)	50.	20000.	100000.	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	3.6
	(ug/l)									2.0 U	2.0 U J				2.0 U
Chloromethane	(ug/l)	NE 20	NE 50000.	NE 100000	2.0 U J 1.0 U	2.0 U 1.0 U	2.0 U 1.0 U	2.0 U J	2.0 U	8.9	1.9	2.0 U 2.6	2.0 U 1.0 U	2.0 U J 2.4	
cis-1,2-Dichloroethene	(ug/l)	20. NE	NE	100000. NF	0.50 U	0.50 U	0.50 U	12. 0.50 U	10. 0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	1.4 0.50 U
cis-1,3-Dichloropropene	(ug/l)	NE 20.	50000.	100000.	0.50 U	0.50 U	0.50 U	1.0 U	0.50 U	0.50 U	1.0 U	1.0 U	0.50 U	1.0 U	0.50 U
Dibromochloromethane	(ug/l)	ZU.	50000. NE	100000. NF	2.0 U J	2.0 U	2.0 U	2.0 U J	2.0 U	2.0 U	2.0 U J	2.0 U	2.0 U	2.0 U	2.0 U
Dichlorodifluoromethane Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U						
	(ug/l)		5000.	100000.											2.0 U
Methylene Chloride	(ug/l)	2000. NE	50000. NE	100000. NF	2.0 U 2.0 U	2.0 U 2.0 U	2.0 U 2.0 U	2.0 U 2.0 U	2.0 U						
o-Chlorotoluene p-Chlorotoluene	(ug/l)	NE NE	NE NE	NF	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U						
Tetrachloroethene	(ug/l)	50.	30000.	100000.	2.0 U	2.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
trans-1,2-Dichloroethene	(ug/l) (ug/l)	80.	50000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U						
trans-1,2-Dichloropropene	(ug/I)	NE	50000. NE	100000. NE	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U						
Trichloroethene		NE 5	5000.	50000.	1.0 U	1.0 U	1.0 U	0.50 U	0.50 U	40.		12. J	3.6	12.	2.8
Vinyl chloride	(ug/l)	3. 2	5000.	100000.	1.0 U	1.0 U	1.0 U	1.0 U	46. J 1.0 U	40. 1.0 U	<b>7.8</b> 1.0 U	12. J	1.0 U	1.0 U	1.0 U
Total CVOCs	(ug/l)	NE	NE	100000. NE	1.0 U	1.0 U	1.0 U	59.	56.	48.9	9.7	14.6	3.6	14.4	7.8
Polychlorinated BiPhenyls	(ug/l)	INE	INE	INE	ND	N D	ט או	35.	30.	40.5	3./	14.0	3.0	14.4	7.0
Aroclor 1016	(ug/l)	NF.	NF	NF	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U						
Aroclor 1016 Aroclor 1221	(ug/I)	NE NE	NE NE	NE NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U						
Aroclor 1221 Aroclor 1232		NE NE	NE NE	NF	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U						
Aroclor 1232 Aroclor 1242	(ug/l)	NF.	NF	NF	0.250 U	4.69	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1242 Aroclor 1248	(ug/l)	NE NE	NE NE	NE NF	0.250 U	4.69 0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U 0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1248 Aroclor 1254	(ug/l)	NE NE	NE NE	NE NF	0.250 U	0.250 0	0.250 U	0.250 U	0.250 U	0.250 U	0.250 0				
Aroclor 1254 Aroclor 1260	(ug/l)	NE NE	NE NE	NE NF	0.250 U J	0.711 0.250 U	0.250 U	0.250 U J	0.250 U	0.250 U	0.250 U J	0.250 U	0.250 U	0.250 U	0.948 0.250 U J
Aroclor 1260 Aroclor 1262	(ug/l)	NE NF	NE NE	NE NF	0.250 U J	0.250 U	0.250 U	0.250 U J	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U J
Aroclor 1262 Aroclor 1268	(ug/l)	NE NE	NE NE	NE NF	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U						
Total PCBs	(ug/l)	NE 5	10.	100.	0.250 U	0.250 U	0.250 U	0.250 U	0.250 0						
Dissolved Gases	(ug/l)	5.	10.	100.	U.25U U	5.40	U.Z3U U	U.25U U	U.23U U	U.25U U	U.25U U	U.25U U	U.23U U	U.25U U	0.948
Ethane	(ug/l)	NF.	NF	NF	0.500 U	0.500 U	0.500 U	0.500 U	2.77						
Ethene	(ug/l)	NE NE	NE NE	NE NF	0.500 U	0.500 U	0.500 U	0.806	0.500 0	0.500 0	0.500 U	0.500 U	0.500 U	0.500 U	2.77
Methane	(ug/l) (ug/l)	NE NF	NE NF	NE NF	0.500 U	0.500 U	0.500 U	15.2	18.6	16.5	1.24	11.3	0.500 U 8.92	3.55	2.24
wetnane	(ug/I)	INE	NE	NE	U.500 U	0.500 0	U.500 U	15.2	18.0	10.5	1.24	11.5	8.92	5.55	2920.

Location				MCP	MW-20D	MW-20D	MW-20D	MW-21B	MW-21B	MW-21B	MW-21D	MW-21D	MW-21D	MW-21D	MW-22S
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW20D-080614	AX-GW-MW20D-092914	AX-GW-MW20D-121014	AX-GW-MW21B-080614	AX-GW-MW21B-092914	AX-GW-MW21B-121014	AX-GW-MW21D-080614	AX-GW-MW21D-092914	AX-GW-MW21D-121014	AX-GW-MW21D-052915	AX-GW-MW22S-080614
Sample Date				UCLs	08/06/14	09/29/14	12/10/14	08/06/14	09/29/14	12/10/14	08/06/14	09/29/14	12/10/14	05/29/15	08/06/14
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	23.4	2.20	38.1	158.	160.	161.	65.9	85.6	57.9	85.5	123.
Ammonia (as N)	(mg/l)	NE	NE	NE	0.383	0.293	0.075 U	0.075	0.075 U	0.842					
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U	0.60	0.50 U	0.50 U	0.50 U	8.0					
Total Iron	(mg/l)	NE	NE	NE	0.41	0.16	0.05 U	0.64	0.43	0.48	0.94	0.32	0.34	0.34	8.1
Nitrate (as N)	(mg/l)	NE	NE	NE	6.01	3.64	5.95	0.450	0.640	0.374 J	0.950	1.53	2.32	1.20	0.100 U
Phosphorus	(mg/l)	NE	NE	NE	0.010 U	0.025	0.010 U	0.070	0.102	0.100	0.010 U	0.010 U	0.010 U	0.010 U	0.079
Sulfate	(mg/l)	NE	NE	NE	79.	26.	34.	34.	30.	31.	10. U	11.	25.	12.	34.
Total Organic Carbon	(mg/l)	NE	NE	NE	6.1	1.8	3.4	1.9	0.57	2.5 U	2.2	0.59	0.86	1.0	14.
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U	51.	5.0 U		15.						
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.29	0.52	1.76	0.19	0.03	0.09	1.27	1.68	2.52	3.11	0.20
ORP	(mv)	NE	NE	NE	53.1	125.6	118.4	-10.2	-92.7	-89.8	47.6	-19.6	130.8	73.0	-36.6
Specific Conductivity	(ms/cm)	NE	NE	NE	0.416	0.267	0.320	1.495	1.527	1.460	0.535	0.813	0.502	0.739	0.420
Temperature	(c)	NE	NE	NE	18.59	17.94	12.23	17.63	16.47	12.22	17.18	17.23	12.08	17.42	16.58
Turbidity	(ntu)	NE	NE	NE	0.30	62.0	1.74	1.96	1.89	0.70	3.47	3.37	1.53	3.42	12.4
pH	(su)	NE	NE	NE	5.22	4.42	5.02	6.78	6.65	9.49	6.36	6.14	5.56	6.60	6.11

Notes:
(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter

(c) = Celsius degrees (ntu) = Nephelometric units (su) = Standard units U = Constituent not detected at listed reporting limit J = Estimated concentration/reporting limit

ND = Not detected NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Wethod 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S

MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).

Total CVOCs and Total PCBs calculated by: summing detected concentrations

Location	T			МСР	MW-22S	MW 220	MW 22D	MW-23B	MM 22B	MW-23B	MW-23D	MW-23D	MW-23D	MW-24B	MW-24B
Location Sample ID	Lluite	MCP GW-2	MCP GW-3	Groundwater		MW-22S	MW-23B AX-GW-MW23B-080614		MW-23B AX-GW-MW23B-121014	MW-23B AX-GW-MW23B-081015				MW-24B AX-GW-MW24B-080714	MW-24B AX-GW-MW24B-092314
Sample ID Sample Date	Units	IVICP GW-2	IVICP GW-3	UCLs	AX-GW-MW22S-092914 09/29/14	AX-GW-MW22S-121014 12/10/14	08/06/14	AX-GW-MW23B-093014 09/30/14	12/10/14	08/10/15	AX-GW-MW23D-080614 08/06/14	AX-GW-MW23D-092914 09/29/14	AX-GW-MW23D-121014 12/10/14	08/07/14	09/23/14
Volatile Organic Compounds				UCLS	09/29/14	12/10/14	08/06/14	09/30/14	12/10/14	08/10/15	08/06/14	09/29/14	12/10/14	08/07/14	09/23/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
1,1,2,2-Tetrachloroethane	(ug/l)	9	50000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U J	1.0 U	10. U	10. U	100. U	25. U
1,1,2-Trichloroethane	(ug/I)	900.	50000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
1,1-Dichloroethane	(ug/I)	2000.	20000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
1.1-Dichloroethene	(ug/I)	80.	30000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	4.0	10. U	10. U	100. U	25. U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	2.0 U	2.0 U	200. U	200. U	100. U	200. U J	2.0 U	20. U	20. U	200. U	50. U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	2.0 U	2.0 U	200. U	200. U	100. U	200. U	2.0 U	20. U	20. U	200. U	50. U
1.2-Dichlorobenzene	(ug/I)	8000.	2000.	80000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
1,2-Dichloroethane	(ug/l)	5	2000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
1,2-Dichloropropane	(ug/I)	3.	50000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
1,3-Dichloropropane	(ug/I)	NE	NE	NE	2.0 U	2.0 U	200. U	200. U	100. U	200. U	2.0 U	20. U	20. U	200. U	50. U
1,3-Dichloropropane	(ug/l)	10.	200.	2000.	0.50 U	0.50 U	50. U	50. U	25. U	50. U	0.50 U	5.0 U	5.0 U	50. U	12. U
1,4-Dichlorobenzene	(ug/I)	60.	8000.	80000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
Bromodichloromethane	(ug/I)	6.	50000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
Bromoform	(ug/I)	700.	50000.	100000.	2.0 U	2.0 U J	200. U	200. U	100. U J	200. U	2.0 U	20. U	20. U J	200. U J	50. U
Carbon Tetrachloride	(ug/l)	700.	5000.	50000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	[33000.]	[71000.]
Chlorobenzene	(ug/l)	200.	1000.	10000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
Chloroethane	(ug/l)	NF	NE	NE	2.0 U	2.0 U	200. U	200. U	100. U	200. U	2.0 U	20. U	20. U	200. U	50. U
Chloroform	(ug/l)	50.	20000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.9	10. U	10. U	18000.	[27000.]
Chloromethane	(ug/l)	NE	NE	NE	2.0 U	2.0 U	200. U	200. U J	100. U	200. U	2.0 U J	20. U	20. U	200. U J	50. U J
cis-1.2-Dichloroethene	(ug/I)	20.	50000.	100000.	5.2	1.0 U	1700.	1500. J	5100.	3000. J	1100.	840.	950.	110.	130.
cis-1,3-Dichloropropene	(ug/l)	NE	NE	NE	0.50 U	0.50 U	50. U	50. U	25. U	50. U	0.50 U	5.0 U	5.0 U	50. U	12. U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	1.0 U	10. U	10. U	100. U	25. U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	2.0 U	2.0 U	200. U	200. U J	100. U	200. U	2.0 U J	20. U	20. U	200. U J	50. U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	0.60 U	0.60 U	60, U	60. U	30. U	60. U	0.60 U	6.0 U	6.0 U	60. U	15. U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	2.0 U	2.0 U	200. U	200. U	100. U	200. U	2.0 U	20. U	20. U	3300.	4500.
o-Chlorotoluene	(ug/I)	NF	NF	NE	2.0 U	2.0 U	200. U	200. U	100. U	200. U J	2.0 U	20. U	20. U	200. U	50. U
p-Chlorotoluene	(ug/I)	NF.	NF.	NF	2.0 U	2.0 U	200. U	200. U	100. U	200. U J	2.0 U	20. U	20. U	200. U	50. U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	4.3	10. U	10. U	100. U	39.
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	1.0 U	1.0 U	100. U	100. U	50. U	100. U	3.1	10. U	10. U	100. U	25. U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	0.50 U	0.50 U	50. U	50. U	25. U	50. U	0.50 U	5.0 U	5.0 U	50. U	12. U
Trichloroethene	(ug/I)	5	5000.	50000.	1.0 U	1.0 U	[7500.]	[6300.] J	2000.	1800.	1100.	890. J	990.	390.	900.
Vinyl chloride	(ug/I)	2	5000.	100000.	1.0 U	1.0 U	100. U	100. U	91.	310.	19.	10. U	11.	100. U	25. U J
Total CVOCs	(ug/l)	NE	NE	NE	5.2	N D	9200.	7800.	7191.	5110.	2232.3	1730.	1951.	54800.	103569.
Polychlorinated BiPhenyls	(46/1/	IVE	145	146	5.2	14.0	3200.	7000.	7151.	3110.	LEJE.J	1730.	1551.	34000.	103503.
Aroclor 1016	(ug/l)	NF	NF	NF	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1010	(ug/l)	NE NE	NE NE	NE NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1221 Aroclor 1232	(ug/l)	NF	NF.	NF.	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	-	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1232 Aroclor 1242	(ug/I)	NF.	NE NE	NE	0.250 U	0.250 U	0.250 U	0.230 0	0.250 0		0.250 U	0.481	0.230 0	0.250 U	0.250 U
Aroclor 1242 Aroclor 1248	(ug/I)	NE NE	NE NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.430 0.250 U		0.250 U	0.481 0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1246 Aroclor 1254	(ug/l)	NF.	NF.	NF.	0.651	0.230 0	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1254 Aroclor 1260	(ug/I)	NE NE	NF.	NE	0.250 U	0.250 U	0.250 U J	0.250 U	0.250 U		0.250 U J	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1260 Aroclor 1262	(ug/l)	NE NE	NE NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Aroclor 1262 Aroclor 1268	(ug/l)	NF.	NF.	NF.	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Total PCBs	(ug/I)	5	10.	100.	0.651	0.986	0.250 U	0.347	0.250 0		0.250 U	0.481	0.230 0	0.250 U	0.250 U
Dissolved Gases	(ug/1)	J.	10.	100.	0.031	0.300	0.230 0	0.347	0.430		0.230 0	0.461	0.053	0.230 0	0.230 0
Ethane	(ug/l)	NF	NF	NF	1.34	0.500 U	7.39	63.2	24.9	_	7.96	2.92	1.07	0.500 U	1.96
Ethene	(ug/I)	NE NE	NE NE	NE NE	1.30	0.500 U	4.32	46.0	29.3		7.66	3.83	1.42	3.03	7.61
Methane	(ug/I) (ug/I)	NE NF	NF.	NF	8500.	3770.	4.52 356.	364.	361.		103.	72.9	48.4	9.29	17.4
ivietnane	(ug/I)	NE	INE	NE	8500.	3//0.	356.	304.	301.		103.	72.9	48.4	9.29	17.4

Location				MCP	MW-22S	MW-22S	MW-23B	MW-23B	MW-23B	MW-23B	MW-23D	MW-23D	MW-23D	MW-24B	MW-24B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW22S-092914	AX-GW-MW22S-121014	AX-GW-MW23B-080614	AX-GW-MW23B-093014	AX-GW-MW23B-121014	AX-GW-MW23B-081015	AX-GW-MW23D-080614	AX-GW-MW23D-092914	AX-GW-MW23D-121014	AX-GW-MW24B-080714	AX-GW-MW24B-092314
Sample Date				UCLs	09/29/14	12/10/14	08/06/14	09/30/14	12/10/14	08/10/15	08/06/14	09/29/14	12/10/14	08/07/14	09/23/14
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	191.	101.	188.	200.	214.		61.3	64.4	38.4	123.	129.
Ammonia (as N)	(mg/l)	NE	NE	NE	3.54	1.34	0.192	0.149	0.114		0.391	0.096	0.132	0.108	0.219
Ferrous Iron	(mg/l)	NE	NE	NE	25.	24.	1.8	0.50 U	2.8		7.2	2.1	1.0	0.50 U	0.50 U
Total Iron	(mg/l)	NE	NE	NE	24.	12.	2.0	2.4	2.9		6.8	8.1	0.98	0.21	0.17
Nitrate (as N)	(mg/l)	NE	NE	NE	0.100 U	-	0.206	0.100 U	0.276	0.884	0.150				
Phosphorus	(mg/l)	NE	NE	NE	0.060	0.060	0.027	0.018	0.010 U	-	0.012	0.010 U	0.010 U	0.010 U	0.010 U
Sulfate	(mg/l)	NE	NE	NE	10. U	24.	380.	370.	400.		350.	280.	250.	79.	57.
Total Organic Carbon	(mg/l)	NE	NE	NE	30.	7.4	3.7	6.2	2.9		3.4	0.50 U	1.7	4.2	1.5
Total Suspended Solids	(mg/l)	NE	NE	NE	30.	9.9	25.	14.	15.	-	14.	8.8	6.3	6.0	5.0 U
Field Parameters				·											
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.18	0.20	0.16	0.12	6.69	0.28	0.14	0.07	0.11	0.71	0.17
ORP	(mv)	NE	NE	NE	-57.4	-74.2	-481.7	-146.2	-149.6	-119.8	-337.9	-30.4	154.8	104.2	-97.7
Specific Conductivity	(ms/cm)	NE	NE	NE	0.478	0.252	12.11	11.18	11.26	8.442	9.084	7.220	6.764	3.556	3.542
Temperature	(c)	NE	NE	NE	16.92	10.95	19.32	14.90	11.25	17.02	19.21	16.93	12.71	21.82	20.87
Turbidity	(ntu)	NE	NE	NE	3.47	0.31	19.0	6.41	0.25	4.90	12.32	4.31	0.51	2.10	3.15
pH	(su)	NE	NE	NE	6.50	6.06	7.26	6.62	6.98	7.05	6.46	5.89	5.50	7.04	7.47

Notes: (ug/l) = Micrograms per liter (mg/l) = Milligrams per liter (mv) = Millivolts

(ms/cm) = Microsiemens per centimeter

(ins, chi) = Microsienters per Centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

ND = Not detected

NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CVOCS and Total PCRS calculated by summing detected concentrations

Total CVOCs and Total PCBs calculated by: summing detected concentrations

Location	T	1	I	MCP	MW-24B	MW-24B	MW-24B	MW-24D	MW-24D	MW-24D	MW-25D	NAVA 26B	MW-26B	MW-26B	MW-26B
Location Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW24B-120814	AX-GW-MW24B-052915	AX-GW-DUP1-052915	AX-GW-MW24D-080714	AX-GW-MW24D-092314	AX-GW-MW24D-120814	AX-GW-MW25D-080714	MW-26B MW-26B	AX-GW-MW26B-092614	AX-GW-DUP4-092614	AX-GW-MW26B-121014
Sample Date	Oilles	IVICE GVV-2	IVICE GVV-5	UCLs	12/08/14	05/29/15	05/29/15	08/07/14	09/23/14	12/08/14	08/07/14	07/23/14	09/26/14	09/26/14	12/10/14
Volatile Organic Compounds				UCLS	12/00/14	03/23/13	03/23/13	08/07/14	03/23/14	12/00/14	00/07/14	07/23/14	03/20/14	03/20/14	12/10/14
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
1,1,1-trichloroethane	(ug/I)	4000.	20000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U J
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	8.0 U	100. U	100. U	2.0 U	2.0 U	2.0 U	10. U	500. U	4000. U	4000. U	2000. U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	8.0 U	100. U	100. U	2.0 U	2.0 U	2.0 U	10. U	500. U	4000. U	4000. U	2000. U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	8.0 U	100. U	100. U	2.0 U	2.0 U	2.0 U	10. U	500. U	4000. U	4000. U	2000. U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	2.0 U	25. U	25. U	0.50 U	0.50 U	0.50 U	2.5 U	120. U	1000. U	1000. U	500. U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	44.	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
Bromoform	(ug/l)	700.	50000.	100000.	8.0 U J	100. U	100. U	2.0 U	2.0 U J	2.0 U J	10. U	500. U J	4000. U	4000. U	2000. U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	[40000.]	[19000.]	[19000.]	1.0 U	1.0 U	1.0 U	5.0 U	250. U J	2000. U	2000. U	1000. U
Chlorobenzene	(ug/l)	200.	1000.	10000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
Chloroethane	(ug/l)	NE	NE	NE	8.0 U	100. U	100. U	2.0 U	2.0 U	2.0 U	10. U	500. U	4000. U	4000. U	2000. U
Chloroform	(ug/l)	50.	20000.	100000.	[31000.]	[34000.]	[34000.]	4.7	4.5	2.7	5.0 U	250. U	2000. U	2000. U	1000. U
Chloromethane	(ug/l)	NE	NE	NE	9.7	100. U J	100. U J	2.0 U	2.0 U	2.0 U	10. U	500. U	4000. U	4000. U	2000. U
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	61.	85.	86.	1.0 U	1.0 U	1.0 U	6.2	1900.	7600.	8000.	7700.
cis-1,3-Dichloropropene	(ug/l)	NE	NE	NE	2.0 U	25. U	25. U	0.50 U	0.50 U	0.50 U	2.5 U	120. U J	1000. U	1000. U	500. U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U J	2000. U	2000. U	1000. U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	8.0 U	100. U	100. U	2.0 U	2.0 U	2.0 U	10. U	500. U	4000. U	4000. U	2000. U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	2.4 U	30. U	30. U	0.60 U	0.60 U	0.60 U	3.0 U	150. U	1200. U	1200. U	600. U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	4200.	4000.	4100.	2.0 U	2.0 U	2.0 U	10. U	500. U	4000. U	4000. U	2000. U
o-Chlorotoluene	(ug/l)	NE	NE NE	NE NE	8.0 U	100. U	100. U	2.0 U	2.0 U	2.0 U	10. U	500. U	4000. U	4000. U	2000. U
p-Chlorotoluene	(ug/l)	NE FO	NE 20000	NE 100000	8.0 U	100. U	100. U	2.0 U	2.0 U	2.0 U	10. U	500. U	4000. U	4000. U	2000. U
Tetrachloroethene trans-1,2-Dichloroethene	(ug/l) (ug/l)	50. 80.	30000. 50000.	100000. 100000.	28. 7.3	50. U 50. U	50. U 50. U	1.0 U 1.0 U	1.0 U 1.0 U	1.0 U 1.0 U	5.0 U 5.0 U	250. U 250. U	2000. U 2000. U	2000. U 2000. U	1000. U 1000. U
trans-1,2-Dichloropropene	(ug/I) (ug/I)	NE	50000. NE	100000. NE	7.5 2.0 U	25. U	25. U	0.50 U	0.50 U	0.50 U	2.5 U	120. U J	1000. U	1000. U	500. U
Trichloroethene	(ug/I)	5.	5000.	50000.	440.	390.	400.	2.2	2.4	2.8	5.0 U	[32000.]	[150000.] J	[15000.1] J	[140000.]
Vinyl chloride	(ug/I)	2	5000.	100000.	440. 4.0 U	50. U	50. U	1.0 U	1.0 U	1.0 U	5.0 U	250. U	2000. U	2000. U	1000. U
Total CVOCs	(ug/I)	NE	NE	NE	75790.	57475.	57586.	6.9	6.9	5.5	6.2	33900.	157600.	158000.	147700.
Polychlorinated BiPhenyls	(48/1)	INC	145	145	73730.	37473.	37300.	0.3	0.5	3.3	0.2	33300.	137000.	130000.	147700.
Aroclor 1016	(ug/l)	NF	NF	NF	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.25 U	0.500 U	0.500 U	0.250 U
Aroclor 1221	(ug/I)	NE	NE	NE NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	13.0	8.77	9.31	0.250 U
Aroclor 1232	(ug/I)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.25 U	0.500 U	0,500 U	0.250 U
Aroclor 1242	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.25 U	2.82	2.88	2.44
Aroclor 1248	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.25 U	0.500 U	0.500 U	0.250 U
Aroclor 1254	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.25 U	0.500 U	0.500 U	0.250 U
Aroclor 1260	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.25 U	0.500 U	0.500 U	0.250 U
Aroclor 1262	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.25 U	0.500 U	0.500 U	0.250 U
Aroclor 1268	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.25 U	0.500 U	0.500 U	0.250 U
Total PCBs	(ug/l)	5.	10.	100.	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	[13.0]	[11.6]	[12.2]	2.44
Dissolved Gases															
Ethane	(ug/l)	NE	NE	NE	3.18	12.8		0.500 U	0.500 U	0.500 U	2.30		9.32		10.1
Ethene	(ug/l)	NE	NE	NE	8.41	19.1		0.500 U	0.500 U	0.500 U	3.84		27.2		37.9
Methane	(ug/l)	NE	NE	NE	19.4	73.1		0.500 U	0.500 U	0.606	1120.		124.	-	178.

Location				MCP	MW-24B	MW-24B	MW-24B	MW-24D	MW-24D	MW-24D	MW-25D	MW-26B	MW-26B	MW-26B	MW-26B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW24B-120814	AX-GW-MW24B-052915	AX-GW-DUP1-052915	AX-GW-MW24D-080714	AX-GW-MW24D-092314	AX-GW-MW24D-120814	AX-GW-MW25D-080714	MW-26B	AX-GW-MW26B-092614	AX-GW-DUP4-092614	AX-GW-MW26B-121014
Sample Date				UCLs	12/08/14	05/29/15	05/29/15	08/07/14	09/23/14	12/08/14	08/07/14	07/23/14	09/26/14	09/26/14	12/10/14
MNA Parameters			•												
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	129.	125.		49.6	38.8	40.1	454.		286.		326.
Ammonia (as N)	(mg/l)	NE	NE	NE	0.178	0.186		0.075 U	0.075 U	0.075 U	1.01		0.157		0.120
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U	0.99		0.50 U	0.50 U	0.50 U	0.71		13.		37.
Total Iron	(mg/l)	NE	NE	NE	0.38	3.2		0.05 U	0.05 U	0.05 U	4.5		13.		17.
Nitrate (as N)	(mg/l)	NE	NE	NE	0.100 U	1.00 U		4.29	4.35	4.10	0.100 U		0.100 U		0.100 U
Phosphorus	(mg/l)	NE	NE	NE	0.010 U	0.010 U		0.012	0.010 U	0.010 U	0.245		0.010 U		0.010 U
Sulfate	(mg/l)	NE	NE	NE	61.	64.		12.	12.	14.	77.		160.		140.
Total Organic Carbon	(mg/l)	NE	NE	NE	1.4	2.8		2.9	0.68	0.55	57. J		1.1		20. J
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U			5.0 U	5.0 U	5.0 U	12.		8.8		9.5
ield Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE	4.21	0.24		1.99	2.40	3.02	0.24		0.00		0.10
ORP	(mv)	NE	NE	NE	-50.6	-270.2		150.5	20.7	116.9	-55.4		23.6		62.9
Specific Conductivity	(ms/cm)	NE	NE	NE	3.600	3.509		0.477	0.494	0.553	1.360		10.60		11.34
Temperature	(c)	NE	NE	NE	14.38	16.96		20.97	22.15	15.02	23.54		17.86		14.98
Turbidity	(ntu)	NE	NE	NE	1.99	5.68		0.95	0.82	1.02	2.65		2.24	-	2.09
Ha	(su)	NE	NE	NE	6.84	6.82		6.08	6.31	6.03	6.99		6.23		5.89

Notes: (ug/l) = Micrograms per liter (mg/l) = Milligrams per liter (mv) = Millivolts

(ms/cm) = Microsiemens per centimeter

(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
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ND = Not detected

NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [1], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [1], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Tatal (VOCS and Total PCRS calculated by summing detected concentrations

Total CVOCs and Total PCBs calculated by: summing detected concentrations

	1	_													
Location				MCP	MW-26B	MW-27B	MW-27B	MW-27B	MW-27B	MW-27B	MW-28B	MW-28B	MW-28B	MW-28B	MW-28B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-DUP3-121014	AX-GW-MW27B-080714	AX-GW-DUP1-080714	AX-GW-MW27B-092614	AX-GW-MW27B-121014	AX-GW-MW27B-080615	AX-GW-MW28B-080714	AX-GW-MW28B-092414	AX-GW-MW28B-121014	AX-GW-MW28B-080615	AX-GW-DUP1-080615
Sample Date				UCLs	12/10/14	08/07/14	08/07/14	09/26/14	12/10/14	08/06/15	08/07/14	09/24/14	12/10/14	08/06/15	08/06/15
Volatile Organic Compounds 1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
1,1,1-trichloroethane	(ug/I)	4000.	20000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
1,1,2,2-Tetrachloroethane		4000.	50000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U J	50. U	100. U	100. U	50. U J	50. U J
1,1,2,7-retraction betriane	(ug/l)	900.	50000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
1.1-Dichloroethene	(ug/l)	80.	30000.	100000.	1000. U J	100. U	100. U	200. U	100. U J	100. U	50. U	100. U	100. U J	50. U	50. U
1,2,4-Trichlorobenzene	(ug/l) (ug/l)	200.	50000.	100000.	2000. U	200. U	200. U	400. U	200. U	200. U	100. U	200. U	200. U	100. U	100. U
1,2-Dibromoethane	(ug/I)	200.	50000.	100000.	2000. U	200. U	200. U	400. U	200. U	200. U	100. U	200. U	200. U	100. U	100. U
1.2-Distribution de la	(ug/I)	8000.	2000.	80000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
1,2-Dichloroethane	(ug/l)	5	2000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
1,2-Dichloropropane	(ug/I)	3.	50000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	2000. U	200. U	200. U	400. U	200. U	200. U	100. U	200. U	200. U	100. U	100. U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	500. U	50. U	50. U	100. U	50. U	50. U	25. U	50. U	50. U	25. U	25. U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
Bromodichloromethane	(ug/l)	6	50000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
Bromoform	(ug/l)	700.	50000.	100000.	2000. U J	200. U J	200. U J	400. U	200. U J	200. U J	100. U	200. U J	200. U J	100. U J	100. U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
Chlorobenzene	(ug/l)	200.	1000.	10000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
Chloroethane	(ug/l)	NF.	NE	NE	2000. U	200. U	200. U	400. U	200. U	200. U	100. U	200. U	200. U	100. U	100. U
Chloroform	(ug/l)	50.	20000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
Chloromethane	(ug/l)	NE	NE	NE	2000. U	200. U J	200. U J	400. U	200. U	200. U	100. U	200. U	200. U	100. U	100. U
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	7500.	1700.	1700.	1600.	1400.	1300.	350.	410.	620.	930.	950.
cis-1,3-Dichloropropene	(ug/l)	NF.	NE NE	NF	500. U	50. U	50. U	100. U	50. U	50. U	25. U	50. U	50. U	25. U	25. U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
Dichlorodifluoromethane	(ug/l)	NE	NE NE	NE	2000. U	200. U J	200. U J	400. U	200. U	200. U	100. U	200. U	200. U	100. U	100. U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	600. U	60. U	60. U	120. U	60. U	60. U	30. U	60. U	60. U	30. U	30. U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	2000. U	200. U	200. U	400. U	200. U	200. U	100. U	200. U	200. U	100. U	100. U
o-Chlorotoluene	(ug/l)	NE	NE	NE	2000. U	200. U	200. U	400. U	200. U	200. U J	100. U	200. U	200. U	100. U J	100. U J
p-Chlorotoluene	(ug/l)	NE	NE	NE	2000. U	200. U	200. U	400. U	200. U	200. U J	100. U	200. U	200. U	100. U J	100. U J
Tetrachloroethene	(ug/l)	50.	30000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	1000. U	100. U	100. U	200. U	100. U	100. U	50. U	100. U	100. U	50. U	50. U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	500. U	50. U	50. U	100. U	50. U	50. U J	25. U	50. U	50. U	25. U J	25. U J
Trichloroethene	(ug/l)	5.	5000.	50000.	[130000.]	[15000.]	[14000.]	[15000.] J	[14000.]	[12000.]	[5400.]	[6200.]	[8600.]	[6000.]	[6100.]
Vinyl chloride	(ug/l)	2.	50000.	100000.	1000. U	170.	160.	200. U	160.	120.	50. U	100. U	100. U	50. U	50. U
Total CVOCs	(ug/l)	NE	NE	NE	137500.	16870.	15860.	16600.	15560.	13420.	5750.	6610.	9220.	6930.	7050.
Polychlorinated BiPhenyls															
Aroclor 1016	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U		
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	2.20	0.250 U		0.250 U	0.250 U	0.250 U		
Aroclor 1232	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U		
Aroclor 1242	(ug/l)	NE	NE	NE	2.76	0.250 U	0.250 U	1.98	2.52		0.336	0.250 U	0.250 U		
Aroclor 1248	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U		
Aroclor 1254	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U		
Aroclor 1260	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U		
Aroclor 1262	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U		
Aroclor 1268	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U	0.250 U	0.250 U		
Total PCBs	(ug/l)	5.	10.	100.	2.76	0.250 U	0.250 U	4.18	2.52		0.336	0.250 U	0.250 U		
Dissolved Gases		,	,				,	,	,	,					
Ethane	(ug/l)	NE	NE	NE		12.3		11.0	17.6		0.675	2.14	2.45		
Ethene	(ug/l)	NE	NE	NE		5.11		5.99	21.1		2.09	6.60	9.01		
Methane	(ug/l)	NE	NE	NE		720.		620.	662.		3.45	5.14	4.27		

Location				MCP	MW-26B	MW-27B	MW-27B	MW-27B	MW-27B	MW-27B	MW-28B	MW-28B	MW-28B	MW-28B	MW-28B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-DUP3-121014	AX-GW-MW27B-080714	AX-GW-DUP1-080714	AX-GW-MW27B-092614	AX-GW-MW27B-121014	AX-GW-MW27B-080615	AX-GW-MW28B-080714	AX-GW-MW28B-092414	AX-GW-MW28B-121014	AX-GW-MW28B-080615	AX-GW-DUP1-080615
Sample Date				UCLs	12/10/14	08/07/14	08/07/14	09/26/14	12/10/14	08/06/15	08/07/14	09/24/14	12/10/14	08/06/15	08/06/15
MNA Parameters															
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE		234.		232.	238.		149.	2.00 U	94.2		
Ammonia (as N)	(mg/l)	NE	NE	NE		0.131		0.160	0.115		0.167	0.269	0.163		
Ferrous Iron	(mg/l)	NE	NE	NE		0.97		0.50 U	1.8		0.50 U	0.50 U	0.50 U		
Total Iron	(mg/l)	NE	NE	NE		3.1		1.8	2.0		1.2	2.2	1.0		
Nitrate (as N)	(mg/l)	NE	NE	NE		0.100 U		0.100 U	0.100 U		0.100 U	0.100 U	0.100 U		
Phosphorus	(mg/l)	NE	NE	NE		0.047		0.011	0.010 U		0.010	0.010 U	0.010 U		
Sulfate	(mg/l)	NE	NE	NE		600.		540.	640.		120.	82.	110.		
Total Organic Carbon	(mg/l)	NE	NE	NE		3.4		0.50 U	2.5 U		3.8	1.8	2.1		-
Total Suspended Solids	(mg/l)	NE	NE	NE		48.		9.0	10.		92.	50.	7.3		
Field Parameters															
Dissolved Oxygen	(mg/l)	NE	NE	NE		0.09		0.32	0.08	0.14	0.07	0.16	0.18	0.09	
ORP	(mv)	NE	NE	NE		-355.2		-39.7	-27.8	-118.2	-128.1	-20.0	-151.7	-458.1	
Specific Conductivity	(ms/cm)	NE	NE	NE		17.38		17.47	16.91	15.83	4.954	4.874	5.646	5.208	
Temperature	(c)	NE	NE	NE		19.62		19.55	12.68	20.49	20.13	19.38	14.92	19.24	-
Turbidity	(ntu)	NE	NE	NE		48.6		4.75	0.29	19.6	7.70	2.80	0.42	13.9	
Hq	(su)	NE	NE	NE		7.49		7.07	6.87	6.80	10.12	9.92	11.31	10.68	

Notes:

(ug/l) = Micrograms per liter

(mg/l) = Milligrams per liter

(mv) = Millivolts

(ms/cm) = Microsiemens per centimeter

(c) = Celsius degrees

(ntu) = Nephelometric units

(su) = Standard units

U = Constituent not detected at listed reporting limit

J = Estimated concentration/reporting limit

ND = Not detected

J = Estimated concentration/reporting limit
ND = Not detected
NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
--- Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Total CVOCs and Total PCBs calculated by: summing detected concentrations

MW-2UD, MW-21D, MW-22S, G2-UD1, G2-UD3, and MW-3 [PFCCX].

Total CVOCs and Total PCBs calculated by: summing detected concentrations

MCP = Massachsetts Contingency Plan

MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards

MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

Location	1			MCP	MW-29B	MW-29B	MW-30B	MW-30B	MW-31B	MW-31B	MW-32B	MW-32B	MW-32B	MW-32B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW29B-052815	AX-GW-MW29B-081015	AX-GW-MW30B-052815	AX-GW-MW30B-080615	AX-GW-MW31B-052815	AX-GW-MW31B-080615	AX-GW-MW32B (100-112)-071	AX-GW-MW32B (135-145)-071	AX-GW-MW32B (153-163)-071	AX-GW-MW32B(100-112)-0807
Sample Date	Oilles	Wici GW Z	Wici GW 5	UCLs	05/28/15	08/10/15	05/28/15	08/06/15	05/28/15	08/06/15	07/13/15	07/13/15	07/13/15	08/07/15
Volatile Organic Compounds				0 023	03/23/13	00/10/13	03/20/13	00,00,15	03,20,13	50,00,15	0.713713	07/13/13	0.713,13	55/57/15
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	1.0 U	1.0 U J	10. U	10. U J	4.0 U	5.0 U J	100. U	500. U	200. U	100. U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	2.0 U	2.0 U J	20. U	20. U	8.0 U	10. U	200. U J	1000. U J	400. U J	200. U J
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	2.0 U	2.0 U	20. U	20. U	8.0 U	10. U	200. U	1000. U	400. U	200. U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	2.0 U	2.0 U	20. U	20. U	8.0 U	10. U	200. U	1000. U	400. U	200. U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	0.50 U	0.50 U	5.0 U	5.0 U	2.0 U	2.5 U	50. U	250. U	100. U	50. U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
Bromoform	(ug/l)	700.	50000.	100000.	2.0 U	2.0 U	20. U	20. U J	8.0 U	10. U J	200. U J	1000. U J	400. U J	200. U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
Chlorobenzene	(ug/l)	200.	1000.	10000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
Chloroethane	(ug/l)	NE	NE	NE	2.0 U	2.0 U	20. U	20. U	8.0 U	10. U	200. U	1000. U	400. U	200. U
Chloroform	(ug/l)	50.	20000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
Chloromethane	(ug/l)	NE	NE	NE	2.0 U J	2.0 U	20. U J	20. U	8.0 U J	10. U	200. U	1000. U	400. U	200. U
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	5.2	3.8	300.	360.	100.	110.	200.	640.	340.	150.
cis-1,3-Dichloropropene	(ug/l)	NE 20	NE Faces	NE 100000	0.50 U	0.50 U	5.0 U	5.0 U	2.0 U	2.5 U	50. U	250. U	100. U	50. U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	1.0 U	1.0 U	10. U 20. U	10. U 20. U	4.0 U 8.0 U	5.0 U 10. U	100. U 200. U	500. U	200. U 400. U	100. U
Dichlorodifluoromethane Hexachlorobutadiene	(ug/l)	NE 50.	NE 3000.	NE 30000.	2.0 U 0.60 U	2.0 U 0.60 U	20. U	20. U	8.0 U	10. U 3.0 U	200. U 60. U J	1000. U 300. U J	400. U 120. U J	200. U 60. U J
Methylene Chloride	(ug/l)	2000.	5000.	100000.	2.0 U	2.0 U	20. U	20. U	2.4 U	10. U	200. U	1000. U	400. U	200. U
o-Chlorotoluene	(ug/l) (ug/l)	2000. NE	NE	100000. NE	2.0 U	2.0 U J	20. U	20. U J	8.0 U	10. U J	200. U	1000. U	400. U	200. U
p-Chlorotoluene	(ug/l)	NF.	NF.	NF.	2.0 U	2.0 U J	20. U	20. U J	8.0 U	10. U J	200. U	1000. U	400. U	200. U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	1.0 U	1.0 U	10. U	12.	4.0 U	5.0 U	100. U	500. U	200. U	100. U
trans-1,3-Dichloropropene	(ug/l)	NF	NF	NE	0.50 U	0.50 U	5.0 U	5.0 U J	2.0 U	2.5 U J	50. U	250. U	100. U	50. U
Trichloroethene	(ug/l)	5.	5000.	50000.	68.	42.	1400.	1400.	460.	460.	[9900.]	[51000.]	[18000.]	[7200.]
Vinvl chloride	(ug/l)	2.	50000.	100000.	1.0 U	1.0 U	10. U	10. U	4.0 U	5.0 U	100. U	500. U	200. U	100. U
Total CVOCs	(ug/l)	NE	NE	NE	73.2	45.8	1700.	1772.	560.	570.	10100.	51640.	18340.	7350.
Polychlorinated BiPhenyls	, G, ,	•	·							•				
Aroclor 1016	(ug/l)	NE	NE	NE	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Aroclor 1232	(ug/l)	NE	NE	NE	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Aroclor 1242	(ug/l)	NE	NE	NE	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Aroclor 1248	(ug/l)	NE	NE	NE	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Aroclor 1254	(ug/l)	NE	NE	NE	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Aroclor 1260	(ug/l)	NE	NE	NE	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Aroclor 1262	(ug/l)	NE	NE	NE	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Aroclor 1268	(ug/l)	NE	NE	NE	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Total PCBs	(ug/l)	5.	10.	100.	0.250 U		0.250 U		0.250 U		0.250 U	0.250 U	0.250 U	
Dissolved Gases			1					,				,		
Ethane	(ug/l)	NE	NE	NE	0.500 U		0.787		0.500 U		1.02	2.03	1.22	
Ethene	(ug/l)	NE NE	NE	NE NE	0.500 U		3.15		0.500 U		4.07	9.24	5.32	
Methane	(ug/l)	NE	NE	NE	4.09		2.92		22.0		9.30	13.0	8.48	

Location				MCP	MW-29B	MW-29B	MW-30B	MW-30B	MW-31B	MW-31B	MW-32B	MW-32B	MW-32B	MW-32B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW29B-052815	AX-GW-MW29B-081015	AX-GW-MW30B-052815	AX-GW-MW30B-080615	AX-GW-MW31B-052815	AX-GW-MW31B-080615	AX-GW-MW32B (100-112)-071	AX-GW-MW32B (135-145)-071	AX-GW-MW32B (153-163)-071	AX-GW-MW32B(100-112)-0807
Sample Date				UCLs	05/28/15	08/10/15	05/28/15	08/06/15	05/28/15	08/06/15	07/13/15	07/13/15	07/13/15	08/07/15
MNA Parameters														
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	126.		68.7		2.00 U		69.4	94.5	116.	
Ammonia (as N)	(mg/l)	NE	NE	NE	0.075 U		0.333		0.170		0.514	0.645	0.508	
Ferrous Iron	(mg/l)	NE	NE	NE	0.50 U		0.50 U		0.50 U		0.50 U	0.59	0.50	
Total Iron	(mg/l)	NE	NE	NE	0.48		18.		0.60		0.19	0.68	0.64	
Nitrate (as N)	(mg/l)	NE	NE	NE	1.05		1.92		0.100 U		0.100 U	0.100 U	0.174	
Phosphorus	(mg/l)	NE	NE	NE	0.010 U		0.051		0.010 U		0.025 U	0.025 U	0.025 U	
Sulfate	(mg/l)	NE	NE	NE	80.		24.		280.		1100.	1200.	1500.	
Total Organic Carbon	(mg/l)	NE	NE	NE	1.0 U		1.9		5.0 U		20. U	10. U	10. U	
Total Suspended Solids	(mg/l)	NE	NE	NE							5.0 U	6.1	5.1	
Field Parameters														
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.15	0.22	0.30	0.10	0.18	0.13	0.08	0.13	0.11	0.19
ORP	(mv)	NE	NE	NE	0.9	-81.6	-168.0	-179.6	79.2	-29.8	-34.6	-280.	-24.4	-92.8
Specific Conductivity	(ms/cm)	NE	NE	NE	1.963	2.934	1.002	1.239	5.579	6.771	28.11	30.64	34.16	23.65
Temperature	(c)	NE	NE	NE	16.52	18.65	15.59	18.87	18.37	21.14	15.84	18.57	17.80	17.96
Turbidity	(ntu)	NE	NE	NE	5.70	4.41	15.4	9.59	11.5	8.46	4.38	3.97	2.59	0.10
pH	(su)	NE	NE	NE	8.85	11.30	7.03	7.54	10.94	10.74	7.24	7.13	7.06	7.10

Notes: (ug/l) = Micrograms per liter (mg/l) = Milligrams per liter (mv) = Millivolts (ms/cm) = Microsiemens per centimeter

(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

ND = Not detected NE = Not established

| NE = Not established
| Sample collection depth interval in feet below ground surface
| noted in parenthesis in Sample ID
| -- = Not analyzed for this constituent
| Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
| Bold, [], and pink shaded value indicates concentration is above UCL
| Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
| \*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S

MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).

MW-2UD, MW-21D, MW-22S, 02-001, 02-003, and MW-3 (FIEUX).
Total CVOCs and Total PCBs calculated by: summing detected concentrations
MCP = Massachsetts Contingency Plan
MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards
MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

Location				MCP	MW-32B	MW-32B	MW-33B	MW-34B	MW-34B	MW-34B	MW-34B	MW-34B	MW-34B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW32B(135-145)-0807	AX-GW-MW32B(153-163)-0807	AX-GW-MW-33B-0827	AX-GW-MW34B (60-80)-07141	AX-GW-MW34B (92-112)-0714	AX-GW-MW34B (120-130)-071	AX-GW-MW34B (170-180)-071	AX-GW-DUP1-071415	AX-GW-MW34B(60-80)-080615
Sample Date	0			UCLs	08/07/15	08/07/15	8/27/2015	07/14/15	07/14/15	07/14/15	07/14/15	07/14/15	08/06/15
Volatile Organic Compounds					55/51/25	33/31/23	5//		3.72.72	3.72.72	3.7 = .7 = 3	3.72.72	30, 30, 20
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U J
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	500. U	200. U	1.1	500. U	500. U	500. U	1200.	1300.	500. U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	500. U	200. U	5.7	500. U	500. U	500. U	1000. U	1000. U	500. U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	500. U	200. U	4.0	500. U	500. U	500. U	1000. U	1000. U	500. U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	1000. U J	400. U J	2.0 U	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	1000. U	400. U	2.0 U	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	500. U	200. U	41	500. U	500. U	500. U	1000. U	1000. U	500. U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	1000. U	400. U	2.0 U	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	250. U	100. U	0.50 U	250. U	250. U	250. U	500. U	500. U	250. U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U
Bromoform	(ug/l)	700.	50000.	100000.	1000. U J	400. U J	2.0 U	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U J
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U
Chlorobenzene	(ug/l)	200.	1000.	10000.	500. U	200. U	7.8	500. U	500. U	500. U	1000. U	1000. U	500. U
Chloroethane	(ug/l)	NE	NE	NE	1000. U	400. U	2.0 U	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U
Chloroform	(ug/l)	50.	20000.	100000.	500. U	200. U	1.0 U	500. U	500. U	500. U	1000. U	1000. U	500. U
Chloromethane	(ug/l)	NE	NE	NE	1000. U	400. U	2.0 U	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U
cis-1,2-Dichloroethene	(ug/l)	20. NF	50000. NF	100000.	500. U	220.	440	2600.	2600.	4600.	6400.	6600.	3600.
cis-1,3-Dichloropropene Dibromochloromethane	(ug/l)	NE 20.	50000.	NE 100000.	250. U 500. U	100. U 200. U	0.50 U 1.0 U	250. U J 500. U	250. U J 500. U	250. U J 500. U	500. U J 1000. U	500. U J 1000. U	250. U 500. U
Dichlorodifluoromethane	(ug/l) (ug/l)	NE	NE	100000. NE	1000. U	400. U	2.0 U	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	300. U J	120. U J	0.60 U	300. U	300. U	300. U	600. U	600. U	300. U
Methylene Chloride	(ug/I)	2000.	5000.	100000.	1000. U	400. U	2.1	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U
o-Chlorotoluene	(ug/l)	NE	NE	NE	1000. U	400. U	2.0 U	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U J
p-Chlorotoluene	(ug/l)	NF	NF.	NE NE	1000. U	400. U	2.0 U	1000. U	1000. U	1000. U	2000. U	2000. U	1000. U J
Tetrachloroethene	(ug/l)	50.	30000.	100000.	500. U	200. U	4.3	500. U	500. U	500. U	1000. U	1000. U	500. U
trans-1.2-Dichloroethene	(ug/l)	80.	50000.	100000.	500. U	200. U	1.6	500. U	500. U	500. U	1000. U	1000. U	500. U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	250. U	100. U	0.50 U	250. U J	250. U J	250. U J	500. U J	500. U J	250. U J
Trichloroethene	(ug/l)	5.	5000.	50000.	[23000.]	[14000.]	3700	[50000.]	[51000.]	[89000.]	[480000.]	[470000.]	[49000.]
Vinyl chloride	(ug/l)	2.	50000.	100000.	500. U	200. U	12	500. U	500. U	500. U	1000. U	1000. U	500. U
Total CVOCs	(ug/l)	NE	NE	NE	23000.	14220.	4659.60	52600.	53600.	93600.	487600.	477900.	52600.
Polychlorinated BiPhenyls													
Aroclor 1016	(ug/l)	NE	NE	NE			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Aroclor 1221	(ug/l)	NE	NE	NE			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Aroclor 1232	(ug/l)	NE	NE	NE			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Aroclor 1242	(ug/l)	NE	NE	NE			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Aroclor 1248	(ug/l)	NE	NE	NE			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Aroclor 1254	(ug/l)	NE	NE	NE			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Aroclor 1260	(ug/l)	NE	NE	NE			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Aroclor 1262	(ug/l)	NE	NE	NE			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Aroclor 1268	(ug/l)	NE	NE	NE			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Total PCBs	(ug/l)	5.	10.	100.			0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	
Dissolved Gases	, 10			1				1	1				
Ethane	(ug/l)	NE	NE NE	NE				0.661	0.847	0.871	0.991		
Ethene	(ug/l)	NE	NE NE	NE				5.34	6.68	7.38	16.4		
Methane	(ug/l)	NE	NE	NE				14.6	19.6	30.6	96.0		

Location				МСР	MW-32B	MW-32B	MW-33B	MW-34B	MW-34B	MW-34B	MW-34B	MW-34B	MW-34B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW32B(135-145)-0807	AX-GW-MW32B(153-163)-0807	AX-GW-MW-33B-0827	AX-GW-MW34B (60-80)-07141	AX-GW-MW34B (92-112)-0714	AX-GW-MW34B (120-130)-071	AX-GW-MW34B (170-180)-071	AX-GW-DUP1-071415	AX-GW-MW34B(60-80)-080615
Sample Date				UCLs	08/07/15	08/07/15	8/27/2015	07/14/15	07/14/15	07/14/15	07/14/15	07/14/15	08/06/15
MNA Parameters													
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE				41.6	42.2	55.5	70.2		
Ammonia (as N)	(mg/l)	NE	NE	NE				0.216	0.214	0.424	0.448		
Ferrous Iron	(mg/l)	NE	NE	NE				2.8	3.0	1.5	0.91		
Total Iron	(mg/l)	NE	NE	NE				2.5	2.5	1.6	1.5		
Nitrate (as N)	(mg/l)	NE	NE	NE				0.100 U	0.100 U	0.100 U	0.100 U		
Phosphorus	(mg/l)	NE	NE	NE				0.010 U	0.010 U	0.015	0.015		
Sulfate	(mg/l)	NE	NE	NE				440.	540.	560.	740.		
Total Organic Carbon	(mg/l)	NE	NE	NE				5.0 U	10. U	10. U	10. U		
Total Suspended Solids	(mg/l)	NE	NE	NE				7.9	6.0	6.7	6.1		
Field Parameters													
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.15	0.24		0.32	0.14	0.07	0.08		0.25
ORP	(mv)	NE	NE	NE	-111.4	-68.0		8.9	2.4	-12.7	12.8		-16.2
Specific Conductivity	(ms/cm)	NE	NE	NE	33.16	34.42		13.85	15.16	16.96	20.42		10.93
Temperature	(c)	NE	NE	NE	17.21	18.58		17.53	17.01	17.70	17.28		19.65
Turbidity	(ntu)	NE	NE	NE	0.08	0.12		0.26	0.52	0.45	0.34		0.28
pH	(su)	NE	NE	NE	7.14	7.06		6.39	6.44	6.73	6.59		6.42

Notes:
(ug/l) = Micrograms per liter
(mg/l) = Milligrams per liter
(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit
ND = Not detected

ND = Not detected NE = Not established

Sample collection depth interval in feet below ground surface

Sample collection depth interval in feet below ground surface noted in parenthesis in Sample ID
--- = Not analyzed for this constituent

Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard

Bold, [], and pink shaded value indicates concentration is above UCL

Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*

\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S

MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).

Total CVOCs and Total PCBs calculated by: summing detected concentrations

MCP = Massachsetts Contingency Plan
MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards
MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

						1							
Location				MCP	MW-34B	MW-34B	MW-34B	MW-35B	MW-101B	MW-101B	MW-101B	MW-101B	MW-103B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW34B(92-112)-08061	AX-GW-MW34B(120-130)-0806	AX-GW-MW34B(170-180)-0806	AX-GW-MW35B-082715	AX-GW-MW101B-031714	AX-GW-MW101B-062314	AX-GW-MW101B-052815	AX-GW-MW101B-080615	AX-GW-MW103B-080714
Sample Date				UCLs	08/06/15	08/06/15	08/06/15	8/27/2015	03/17/14	06/23/14	05/28/15	08/06/15	08/07/14
Volatile Organic Compounds 1,1,1,2-Tetrachloroethane	(a/l)	10.	50000.	100000.	500. U	1000. U	10000. U	1.0 U	100. U	100. U	200. U	100. U	20. U
1,1,1-trichloroethane	(ug/l) (ug/l)	4000.	20000.	100000.	500. U	1000. U	10000. U	1.0 U	100. U	100. U	200. U	100. U	20. U
1.1.2.2-Tetrachloroethane	, , ,	4000.	50000.	100000.		1000. U J	10000. U	1.0 U	100. U	100. U	200. U	100. U	20. U
1,1,2,2-Tetrachioroethane	(ug/l)	900.	50000.	100000.	500. U J 500. U	1000. U J	10000. U	1.0 U	100. U	100. U	200. U	100. U	20. U
1,1,2-1 richloroethane	(ug/l)		20000.		500. U	1000. U	10000. U	1.0 U	100. U	100. U	200. U		20. U
1,1-Dichloroethane 1.1-Dichloroethene	(ug/l)	2000. 80.	30000.	100000. 100000.	500. U	1000. U	10000. U	1.0 U	100. U	100. U	200. U	100. U 100. U	20. U
1,1-Dichloroethene 1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	1000. U	2000. U	20000. U	2.0 U	200. U	200. U	200. U 400. U	200. U	20. U 40. U
1,2-Dibromoethane	(ug/l)		50000.	100000.	1000. U	2000. U	20000. U	2.0 U	200. U	200. U	400. U	200. U	40. U
	(ug/l)	2. 8000.			500. U	1000. U			200. U	200. U	200. U	200. U	40. U
1,2-Dichlorobenzene	(ug/l)	8000. 5.	2000. 20000.	80000.	500. U	1000. U	10000. U	1.0 U		100. U	200. U		
1,2-Dichloroethane	(ug/l)		20000. 50000.	100000.			10000. U	1.0 U	100. U			100. U	20. U
1,2-Dichloropropane	(ug/l)	3. 6000.	50000.	100000.	500. U	1000. U 1000. U	10000. U	1.0 U	100. U	100. U 100. U	200. U	100. U	20. U 20. U
1,3-Dichlorobenzene	(ug/l)			100000.	500. U 1000. U	2000. U	10000. U 20000. U	1.0 U	100. U		200. U 400. U	100. U	20. U 40. U
1,3-Dichloropropane 1,3-Dichloropropene	(ug/l)	NE 10.	NE 200.	NE 2000.	1000. U 250. U	2000. U 500. U	20000. U	2.0 U 0.50 U	200. U	200. U 50. U	400. U 100. U	200. U 50. U	40. U 10. U
	(ug/l)												
1,4-Dichlorobenzene Bromodichloromethane	(ug/l)	60. 6.	8000. 50000.	80000. 100000.	500. U 500. U	1000. U 1000. U	10000. U 10000. U	1.0 U 1.0 U	100. U 100. U	100. U 100. U	200. U 200. U	100. U 100. U	20. U 20. U
Bromodicnioromethane	(ug/l)		50000.	100000.	1000. U J		20000. U		200. U		200. U		20. U 40. U
	(ug/l)	700. 2.	5000.			2000. U J		2.0 U		200. U J		200. U	40. U
Carbon Tetrachloride Chlorobenzene	(ug/l)	200.	1000.	50000. 10000.	500. U 500. U	1000. U 1000. U	10000. U 10000. U	1.0 U 1.0 U	100. U 100. U	100. U 100. U	200. U 200. U	100. U 100. U	20. U
Chloroethane	(ug/l)	200. NE	1000. NE	10000. NE	1000. U	2000. U	20000. U	2.0 U	200. U	200. U	200. U 400. U	100. U 200. U	20. U 40. U
Chloroform	(ug/l)	50.	20000.	100000.	500. U	1000. U	10000. U	1.0 U	200. U	200. U	400. U	100. U	40. U
	(ug/l)		20000. NE		1000. U			2.0 U					40. U
Chloromethane	(ug/l)	NE 20	50000.	NE 100000.		2000. U 6100.	20000. U		200. U 1800.	200. U 1700.	400. U J 2300.	200. U 2600.	730.
cis-1,2-Dichloroethene cis-1,3-Dichloropropene	(ug/l)	20. NF	NE	100000. NE	3600. 250. U	500. U	10000. U 5000. U	1.0 U 0.50 U	50. U	50. U	100. U	50. U	730. 10. U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	500. U	1000. U	10000. U	1.0 U	100. U	100. U	200. U	100. U	20. U
Dichlorodifluoromethane	(ug/l) (ug/l)	NE	NE	NE	1000. U	2000. U	20000. U	2.0 U	200. U J	200. U	400. U	200. U	40. U
Hexachlorobutadiene	(ug/I)	50.	3000.	30000.	300. U	600. U	6000. U	0.60 U	60, U	60. U	120. U	60. U	12. U
Methylene Chloride		2000.	5000.	100000.	1000. U	2000. U	2000. U	2.0 U	200. U	200. U	400. U	200. U	40. U
o-Chlorotoluene	(ug/l)	2000. NE	NE	100000. NE	1000. U J	2000. U J	20000. U	2.0 U	200. U	200. U	400. U	200. U	40. U
p-Chlorotoluene	(ug/l) (ug/l)	NE NE	NF.	NF.	1000. U J	2000. U J	20000. U	2.0 U	200. U	200. U	400. U	200. U	40. U
Tetrachloroethene	(ug/I)	50.	30000.	100000.	500. U	1000. U	10000. U	1.0 U	100. U	100. U	200. U	100. U	20. U
trans-1,2-Dichloroethene	(ug/I)	80.	50000.	100000.	500. U	1000. U	10000. U	1.0 U	100. U	100. U	200. U	100. U	20. U
trans-1,3-Dichloropropene	(ug/I)	NE	NE	NE	250. U J	500. U J	5000. U	0.50 U	50. U	50. U	100. U	50. U	10. U
Trichloroethene	(ug/I)	5.	5000.	50000.	[60000.]	[11000.]	[50000.]	2.8	[7400.]	[7800.]	[16000.]	[17000.]	1800.
Vinyl chloride	(ug/l)	2.	5000.	100000.	500. U	1000. U	10000. U	1.0 U	100. U	100. U	200. U	100. U	46.
Total CVOCs	(ug/l)	NE	NE	NE	63600.	116100.	500000.	2.8	9200.	9500.	18300.	19600.	2576.
Polychlorinated BiPhenyls	(46/1)	IVE	INE	IVE.	03000.	110100.	300000.	2.0	3200.	3300.	10500.	13000.	2570.
Aroclor 1016	(ug/l)	NF	NF	NF				0.250 U	0.250 U	0.250 U	0.250 U		0.250 U
Aroclor 1010	(ug/l)	NE NE	NE NE	NE NE				0.250 U	0.250 U	0.250 U	0.250 U		0.250 U
Aroclor 1221	(ug/I)	NE NE	NE NE	NE NE				0.250 U	0.250 U	0.250 U	0.250 U		0.250 U
Aroclor 1232 Aroclor 1242	(ug/l)	NF.	NE NE	NE NE				0.250 U	0.250 U	0.250 U	3.23		1.41
Aroclor 1242 Aroclor 1248	(ug/l)	NE NE	NE NE	NE NE				0.250 U	0.250 U	0.250 U	0.250 U		0.250 U
Aroclor 1248	(ug/l)	NF.	NE NE	NF.				0.250 U	0.250 U	0.250 U	0.250 U		0.250 U
Aroclor 1254 Aroclor 1260	(ug/I)	NF.	NE NE	NE NE				0.250 U	0.250 U	0.250 U	0.250 U		0.250 U
Aroclor 1260	(ug/l)	NE NE	NE NE	NE NE				0.250 U	0.250 U	0.250 U	0.250 U		0.250 U
Aroclor 1262 Aroclor 1268	(ug/l)	NF.	NE NE	NE NE				0.250 U	0.250 U	0.250 U	0.250 U		0.250 U
Total PCBs	(ug/l)	5.	10.	100.				0.250 U	0.250 U	0.250 U	3.23		1.41
Dissolved Gases	(48/1)	J.	10.	100.				5.230 0	5.230 0	0.230 0	5.23	-	1.41
Ethane	(ug/l)	NF	NF	NF						0.500 U	1.41		5.69
Ethene	(ug/I)	NE NE	NE NE	NE NE						3.75	6.35		4.46
Methane	(ug/I)	NF.	NE NE	NE NE						11.9	33.2		21.3
wemane	(ug/I)	INE	INE	INE						11.9	33.4		21.3

Location				MCP	MW-34B	MW-34B	MW-34B	MW-35B	MW-101B	MW-101B	MW-101B	MW-101B	MW-103B
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW34B(92-112)-08061	AX-GW-MW34B(120-130)-0806	AX-GW-MW34B(170-180)-0806	AX-GW-MW35B-082715	AX-GW-MW101B-031714	AX-GW-MW101B-062314	AX-GW-MW101B-052815	AX-GW-MW101B-080615	AX-GW-MW103B-080714
Sample Date				UCLs	08/06/15	08/06/15	08/06/15	8/27/2015	03/17/14	06/23/14	05/28/15	08/06/15	08/07/14
MNA Parameters				•									
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE						1790.	5.00 U		49.4
Ammonia (as N)	(mg/l)	NE	NE	NE						0.428	0.078		0.099
Ferrous Iron	(mg/l)	NE	NE	NE						0.50 U	0.50 U		1.3
Total Iron	(mg/l)	NE	NE	NE						0.24	0.21		1.1
Nitrate (as N)	(mg/l)	NE	NE	NE						0.100 U	0.475		0.179
Phosphorus	(mg/l)	NE	NE	NE						0.015	0.010 U		0.010
Sulfate	(mg/l)	NE	NE	NE						10. U	40.		110.
Total Organic Carbon	(mg/l)	NE	NE	NE						230.	7.5		5.2
Total Suspended Solids	(mg/l)	NE	NE	NE					34.	11.			5.0 U
Field Parameters													
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.17	0.22	0.20		2.99	1.99	0.20	0.16	0.13
ORP	(mv)	NE	NE	NE	-1.3	-39.2	-27.4		-73.6	-76.1	-76.5	19.9	-83.3
Specific Conductivity	(ms/cm)	NE	NE	NE	12.18	14.03	16.72		8.414	8.992	4.135	5.82	1.846
Temperature	(c)	NE	NE	NE	18.11	18.00	18.15		10.03	26.99	15.69	19.45	18.70
Turbidity	(ntu)	NE	NE	NE	0.48	0.22	0.21		10.28	8.66	2.05	3.55	1.76
Hq	(su)	NE	NE	NE	6.44	6.81	6.70		12.57	12.34	12.04	12.18	5.58

Notes: (ug/l) = Micrograms per liter (mg/l) = Milligrams per liter (mv) = Millivolts

(my) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

J = Estimated concentration/reporting limit
ND = Not detected
NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-45, MW-165, MW-185
MW-20D, MW-21D, MW-225, GZ-001, GZ-003, and MW-3 (Precix).
Total CVOCs and Total PCBs calculated by: summine detected concentrations

Total CVOCs and Total PCBs calculated by: summing detected concentrations

MCP = Massachsetts Contingency Plan
MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards
MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

Location				MCP	MW-103B	MW-103B	MW-TITL01
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW103B-092314	AX-GW-MW103B-120814	AX-GW-TITL01-052915
Sample Date				UCLs	09/23/14	12/08/14	05/29/15
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	(ug/l)	10.	50000.	100000.	1.0 U	20. U	1.0 U
1,1,1-trichloroethane	(ug/l)	4000.	20000.	100000.	1.0 U	20. U	1.0 U
1,1,2,2-Tetrachloroethane	(ug/l)	9.	50000.	100000.	1.0 U	20. U	1.0 U
1,1,2-Trichloroethane	(ug/l)	900.	50000.	100000.	1.0 U	20. U	1.0 U
1,1-Dichloroethane	(ug/l)	2000.	20000.	100000.	1.9	20. U	1.0 U
1,1-Dichloroethene	(ug/l)	80.	30000.	100000.	4.8	20. U	1.0 U
1,2,4-Trichlorobenzene	(ug/l)	200.	50000.	100000.	7.7	40. U	2.0 U
1,2-Dibromoethane	(ug/l)	2.	50000.	100000.	2.0 U	40. U	2.0 U
1,2-Dichlorobenzene	(ug/l)	8000.	2000.	80000.	1.0 U	20. U	1.0 U
1,2-Dichloroethane	(ug/l)	5.	20000.	100000.	1.0 U	20. U	1.0 U
1,2-Dichloropropane	(ug/l)	3.	50000.	100000.	1.0 U	20. U	1.0 U
1,3-Dichlorobenzene	(ug/l)	6000.	50000.	100000.	2.1	20. U	1.0 U
1,3-Dichloropropane	(ug/l)	NE	NE	NE	2.0 U	40. U	2.0 U
1,3-Dichloropropene	(ug/l)	10.	200.	2000.	0.50 U	10. U	0.50 U
1,4-Dichlorobenzene	(ug/l)	60.	8000.	80000.	1.6	20. U	1.0 U
Bromodichloromethane	(ug/l)	6.	50000.	100000.	1.0 U	20. U	1.0 U
Bromoform	(ug/l)	700.	50000.	100000.	2.0 U	40. U J	2.0 U
Carbon Tetrachloride	(ug/l)	2.	5000.	50000.	1.0 U	20. U	1.0 U
Chlorobenzene	(ug/l)	200.	1000.	10000.	1.0 U	20. U	1.0 U
Chloroethane	(ug/l)	NE	NE	NE	2.0 U	40. U	2.0 U
Chloroform	(ug/l)	50.	20000.	100000.	1.0	20. U	1.0 U
Chloromethane	(ug/l)	NE	NE	NE	2.0 U J	40. U	2.0 U J
cis-1,2-Dichloroethene	(ug/l)	20.	50000.	100000.	730.	600.	1.0 U
cis-1,3-Dichloropropene	(ug/l)	NE	NE	NE	0.50 U	10. U	0.50 U
Dibromochloromethane	(ug/l)	20.	50000.	100000.	1.0 U	20. U	1.0 U
Dichlorodifluoromethane	(ug/l)	NE	NE	NE	2.0 U	40. U	2.0 U
Hexachlorobutadiene	(ug/l)	50.	3000.	30000.	0.60 U	12. U	0.60 U
Methylene Chloride	(ug/l)	2000.	50000.	100000.	2.0 U	40. U	2.0 U
o-Chlorotoluene	(ug/l)	NE	NE	NE	2.0 U	40. U	2.0 U
p-Chlorotoluene	(ug/l)	NE	NE	NE	2.0 U	40. U	2.0 U
Tetrachloroethene	(ug/l)	50.	30000.	100000.	7.9	20. U	1.0 U
trans-1,2-Dichloroethene	(ug/l)	80.	50000.	100000.	2.8	20. U	1.0 U
trans-1,3-Dichloropropene	(ug/l)	NE	NE	NE	0.50 U	10. U	0.50 U
Trichloroethene	(ug/l)	5.	5000.	50000.	2000.	1500.	1.0 U
Vinyl chloride	(ug/l)	2.	50000.	100000.	34. J	51.	1.0 U
Total CVOCs	(ug/l)	NE	NE	NE	2793.8	2151.	N D
Polychlorinated BiPhenyls	, ,	·	•	·			
Aroclor 1016	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U
Aroclor 1221	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U
Aroclor 1232	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U
Aroclor 1242	(ug/l)	NE	NE	NE	2.85	4.60	0.250 U
Aroclor 1248	(ug/l)	NE NE	NE	NE	0.250 U	0.250 U	0.250 U
Aroclor 1254	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U
Aroclor 1260	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U
Aroclor 1262	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U
Aroclor 1268	(ug/l)	NE	NE	NE	0.250 U	0.250 U	0.250 U
Total PCBs	(ug/l)	5.	10.	100.	2.85	4.60	0.250 U
Dissolved Gases	(-0/-/						
Ethane	(ug/l)	NE	NE	NE	3.40	1.00	3.19
Ethene	(ug/l)	NE NE	NE NE	NE NE	4.68	1.25	0.500 U
Methane	(ug/l)	NE NE	NE	NE NE	26.3	15.0	8440.

Location				MCP	MW-103B	MW-103B	MW-TITL01
Sample ID	Units	MCP GW-2	MCP GW-3	Groundwater	AX-GW-MW103B-092314	AX-GW-MW103B-120814	AX-GW-TITL01-052915
Sample Date				UCLs	09/23/14	12/08/14	05/29/15
MNA Parameters							
Alkalinity, Bicarbonate (as CaCO3)	(mg/l)	NE	NE	NE	29.4	24.6	141.
Ammonia (as N)	(mg/l)	NE	NE	NE	0.127	0.086	3.13
Ferrous Iron	(mg/l)	NE	NE	NE	0.61	0.50 U	22.
Total Iron	(mg/l)	NE	NE	NE	0.64	0.06	51.
Nitrate (as N)	(mg/l)	NE	NE	NE	0.134	0.693	1.00 U
Phosphorus	(mg/l)	NE	NE	NE	0.010 U	0.010 U	0.028
Sulfate	(mg/l)	NE	NE	NE	110.	120.	10. U
Total Organic Carbon	(mg/l)	NE	NE	NE	2.1	1.4	9.7
Total Suspended Solids	(mg/l)	NE	NE	NE	5.0 U	5.0 U	
Field Parameters							
Dissolved Oxygen	(mg/l)	NE	NE	NE	0.30	0.09	0.17
ORP	(mv)	NE	NE	NE	102.5	222.5	-43.8
Specific Conductivity	(ms/cm)	NE	NE	NE	2.070	2.109	0.586
Temperature	(c)	NE	NE	NE	19.25	15.68	21.39
Turbidity	(ntu)	NE	NE	NE	1.65	0.44	4.23
pH	(su)	NE	NE	NE	5.65	5.34	6.22

Notes: (ug/l) = Micrograms per liter (mg/l) = Milligrams per liter (mv) = Millivolts

(mv) = Millivolts
(ms/cm) = Microsiemens per centimeter
(c) = Celsius degrees
(ntu) = Nephelometric units
(su) = Standard units
U = Constituent not detected at listed reporting limit
J = Estimated concentration/reporting limit

ND = Not detected

NE = Not established

NE = Not established
Sample collection depth interval in feet below ground surface
noted in parenthesis in Sample ID
-- = Not analyzed for this constituent
Bold, [], and yellow shaded value indicates concentration is above Method 1 GW-3 standard
Bold, [], and pink shaded value indicates concentration is above UCL
Bold and green shaded value indicates concentration is above Method 1 GW-2 standard\*
\*Monitoing wells that are within the MCP Method 1 defined GW2 area include: MW-4S, MW-16S, MW-18S
MW-20D, MW-21D, MW-22S, GZ-001, GZ-003, and MW-3 (Precix).
Tatal (VOCS and Total PGS calculated by: summine detected concentrations

Total CVOCs and Total PCBs calculated by: summing detected concentrations

MCP = Massachsetts Contingency Plan
MCP GW-3 = MCP Method 1: GW-3 Water Quality Standards
MCP GW-2 = MCP Method 1: GW-2 Water Quality Standards

# Table 2-9 Slug Test Information and Results Aerovox Facility, 740 Belleville Avenue, New Bedford, Massachusetts

Well No.	Screened Interval Depth (feet below ground surface)	Hydrologic Unit Modeled as Confined or Unconfined	Physical or Pneumatic Slug Test	Average K value (cm/sec)	Minimum K Value (cm/sec)	Maximum K Value (cm/sec)
Wells Screen	ed in Soil - Partiall	y Saturated Screen				
MW-4S	3 to 13	Unconfined	Physical	2.66E-03	2.41E-03	2.97E-03
MW-13D	2 to 12	Unconfined	Physical	2.05E-03	1.85E-03	2.20E-03
MW-16S	2.5 to 12.5	Unconfined	Physical	6.80E-03	5.88E-03	8.13E-03
MW-19S	3 to 13	Unconfined	Physical	4.45E-02	4.12E-02	5.19E-02
Wells Screen	ed in Soil - Fully Sa	nturated Screen				
GZ-103D	20 to 25	Unconfined	Physical	4.56E-04	3.13E-04	5.75E-04
MW-6	34 to 44	Unconfined	Physical	7.25E-02	5.89E-02	8.61E-02
MW-17D	24 to 34	Unconfined	Physical	2.27E-02	1.56E-02	2.73E-02
MW-19D	14 to 24	Unconfined	Physical	1.35E-03	NA	NA
MW-21D	5 to 20	Unconfined	Physical	1.95E-02	1.78E-02	2.05E-02
MW-24D	17 to 27	Unconfined	Physical	1.51E-01	NA	NA
Wells Screen	ed in Bedrock					
MW-6B	46 to 56	Unconfined	Physical	3.95E-02	3.56E-02	4.43E-02
MW-13B	13 to 23	Unconfined	Physical	3.14E-05	2.13E-05	4.50E-05
MW-17B	39 to 49	Unconfined	Physical	5.70E-03	5.67E-03	5.72E-03
MW-103B	28 to 38	Unconfined	Physical	3.99E-03	1.26E-03	8.26E-03
Open Bedroc	k Well					
MW-27B	41 to 51	Unconfined	Physical	1.11E-04	8.33E-05	1.60E-04

## Table 2-12 Precix Indoor Air Data Aerovox Facility

#### 740 Belleville Avenue, New Bedford, Massachusetts

Location		Indoor Air	Indoor Air	IA01	IA01	IA02	IA02	IA03	IA03	IA04	IA04
Sample ID	Units	Residential	C/I	AX-VI-IA1	AX-VI-IA1	AX-VI-IA2	AX-VI-IA2	AX-VI-IA3	AX-VI-IA3	AX-VI-IA4	AX-VI-IA4
Sample Date		Threshold Values	Threshold Values	05/04/14	12/30/14	05/04/14	12/30/14	05/04/14	12/30/14	05/04/14	12/30/14
1,1,1-trichloroethane	(ug/m3)	3.	4400.	1.09 U J	1.09 U J	1.09 U J	1.09 U				
1,1-Dichloroethane	(ug/m3)	0.8	710.	0.809 U J	0.809 U J	0.809 U J	0.809 U				
1,1-Dichloroethene	(ug/m3)	0.8	180.	0.793 U J	0.793 U J	0.793 U J	0.793 U				
1,2,3-Trichlorobenzene	(ug/m3)	NP	NP	1.48 U J	1.48 U J	1.48 U J	1.48 U				
1,2,4-Trichlorobenzene	(ug/m3)	0.4	3.4	1.48 U J	1.48 U J	1.48 U J	1.48 U				
1,2-Dichlorobenzene	(ug/m3)	0.72	710.	1.20 U J	1.20 U J	1.20 U J	1.20 U				
1,2-Dichloroethane	(ug/m3)	0.09	0.44	0.809 U J	0.809 U J	0.809 U J	0.809 U				
1,3-Dichlorobenzene	(ug/m3)	0.6	710.	1.20 U J	1.20 U J	1.20 U J	1.20 U				
1,4-Dichlorobenzene	(ug/m3)	0.5	1.7	1.20 U J	1.20 U J	1.20 U J	1.20 U				
Chlorobenzene	(ug/m3)	2.3	44.	0.921 U J	0.921 U J	0.921 U J	0.921 U				
cis-1,2-Dichloroethene	(ug/m3)	0.8	5.3	0.793 U J	0.793 U J	0.793 U J	0.793 U				
Tetrachloroethene	(ug/m3)	1.4	4.1	1.76 J	2.14 J	1.38 J	1.36 U	2.35	1.36 U	1.36 U	1.36 U
trans-1,2-Dichloroethene	(ug/m3)	0.8	53.	0.793 U J	0.793 U J	0.793 U J	0.793 U				
Trichloroethene	(ug/m3)	0.4	1.8	2.90 J	6.45 J	1.07 U J	2.07	1.07 U	1.07 U	1.07 U	1.07 U
Vinyl chloride	(ug/m3)	0.27	1.3	0.511 U J	0.511 U J	0.511 U J	0.511 U				

#### Notes:

(ug/m3) = Micrograms per cubic meter

NE = Not Established

U = Constituent not detected at listed concentration

J = Estimated concentation

C/I = Commercial/Industrial

Blue shading indicates exceedance of residential threshold value

Orange shading indicates exceedance of C/I threshold value

Soil Gas Threshold Values are taken from the Massachusetts

Indoor Air Threshold Values are taken from the Massachusetts Department of Environmental Protection Draft

Guidance, dated October 2014.

## Table 2-13 Precix Sub Slab Soil Gas Data Aerovox Facility

#### 740 Belleville Avenue, New Bedford, Massachusetts

Location		Sub-Slab Soil Gas	Sub-Slab Soil Gas	SS01	SS01	SS02	SS02	SS03	SS03	SS04	SS04
Sample ID	Units	Residential	C/I	AX-VI-SS1	AX-VI-SS1	AX-VI-SS2	AX-VI-SS2	AX-VI-SS3	AX-VI-SS3	AX-VI-SS4	AX-VI-SS4
Sample Date		Screening Values	Screening Values	05/04/14	12/30/14	05/04/14	12/30/14	05/04/14	12/30/14	05/04/14	12/30/14
1,1,1-trichloroethane	(ug/m3)	210.	310000.	60.0	69.8	2.73 U	10.9 U	24.9	68.7	5.06	8.29
1,1-Dichloroethane	(ug/m3)	56.	50000.	8.09 U	8.09 U	2.02 U	8.09 U	2.65	4.45	0.809 U	1.10
1,1-Dichloroethylene	(ug/m3)	56.	12000.	7.93 U	7.93 U	1.98 U	7.93 U	1.98 U	3.96 U	0.793 U	0.793 U
1,2,3-Trichlorobenzene	(ug/m3)	NE	NE	14.8 U	14.8 U	3.71 U	14.8 U	3.71 U	7.42 U	1.48 U	1.48 U
1,2,4-Trichlorobenzene	(ug/m3)	28.	240.	14.8 U	14.8 U	3.71 U	14.8 U	3.71 U	7.42 U	1.48 U	1.48 U
1,2-Dichlorobenzene	(ug/m3)	50.	50000.	12.0 U	12.0 U	3.01 U	12.0 U	3.01 U	6.01 U	1.20 U	1.20 U
1,2-Dichloroethane	(ug/m3)	6.3	31.	8.09 U	8.09 U	2.02 U	8.09 U	2.02 U	4.05 U	0.809 U	0.809 U
1,3-Dichlorobenzene	(ug/m3)	42.	50000.	12.0 U	12.0 U	3.01 U	12.0 U	3.01 U	7.46	1.20 U	3.45
1,4-Dichlorobenzene	(ug/m3)	35.	120.	12.0 U	12.0 U	3.01 U	12.0 U	3.01 U	6.01 U	1.20 U	1.20 U
Chlorobenzene	(ug/m3)	160.	3100.	9.21 U	9.21 U	2.30 U	9.21 U	2.30 U	4.61 U	0.921 U	0.921 U
cis-1,2-Dichloroethylene	(ug/m3)	56.	370.	62.6	40.4	1.98 U	7.93 U	4.40	11.5	29.2	40.8
Tetrachloroethylene	(ug/m3)	98.	290.	74.6	821.	3.39 U	149.	3.39 U	198.	4.06	17.2
trans-1,2-Dichloroethene	(ug/m3)	56.	3700.	8.84	9.75	1.98 U	7.93 U	1.98 U	3.96 U	1.08	1.68
Trichloroethylene	(ug/m3)	28.	120.	7580.	23200.	168.	3290.	196.	3130.	202.	436.
Vinyl chloride	(ug/m3)	19.	91.	5.11 U	5.11 U	1.28 U	5.11 U	1.28 U	2.56 U	0.511 U	0.511 U

#### Notes:

(ug/m3) = Micrograms per cubic meter

NE = Not Established

U = Constituent not detected at listed concentration

J = Estimated concentation

C/I = Commercial/Industrial

Blue shading indicates exceedance of residential screening value

Orange shading indicates exceedance of C/I screening value

Soil Gas Screening Values are taken from the Massachusetts

Department of Environmental Protection Draft Vapor Instrusion

Guidance, dated October 2014.

## Table 2-14 Titleist Sub Slab Soil Gas Data Aerovox Facility

#### 740 Belleville Avenue, New Bedford, Massachusetts

Location		Sub-Slab Soil Gas	Sub-Slab Soil Gas	T-SS01	T-SS01	T-SS02	T-SS02	T-SS03	T-SS03	T-SS04	T-SS04
Sample ID	Units	Residential	C/I	AX-VIT-SS01	AX-VIT-SS01	AX-VIT-SS02	AX-VIT-SS02	AX-VIT-SS03	AX-VIT-SS03	AX-VIT-SS04	AX-VIT-SS04
Sample Date		Screening Values	Screening Values	12/31/14	04/19/15	12/31/14	04/19/15	12/31/14	04/19/15	12/31/14	04/19/15
1,1,1-trichloroethane	(ug/m3)	210.	310000.	1.09 U	2.73 U	1.09 U	1.09 U	1.09 U	2.73 U	1.09 U	2.73 U
1,1-Dichloroethane	(ug/m3)	56.	50000.	0.809 U	2.02 U	0.809 U	0.809 U	0.809 U	2.02 U	0.809 U	2.02 U
1,1-Dichloroethylene	(ug/m3)	56.	12000.	0.793 U	1.98 U	0.793 U	0.793 U	0.793 U	1.98 U	0.793 U	1.98 U
1,2,3-Trichlorobenzene	(ug/m3)	NE	NE	1.48 U	3.71 U	1.48 U	1.48 U	1.48 U	3.71 U	1.48 U	3.71 U
1,2,4-Trichlorobenzene	(ug/m3)	28.	240.	1.48 U	3.71 U	1.48 U	1.48 U	1.48 U	3.71 U	1.48 U	3.71 U
1,2-Dichlorobenzene	(ug/m3)	50.	50000.	1.20 U	3.01 U	1.20 U	1.20 U	1.20 U	3.01 U	1.20 U	3.01 U
1,2-Dichloroethane	(ug/m3)	6.3	31.	0.809 U	2.02 U	0.809 U	0.809 U	0.809 U	2.02 U	0.809 U	2.02 U
1,3-Dichlorobenzene	(ug/m3)	42.	50000.	1.20 U	3.01 U	1.20 U	2.04	1.20 U	3.01 U	1.20 U	3.01 U
1,4-Dichlorobenzene	(ug/m3)	35.	120.	1.20 U	3.01 U	1.20 U	1.20 U	1.20 U	3.01 U	1.20 U	3.01 U
Chlorobenzene	(ug/m3)	160.	3100.	0.921 U	2.30 U	0.921 U	0.921 U	0.921 U	2.30 U	0.921 U	2.30 U
cis-1,2-Dichloroethylene	(ug/m3)	56.	370.	0.793 U	1.98 U	0.793 U	0.793 U	0.793 U	1.98 U	0.793 U	1.98 U
Tetrachloroethylene	(ug/m3)	98.	290.	1.61	3.39 U	2.02	2.41	1.53	3.39 U	2.15	3.65
trans-1,2-Dichloroethene	(ug/m3)	56.	3700.	0.793 U	1.98 U	0.793 U	0.793 U	0.793 U	1.98 U	0.793 U	1.98 U
Trichloroethylene	(ug/m3)	28.	120.	9.46	12.0	6.18	13.1	1.07 U	2.69 U	4.94	7.31
Vinyl chloride	(ug/m3)	19.	91.	0.511 U	1.28 U	0.511 U	0.511 U	0.511 U	1.28 U	0.511 U	1.28 U

#### Notes:

(ug/m3) = Micrograms per cubic meter

NE = Not Established

U = Constituent not detected at listed concentration

J = Estimated concentation

C/I = Commercial/Industrial

Blue shading indicates exceedance of residential screening value

Orange shading indicates exceedance of C/I screening value

Soil Gas Screening Values are taken from the Massachusetts

Department of Environmental Protection Draft Vapor Instrusion

Guidance, dated October 2014.

Table 2-18
Groundwater Elevation Data
Aerovox Facility
740 Belleville Avenue, New Bedford, Massachusetts

Туре	Well ID	Property	Measuring Point: PVC or Roadbox	Overburden, TOB <sup>2</sup> or Bedrock <sup>1</sup>	Total Well Depth <sup>3</sup>	Screen Length	Measuring Point Elevation <sup>5</sup>	Depth to Water 12/2010	Groundwater Elevation 12/2010	Depth to Water 11/2011	Groundwater Elevation 11/2011	Depth to Water 12/2012	Groundwater Elevation 12/2012
Acushnet River	Wood Street Bridge Mark	NA	NA	NA	NA	NA	13.95	N/A	N/A	N/A	N/A	N/A	N/A
Acushnet River	Staff Gauge	NA	NA	NA	NA	NA	4.18	N/A	N/A	N/A	N/A	N/A	N/A
	GZ-1	Precix	PVC	Overburden	13	10	9.79	7.47	2.32	6.29	3.50	8.14	1.65
	GZ-2	Precix	PVC	Overburden	13	10	7.47	4.53	2.94	4.33	3.14	4.91	2.56
	GZ-3	Precix	PVC	Overburden	15	unknown	12.70	10.26	2.44	8.98	3.72	11.01	1.69
	GZ-101S	Precix	PVC	Overburden	11.91	10	7.46	5.30	2.16	4.19	3.27	5.88	1.58
	GZ-102S	Precix	PVC	Overburden	13	10	6.54	4.94	1.68	4.23	2.39	5.33	1.21
	GZ-103S	Precix	PVC	Overburden	11.90	10	5.97	4.85	1.25	4.56	1.54	4.79	1.31
	MW-TITL-01	Titleist	PVC	Unknown (overburden)	16.90	unknown	5.58						
<u>v</u>	MW-1	Precix	PVC	Overburden	24.5	10	8.03	4.47	3.56	3.98	4.05	5.00	3.03
Wells	MW-2A	Aerovox	PVC	Overburden	6	4	4.70	NM	NM	NM	N/A	NM	N/A
2	MW-3 (Aerovox)	Aerovox	PVC	Overburden	19	10	6.27	NM	NM	7.96	-1.05	NM	N/A
e e	MW-3 (Precix)	Precix	PVC	Unknown (overburden)	14.85	unknown	11.45	9.24	2.21	7.96	3.49	9.81	1.64
Overburden	MW-3A	Aerovox	PVC	Overburden	7	5	6.31	6.16	2.09	5.62	2.63	4.46	1.85
문	MW-4A	Aerovox	PVC	Overburden	6.5	5	7.08	7.79	3.05	7.47	3.37	4.68	2.40
Š	MW-4S	Precix	PVC	Overburden	13	10	7.20	N/A	N/A	N/A	N/A	N/A	N/A
	MW-6A	Aerovox	PVC	Overburden	10	5	6.66	7.31	1.66	6.60	2.37	5.45	1.21
Shallow	MW-7A	Aerovox	PVC	Overburden	8.5	7	5.55	4.31	2.97	4.21	3.07	2.75	2.80
l g	MW-8S	Aerovox	PVC	Unknown (overburden)	8.48	unknown	6.22	3.46	2.05	blocked	N/A	4.70	1.52
0,	MW-12S	Aerovox	PVC	Overburden, TOB	13	10	7.76	N/A	N/A	N/A	N/A	N/A	N/A
	MW-13D	Aerovox	PVC	Overburden, TOB	12	10	5.25	N/A	N/A	N/A	N/A	N/A	N/A
	MW-16S	Precix	PVC	Overburden	13	10	5.87	N/A	N/A	N/A	N/A	N/A	N/A
	MW-18S	Precix	PVC	Overburden	13	10	7.08	N/A	N/A	N/A	N/A	N/A	N/A
	MW-19S	Aerovox	PVC	Overburden	13	10	7.40	N/A	N/A	N/A	N/A	N/A	N/A
	MW-20D	Aerovox	PVC	Overburden, TOB	11.85	7	12.65	N/A	N/A	N/A	N/A	N/A	N/A
	MW-22S	Aerovox	PVC	Overburden	13	10	6.58	N/A	N/A	N/A	N/A	N/A	N/A
	MW-25D	Aerovox	PVC	Overburden, TOB	8.5	5	7.55	N/A	N/A	N/A	N/A	N/A	N/A
	GZ-101D	Precix	PVC	Overburden	24.52	5	7.69	5.55	2.14	4.45	3.24	6.13	1.56
	GZ-102D	Precix	PVC	Overburden	45	5	6.53	4.90	1.64	4.19	2.35	5.29	1.24
	GZ-103D	Precix	PVC	Overburden	23.34	5	6.13	4.76	1.47	4.56	1.67	4.95	1.28
un.	GZ-4A	Precix	PVC	Overburden	23.4	5	7.27	5.51	1.85	4.45	2.91	5.89	1.47
<u>≅</u>	MW-2	Aerovox	PVC PVC	Overburden	21	10	4.78	7.00 9.92	-0.63	5.40	0.97	3.40	1.38
≯	MW-4	Aerovox		Overburden	20	10	7.43		1.10	9.87	1.15	5.95	1.48
<u>e</u>	MW-5	Aerovox	PVC	Overburden	19.5	10	13.45	12.91	2.68	11.38	4.21	11.60	1.85
l š	MW-6 MW-7	Aerovox Aerovox	PVC PVC	Overburden Overburden	45 22	10 10	6.64 5.44	6.71 6.49	1.58 1.03	6.00 6.48	2.29 1.04	5.38 3.90	1.26 1.54
ē	MW-10D		PVC	Overburden, TOB	37	10	4.25	0.49 N/A	N/A	0.46 N/A	N/A	3.90 N/A	N/A
Overburden Wells	MW-10D MW-15D	Aerovox	PVC		31	10	4.25 5.48	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
	MW-15D MW-17D	Aerovox Aerovox	PVC	Overburden, TOB Overburden, TOB	31	10	5.48 4.75	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Deep	MW-17D MW-18D	Precix	PVC	Overburden, TOB	23	5	6.83	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
	MW-19D	Aerovox	PVC	Overburden, TOB	24	10	7.40	N/A	N/A	N/A	N/A N/A	N/A	N/A N/A
	MW-21D	Aerovox	PVC	Overburden, TOB	19.3	10	11.13	N/A	N/A	N/A	N/A N/A	N/A	N/A N/A
	MW-23D	Aerovox	PVC	Overburden, TOB	34.05	10	6.00	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
	MW-24D	Aerovox	PVC	Overburden, TOB	25.9	10	7.65	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
	IVIVV-24D	Aerovox	r v C	Overbuiden, TOB	25.9	10	60.1	IN/A	IN/A	IN/A	IN/A	IN/A	IN/A

### Table 2-18 Groundwater Elevation Data Aerovox Facility

#### 740 Belleville Avenue, New Bedford, Massachusetts

Туре	Well ID	Property	Measuring Point: PVC or Roadbox	Overburden, TOB <sup>2</sup> or Bedrock <sup>1</sup>	Total Well Depth <sup>3</sup>	Screen Length	Measuring Point Elevation <sup>5</sup>	Depth to Water 12/2010	Groundwater Elevation 12/2010	Depth to Water 11/2011	Groundwater Elevation 11/2011	Depth to Water 12/2012	Groundwater Elevation 12/2012
Acushnet River	Wood Street Bridge Mark	NA	NA	NA	NA	NA	13.95	N/A	N/A	N/A	N/A	N/A	N/A
Acushnet River	Staff Gauge	NA	NA	NA	NA	NA	4.18	N/A	N/A	N/A	N/A	N/A	N/A
	MW-2B	Aerovox		Bedrock	35.67	10	4.66	N/A	N/A	N/A	N/A	N/A	N/A
	MW-4B	Aerovox		Bedrock	40.60	20?	9.60	6.67	2.12	5.80	2.99	7.52	2.08
	MW-6B	Aerovox		Bedrock	56.5	10	6.13	N/A	N/A	N/A	N/A	N/A	N/A
	MW-7B	Aerovox		Bedrock	45.50	10	5.58	N/A	N/A	N/A	N/A	N/A	N/A
	MW-11B	Aerovox		Bedrock	22.00	10	11.04	N/A	N/A	N/A	N/A	N/A	N/A
	MW-13B	Aerovox		Bedrock	24.00	10	5.10	N/A	N/A	N/A	N/A	N/A	N/A
	MW-15B	Aerovox		Bedrock	46.00	10	5.62	N/A	N/A	N/A	N/A	N/A	N/A
	MW-17B	Aerovox		Bedrock	49.00	10	4.99	N/A	N/A	N/A	N/A	N/A	N/A
	MW-20B	Aerovox		Bedrock	27.00	10	12.62	N/A	N/A	N/A	N/A	N/A	N/A
	MW-21B	Aerovox		Bedrock	38.46	10	11.00	N/A	N/A	N/A	N/A	N/A	N/A
	MW-23B	Aerovox		Bedrock	49.75	10	5.88	N/A	N/A	N/A	N/A	N/A	N/A
v	MW-24B	Aerovox		Bedrock	41.30	10	7.53	N/A	N/A	N/A	N/A	N/A	N/A
e	MW-26B	Aerovox		Bedrock	87.45	10	7.25	N/A	N/A	N/A	N/A	N/A	N/A
Bedrock Wells	MW-27B	Aerovox		Bedrock, OB	51.15	OB	4.15	N/A	N/A	N/A	N/A	N/A	N/A
Ž	MW-28B	Aerovox		Bedrock, OB	61.11	OB	7.86	N/A	N/A	N/A	N/A	N/A	N/A
<del>,</del>	MW-29B	Titleist		Bedrock, OB	60.25	OB	9.41						
æ	MW-30B	Precix		Bedrock, OB	53.00	OB	6.88						
	MW-31B	Precix		Bedrock, OB	60.25	OB	6.67						
	MW-32B	Aerovox		Bedrock (100-112)	163.00	12	4.01						
	MW-32B	Aerovox		Bedrock (135-145)	163.00	10	3.99						
	MW-32B	Aerovox		Bedrock (153-163)	163.00	10	4.02						
	MW-33B	Aerovox		Bedrock	250.00	10	7.00						
	MW-34B	Aerovox		Bedrock (60-80)	180.00	10	4.96						
	MW-34B	Aerovox		Bedrock (92-112)	180.00	10	4.95						
	MW-34B	Aerovox		Bedrock (120-130)	180.00	10	5.00						
	MW-34B	Aerovox		Bedrock (170-180)	180.00	10	5.01						
	MW-35B	Titleist	PVC	Bedrock, OB	52.00	OB	5.88	N1/A	N1/A	N1/A	N1/A	N1/A	N1/A
	MW-101B	Precix	PVC	Bedrock	39	10	7.49	N/A	N/A	N/A	N/A	N/A	N/A
	MW-103B	Aerovox	PVC	Bedrock	38.10	10	6.08	N/A	N/A	N/A	N/A	N/A	N/A

#### Notes:

<sup>1</sup>Unknown (overburden) - Well log missing; well is assumed to be an overburden shallow or deep well based on other well logs

Measuring Point for each monitoring well is the top of the PVC casing or steel casing, as applicable.

Elevations relative to NGVD 1929.

NA - not applicable

NM - not measured

NC - Not calculated

Bedrock, OB - open borehole bedrock well

<sup>&</sup>lt;sup>2</sup>TOB - Top of Bedrock; well was installed at the overburden-bedrock interface

<sup>&</sup>lt;sup>3</sup> Total well depths for some wells were changed based on removal of standpipe protective casings as part of NTCRA.

<sup>&</sup>lt;sup>4</sup> MW-4A was repaired in 2/2014 and resurveyed

Measuring point elevations for Aerovox monitoring wells and two Precix monitoring wells (MW-102D & MW-102D) were surveyed as part of the NTCRA and elevations have been updated accordingly. Measuring Point for GZ-4A, GZ-103B, GZ-103B were resurveyed after installation of new roadbox covers in 2014.

<sup>&</sup>lt;sup>6</sup>Acushent River staff gauge was destroyed in early Spring 2015.

Table 2-18
Groundwater Elevation Data
Aerovox Facility
740 Belleville Avenue, New Bedford, Massachusetts

Туре	Well ID	Property	Measuring Point: PVC or Roadbox	Overburden, TOB <sup>2</sup> or Bedrock <sup>1</sup>	Total Well Depth <sup>3</sup>	Screen Length	Measuring Point Elevation <sup>5</sup>	Depth to Water 03/2014	Groundwater Elevation 03/2014	Depth to Water 06/23/2014	Groundwater Elevation 06/23/2014	Depth to Water 9/12/2014	Groundwater Elevation 09/12/2014
Acushnet River	Wood Street Bridge Mark	NA	NA	NA	NA	NA	13.95	N/A	N/A	N/A	N/A	N/A	N/A
Acushnet River	Staff Gauge	NA	NA	NA	NA	NA	4.18	N/A	N/A	N/A	N/A	2.42	1.76
	GZ-1	Precix	PVC	Overburden	13	10	9.79	7.32	2.47	7.78	2.01	7.92	1.87
	GZ-2	Precix	PVC	Overburden	13	10	7.47	4.15	3.32	4.60	2.87	4.99	2.48
	GZ-3	Precix	PVC	Overburden	15	unknown	12.70	10.04	2.66	10.62	2.08	10.96	1.74
	GZ-101S	Precix	PVC	Overburden	11.91	10	7.46	5.19	2.27	5.55	1.91	5.73	1.73
	GZ-102S	Precix	PVC	Overburden	13	10	6.54	4.96	1.58	5.20	1.34	5.11	1.43
	GZ-103S	Precix	PVC	Overburden	11.90	10	5.97	4.26	1.84	5.33	0.77	4.13	1.84
	MW-TITL-01	Titleist	PVC	Unknown (overburden)	16.90	unknown	5.58						
<u> </u>	MW-1	Precix	PVC	Overburden	24.5	10	8.03	4.00	1.00	5.02	3.01	5.72	2.31
Wells	MW-2A	Aerovox	PVC	Overburden	6	4	4.70	2.02	2.68	2.02	2.68	1.78	2.92
> -	MW-3 (Aerovox)	Aerovox	PVC	Overburden	19	10	6.27	4.10	2.17	4.22	2.05	4.48	1.79
Overburden	MW-3 (Precix)	Precix	PVC	Unknown (overburden)	14.85	unknown	11.45	8.99	2.46	9.47	1.98	9.76	1.69
į	MW-3A	Aerovox	PVC	Overburden	7	5	6.31	4.14	2.17	4.26	2.05	4.51	1.80
a di	MW-4A	Aerovox	PVC	Overburden	6.5	5	7.08	3.92	3.16	3.93	3.15	4.18	2.90
ò	MW-4S	Precix	PVC	Overburden	13	10	7.20	5.19	2.01	5.65	1.55	5.58	1.62
	MW-6A	Aerovox	PVC	Overburden	10	5	6.66	5.05	1.61	5.35	1.31	5.35	1.31
Shallow	MW-7A	Aerovox	PVC	Overburden	8.5	,	5.55	2.58	2.97	2.43	3.12	2.55	3.00
, se	MW-8S	Aerovox	PVC	Unknown (overburden)	8.48	unknown	6.22	4.26	1.96	4.42	1.80	4.58	1.64
0,	MW-12S	Aerovox	PVC	Overburden, TOB	13	10	7.76	5.20	2.56	5.60	2.16	5.78	1.98
	MW-13D	Aerovox	PVC	Overburden, TOB	12	10	5.25	2.94	2.31	3.42	1.83	3.61	1.64
	MW-16S	Precix	PVC	Overburden	13	10	5.87	4.35	1.52	4.52	1.35	4.48	1.39
	MW-18S	Precix	PVC	Overburden	13	10	7.08	5.43	1.65	5.68	1.40	5.64	1.44
	MW-19S	Aerovox	PVC	Overburden	13	10	7.40	5.90	1.50	6.01	1.39	5.83	1.57
	MW-20D	Aerovox	PVC	Overburden, TOB	11.85	7	12.65	N/A	N/A	N/A	N/A	9.52	3.13
	MW-22S	Aerovox	PVC	Overburden	13	10	6.58	N/A	N/A	N/A	N/A	4.74	1.84
	MW-25D	Aerovox	PVC	Overburden, TOB	8.5	5	7.55	N/A	N/A	N/A	N/A	5.79	1.76
	GZ-101D	Precix	PVC	Overburden	24.52	5	7.69	5.47	2.22	5.81	1.88	5.97	1.72
	GZ-102D	Precix	PVC	Overburden	45	5	6.53	4.90	1.63	5.25	1.28	5.04	1.49
	GZ-103D	Precix	PVC	Overburden	23.34	5	6.13	4.52	1.71	5.50	0.73	4.24	1.89
w	GZ-4A	Precix	PVC	Overburden	23.4	5	7.27	5.40	1.87 1.89	5.49	1.78	5.71 2.92	1.56 1.86
Wells	MW-2 MW-4	Aerovox	PVC PVC	Overburden	21 20	10 10	4.78 7.43	2.89 5.42	2.01	4.05 6.91	0.73 0.52	5.38	2.05
>	MW-5	Aerovox Aerovox	PVC	Overburden	19.5	10	13.45	10.52	2.93	11.15	2.30	11.50	1.95
urden	MW-6		PVC	Overburden		10	6.64	4.97	1.67	5.35	1.29	5.22	1.42
ı aı	MW-7	Aerovox Aerovox	PVC	Overburden Overburden	45 22	10	5.44	3.39	2.05	4.97	0.47	3.32	2.12
Overbu	MW-10D	Aerovox	PVC	Overburden, TOB	37	10	4.25	2.44	2.05 1.81	3.23	1.02	2.41	1.84
Š	MW-15D	Aerovox	PVC	Overburden, TOB	31	10	5.48	3.34	2.14	5.06	0.42	3.21	2.27
D d	MW-15D MW-17D	Aerovox	PVC	Overburden, TOB Overburden, TOB	34	10	5.48 4.75	2.69	2.14	3.94	0.42	2.65	2.27
Deep	MW-18D	Precix	PVC	Overburden, TOB	23	5	6.83	5.18	1.65	5.41	1.42	5.37	1.46
	MW-19D	Aerovox	PVC	Overburden, TOB	24	10	7.40	5.70	1.70	6.24	1.16	5.58	1.82
	MW-21D	Aerovox	PVC	Overburden, TOB	19.3	10	11.13	5.70 N/A	N/A	N/A	N/A	9.07	2.06
	MW-23D	Aerovox	PVC	Overburden, TOB	34.05	10	6.00	N/A	N/A N/A	N/A	N/A N/A	3.98	2.06
	MW-24D	Aerovox	PVC	Overburden, TOB	25.9	10	7.65	N/A N/A	N/A N/A	N/A N/A	N/A N/A	6.24	1.41
	IVIVV-24D	Aerovox	r v C	Overbuiden, TOB	25.9	10	60.1	IN/A	IN/A	IN/A	IN/A	0.24	1.41

#### **Table 2-18 Groundwater Elevation Data Aerovox Facility** 740 Belleville Avenue, New Bedford, Massachusetts

Туре	Well ID	Property	Measuring Point: PVC or Roadbox	Overburden, TOB <sup>2</sup> or Bedrock <sup>1</sup>	Total Well Depth <sup>3</sup>	Screen Length	Measuring Point Elevation <sup>5</sup>	Depth to Water 03/2014	Groundwater Elevation 03/2014	Depth to Water 06/23/2014	Groundwater Elevation 06/23/2014	Depth to Water 9/12/2014	Groundwater Elevation 09/12/2014
Acushnet River	Wood Street Bridge Mark	NA	NA	NA	NA	NA	13.95	N/A	N/A	N/A	N/A	N/A	N/A
Acushnet River	Staff Gauge	NA	NA	NA	NA	NA	4.18	N/A	N/A	N/A	N/A	2.42	1.76
	MW-2B	Aerovox		Bedrock	35.67	10	4.66	3.01	1.65	3.97	0.69	2.42	2.24
	MW-4B	Aerovox		Bedrock	40.60	20?	9.60	7.45	2.15	7.72	1.88	7.73	1.87
	MW-6B	Aerovox		Bedrock	56.5	10	6.13	4.43	1.70	4.86	1.27	4.65	1.48
	MW-7B	Aerovox		Bedrock	45.50	10	5.58	3.95	1.63	5.14	0.44	3.65	1.93
	MW-11B	Aerovox		Bedrock	22.00	10	11.04	8.45	2.59	8.79	2.25	8.82	2.22
	MW-13B	Aerovox		Bedrock	24.00	10	5.10	3.10	2.00	3.20	1.90	3.37	1.73
	MW-15B	Aerovox		Bedrock	46.00	10	5.62	3.69	1.93	5.30	0.32	3.73	1.89
	MW-17B	Aerovox		Bedrock	49.00	10	4.99	2.93	2.06	4.16	0.83	2.86	2.13
	MW-20B	Aerovox		Bedrock	27.00	10	12.62	N/A	N/A	N/A	N/A	9.63	2.99
	MW-21B	Aerovox		Bedrock	38.46	10	11.00	N/A	N/A	N/A	N/A	8.92	2.08
	MW-23B	Aerovox		Bedrock	49.75	10	5.88	N/A	N/A	N/A	N/A	3.87	2.01
v	MW-24B	Aerovox		Bedrock	41.30	10	7.53	N/A	N/A	N/A	N/A	6.09	1.44
Bedrock Wells	MW-26B	Aerovox		Bedrock	87.45	10	7.25	N/A	N/A	N/A	N/A	5.95	1.30
5	MW-27B	Aerovox	PVC	Bedrock, OB	51.15	OB OB	4.15	N/A	N/A	N/A	N/A	2.48	1.67
20	MW-28B	Aerovox		Bedrock, OB	61.11		7.86	N/A	N/A	N/A	N/A	6.38	1.48
ģ	MW-29B	Titleist		Bedrock, OB	60.25	OB	9.41						
å	MW-30B	Precix		Bedrock, OB	53.00	OB OB	6.88 6.67						
	MW-31B	Precix		Bedrock, OB	60.25	12							
	MW-32B MW-32B	Aerovox	Flute Flute	Bedrock (100-112) Bedrock (135-145)	163.00 163.00	10	4.01 3.99						
	MW-32B	Aerovox		Bedrock (135-145)	163.00	10	4.02						
	MW-33B	Aerovox Aerovox		Bedrock (153-163)	250.00	10	7.00						
	MW-34B	Aerovox		Bedrock (60-80)	180.00	10	4.96						
I	MW-34B	Aerovox		Bedrock (92-112)	180.00	10	4.96						
I	MW-34B	Aerovox		Bedrock (92-112)	180.00	10	5.00						
I	MW-34B	Aerovox		Bedrock (120-130)	180.00	10	5.00						
I	MW-35B	Titleist		Bedrock (170-180)	52.00	OB	5.88						
I	MW-101B	Precix	PVC	Bedrock	39	10	7.49	6.45	1.04	5.58	1.91	5.68	1.81
	MW-103B	Aerovox	PVC	Bedrock	38.10	10	6.08	N/A	N/A	N/A	N/A	4.42	1.66

#### Notes:

<sup>1</sup>Unknown (overburden) - Well log missing; well is assumed to be an overburden shallow or deep well based on other well logs

Measuring Point for each monitoring well is the top of the PVC casing or steel casing, as applicable.

Elevations relative to NGVD 1929.

NA - not applicable

NM - not measured NC - Not calculated

Bedrock, OB - open borehole bedrock well

<sup>&</sup>lt;sup>2</sup>TOB - Top of Bedrock; well was installed at the overburden-bedrock interface

<sup>&</sup>lt;sup>3</sup> Total well depths for some wells were changed based on removal of standpipe protective casings as part of NTCRA.

<sup>&</sup>lt;sup>4</sup> MW-4A was repaired in 2/2014 and resurveyed

<sup>&</sup>lt;sup>5</sup> Measuring point elevations for Aerovox monitoring wells and two Precix monitoring wells (MW-102S & MW-102D) were surveyed Measuring Point for GZ-4A, GZ-103S, GZ-103B were resurveyed after installation of new roadbox covers in 2014.

<sup>&</sup>lt;sup>6</sup>Acushent River staff gauge was destroyed in early Spring 2015.

Table 2-18
Groundwater Elevation Data
Aerovox Facility
740 Belleville Avenue, New Bedford, Massachusetts

Туре	Well ID	Property	Measuring Point: PVC or Roadbox	Overburden, TOB <sup>2</sup> or Bedrock <sup>1</sup>	Total Well Depth <sup>3</sup>	Screen Length	Measuring Point Elevation <sup>5</sup>	Depth to Water 12/1/2014	Groundwater Elevation 12/1/2014	Depth to Water 5/28/2015	Groundwater Elevation 5/28/2015	Depth to Water 8/5/2015	Groundwater Elevation 8/5/2015
Acushnet River	Wood Street Bridge Mark	NA	NA	NA	NA	NA	13.95	N/A	N/A	14.82	-0.87	10.48	3.47
Acushnet River	Staff Gauge	NA	NA	NA	NA	NA	4.18	NM	NA	NM <sup>6</sup>	NC	NM <sup>6</sup>	NC
	GZ-1	Precix	PVC	Overburden	13	10	9.79	7.06	2.73	7.97	1.82	7.99	1.80
	GZ-2	Precix	PVC	Overburden	13	10	7.47	4.17	3.30	4.54	2.93	4.57	2.90
	GZ-3	Precix	PVC	Overburden	15	unknown	12.70	9.84	2.86	10.76	1.94	10.90	1.80
	GZ-101S	Precix	PVC	Overburden	11.91	10	7.46	5.00	2.46	5.76	1.70	5.68	1.78
	GZ-102S	Precix	PVC	Overburden	13	10	6.54	4.77	1.77	5.47	1.07	4.99	1.55
	GZ-103S	Precix	PVC	Overburden	11.90	10	5.97	5.02	0.95	5.53	0.44	3.87	2.10
	MW-TITL-01	Titleist	PVC	Unknown (overburden)	16.90	unknown	5.58			4.92	0.66	3.28	2.30
<u>8</u>	MW-1	Precix	PVC	Overburden	24.5	10	8.03	3.29	4.74	5.07	2.96	5.44	2.59
Wells	MW-2A	Aerovox	PVC	Overburden	6	4	4.70	1.84	2.86	2.22	2.48	1.67	3.03
> -	MW-3 (Aerovox)	Aerovox	PVC	Overburden	19	10	6.27	3.64	2.63	4.32	1.95	4.13	2.14
<del>g</del>	MW-3 (Precix)	Precix	PVC	Unknown (overburden)	14.85	unknown	11.45	8.79	2.66	9.64	1.81	9.72	1.73
, in	MW-3A	Aerovox	PVC	Overburden	7	5	6.31	3.67	2.64	4.35	1.96	4.16	2.15
e t	MW-4A	Aerovox	PVC	Overburden	6.5	5	7.08	3.53	3.55	4.02	3.06	3.92	3.16
Overburden	MW-4S	Precix	PVC	Overburden	13	10	7.20	4.97	2.23	5.73	1.47	5.53	1.67
	MW-6A	Aerovox	PVC	Overburden	10	5 7	6.66	4.90	1.76	5.57	1.09	5.13	1.53
Shallow	MW-7A	Aerovox	PVC	Overburden	8.5		5.55	2.30	3.25	2.53	3.02	2.37	3.18
Sh.	MW-8S	Aerovox	PVC	Unknown (overburden)	8.48	unknown	6.22	4.08	2.14	4.72	1.50	4.44	1.78
•	MW-12S	Aerovox	PVC	Overburden, TOB	13	10	7.76	5.15	2.61	5.76	2.00	5.74	2.02
	MW-13D	Aerovox	PVC	Overburden, TOB	12	10	5.25	2.94	2.31	3.59	1.66	3.45	1.80
	MW-16S	Precix	PVC	Overburden	13	10	5.87	4.13	1.74	4.81	1.06	4.32	1.55
	MW-18S	Precix	PVC PVC	Overburden	13	10	7.08	5.22	1.86	5.92	1.16	5.52	1.56
	MW-19S	Aerovox	PVC	Overburden	13	10	7.40	5.66	1.74	6.38	1.02	5.73	1.67
	MW-20D	Aerovox	PVC	Overburden, TOB	11.85	7 10	12.65	8.81	3.84	9.79	2.86	9.45	3.20
	MW-22S MW-25D	Aerovox	PVC	Overburden TOP	13 8.5	5	6.58 7.55	5.01 NM	1.57 NA	5.73 NM	0.85 NC	4.59 NM	1.99 NC
		Aerovox		Overburden, TOB									
	GZ-101D	Precix	PVC	Overburden	24.52	5	7.69	5.29	2.40	6.05	1.64	5.91	1.78
	GZ-102D GZ-103D	Precix	PVC PVC	Overburden	45 23.34	5 5	6.53 6.13	4.80 5.18	1.73 0.95	5.52 5.71	1.01 0.42	4.91 3.98	1.62 2.15
	GZ-103D GZ-4A	Precix	PVC	Overburden	23.34		7.27			5.71	1.34		1.63
σ	MW-2	Precix Aerovox	PVC	Overburden Overburden	23.4	5 10	4.78	5.17 3.80	2.10 0.98	2.30	2.48	5.64 2.47	2.31
Wells	MW-4	Aerovox	PVC	Overburden	20	10	7.43	6.79	0.64	7.26	0.17	5.06	2.37
> =	MW-5	Aerovox	PVC	Overburden	19.5	10	13.45	10.40	3.05	11.31	2.14	11.45	2.00
de Je	MW-6	Aerovox	PVC	Overburden	45	10	6.64	4.95	1.69	5.63	1.01	5.01	1.63
Ĭ	MW-7	Aerovox	PVC	Overburden	22	10	5.44	4.95	0.55	5.35	0.09	2.87	2.57
erburden	MW-10D	Aerovox	PVC	Overburden, TOB	37	10	4.25	2.92	1.33	3.49	0.76	2.28	1.97
ŏ	MW-15D	Aerovox	PVC	Overburden, TOB	31	10	5.48	5.02	0.46	5.42	0.06	2.20	2.57
	MW-17D	Aerovox	PVC	Overburden, TOB	34	10	4.75	3.76	0.40	4.28	0.47	2.61	2.14
Deep	MW-18D	Precix	PVC	Overburden, TOB	23	5	6.83	4.97	1.86	5.68	1.15	5.25	1.58
"	MW-19D	Aerovox	PVC	Overburden, TOB	24	10	7.40	5.96	1.44	6.58	0.82	5.42	1.98
	MW-21D	Aerovox	PVC	Overburden, TOB	19.3	10	11.13	8.61	2.52	9.35	1.78	8.95	2.18
	MW-23D	Aerovox	PVC	Overburden, TOB	34.05	10	6.00	4.81	1.19	5.37	0.63	3.80	2.20
	MW-24D	Aerovox	PVC	Overburden, TOB	25.9	10	7.65	5.68	1.19	6.42	1.23	6.19	1.46
	ויייז בדט	ACIOVOX	J. 70	Overburden, TOB	20.0	10	7.00	5.00	1.31	0.42	1.20	0.19	1.40

# Table 2-18 Groundwater Elevation Data Aerovox Facility 740 Belleville Avenue, New Bedford, Massachusetts

Туре	Well ID	Property	Measuring Point: PVC or Roadbox	Overburden, TOB <sup>2</sup> or Bedrock <sup>1</sup>	Total Well Depth <sup>3</sup>	Screen Length	Measuring Point Elevation <sup>5</sup>	Depth to Water 12/1/2014	Groundwater Elevation 12/1/2014	Depth to Water 5/28/2015	Groundwater Elevation 5/28/2015	Depth to Water 8/5/2015	Groundwater Elevation 8/5/2015
Acushnet River	Wood Street Bridge Mark	NA	NA	NA	NA	NA	13.95	N/A	N/A	14.82	-0.87	10.48	3.47
Acushnet River	Staff Gauge	NA	NA	NA	NA	NA	4.18	NM	NA	NM <sup>6</sup>	NC	NM <sup>6</sup>	NC
	MW-2B	Aerovox	PVC	Bedrock	35.67	10	4.66	3.81	0.85	4.31	0.35	2.26	2.40
	MW-4B	Aerovox	PVC	Bedrock	40.60	20?	9.60	7.30	2.30	8.01	1.59	7.68	1.92
	MW-6B	Aerovox	PVC	Bedrock	56.5	10	6.13	4.43	1.70	5.10	1.03	4.45	1.68
	MW-7B	Aerovox	PVC	Bedrock	45.50	10	5.58	5.02	0.56	5.50	0.08	3.10	2.48
	MW-11B	Aerovox	PVC	Bedrock	22.00	10	11.04	8.36	2.68	8.99	2.05	8.73	2.31
	MW-13B	Aerovox	PVC	Bedrock	24.00	10	5.10	2.80	2.30	3.48	1.62	3.24	1.86
	MW-15B	Aerovox	PVC	Bedrock	46.00	10	5.62	5.05	0.57	5.54	0.08	3.11	2.51
	MW-17B	Aerovox	PVC	Bedrock	49.00	10	4.99	3.96	1.03	4.49	0.50	2.37	2.62
	MW-20B	Aerovox	PVC	Bedrock	27.00	10	12.62	9.19	3.43	9.91	2.71	9.43	3.19
	MW-21B	Aerovox	PVC	Bedrock	38.46	10	11.00	8.42	2.58	9.13	1.87	8.82	2.18
	MW-23B	Aerovox	PVC	Bedrock	49.75	10	5.88	4.79	1.09	5.31	0.57	3.57	2.31
"	MW-24B	Aerovox	PVC	Bedrock	41.30	10	7.53	5.50	2.03	6.21	1.32	6.17	1.36
Bedrock Wells	MW-26B	Aerovox	PVC	Bedrock	87.45	10	7.25	5.42	1.83	6.13	1.12	5.77	1.48
≥	MW-27B	Aerovox	PVC	Bedrock, OB	51.15	OB	4.15	2.88	1.27	3.23	0.92	1.95	2.20
ş	MW-28B	Aerovox	PVC	Bedrock, OB	61.11	OB	7.86	6.83	1.03	7.40	0.46	5.66	2.20
유	MW-29B	Titleist	PVC	Bedrock, OB	60.25	OB	9.41			8.47	0.94	6.98	2.43
ĕ	MW-30B	Precix	PVC	Bedrock, OB	53.00	OB	6.88			5.61	1.27	5.32	1.56
	MW-31B	Precix	PVC	Bedrock, OB	60.25	OB	6.67			6.20	0.47	4.61	2.06
	MW-32B	Aerovox	Flute	Bedrock (100-112)	163.00	12	4.01			NM	NC	1.75	2.26
	MW-32B	Aerovox	Flute	Bedrock (135-145)	163.00	10	3.99			NM	NC	2.08	1.91
	MW-32B	Aerovox	Flute	Bedrock (153-163)	163.00	10	4.02			NM	NC	2.26	1.76
	MW-33B	Aerovox	PVC	Bedrock	250.00	10	7.00			NM	NC	NM	NC
	MW-34B	Aerovox	Flute	Bedrock (60-80)	180.00	10	4.96			NM	NC	2.52	2.44
	MW-34B	Aerovox	Flute	Bedrock (92-112)	180.00	10	4.95			NM	NC	2.65	2.30
	MW-34B	Aerovox	Flute	Bedrock (120-130)	180.00	10	5.00			NM	NC	2.82	2.18
	MW-34B	Aerovox	Flute	Bedrock (170-180)	180.00	10	5.01			NM	NC	3.05	1.96
	MW-35B	Titleist	PVC	Bedrock, OB	52.00	OB	5.88			NM	NC	NM	NC
	MW-101B	Precix	PVC	Bedrock	39	10	7.49	5.39	2.10	5.82	1.67	5.68	1.81
	MW-103B	Aerovox	PVC	Bedrock	38.10	10	6.08	4.71	1.37	5.34	0.74	4.25	1.83

#### Notes:

<sup>1</sup>Unknown (overburden) - Well log missing; well is assumed to be an overburden shallow or deep well based on other well logs

Measuring Point for each monitoring well is the top of the PVC casing or steel casing, as applicable.

Elevations relative to NGVD 1929.

NA - not applicable

NM - not measured

NC - Not calculated

Bedrock, OB - open borehole bedrock well

<sup>&</sup>lt;sup>2</sup> TOB - Top of Bedrock; well was installed at the overburden-bedrock interface

<sup>&</sup>lt;sup>3</sup> Total well depths for some wells were changed based on removal of standpipe protective casings as part of NTCRA.

<sup>&</sup>lt;sup>4</sup> MW-4A was repaired in 2/2014 and resurveyed

Measuring point elevations for Aerovox monitoring wells and two Precix monitoring wells (MW-102S & MW-102D) were surveyed Measuring Point for GZ-4A, GZ-103S, GZ-103B were resurveyed after installation of new roadbox covers in 2014.

<sup>&</sup>lt;sup>6</sup>Acushent River staff gauge was destroyed in early Spring 2015.

### Table 4-1 Catch Basin/Manhole Soil Analytical Results Aerovox Facility

#### 740 Belleville Avenue, New Bedford, Massachusetts

LOCATION		CB-01	CB-02	CB-03	CB-04	CB-05	CB-06	CB-09	CB-13	MH-03	MH-03
SAMPLE ID	Units	AX-CB01-052014	AX-CB02-052014	AX-CB03-052014	AX-CB04-052014	AX-CB05-052014	AX-CB06-052014	AX-CB09-052014	AX-CB13-052014	AX-MH03-052014	AX-DUP01-052014
SAMPLE DATE		05/20/14	05/20/14	05/20/14	05/20/14	05/20/14	05/20/14	05/20/14	05/20/14	05/20/14	05/20/14
Aroclor 1016	(mg/kg)	0.456 U	10.700 U	4.970 U	5.350 U	2.620 U	26.400 U	12.900 U	1.260 U	2.530 U	2.640 U
Aroclor 1221	(mg/kg)	0.456 U	10.700 U	4.970 U	5.350 U	2.620 U	26.400 U	12.900 U	1.260 U	2.530 U	2.640 U
Aroclor 1232	(mg/kg)	0.456 U	10.700 U	4.970 U	5.350 U	2.620 U	26.400 U	12.900 U	1.260 U	2.530 U	2.640 U
Aroclor 1242	(mg/kg)	1.490	259.000	32.100	69.600	68.500	625.000	12.900 U	11.200	15.500	19.100
Aroclor 1248	(mg/kg)	0.304 U	7.140 U	3.320 U	3.560 U	1.750 U	17.600 U	8.620 U	0.840 U	1.690 U	1.760 U
Aroclor 1254	(mg/kg)	2.720	50.600	23.400	23.600	52.500	70.500 J	153.000	2.650	8.140	10.200
Aroclor 1260	(mg/kg)	0.304 U	7.140 U	3.320 U	3.560 U	1.750 U	17.600 U	8.620 U	0.840 U	1.690 U	1.760 U
Aroclor 1262	(mg/kg)	0.152 U	3.570 U	1.660 U	1.780 U	0.873 U	8.810 U	4.310 U	0.420 U	0.844 U	0.880 U
Aroclor 1268	(mg/kg)	0.152 U	3.570 U	1.660 U	1.780 U	0.873 U	8.810 U	4.310 U	0.420 U	0.844 U	0.880 U
Total PCBs	(mg/kg)	4.210	310.000	55.500	93.200	121.000	696.000	153.000	13.900	23.600	29.300

#### Notes:

(mg/kg) = Milligrams per kilogram

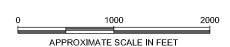
U = Constituent not detected at listed reporting limit

J = Estimated concentration/reporting limit

Total PCBs calculated by summing detected concentrations

### **Figures**





#### BASEMAP SOURCE:

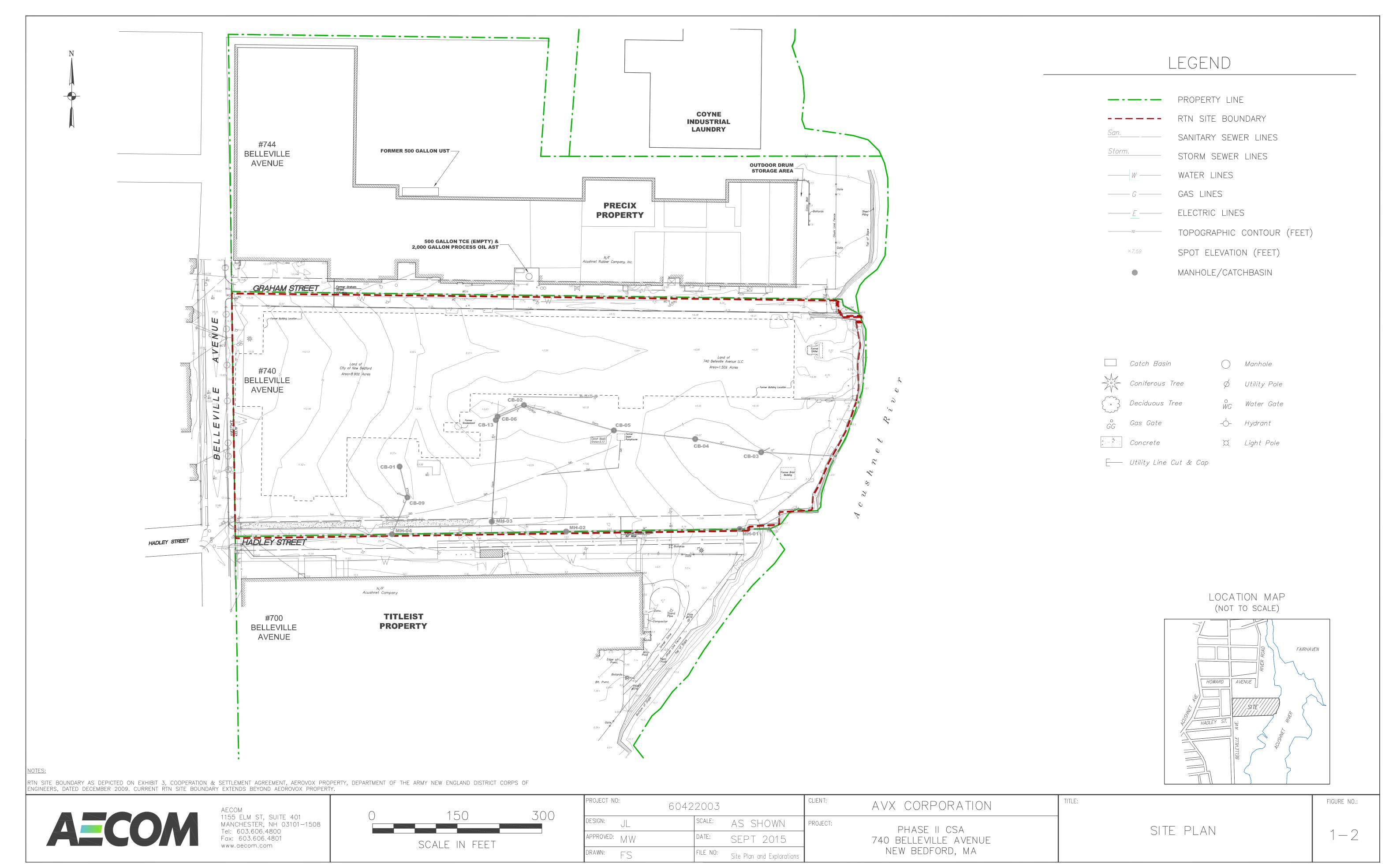
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### SITE LOCATION PLAN

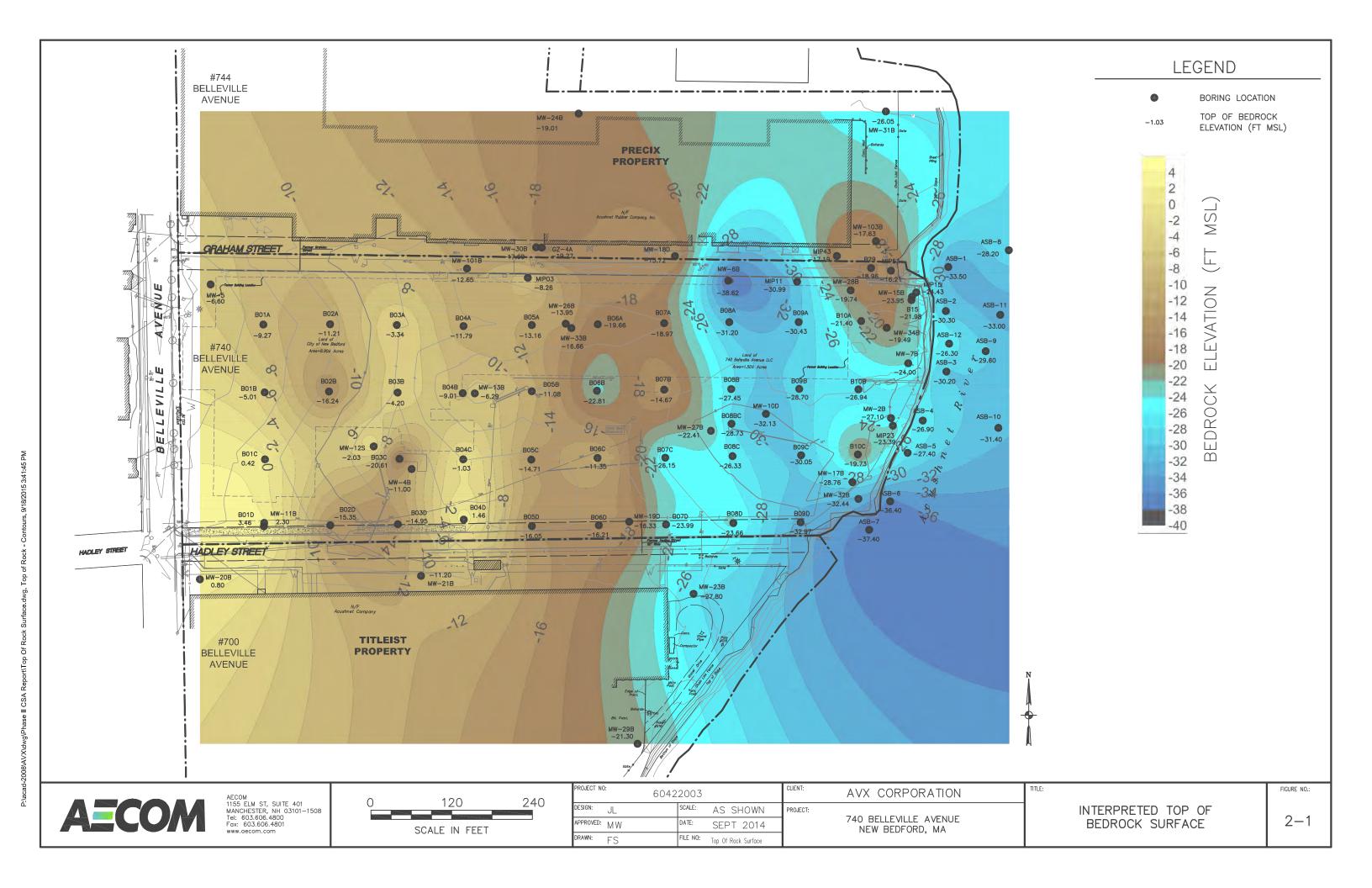
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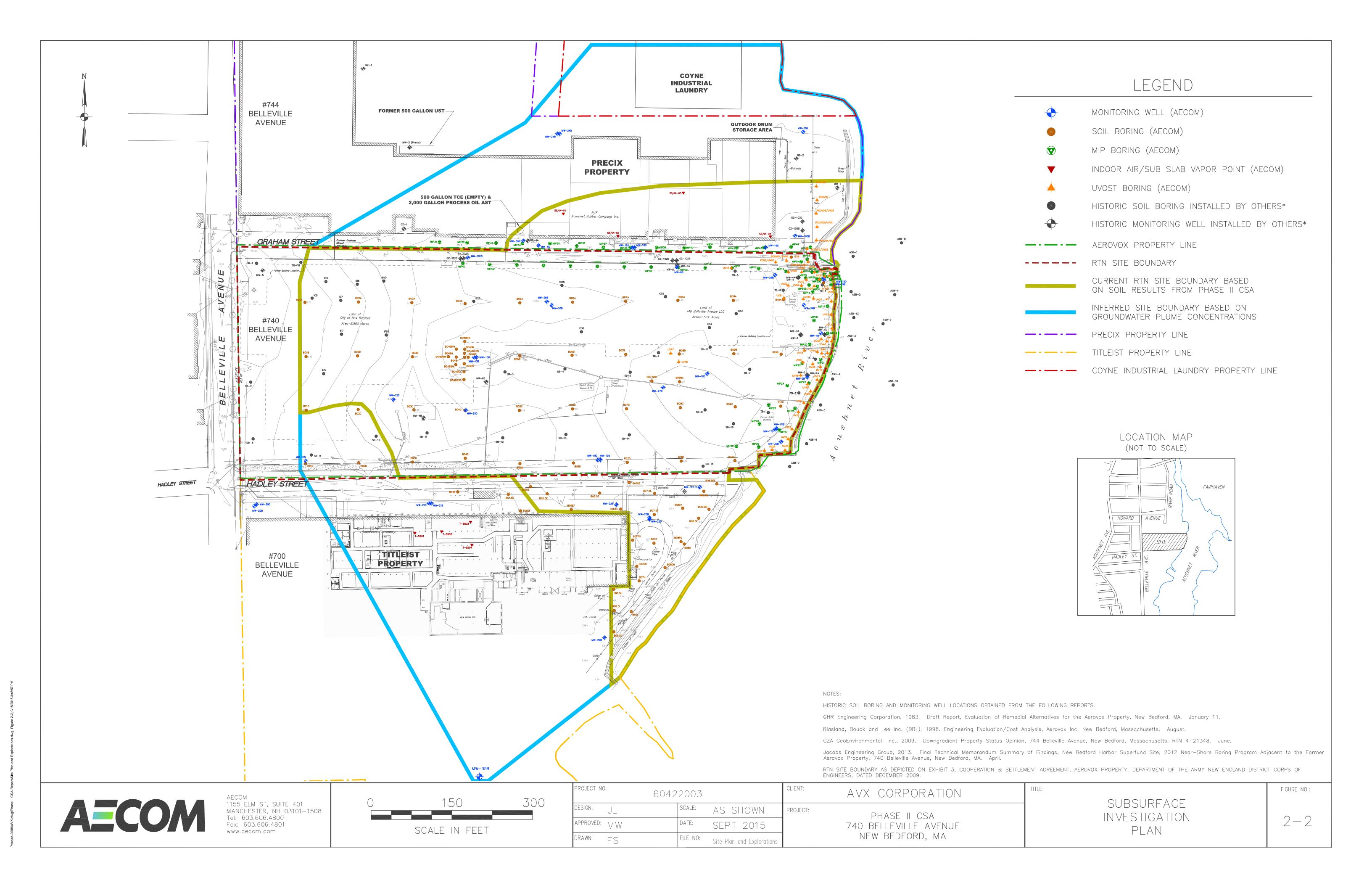
115 Elm Steet, Suite 401 Manchester, New Hampshire 03101 TEL: (603) 605–4800 www.aecom.com

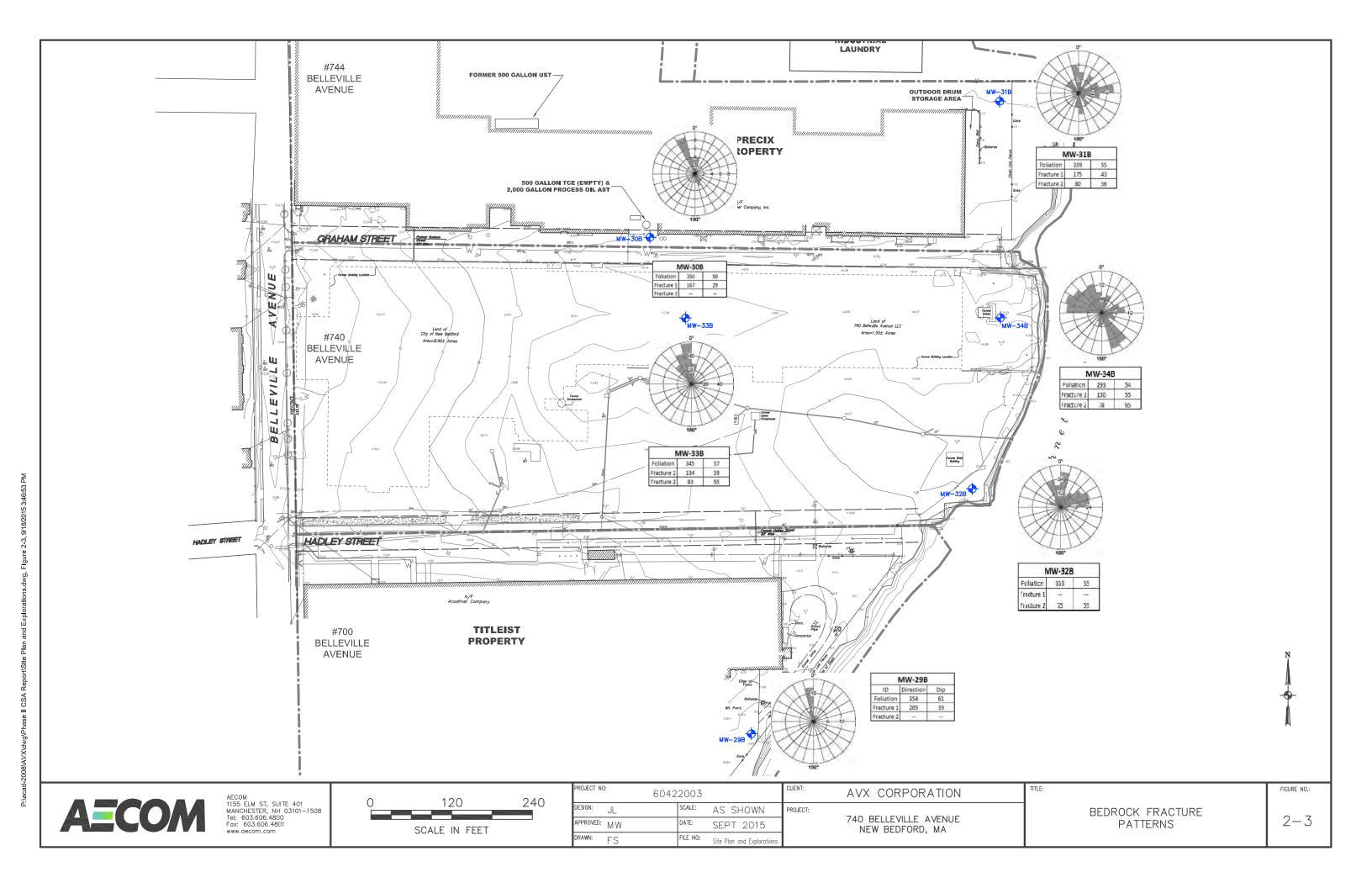
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DATE:	09/15	APPR. BY:	JU	FIGURE 1-	1

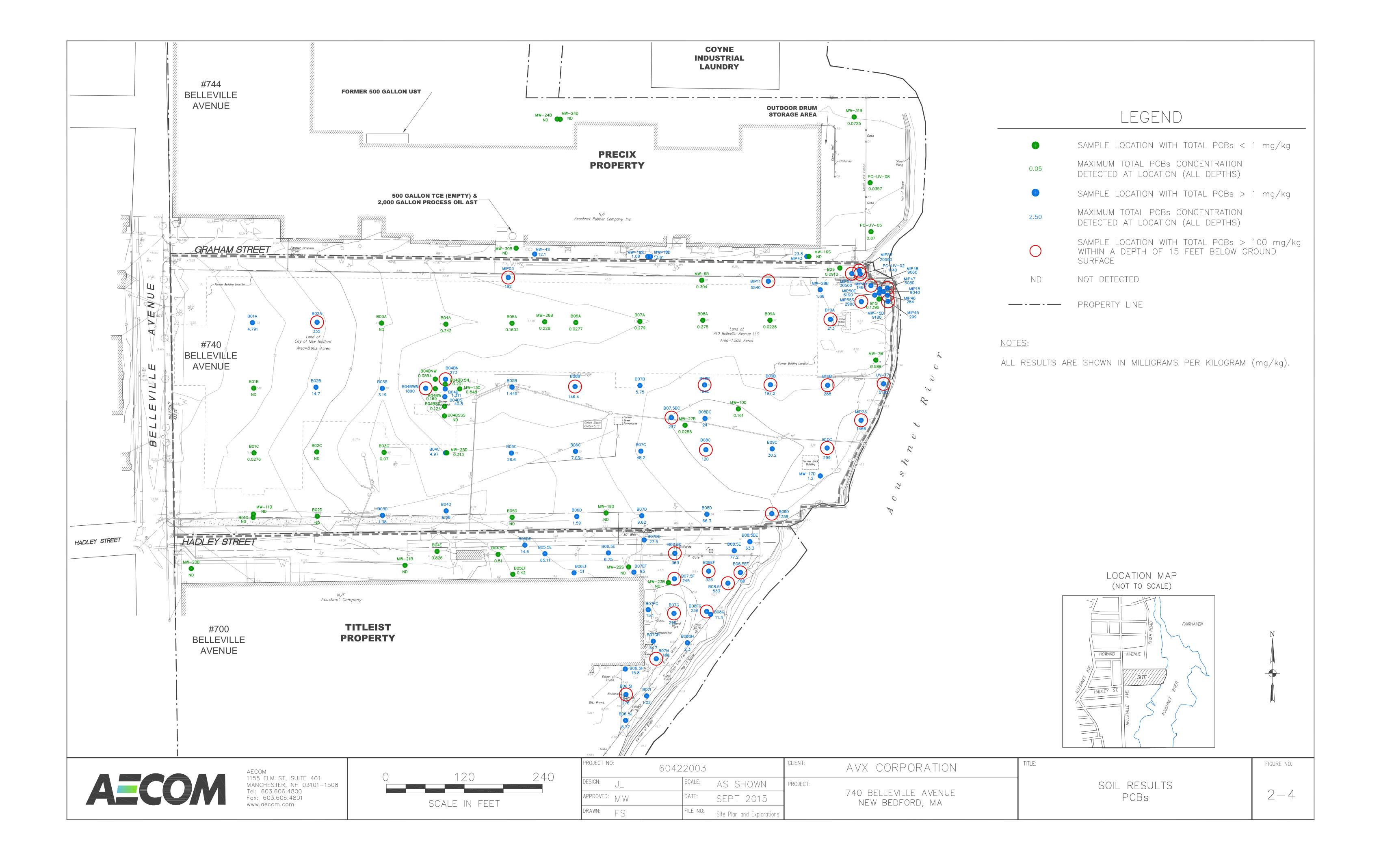


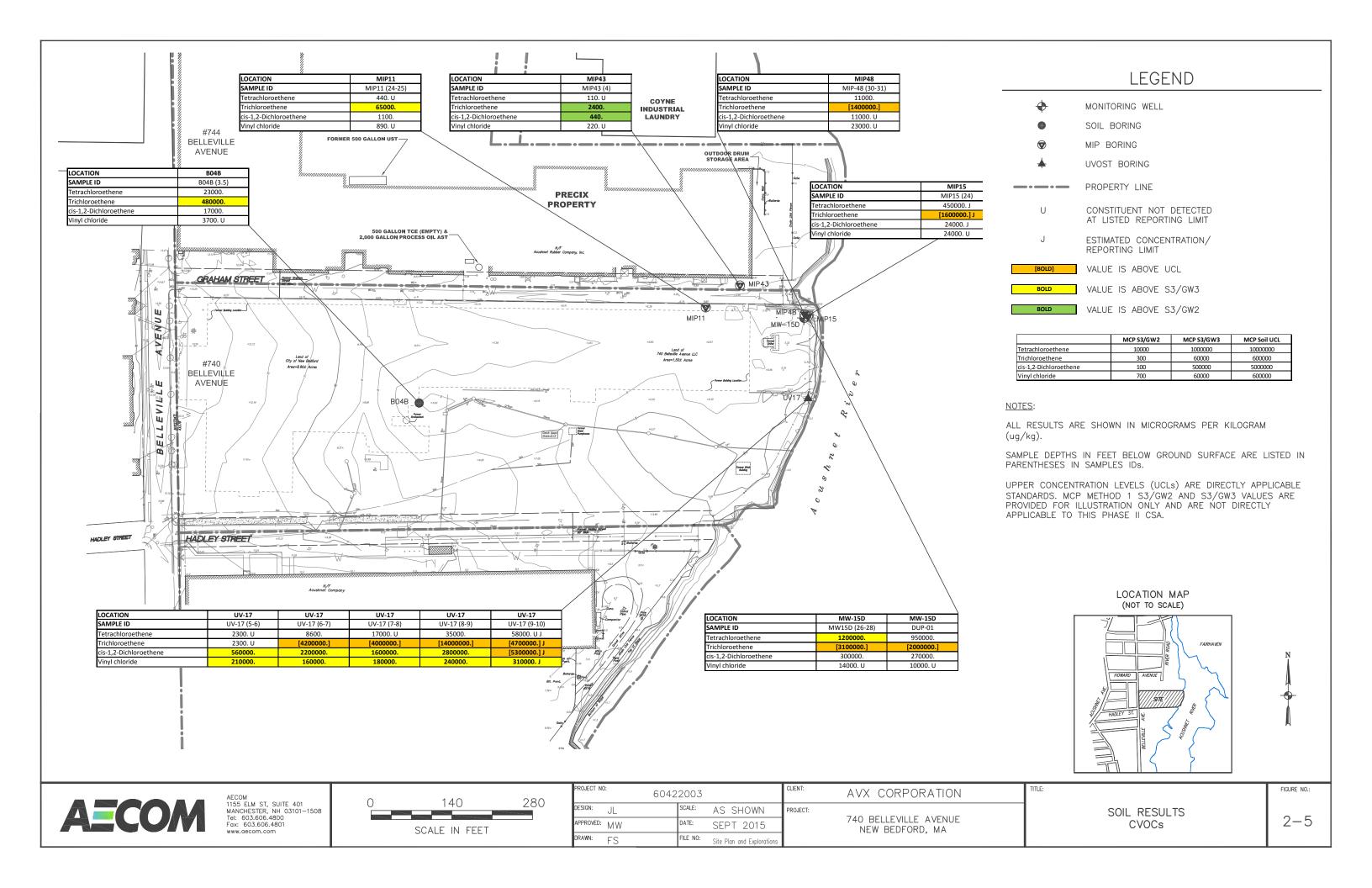
acad-2008\AVX\dwg\Phase II CSA Report\Site Plan and Explorations

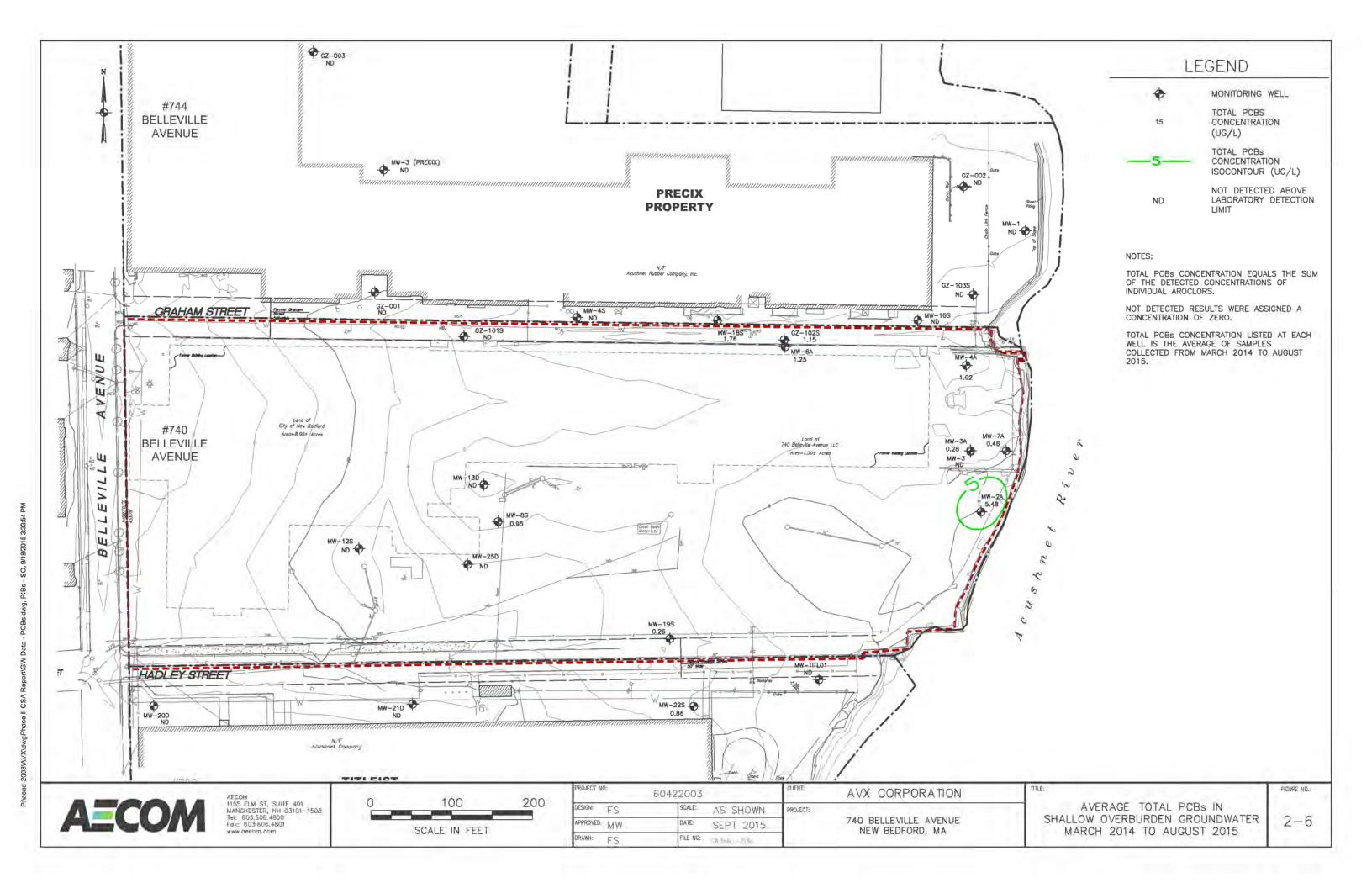


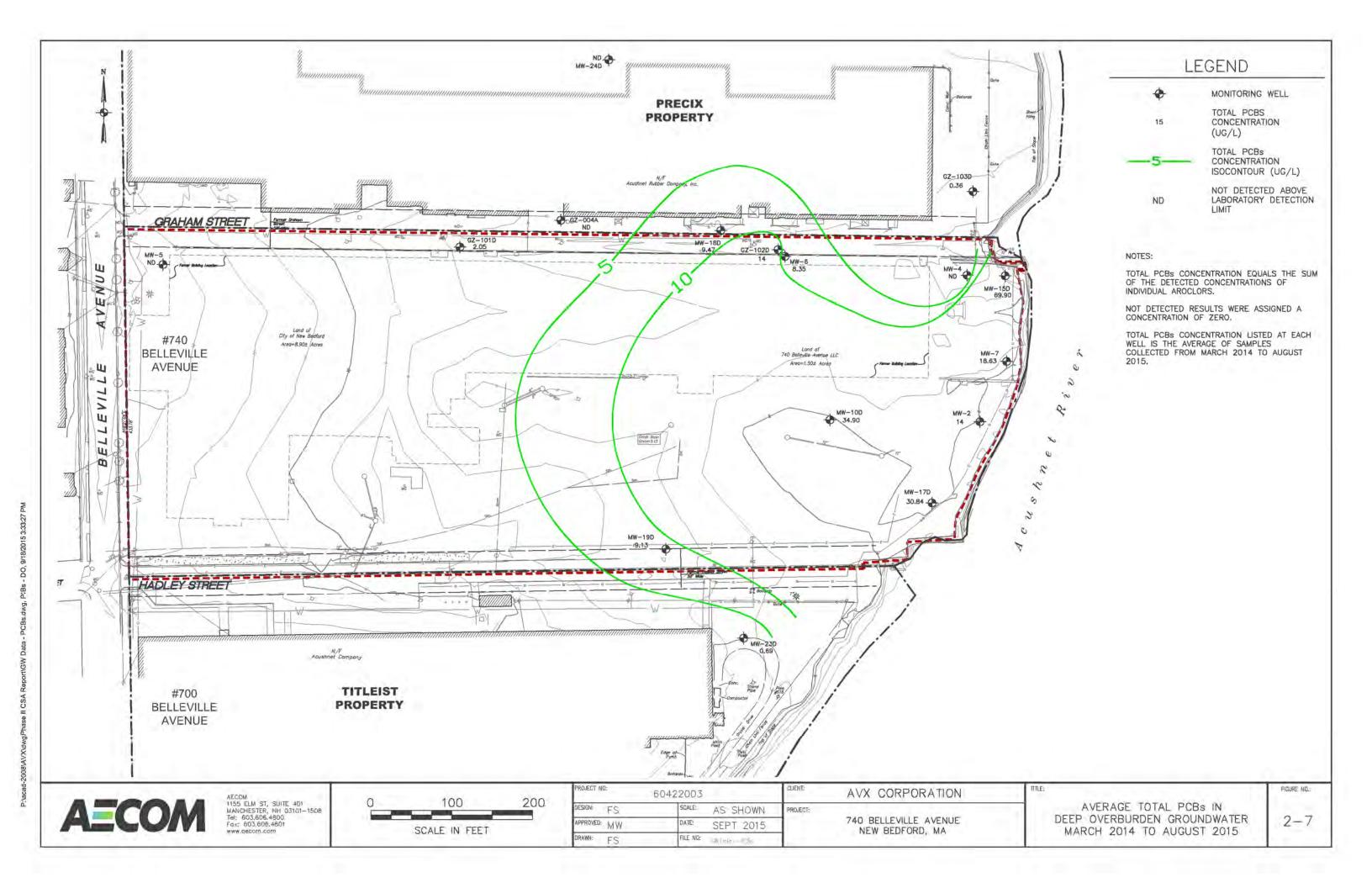


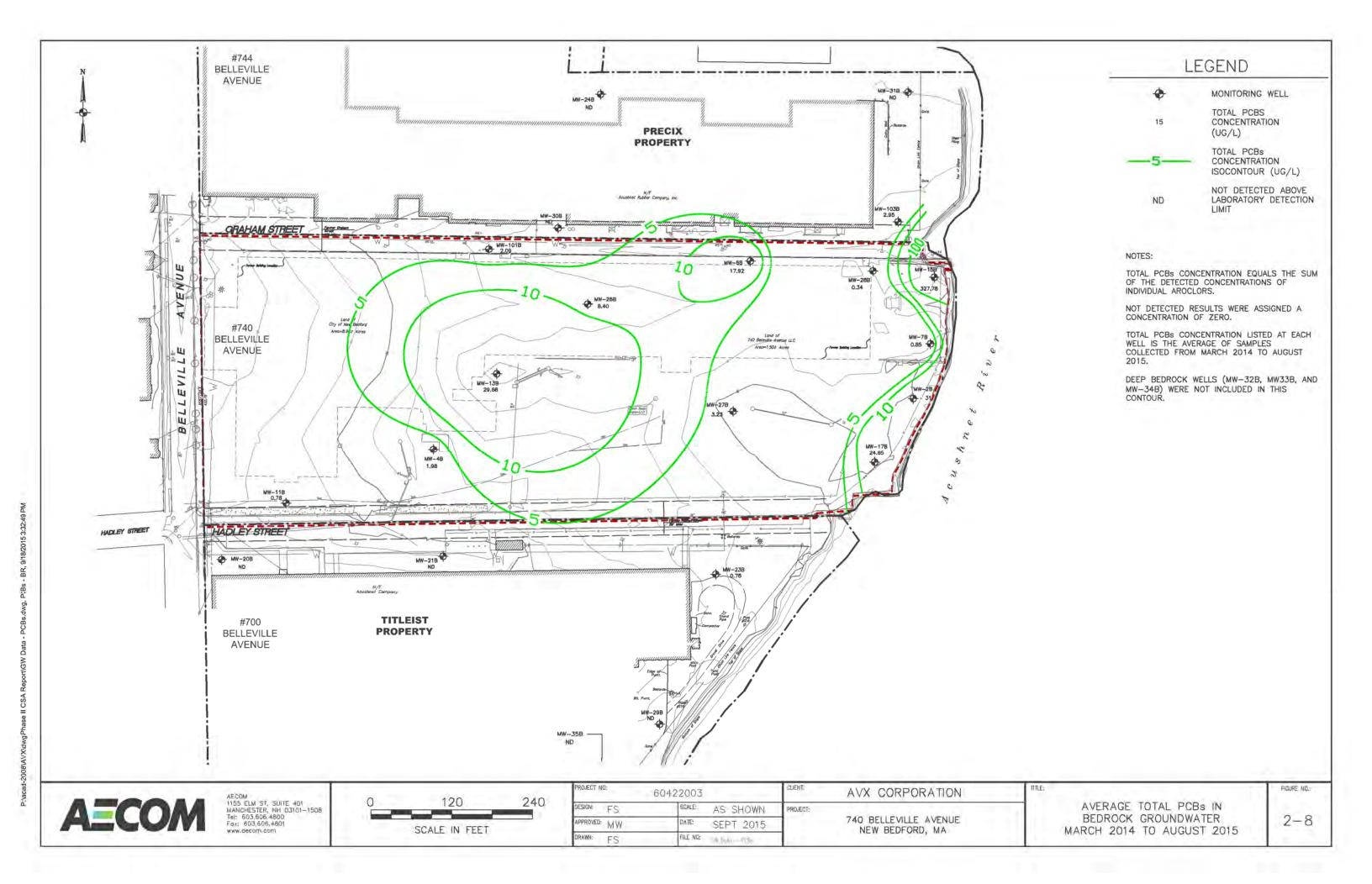


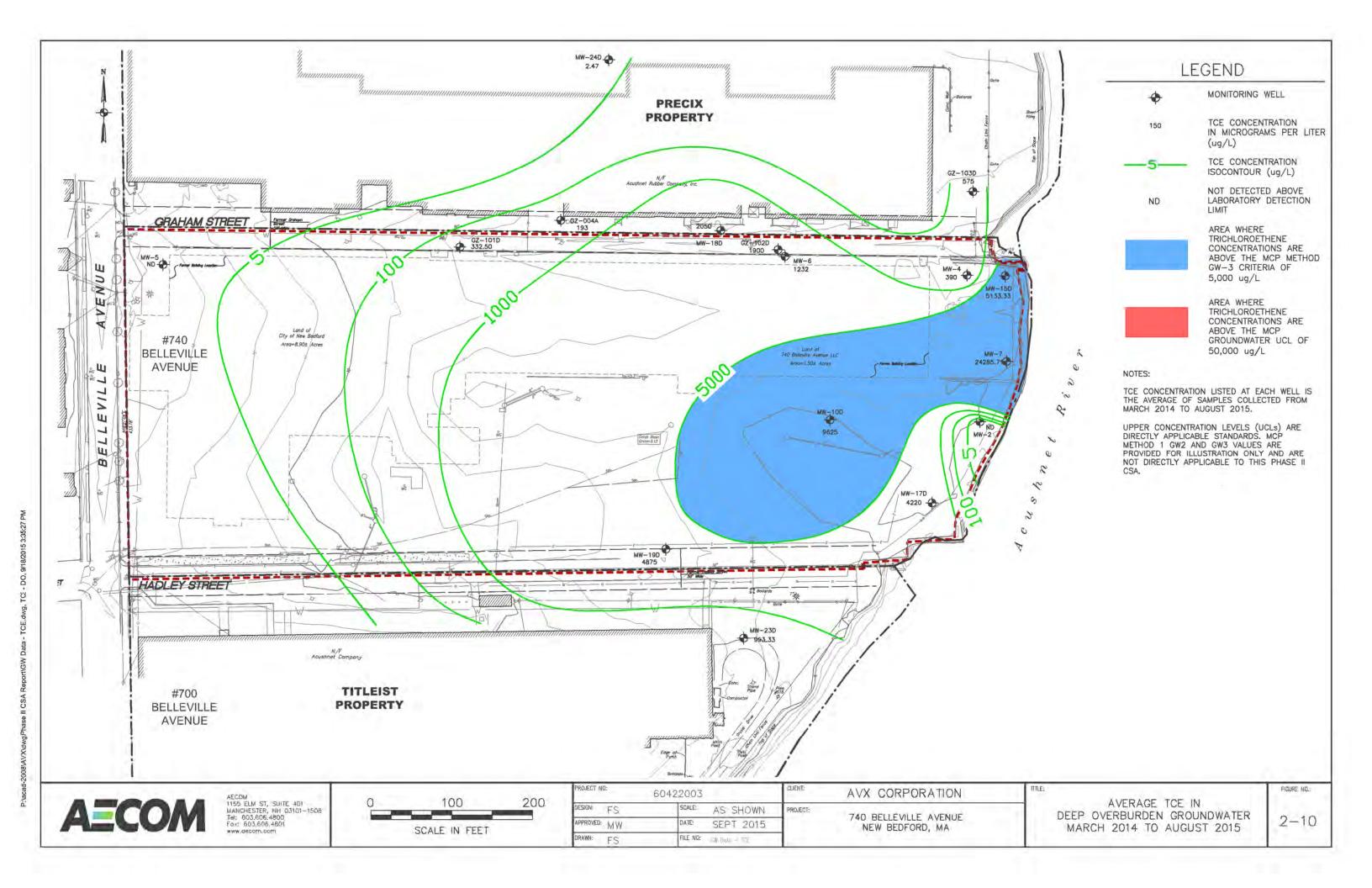


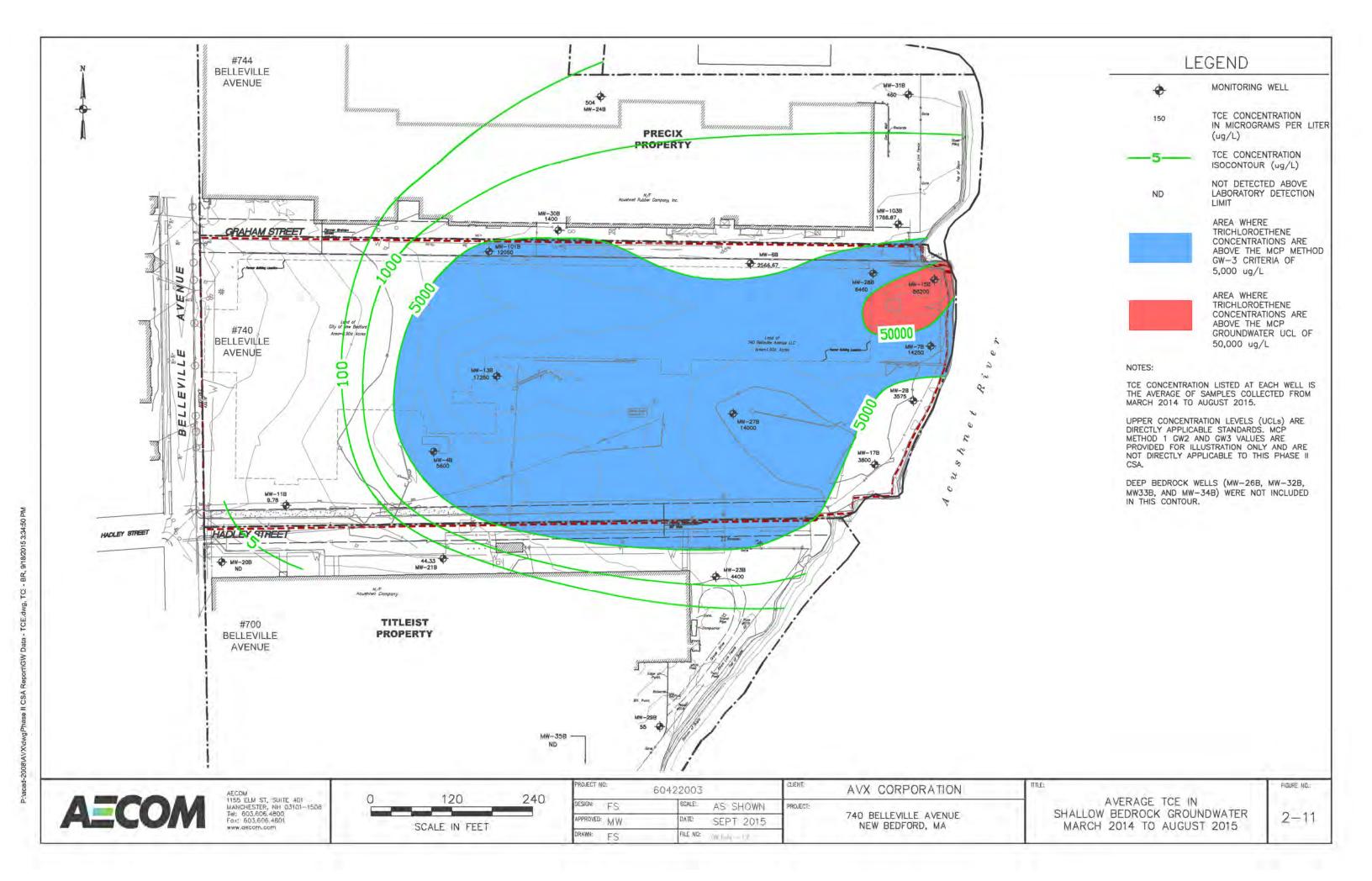












Appendix A.
Conceptual Site
Model



Submitted to AVX Corporation 801 17th Avenue South Myrtle Beach, SC 29578 Submitted by AECOM 1155 Elm Street Suite 401 Manchester, NH 03101 September 18, 2015

# Conceptual Site Model

Former Aerovox Facility 740 Belleville Avenue New Bedford, Massachusetts RTN 4-0601

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# List of Acronyms

ACO Administrative Consent Order and Notice of Responsibility
AECOM AECOM Technical Services, Inc. (formerly URS Corporation)

AST aboveground storage tank
AUL Activity and Use Limitation

AVX AVX Corporation
bgs below ground surface
COC Contaminant of Concern
CSM Conceptual Site Model

CVOC chlorinated volatile organic compound DNAPL dense non-aqueous phase liquid

EPA United States Environmental Protection Agency

FLUTe<sup>TM</sup> Flexible Liner Underground Technologies

ft feet

HAC Hydraulic Asphalt Concrete IRA Immediate Reponse Action

MassDEP Massachusetts Department of Environmental Protection

MCP Massachusetts Contingency Plan

Mg/kg milligrams per kilogram mg/L milligrams per liter MHW Mean High Water

MiHpt combination Membrane Interface Tool/Hydraulic Profiling Tool

MIP Membrane Interface Probe

mm millimeter msl mean sea level

NAPL non-aqueous phase liquid

NGVD National Geodetic Vertical Datum

NPDES National Pollutant Discharge Elimination System

NTCRA Non-Time-Critical Removal Action

OHM Oil and Hazardous Material PCBs polychlorinated biphenyls

PCE tetrachloroethene

Phase I ISI Phase I Initial Site Investigation

Phase II CSA Phase II Comprehensive Site Assessment

ppm parts per million

RTN Release Tracking Number

TCE trichloroethene

TSCA Toxic Substances Control Act UCL Upper Concentration Limit ug/L micrograms per liter

UST underground storage tank

UVOST Ultraviolet Optical Screening Tool

VI Vapor Intrusion

VOC volatile organic compound

# 1 Introduction, Site Description and History

The Massachusetts Contingency Plan (MCP) provides for the development and refinement of a Conceptual Site Model (CSM) to provide a description of how contaminants entered the environment, how they have been or may be transported within the environment and between media, and the potential routes of exposure to these contaminants for human and environmental receptors. The CSM is modified as needed at each phase of the MCP process and is intended to be a dynamic document. The following CSM presents the current understanding of site conditions, contaminant migration and potential exposure pathways.

## 1.1 Site Description

The Aerovox Site was originally defined by the Administrative Consent Order (ACO) between the Commonwealth of Massachusetts and AVX Corporation, as the property located at 740 Belleville Avenue, Bristol County, New Bedford, Massachusetts, encompassing approximately 10.3 acres (Property). It was assigned Release Tracking Number (RTN) 4-601. The Site, includes the Property and any place or area where a release of oil and/or hazardous material from the Property which occurred before the ACO effective date (June 3, 2010) has come to be located, excepting releases associated with the former fuel oil/bunker oil tanks (addressed as a short term measure) as well as those places or areas that are part of, or associated with, the New Bedford Harbor Superfund Site including land area, bank or water body located seaward of the sheet pile wall previously installed at the Property or seaward of the mean high water (MHW) level at the Property and running along the MHW level in a northward and southward direction from the Property. Per this definition and the subsequent results of the MCP Phase II Comprehensive Site Assessment (Phase II CSA), the Site as currently delineated based on soil and groundwater impacts, extends to the following locations:

- The existing Aerovox western property line along Belleville Avenue,
- The existing sheet pile wall (inclusive of the wall itself) running generally in a north-south orientation along the Acushnet River (the River);
- North of the northern boundary of the Property, on to the Precix property located at 744
   Belleville Avenue;
- Beyond the Precix property to the northeast on to the Coyne property at 20 Howard Avenue, and
- South of the southern boundary of the Property, on to the Titleist Property located at 700 Belleville Avenue.

Note that in all instances, the eastern boundary of the Site is by definition the existing sheet pile wall on the Property and the landward side of the MHW line to the north and south.

## 1.2 Site History

The Property is situated on industrially-zoned land and formerly contained a manufacturing building, associated ancillary buildings, and a parking lot. The approximately 450,000 square-foot manufacturing building consisted of a western section containing two floors, and an eastern section containing three floors. The exterior walls of the building were brick and the roof was constructed of wood. The first floor, which was the building foundation floor, was constructed of concrete. The second floor consisted of both concrete and wood, and the third floor was constructed of wood. Ancillary structures included a brick sewer pump station and a brick boiler house situated along the southern side of the manufacturing building, and a brick structure that housed electrical switching equipment located at the southwest corner of the manufacturing building.

The Property was originally developed as a textile mill circa 1916 to 1921 (Manomet Mills, later sold to Nashawena Mills in 1925). Aerovox acquired the Property circa 1937 and electrical component manufacturing began on the Property in approximately 1938. Beginning in the 1940s, use of dielectric fluid containing polychlorinated biphenyls (PCBs) in capacitor manufacturing started. In addition to the use of PCBs in capacitor manufacturing, the Aerovox Facility (Facility) also utilized a trichloroethene (TCE) capacitor degreasing operation. Degreasing residues from the degreasing operations were stored in 55-gallon drums on a concrete floor with no secondary containment. Sampling of the degreasing residues by EPA confirmed the presence of PCBs. Reportedly, PCB concentrations of up to 50 ppm were present in the degreasing residues based on samples collected by Aerovox. A TCE above ground storage tank (AST) was formerly located in the second floor of the manufacturing building, just outside of the impregnation room (where capacitors were filled). In addition, the TCE recovery system ASTs were located in the first floor of the manufacturing building. Use of PCBs in the manufacturing process ended on or about October 1978, and it has been estimated that up to 100,000,000 pounds of PCBs were used at the Facility during this period. The Facility continued to be used for manufacturing until Aerovox filed for bankruptcy and the building was closed in 2001.

During a 1981 United States Environmental Protection Agency (EPA) compliance inspection of the Facility, "oil impregnated soil was observed in the culverts leading to and at both outfalls." Culvert, as used here, is believed to refer to the open drainage trenches that were formerly adjacent to the north and south sides of the manufacturing building. The Facility had a National Pollution Discharge Elimination System (NPDES) permit for both of these outfalls. The compliance inspection report further indicated that "small amounts of PCBs have been discharged through the two NPDES outfalls (001 and 002) into the river." In addition to the oily soils observed in the drainage trenches, stained soil was observed in the "backyard power substation" located between the former Aerovox building and the River. Samples collected from the soils within the drainage ditches and in the former backyard power substation contained PCB concentrations of up to 24,000 parts per million (ppm). The backyard power substation was reportedly used for drum storage within the month prior to EPA's collection of the samples.

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<sup>&</sup>lt;sup>1</sup> U.S. EPA, 1997. Aerovox Incorporated, New Bedford, Massachusetts. June 27, 1997, pg. 2.

Between 1981 and 1984, under consent agreements between Aerovox and EPA, Aerovox completed further investigation of the unpaved area between the building and the River, and the unpaved ditch running along the north side of the building, and a remedial action was developed to address this contamination. These two areas were covered with a hydraulic asphalt concrete (HAC) cap. In addition, at the same time, a sheet pile wall was installed to serve as a vertical barrier to limit the tidal and groundwater flow through impacted shallow soils. The sheet pile wall was installed down 9 to 13 feet below ground surface and keyed into a peat layer present between shallow and deep soils along the waterfront.

In 1988, two 10,000-gallon fuel oil underground storage tanks (USTs) were removed from a former concrete oil containment bunker. Follow-up investigations indicated the presence of oil saturated soils and non-aqueous phase liquid (NAPL) on the surface of groundwater within monitoring wells adjacent to the bunker. As part of the cleanup of this release, contaminated soils around the concrete bunker were excavated and sent to an asphalt batching facility. The asphalt was then used to pave the Facility's parking lot. Subsequent sampling indicated that PCBs were present in the asphalt of the parking lot, presumably due to the presence of PCBs within soils around the fuel oil USTs.

In May 1997, EPA conducted a multi-media compliance inspection of the Facility. The Toxic Substance Control Act (TSCA) compliance inspection report indicates that the first floor of the building was where "all oils and wastes were stored." In June 1997, EPA returned to the Facility to collect samples from building materials and interior building surfaces for PCBs. The results of this sampling indicated that PCBs were detected in floors and walls and on various surfaces within the building, especially in the impregnation room.

In 2001, Aerovox abandoned the building and ceased operations at the Site. The building was left unmaintained and subject to vandalism and water intrusion. EPA sampling of building materials indicated that building surfaces throughout were contaminated with PCBs. Sampling also indicated the presence of PCBs and volatile organic compounds (VOCs) below the foundation floor and the paved area surrounding the manufacturing building, as well as in groundwater below the Site. The building remained vacant from 2001 through its demolition in 2011. In 2011, a Non-Time Critical Removal Action (NTCRA) was completed which included removal of the existing building, backfilling of the building foundation with clean backfill, and placement of a 3-inch asphalt cap across the Property, covering both the demolished building footprint and the existing impacted pavement. The new asphalt cap did not extend over the area of the HAC cap. The Property is currently a vacant, asphalt paved parking lot.

In addition to the Property, the Site boundary extends onto the Precix property and the Coyne property to the north. The Precix property is occupied by a former mill building where the company is now engaged in the manufacturing of O-rings, Fuel System and Brake System Seals. Precix previously used and stored VOCs as part of its manufacturing process. The Coyne property currently operates as a commercial laundry facility. The Site boundary extends onto the Acushnet Company (Titleist) property to the south, which also contains a former mill building. Titleist is engaged in the manufacturing of golf balls and equipment.

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AECOM 2-1

## 2 Site Setting

## 2.1 Topography and Site Drainage

Topography grades slightly downward from west to east across the Site. Elevation in the northwest corner of the Site is approximately 14 feet above mean sea level (msl) and elevation adjacent to the River (eastern margin of Site) is approximately 4 feet above msl. Surface water runoff from the Site drains to two drainage ditches and to the on-site storm sewer system, which consists of eight catch basins. The two drainage ditches and the catch basins ultimately discharge to the River. Site drainage patterns were altered slightly from historic drainage patterns when the NTCRA was completed. Historic drainage patterns also may have allowed surface water runoff from the Facility parking area and Hadley Street to flow onto the eastern end of the Titleist property, adjacent to the southern end of the Titleist building. In addition, flooding of the eastern end of Hadley Street occurs during periods of heavy rain and high tide due to influx to the Hadley Street catch basin system from the Site and along Belleville Avenue.

## 2.2 Geology

#### 2.2.1 Surficial

Unconsolidated subsurface materials at the Site consist of four main categories (from top to bottom); fill, peat, glacial outwash, and till. The fill materials range from approximately 2 feet to 10 feet in depth across the Site. Fill materials observed in the western end of the Site and throughout the former building foundation on the Property are largely clean sand backfill that was used to fill the former Aerovox basement after demolition of the building. Fill materials along the eastern end of the Site are mostly related to filling of wetlands and are largely industrial fill and urban fill materials, including wood, plastic, rubber gaskets, metal, wire, and cloth mixed with sand and gravel.

In the eastern half of the Site, peat, peaty clay, and fine silts have been identified at depths of between 2 to 11 feet bgs, with a peat thickness from several inches to a maximum of 8 feet. The peat layer has not been identified beneath the western portion of the Site. Underlying the peat is a layer of glacial outwash stratified variable sands and gravels, with some layers and lenses of silt or silty sand. With the exception of the northwest corner of the **Property**, the sand and gravel deposit is underlain by bedrock. The bedrock has been identified as granitic gneiss, and has been observed from 4 feet bgs in the western part of the Site (SB-2), 2 to 6 feet bgs in the center of the Property (SB-1 and SB-12), to 45 feet along the northern Property boundary (MW-6B), and 29 feet (MW-103B) to 35 feet bgs (MW-23B) feet along the River. Till has been identified in several borings between the glacial outwash deposits and the bedrock surface, including MW-20B on the western side of the Site, and MW-105D, MW-24B, MW-102D, MW-103, MIP-23, MIP-43, MIP-49, MIP-50E, MIP-53, MIP-54 and MIP-55S.

AECOM 2-2

## 2.2.2 Bedrock

The City of New Bedford lies within the Southeastern Massachusetts Batholith which is Proterozoic in age. The Freetown fault is a major structural feature in the area trending north-south from Dartmouth, Massachusetts to Lakeville more than 20 miles to the north. The fault zone is believed to have been eroded to form the current path of the existing Acushnet River, abutting the Site to the east.

The igneous intrusive rocks at the Site were metamorphosed (heated and squeezed) multiple times to form the gneissic bedrock observed at the Site. Mineral assemblages in rock cores from the Site are varying and contain quartz, feldspar, amphibole, and other minor minerals. Gneissic foliation is present at thicknesses ranging from less than 1 to 10 millimeters (mm), exhibiting a 30 to 50 degree dip. The foliation is observed generally in the central and western portion of the Site. Rocks close to the river (in borings MW-2B, MW-7B and MW-15B) lack distinct foliation but have fractures filled and sealed with a secondary mineral, possibly epidote.

Two main fractures sets have been identified in the bedrock cores using geophysical borehole logging techniques, including a near-horizontal to shallow dipping set and a high angle to vertical fracture set. Additionally, a local bedrock outcrop west of the Site also exhibits two joint sets, one trending north-south and dipping 61 degrees to east and the other east-west and dipping 49 degrees to the south. Groundwater flow through bedrock occurs in these fracture sets.

The bedrock topography gradually slopes down to the west across the western two-thirds of the Site, at which point the bedrock surface begins to gradually rise toward the east, forming a north-south trending bedrock trough. In the west end of the Site, the bedrock is very shallow (approximately 2 feet elevation relative to the National Geodetic Vertical Datum (NGVD), while bedrock is deepest within the trough (approximately -36 feet NGVD). This bedrock low trends parallel to the Freetown fault and Acushnet River. Several bedrock knobs are located across the Site.

## 2.3 Hydrogeology

There are three (3) water bearing zones at the Site: shallow overburden, deep overburden, and bedrock. The net flow for all three aquifers is from west to east and towards the Acushnet River. However, the water levels in all zones are affected by the tidally-influenced river level, causing flow direction reversals on the east side of the Site during high tide in the deep overburden and bedrock aquifers. The flow reversals result in a groundwater divide with flow in opposite directions, with the groundwater divide approximately 300 feet inland in the deep overburden aquifer and 500-600 feet inland in the bedrock aquifer. The shallow overburden aquifer exhibits a flow reversal, regardless of the tidal cycle. However, the potentiometric surface resulting from high tide forms a steeper gradient than observed at low tide.

Vertical groundwater gradients exist at the Site between the three aquifer types, and vary between positive (upward) and negative (downward) across the Site. In portions of the Site where tidal influence on groundwater levels is greatest, reversals in vertical gradient from positive to negative are observed with changing tides. Further inland, vertical gradients are largely upward, with the magnitude of the gradient also changing with the tides. Based on data collected for the multi-level bedrock sampling devices (Water FLUTes), a positive vertical gradient is observed in shallow bedrock, while negative vertical gradients are observed in deeper bedrock sampling intervals.

**AECOM** 3-1

## Historic Sources and Release Mechanisms

Based on prior investigations and available reports dating back to 1981, known or presumed releases from past operations at the Facility include the following:

- Discharge of (NPDES permitted) water (including PCBs) to the discharge trenches located on the northern and southern side of the building;
- Contaminated soils located beneath the existing HAC cap (from storage of drums containing wastes in between the former building and the River, and releases to a previously unpaved ditch along the north side of the former building);
- Leakage of stored virgin and waste PCB-containing oils and TCE through cracks in the building foundations or onto the ground surface;
- Possible overfills of virgin PCB-containing oil (on the Property) and TCE (on the Property and the Precix property) to the ground surface on the northern and southern side of Graham Street near the manufacturing buildings during tank filling activities;
- Release of oil from the 2 fuel oil USTs formerly located on the south side of the manufacturing building and associated contaminated soils that were not excavated due to structural concerns associated with adjacent nitrogen cooling system pad and corrugated storm sewer<sup>2</sup>;
- PCBs contained within the former parking lot asphalt placed as part of the fuel oil remediation;
- Erosion and runoff of contaminated soils that existed in the former unpaved area between the former manufacturing building and the shoreline;
- Infiltration of storm water formerly in contact with contaminated building materials;
- PCB-containing sediment within the catch basin/surface water runoff system; and
- Direct dumping of waste into the River from shore (as evidenced by the excavation of capacitors during dredging).

None of these historic or potential sources is currently uncontrolled. No specific release mechanisms or release volumes are documented; rather, the releases are presumed to be the result of activities related to the historic manufacturing of electrical components at the Facility over a forty-year period. Releases most likely occurred from spills and improper storage or handling of Oil and Hazardous Material (OHM). Releases to the environment including soil, groundwater, and the adjacent Acushnet River likely occurred through surface spills, floor sumps, foundation cracks, surficial erosion, and via the stormwater outfall systems.

<sup>&</sup>lt;sup>2</sup> Fuel oil releases from storage tanks have been addressed separately and are not part of this RTN.

# 4 Contaminants of Concern, Nature and Extent of Impacts, and Source Areas

The following sections describe the type and lateral/vertical extent of contaminants on the Site, based on the investigations summarized in the Phase II Comprehensive Site Assessment (CSA) report. Refer to Figure 2-2 in the Phase II CSA Report for the locations of borings, wells and features discussed below.

## 4.1 Contaminants of Concern

Based on investigations conducted at the Site to date, the contaminants of concern (COCs) for the Site include PCBs (Aroclor-1016, Aroclor-1242, and Aroclor-1254 were used by Aerovox [Versar 1981]); associated chlorobenzenes typically found in PCB oil (1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene and chlorobenzene); and chlorinated VOCs including primarily TCE and its daughter products (cis-1,2-dichloroethene and vinyl chloride), but also to a lesser extent tetrachloroethene (PCE). Detected concentrations of COCs have been compared to the UCLs applicable to the Site. Comparisons to Method 1 GW-2 (where applicable) and GW-3 standards are also used for illustrative purposes only. (A Method 3 Risk Assessment was used for the Phase II CSA.)

## 4.2 **Soil**

Site COCs were found in shallow (0 to 3 feet bgs), mid-range (3 to 15 feet bgs) and deep (>15 feet bgs) soils as described below. Additional details regarding the extent of COCs in soil at the Site can be found in Table 2-1, Figures 2-4 and 2-5, and the cross sections in Appendix R of the Phase II CSA Report.

## 4.2.1 PCBs

Soils impacted with PCBs in the shallow and mid-range depths are primarily present in seven areas of the Site: (1) the area including surrounding and inclusive of B01A, B02A, south to B02B and west to the area surrounding B04B and south to B04C; (2) the area surrounding and inclusive of B07B and B07.5BC; (3) the landscaped area in the eastern third of the Titleist property; (4) soils in the southeast portion of the Property immediately surrounding and inclusive of B09C, B10C and MIP-23; (5) soils on the Property in the immediate vicinity of UV-17, delineated by UVOST borings; (6) the northeast corner of the Property; and (7) along Graham Street within the bounds of the Precix property, including MW-4S and MW-18D, and MIP43.

- 1) Soils in the first area described above reach PCB concentrations of less than one mg/kg at depths ranging from eight feet bgs to 13 feet bgs.
- 2) PCB concentrations at borings B07B above the UCL extend to below 15 feet bgs, and PCB concentrations at B07.5BC decrease to below reporting limits by three feet bgs.
- 3) Soils on the eastern third of the Titleist property exceeding the Method 1 S-3/GW-2 standard (as applicable), Method 1 S-3/GW-3 standard and/or UCL decrease to less than one mg/kg at depths of between four feet to eight feet bgs, with the exception of soils surrounding and including B06.5I. PCB concentrations are highest and exceed the PCB UCL of 100 mg/kg adjacent to the fence line along the Acushnet River.

4) In the soils in the southeast corner of the Property, PCB concentrations decrease to below one mg/kg by eight feet bgs, just above or within the peat layer.

- 5) Soils in the immediate vicinity of UV-17 from a depth of five feet bgs down to 10 feet bgs exceed the Method 1 S-3/GW-3 and/or UCL down to at least 10 feet bgs, which is within the peat layer.
- 6) Soils in the northeast corner of the Property generally decrease to below four ug/kg between eight feet to 13 feet bgs.
- 7) Lastly, PCB concentrations in soils along Graham Street collected from below the asphalt pavement to a depth of 2 feet bgs exceed the Method 1 S-3/GW-2 and Method 1 S-3/GW-3 standards. One of the samples (MIP43) contains a PCB concentration exceeding the UCL.

At depths of greater than 15 feet bgs, sporadic detections of less than one mg/kg are present on the Titleist and Precix properties. In general, soils at this depth from borings throughout the Property are non-detect or detected at less than one mg/kg. Soil samples collected from two locations contain concentrations greater than 1.0 mg/kg but less than 4.0 mg/kg. The only area of the Site with PCB concentrations greater than the UCL in soils at depths greater than 15 feet bgs are located in the northeast corner of the Property, in the vicinity of MW-15B/MW-15D. In this area, soil samples MIP46 (20-22' bgs), MIP-47 (23-25' bgs), MIP-48 (22.5' bgs), MIP-48(30-31' bgs) and MIP-50E (30-31' bgs) exceed the UCL of 100 mg/kg. The depth to bedrock in this area ranges between 27 feet bgs to 31 feet bgs.

## 4.2.2 CVOCs

## 4.2.2.1 TCE and Daughter Products

CVOCs were detected in only one sample in the shallow depth interval from the ground surface to three feet bgs. This sample was collected at B04BN in the central portion of the Property. The concentrations of TCE, cis-1,2-dichloroethene and PCE detected in this sample are below the respective UCLs and Method 1 S-3/GW-3 standards. There were no other CVOCs detected in soil samples collected from the ground surface to three feet bgs interval.

TCE concentrations in the three feet to 15 feet bgs depth interval are present beneath the former Aerovox building foundation, in the south central area of the Property near B04B and B04C, at B08B (near MW-10D and MW-27B), at MIP-43 (Titleist property), in the UV-17 area, and within the northeast corner of the Site. TCE concentrations at soil boring MIP-43, B04B, and soil boring UV-17 exceed the Method 1 S-3/GW-2 standard (applicable for MIP-43), Method 1 S-3/GW-3 standard and UCL, respectively.

The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. With the exception of soil boring B02B, there are no TCE concentrations detected in soils beneath the former 2-story (west) section of the building. TCE concentrations in this depth interval were detected north as far as MW-30B (in Graham Street), and south as far as MW-23B (east end of Titleist Property). In general, higher TCE concentrations are detected in deeper soils. Soil samples collected in the 15 feet bgs to bedrock depth intervals exceeding the Method 1 S-3/GW-3 standard and/or UCL include soils collected from borings MIP-11, MIP15, MIP48 and MW-15D.

Soil concentrations of cis-1,2-dichloroethene and vinyl chloride are present pervasively across the Site in the soil profile beneath three feet bgs at variable concentrations. Concentrations of cis-1,2-dichloroethene exceeding the Method 1 S-3/GW-2 standard (as applicable), Method 1 S-3/GW-3 standard and/or the UCL were detected in samples collected from soil borings MIP43 and UV-17. Concentrations of trans-1,2-dichloroethene ranging from 2.1 ug/kg to 4.2 ug/kg were detected in soil samples collected from three soil borings on the Property. These concentrations do not exceed the Method 1 S-3/GW-3 standard or UCL. Vinyl chloride concentrations in soils collected from the UV-17 soil boring exceed the Method 1 S-3/GW-3 standard. There are no soil samples collected from the Site that exceed the vinyl chloride UCL.

## 4.2.2.2 PCE

Tetrachloroethene concentrations were detected in soils collected from three soil borings in the three feet to 15 feet bgs depth interval. The detections were reported in soil samples collected from soil boring MW-11B (0.90 ug/kg) in the southwest corner of the Property, and soil borings MIP53 (5.6 ug/kg) and MIP54 (140 ug/kg) in the northeast corner of the Property. Nine soil borings collected at a depth of greater than 15 feet bgs contained PCE concentrations. Of these nine locations, only the PCE concentration in the soil sample collected from a depth interval of 26 feet to 28 feet bgs in soil boring MW-15D exceeds the Method 1 S-3/GW-3 standard. There are no PCE concentrations in soil that exceed the UCL.

## 4.2.2.3 Chlorobenzenes

Concentrations of 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and/or 1,4-dichlorobenzene were detected in soil samples collected from eleven soil borings on the Aerovox property in the 3 foot to 15 foot bgs depth interval. Similarly, soil samples collected at depths of greater than 15 feet bgs contained concentrations of one or more of these compounds. These compounds were not detected in soil samples collected from the Precix or Titleist properties, and none of the detections exceed the Method 1 S-3/GW-3 and/or UCL standard.

### 4.2.2.4 Other CVOCs

Other CVOCs detected in soils include 1,1,1-trichloroethane (three feet to 15 feet bgs), 1,1,2-trichloroethane (greater than 15 feet bgs), 1,1-dichloroethane (three feet to 15 feet bgs), 1,1-dichloroethene (greater than three feet bgs), carbon tetrachloride (greater than three feet bgs) and (chloroform (greater than three feet bgs). None of these compound concentrations exceed their Method 1 S-3/GW-3 or UCL.

## 4.3 Groundwater

Groundwater at the Site is broken into three aquifers: shallow overburden (groundwater within 15 feet of the ground surface), deep overburden (groundwater at depths of greater than 15 feet bgs to the bedrock interface, and bedrock. Groundwater contamination at the Site includes PCBs and CVOCs.

## 4.3.1 PCBs

PCBs are present in the shallow overburden, deep overburden and bedrock aquifers. Both PCB concentrations and the areal extent of PCB concentrations in groundwater increase with depth.

PCBs were detected in samples collected from 11 of the shallow overburden monitoring wells. The shallow overburden aquifer contains the lowest average total PCB concentrations, ranging from below laboratory reporting limits to 5.46 ug/L, detected in MW-2A. The PCB detections in shallow overburden wells are largely in wells on the Property and Graham Street, with the exception of detections in samples collected from MW-22S. There are no total PCB concentrations in shallow overburden monitoring wells above the UCL or Method 1 GW-3 standard.

Concentrations of total PCBs were detected in 11 deep overburden monitoring wells: GZ-101D, GZ-103D, MW-2, MW-6, MW-7, MW-10D, MW-15D, MW-17D, MW-18D, MW-19D and MW-23D. Detected PCB concentrations in these wells range from 0.464 ug/L to a maximum of 86.2 ug/L in the sample collected from MW-15D. PCB concentrations in deep overburden groundwater are highest in the northeast corner of the Property, near MW-15D, and in the southeast corner of Property around MW-10D and MW-17D. There are no individual or average PCB concentrations in deep overburden groundwater above the UCL. However, the eastern third of the Property and one monitoring well on the Titleist property exceed the Method 1 GW-3 standard.

PCBs were detected in 12 bedrock monitoring wells including MW-2B, MW-4B, MW-6B, MW-7B, MW-11B, MW-13B, MW-15B, MW-17B, MW-23B, MW-26B, MW-27B and MW-28B. Detected PCB concentrations in individual sample collected from these wells ranged from 0.336 ug/L in MW-28B to a maximum of 215 ug/L in the sample collected from MW-15B. The highest total PCB concentrations are centered around MW-13B in the center of the Property, and along the east end of the Property adjacent to the Acushnet River. The average total PCB concentration in groundwater samples collected from MW-15B exceeds the UCL, and concentrations in five of the bedrock monitoring wells exceed the Method 1 GW-3 standard.

Refer to the Phase II CSA Report, **Table 2-8, Figures 2-6 through 2-8**, and the cross sections in **Appendix R** for graphical depictions of PCB concentrations in groundwater across the Site.

## 4.3.2 CVOCs

Eleven CVOCs were detected in shallow groundwater during completion of this Phase II CSA: tetrachloroethene, trichloroethene, cis-1,2-dicloroethene, trans-1,2-dichloroethene, vinyl chloride, chloroform, 1,1,1-trichloroethane, 1,1-dichloroehtane, chlorobenzene, 1,3-dichlorobenzene and 1,4-dichlorobenzene. Ten CVOCs were detected in shallow groundwater during completion of this Phase II CSA: tetrachloroethene, trichloroethene, cis-1,2-dicloroethene, trans-1,2-dichloroethene, vinyl chloride, chloroform, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene and 1,4-dichlorobenzene. A total of 16 CVOCs were detected in bedrock groundwater samples collected for the Phase II CSA: PCE, TCE, cis-1,2-dichloroethene, trans-1,2-dichloroethene, vinyl chloride, 1,1-dichloroethene, 1,1,2-trichloroethane, 1,1,1-thricloroethane, 1,1-dichloroethane, carbon tetrachloride, chloroform, methylene chloride, bromodicloromethane, 1,3-dichlorobenzene, 1,4-dichlorobenzene and chloromethane.

## 4.3.2.1 TCE and Daughter Products

Similar to PCBs, TCE and associated daughter products, cis-1,2-dichloroethene, trans 1,2-DCE and vinyl chloride, are present in the shallow overburden, deep overburden, and bedrock aquifers. Also similar is the increasing TCE concentrations detected with depth, with the highest average concentrations in the shallow overburden aquifer, deep overburden aquifer, and bedrock aquifer of 784 ug/L, 24,286 ug/L and 483,333 ug/L, respectively. In general, the aerial extent of the groundwater plume increases with depth.

TCE concentrations were detected in 15 shallow overburden monitoring wells, with groundwater concentrations ranging from below laboratory reporting limits (< 1.0 ug/L) to a maximum of 1,500 ug/l in the sample collected from MW-18S on the Precix property. The average TCE concentration in MW-18S is 784 ug/L. The highest TCE concentrations are present in two monitoring wells along Graham Street adjacent to the Precix building (MW-18S and MW-16S), as well as MW-8S, located in the center of the Property. The average concentrations of TCE in MW-18S (823 ug/L), MW-16S (270 ug/L) on Precix property and MW-21D (8.85 ug/L) on Titleist property exceed the Method 1 GW-2 standard of five ug/L. Lower concentrations of PCE are detected in monitoring wells across the center portion of the Site, and are roughly bounded by MW-21D and MW-19S to the south, MW-4A and GZ-103D to the east, and GZ-1 and MW-12 to the west. TCE concentrations were detected in deep overburden groundwater samples collected from 14 monitoring well across the Site, including the Titleist property to the south (MW-23D) and Precix to the north (MW-24D). The highest detected TCE concentrations in individual samples collected deep overburden monitoring wells range from a minimum of 2.8 ug/L in MW-24D to a maximum of 29,000 in MW-7. The average TCE concentrations for the samples collected during the Phase II CSA from MW-7 (24,265 ug/L), MW-10D (9,625 ug/L), MW-15D (5,133 ug/L) and MW-19D (4,875 ug/L), exceed the Method 1 GW-3 Standard. There are no average TCE concentrations in deep overburden exceeding the UCL. In general, the wells with TCE concentrations present are largely found along Graham Street and the east edge of the Property, with the exception of detects at two wells located further inland (MW-10D and MW-19D). TCE concentrations are highest in the west-central part of the Property, extending east to MW-7 and MW-15D, adjacent to the Acushnet River.

Concentrations of TCE were detected in bedrock in 23 site monitoring wells at concentrations above laboratory reporting limits. The three monitoring wells with the highest individual sample concentrations are MW-26B (150,000 ug/L), MW-15B (110,000 ug/L), and MW-34B (500,000 ug/L in the 170 foot to 180 foot bgs sampling interval). The wells on the perimeter of the site boundary contain TCE concentrations ranging from 2.8 ug/L in MW-35B south of the Titleist building to 9.78 in MW-11B to the southwest, and 504 ug/L and 480 ug/L to the north of the Precix building. The northern boundary of TCE in groundwater in bedrock has not been defined as of this time because access to the property north of Precix (the Coyne property) could not be obtained.. Average TCE concentrations detected in MW-26B, MW-15B, and MW-28B exceed the UCL, and average TCE concentrations in MW-4B, MW-6B, MW-7B, MW-13B, MW-27B, MW-28B, MW-32B and MW-101B exceed Method 1 GW-3 Standards.

In the Phase II CSA Report, refer to **Table 2-8**, **Figures 2-9 through 2-11**, and the cross sections in **Appendix R** for graphical depictions of TCE concentrations across the Site.

Twelve monitoring wells contained concentrations of cis-1,2-dichloroethene in shallow overburden groundwater. Individual sample concentrations of cis-1,2-dichloroethene in shallow overburden groundwater range from below reporting limits (1.0 ug/L) to a maximum of 13,000 ug/L in MW-8S. Detections of cis-1,2-dichloroethene are generally found within the same monitoring wells as TCE, with limited exception. Monitoring well GZ-1 does not contain a detectable concentration of cis-1,2-dichloroethene, and MW-2A and GZ-103S contain cis-1,2-dichloroethene, but do not contain TCE. The monitoring wells bounding the current extent of detectable concentrations of cis-1,2-dichloroethene include MW-21D and MW-22S to the south, MW-12S to the east, multiple wells along Graham Street, and MW-2A to the east and adjacent to the Acushnet River. Average concentrations of cis-1,2-dichloroethene in monitoring wells MW-4S, MW-16S, MW-18S exceed the Method 1 GW-2 standard. There are no UCL or Method 1 GW-3 standard exceedances of cis-1,2-dichloroethene in the shallow overburden aquifer.

With the exception of groundwater samples collected from MW-24D, cis-1,2-dichloroethene is present in the same deep overburden monitoring wells as TCE. The highest detected cis-1,2-dichloroethene concentrations in individual samples collected for the Phase II CSA range from 140 ug/L in MW-101D to a maximum of 4,800 in MW-17D. The center of the existing cis-1,2-dichloroethene plume is shifted slightly southeast of the center of the TCE plume, defined by the average cis-1,2-dichloroethene concentrations in MW-17D (3,150 ug/L), MW-19D (3,475 ug/L) and MW-10D (4,250 ug/L). There are no individual or average concentrations exceeding the UCL or Method 1 GW-3 standard for cis-1,2-dichloroethene in deep overburden.

Concentrations of cis-1,2-dichloroethene were detected in the same 23 bedrock monitoring wells as TCE. The highest individual cis-1,2-dichloroethene sample result was 92,000 ug/L, collected from MW-15B, with the second highest average concentration detected at MW-26B, similar to the TCE concentrations. There were no cis-1,2-dichloroethene concentrations in bedrock groundwater samples exceeding the UCL. However, the concentration detected in MW-15B exceeds the Method 1 GW-3 standard.

Trans-1,2-dichloroethene was detected in groundwater samples collected from MW-4S, MW-12S, MW-13D, MW-16S, MW-19S and GZ-103S. The highest detected trans-1,2-dichloroethene concentration detected was 5.2 ug/L, detected in MW-19S. These detections correspond to two areas of the Site, the central portion of the Property and along Graham Street. Trans-1,2-dichloroethene was detected in samples collected from two deep overburden monitoring wells, MW-17D and MW-23D. These wells are both located in the southeast portion of the Site, near the Acushnet River. There are no individual or average trans-1,2-dichloroethene concentrations above the UCL or Method 1 GW-3 standard. Only four bedrock monitoring wells contained detectable concentrations of trans-1,2-dichloroethene: MW17B, MW-26B, MW-30B, and MW-103B. These four wells are located at various locations across the Site.

Vinyl chloride was detected in twelve monitoring wells. Concentrations of vinyl chloride ranged from below reporting limits to a maximum concentration of 3,700 ug/L in a sample collected from monitoring well MW-8S. The average concentration of vinyl chloride in MW-8S, based on three groundwater sampling events, is 3,233 ug/L. The vinyl chloride concentrations in deep overburden groundwater are present in the same set of monitoring wells that exhibit detectable cis-1,2-dichloroethene concentrations. The highest individual sample detections range from a minimum of 6.1 ug/L in samples collected from GZ-4A to a maximum concentrations of 620 ug/L in a sample collected from MW-7. Vinyl chloride has not been detected in individual sample concentrations above UCLs or Method 1 GW-3 standards. Vinyl chloride concentrations were detected in seven bedrock monitoring wells, also at various locations across the Site. Laboratory reporting limits for these TCE daughter products are elevated in many of the sample analyses, due to the elevated concentration of TCE. None of the detected concentrations of TCE daughter products are reported at concentrations greater than the UCL or Method 1 GW-3 standard.

## 4.3.2.2 PCE

Reported concentrations of PCE in shallow groundwater range from below laboratory reporting limits (<1.0 ug/l) in MW-16S to a maximum of 4.2 ug/l in GZ-101S. Detections of PCE are generally in monitoring wells along Graham Street, with detections also in the center of the Site near MW-13D.

PCE is present above laboratory detection limits in four monitoring wells, including MW-10D, MW-15D, MW-17D, and MW-23D. Reported concentrations of PCE in deep overburden groundwater collected

from these monitoring wells range from 56 ug/L in MW-10D to a maximum of 180 ug/l in MW-15D. PCE detections are generally present in monitoring wells on the eastern third of the Site.

PCE concentrations were detected in five monitoring wells, MW-11B, MW-13B, MW-17B and MW-103B. Three of these monitoring wells, MW-11B, MW-13B, and MW-24B are located along a roughly northeast-southwest linear fashion relative to each other. The other two wells are located along the eastern edge of the Site, adjacent to the Acushnet River. Detected PCE concentrations range from 7.0 ug/L in MW-103B to a maximum of 220 ug/L in MW-11B, which is located in the southeast corner of the Site. There were no PCE concentrations detected above the UCL or Method 3 GW-3 standard.

## 4.3.2.3 Chlorobenzenes

Chlorobenzene was detected in shallow overburden monitoring wells MW-2A, MW-3, MW-3A, and GZ-103S, located along the east end of the Site. The highest concentrations of chlorobenzene in these monitoring wells were 38 ug/L, 170 ug/L, 99 ug/L and 6.4 ug/L, below the UCL of 10,000 ug/L and Method 1 GW-3 standard of 1,000 ug/L. Both 1,3-dichlorobenzene and 1,4-dichlorobenzene were detected in the same monitoring wells as chlorobenzene. The highest concentration of 1,3-DCB in these monitoring wells was 5.7 ug/l, 3.9 ug/l, 1.4 ug/L and 2.1 ug/L, respectively, and the highest concentrations of 1,4-DCB in these monitoring wells was 8.6 ug/L, 7.1 ug/L, 2.6 ug/L and 1.4 ug/L, respectively.

Chlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene concentrations were detected in deep overburden monitoring wells MW-2 and MW-4. These two monitoring wells are located between the east end of the former Aerovox building and south of the southern drainage ditch. The highest concentrations of these three constituents detected in MW-2 were 940 ug/L, 52 ug/L and 120 ug/L, respectively. Concentrations of these compounds in samples collected from MW-4 are lower, with the highest detections of 24 ug/L, 9.6 ug/L, and 21 ug/L. The highest detected concentration of 1,2-dichlorobenzene in MW-2 was 14 ug/L. This compound was not detected in MW-4.

There were no detected chlorobenzenes present in any of the bedrock monitoring wells. A 1,3-dichlorobenzene concentration of 2.1 ug/L was detected a groundwater samples collected from MW-103B in September 2014. Analytical results for the samples collected from this monitoring well during the other two groundwater sampling rounds indicate the compound was not detected. Concentrations of 1,4-dichlorobenzene were detected in monitoring wells MW-11B and MW-103 B. The maximum detected concentrations in these two wells were 1.5 ug/L and 1.6 ug/L, respectively. There were no UCL or Method 1 GW-3 exceedances of chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene or 1,4-dichlorobenzene in the shallow overburden, deep overburden or bedrock aguifers.

## 4.4 DNAPL

During the Phase II CSA, measured DNAPL was found in two monitoring wells in the northeast corner of the Property, wells MW-15D and MW-15B. Subsequent investigations, done as part of an IRA, defined the extent of DNAPL and this location and areas where DNAPL may also be present along the eastern boundary of the Site. Based on results of the IRA and the Phase II CSA, areas of the Site with DNAPL (potential source areas) were identified as follows:

 Northeast corner of the Property, at the MW-15 wells. Data from the MIP work, UVOST, MALM, soil borings, and from wells MW-15D and MW-15B confirm that this DNAPL source area is confined to a zone approximately sixty to seventy feet in diameter. The shallow soils (fill

material above the peat), deep overburden, and bedrock in this area contain, or likely contain, pooled or residual DNAPL (CVOCs and PCBs).

- Small area isolated above the peat and behind the existing sheet pile wall in the vicinity
  of MIP-23. Boring location MIP-23 exhibited soil concentrations above the UCL from the surface
  down to the peat layer, and NAPL blebs were observed in the soil interval from 4 to 6 feet bgs.
  However, explorations surrounding this boring, including the MIP and UVOST borings, did not
  indicate a widespread or contiguous NAPL area.
- Former northern manufacturing building ditch area. North of the former manufacturing building, lines of evidence suggest a potential DNAPL source zone in the vicinity of boring MIP-11 in shallow soils (0-2 feet bgs, PCBs only) immediately under the pavement, and in deep soils (24-27 feet bgs, CVOCs only).
- Former loading dock (central area of the Site). Soil sampling from the area surrounding boring B04B indicates a potential, or possibly historic, DNAPL source zone that is approximately fifty feet in diameter. This area has little overburden (bedrock is shallow) and concentrations drop off laterally in all directions.
- Area near UV-17. The UVOST response observed at UV-17, and subsequent sampling at this
  location, suggest that a small area situated near where the southern manufacturing building
  ditch discharged to the River is a probable DNAPL source zone. This area is approximately 35
  feet in diameter and extends only down to the top of the peat layer.

### 4.5 Storm Sewers

Analysis of sediment from the on-site catch basins (CB-01, CB-02, CB-03, CB-04, CB-05, CB-66, CB-09 and CB-13) and manhole (MH03) indicates that PCBs are present at concentrations ranging from 4.21 mg/kg to 696 mg/kg. The assessment of the storm sewers indicates that PCBs are present within the Property sewers, including the main sewer line along Hadley Street which collects storm water runoff from Belleville Avenue, beyond the Site. Specific catch basin and manhole sediment results are provided in **Table 4-1**.

Based on these results, and the structural assessment completed with the televiewer, the storm sewer pathway warrants inclusion in development of response actions to mitigate their potential as a preferential pathway to the River.

#### 4.6 Indoor Air

Shallow groundwater monitoring wells installed adjacent to the Precix and Titleist buildings exhibited concentrations of CVOCs above Method 1 GW-2 standards, suggesting a potential for impacts to indoor air. In response to these findings, sub-slab soil gas and indoor air sampling were conducted at the Precix building in May 2014 and December 2014, and sub-slab soil gas sampling was conducted at the Titleist building in December 2014 and April 2015. Sub-slab soil gas data indicated the presence of TCE and tetrachloroethene beneath the Precix building at levels above commercial/industrial screening values. CVOC concentrations in co-located indoor air samples within the Precix building suggest that significant attenuation of soil vapor is achieved by the existing concrete slab foundation. However, levels of TCE above commercial/industrial threshold values were observed in indoor air samples

collected from the Precix building. No CVOCs were detected above applicable screening values in subslab soil gas samples collected at the Titleist building.

## 4.7 Summary of Current Source Areas and Migration

Based on the findings described above and current Site conditions, including mechanical removal of DNAPL, earlier implementation of the NTCRA and historical installation of the HAC cap, the remaining sources of contaminants at the Site include:

- · impacted soils;
- impacted groundwater; and
- areas of the Site with DNAPL.

## 4.7.1 Soil

Based on soil analytical data collected as part of the Phase II CSA from December 2013 through April 2015, soils at the Site are impacted with PCBs and VOCs at concentrations that may be a source to groundwater. PCBs are ubiquitous throughout the Site and in general, PCBs are present in surficial soils and in deeper soils above the peat layer. The existing HAC cap prevents infiltration of precipitation to soils underneath the cap, thereby limiting the ability of impacts to leach from shallow soils. However, in the northeastern portion of the Site the groundwater table is shallow and comes in contact fill materials that exhibit elevated levels of COCs.

## 4.7.2 Groundwater

Based on groundwater analytical data collected as part of the Phase II CSA from March 2014 through August 2015, groundwater at the Site is impacted with PCBs and CVOCs at concentrations that may be a source to surface water and indoor air. Constituents that may impact surface water (i.e., constituents detected in groundwater at levels exceeding Method 1 GW-3 standards) include PCBs, TCE, cis-1,2-DCE, carbon tetrachloride, and chloroform. Of these constituents, only PCBs, TCE, cis-1,2-DCE are from on-site sources. Carbon tetrachloride and chloroform were detected at levels above Method 1 GW-3 standards in well MW-24B only. MW-24B is a bedrock well located towards the northern boundary of the Precix property and southeast of an adjacent laundry and dry cleaning facility. The carbon tetrachloride is believed to be from a release associated with the dry cleaning facility, and chloroform is a carbon tetrachloride degradation product. Constituents in groundwater that may impact indoor air (i.e., constituents detected in groundwater at levels exceeding Method 1 GW-2 standards, where applicable) include PCBs, TCE, cis-1,2-DCE, and vinyl chloride.

### 4.7.3 DNAPL

The MCP indicates that for sites where NAPL is present, it is necessary to describe the scientific principles behind and behavior of fluid flow in porous media at the Site. This description has been provided previously in detail in the IRA Status Reports, and is summarized below.

Based on the 2009 technical publication by Kueper and Davies, the characterization of an area or volume of soil within the Site as a DNAPL source means that the area has a volume that contains residual or pooled DNAPL. This definition does not imply that DNAPL is, or may, migrate within, or

from, that zone, or that such zone's contribution to a dissolved-phase will necessarily contribute to an unacceptable site risk. The stage of the DNAPL zone present at the Site (early, middle or late), and whether that DNAPL is stable, has micro-scale mobility, or whether it is contributing to an expanding, stable, or contracting dissolved-phase groundwater plume were evaluated using site-specific data and standard methods to assess the potential for DNAPL to mobilize and migrate within the subsurface stratigraphy at the Site.

The results of the Phase II CSA and the IRA DNAPL mobility evaluation indicate that site DNAPL has migrated vertically through the fill and overburden materials to, and into, bedrock beneath the Site. Furthermore, the evaluation determined that Site DNAPL migrates laterally, in both an easterly and westerly direction, under the influence of the observed tidally-influenced reversing gradients, provided a sufficient DNAPL body is present. This continual back and forth migration likely aids the dissolution of subsurface DNAPL and supports a preference for vertical migration (i.e., sinking) of DNAPL.

The site-specific investigative data does not support wide-spread DNAPL accumulations, rather limited areas of known DNAPL presence, with likely larger areas constituting residual DNAPL zones, which are by definition incapable of migrating. Therefore, the DNAPL investigative findings are supportive of a middle- to late-stage DNAPL plume condition, i.e., its downward mobility has dominated over a period of 30+ years resulting in the remaining limited pooling at the deepest interface between overburden and top of rock and within shallow bedrock at the northeast corner of the Property. The remaining four areas where the Phase II CSA and IRA indicate the potential for DNAPL to be present (described in Section 4.4 above) do not have corresponding measurable DNAPL thickness in a well, and are confined to small zones within the overall Site. These small areas are either stranded in shallow vadose zone soils without a driver for migration, are stranded on top of the peat layer where the increased carbon content mitigates migration, or are present at depth at the top of rock interface.

## 5 Potential Exposure Pathways

## 5.1 Soil Pathway

As a result of the existing temporary HAC cap on the Property, direct contact exposure is not a complete pathway. Should the asphalt be removed, a direct exposure pathway will potentially exist. As a result of temporary security measures that have been implemented on the east end of the Titleist property, the PCB concentrations in surface soils have been mitigated and these measures will be maintained until a permanent solution is achieved.

## 5.2 Groundwater Pathway

Groundwater in the site vicinity is not utilized for drinking purposes and there are currently no known irrigation wells present in the site vicinity. Therefore, category GW-1 does not apply. In addition, use of groundwater at the Site is prohibited by a Declaration recorded on the property title. The GW-2 groundwater category is applicable to sites where groundwater is within 15 vertical feet of the ground surface and 30 horizontal feet of a building, reflecting a potential pathway to indoor air. Groundwater within 30 horizontal feet of the Precix and Titleist buildings to the north and south are subject to GW-2 standards. Therefore, the groundwater pathway for the Site as currently defined under current uses consists of potential migration to indoor air and migration and discharge to surface water (as reflected in the category GW-3 definition).

## 5.3 Air Pathway

CVOCs were detected in groundwater adjacent to the Precix and Titleist properties at levels above the applicable Method 1 GW-2 standards. Sub-slab and indoor air sampling has demonstrated that there is a complete pathway at the Precix building, as both sub-slab and indoor air samples exceeded applicable threshold values. Sub-slab soil vapor sampling at the Titleist property indicated that a complete pathway does not exist in this building.

#### 5.4 Storm and Surface Water

Storm water at the Site is currently directed to existing drainage structures. The existing HAC cap prevents potential contamination of storm water runoff from occurring. Subsurface drainage structures used prior to capping are still in place and are utilized. Samples of the accumulated soil/sediment within catch basins and a manhole at the Site have indicated that PCBs, CVOCs and PAHs (not a site contaminant of concern) are present. These contaminated sediments could mobilize during storm events and are considered a potential pathway to surface water.

Contaminant transport through groundwater to the adjacent surface water (Acushnet River) is a potential exposure pathway to Site COCs. Existing levels of contamination in sediment and surface water are being addressed by U.S. EPA under the Superfund program and are not considered part of the Site. However, based on the Phase II CSA results in groundwater

samples collected from adjacent to the River, and the tidal flushing of groundwater both into and outward from the Site, it is likely that contaminants from the Site are migrating to surface water. However, this pathway is valid if and only to the extent that the Site could act as a continuing source to the River after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete, as measured by post-Phase IV confirmatory sampling. Such confirmatory sampling and analysis would need to clearly identify contaminants, if any, as coming from the Site and not from other sources historically or presently impacting the River or from historical conditions in the River that remain after EPA CERCLA response actions are complete.

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## 6 Potential Receptors

### 6.1 Current Use

Under existing site use, there are no on-site receptors at the Property. On-site receptors at the Precix and Titleist facilities that are part of the disposal site include employees, visitors, utility/construction workers, and trespassers. The potential for receptors on the Coyne property cannot be evaluated until access to this property is provided.

The site vicinity is served by municipal water and sewer. There is one single institution, St. Joseph-St. Therese School, within 500 feet of the Site. There are no known daycare centers within 500 feet of the Site. The northwest corner of the Property has been converted to a public park. Based on historic data for samples collected in the area of the park (MW-5), PCB concentrations in samples collected from this area were reported as below laboratory detection limits. According to the Massachusetts Department of Environmental Protection (MassDEP), Bureau of Waste Site Cleanup, site scoring map of the area, Brooklawn Park, located approximately 650 feet west, is mapped as Protected Open Space. Wetland areas and mapped aquifers are located on the east bank of the River. There were no complete pathways to these areas identified as a result of the Phase II CSA. Potential off-site receptors (human and ecological) related to the River are being addressed by EPA under CERCLA.

#### 6.2 Foreseeable Future Use

An Activity and Use Limitation (AUL) was negotiated as part of a settlement agreement between the owner of the Site, the City of New Bedford, and AVX. Potential future uses of the Property are limited to commercial or industrial uses, or use as open space available for passive recreational use. These are activities that will not pose risk to human health, public safety, or the environment. Upon completion of the MCP response actions, the AUL will be recorded with the Registry of Deeds and Registered Land Office.

For other properties within the site boundary, the potential for future residential use cannot be assumed, and as such the Method 3 risk assessment evaluated the risks to such receptors on the Titleist and Precix properties. A condition of No Significant Risk was not found for such future uses based on the levels of COCs identified and the potentially foreseeably complete exposure pathways.

Aquatic human and environmental receptors associated with the River are possible only if COCs are transported through groundwater to the adjacent surface water (Acushnet River) in the foreseeable future. Existing levels of contamination in sediment and surface water are being addressed by U.S. EPA under the Superfund program and are not considered part of the Site. However the foreseeable migration of groundwater contaminants to surface water is a valid site-related pathway to such receptors if and only to the extent that the Site could act as a continuing source to the River after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete, and such contaminants are clearly identifiable as coming from the Site and not from other sources historically or presently impacting the River or from historical conditions in the River that remain after EPA CERCLA response actions are complete.

AECOM 7-1

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Appendix B.
Former Aerovox
Building Plans

PROJECT NO:

DESIGN: DB

PPROVED: MW

DRAWN: FS

6

SCALE IN FEET

39743350

FILE NO:

CLIENT:

PROJECT:

AS SHOWN

AUG 2010

Aerovox Floor Plan.dwg

AEROVOX

AEROVOX FACILITY

740 BELLEVILLE AVENUE

NEW BEDFORD, MASSACHUSETTS

TITLE:

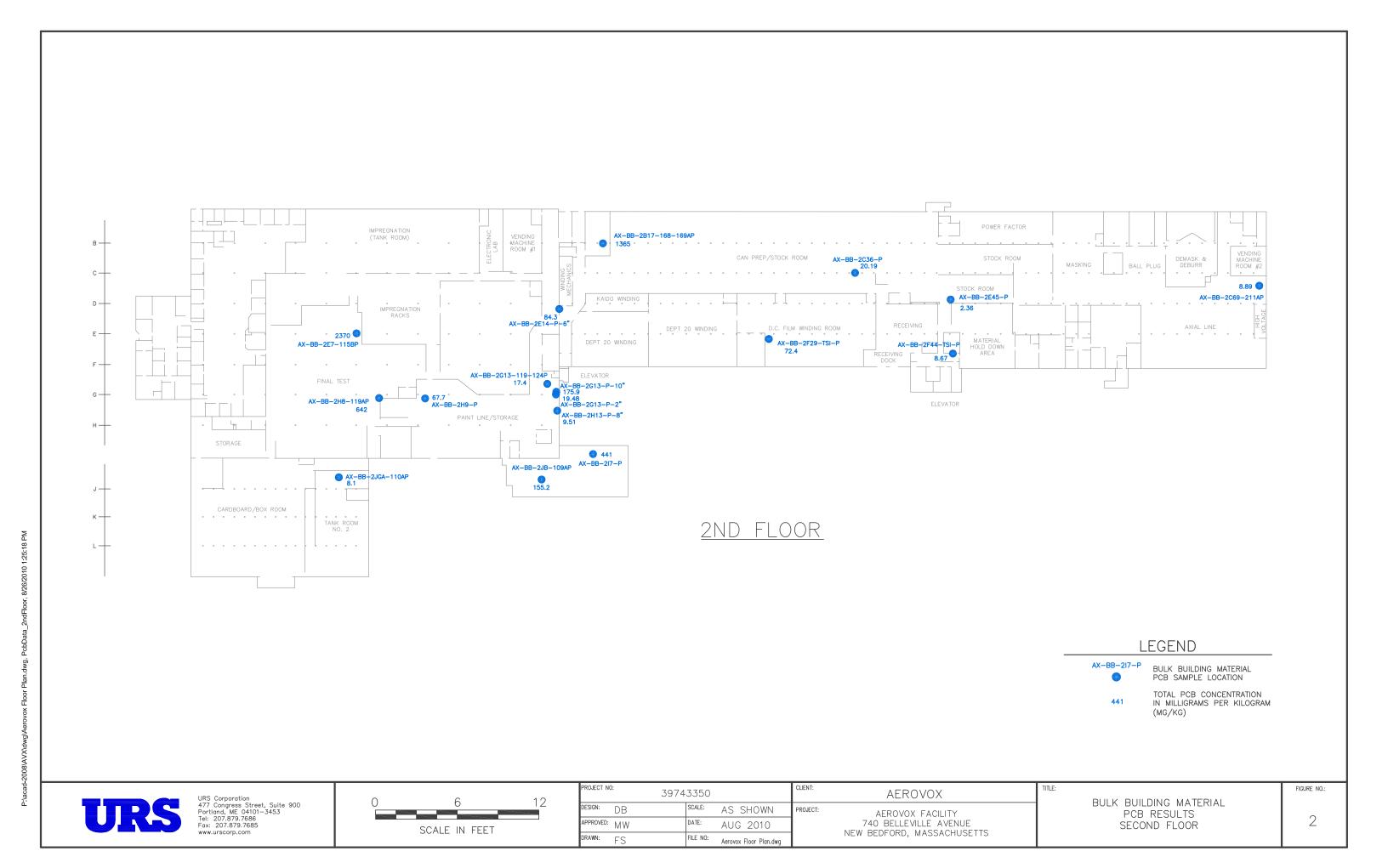
BULK BUILDING MATERIAL

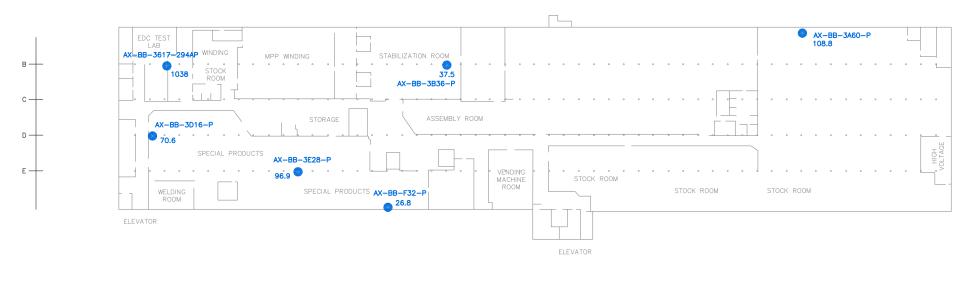
PCB RESULTS

FIRST FLOOR

FIGURE NO .:

URS Corporation 477 Congress Street, Suite 900 Portland, ME 04101-3453 Tel: 207.879.7685 Fax: 207.879.7685





3RD FLOOR

## LEGEND

AX-BB-2I7-P

BULK BUILDING MATERIAL PCB SAMPLE LOCATION

441

TOTAL PCB CONCENTRATION IN MILLIGRAMS PER KILOGRAM (MG/KG)



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477 Congress Street, Suite 900
Portland, ME 04101-3453
Tel: 207.879.7686
Fax: 207.879.7685
www.urscorp.com



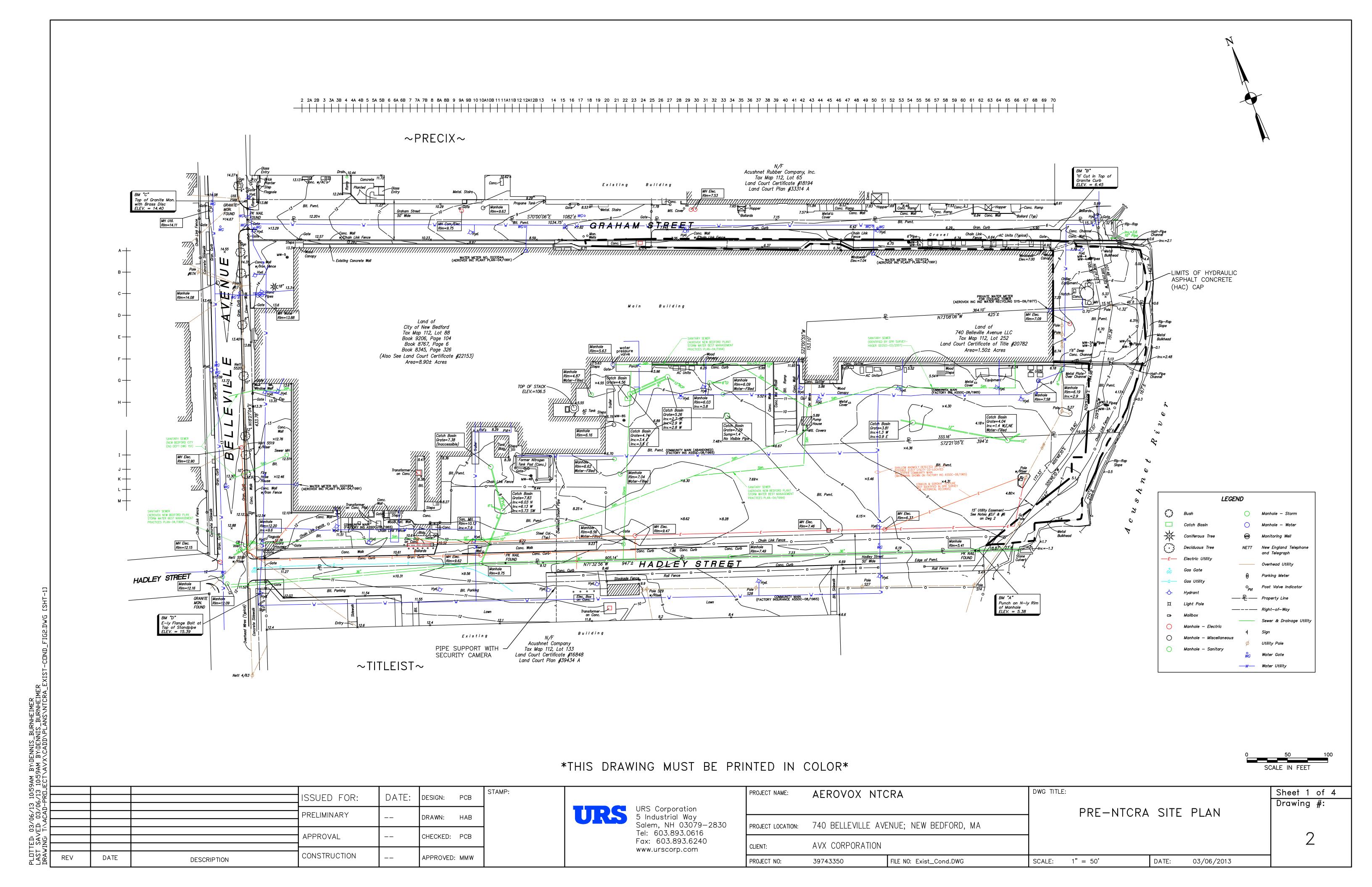
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DESIGN:	DB	SCALE:	AS SHOWN	PROJECT:
APPROVED:	MW	DATE:	AUG 2010	
DRAWN:	EC.	FILE NO:	Associate Flags Diam dissa	

AEROVOX

AEROVOX FACILITY
740 BELLEVILLE AVENUE
NEW BEDFORD, MASSACHUSETTS

BULK BUILDING MATERIAL PCB RESULTS THIRD FLOOR FIGURE NO.:

3



Appendix C.
Hager-Richter
Seismic Refraction
(Included on CD
only)

Appendix D. Survey MiHpt Reports





# High Resolution Site Characterization Using Membrane Interface Probe /Hydraulic Profiling Tool (MiHpt) and Electrical Conductivity (EC) Technologies Former Aerovox Facility 740 Belleville Avenue New Bedford, Massachusetts 02745

#### PREPARED FOR

URS Corporation 1155 Elm Street, Suite 401 Manchester, New Hampshire 03101

July 25, 2014

#### PREPARED BY

#### **COLUMBIA Technologies, LLC**

1448 South Rolling Rd. Baltimore, Maryland 21227 410-536-9911

www.columbiatechnologies.com

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Figure 2.... Maximum PID Response in Entire Borehole, Size Graded Icons

Figure 3.... Maximum FID Response in Entire Borehole, Size Graded Icons

Figure 4.... Maximum XSD Response in Entire Borehole, Size Graded Icons

### **APPENDICES**

Appendix A: MiHpt Equipment Description

Appendix B: MiHpt Logs, 2013 Visit

Appendix C: MiHpt Logs, 2014 Visit

### **Introduction**

URS Corporation (URS) contracted COLUMBIA Technologies, LLC (COLUMBIA) to conduct a high resolution site characterization of a trichloroethylene (TCE) release associated with a former manufacturing facility located in New Bedford, Massachusetts, in order to supplement the former direct sensing investigation. This investigation involved identifying the vertical and horizontal extent of volatile organic compounds (VOCs) contained in the subsurface and was completed around the existing building on the property.

Direct sensing tooling used at the site included the Membrane Interface Probe (MIP) technology to map the dissolved phase, vapor phase and sorbed phase of VOCs, the Hydraulic Profiling Tool (HPT) technology to collect subsurface soil hydraulic permeability information and the Electrical Conductivity (EC) technology to characterize soil electrical conductivity. All three technologies are contained in a single downhole tool, the MiHpt Probe, allowing **COLUMBIA** to collect multiple lines of evidence with a single push at each location.

A description of the equipment and processes used in this characterization survey and a report of results are presented in Appendix A.

# **Investigation Methods**

The first investigation was conducted from November 18<sup>th</sup>, 2013 through November 26<sup>th</sup>, 2013 and consisted of 44 MiHpt locations. The revisit investigation was conducted on July 14<sup>th</sup>, 2014 and July 15<sup>th</sup>, 2014 and consisted of 12 MiHpt locations. Depth of direct sensing logging ranged from 13.3 feet to 43.25 feet below ground surface (bgs). A Geoprobe<sup>®</sup> Direct Push Technology (DPT) drilling rig was used to advance the locations. Each location was selected by **URS's** representative onsite, and the termination depth of each location was determined by **COLUMBIA's** representative onsite. The results from each location are shown in Appendices B and C. A site location map and maximum concentration maps have been prepared for easier visualization of the site.

# SmartData Solutions®

**COLUMBIA's** *SmartData Solutions*<sup>®</sup> is a patented process (U.S. Patent No, 7,058,509) that enables the rapid processing of field data into easy to understand 2D visualizations posted to a password protected website. Immediately upon completion of each direct sensing location, the dataset is wirelessly delivered to **COLUMBIA's** remote servers for Quality Assurance/Quality Control (QA/QC) review and upload to a password secure website. This enables a complete check of the dataset prior to completion of fieldwork.

# **Log Anomalies and Field Notes**

Location MIP-04 was completed in two separate pushes, due to shallow refusal at 9 feet bgs on the first attempt. The two logs were spliced together at 8 feet bgs. Location MIP-49 was also completed in two separate pushes, due to a carrier gas leak at 18.8 feet bgs on the first attempt. The two logs were spliced together at 16 feet bgs. All spliced logs are presented together in Appendices B and C.

No other log anomalies were noted.

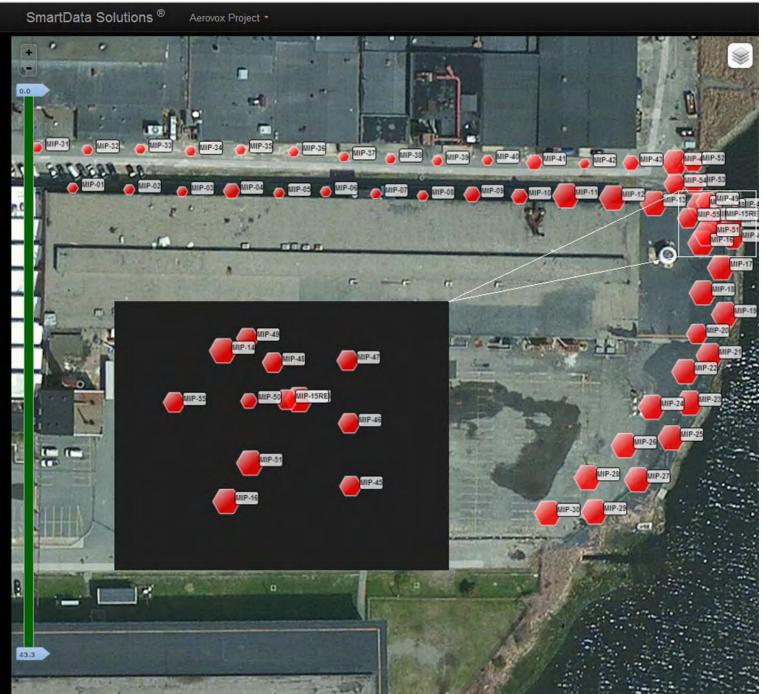
SmartData Solutions<sup>®</sup> is a registered trademark of COLUMBIA Technologies LLC. Geoprobe<sup>®</sup> is a registered trademark of Geoprobe Systems, Inc.



Figure 1 Sitemap and Locations November 18<sup>th</sup>, 2013 – November 26<sup>th</sup>, 2013, July 14th, 2014 – July 15<sup>th</sup>, 2014



- PID 0 to 5.0E+05uV
- PID 5.0E+05uV to 1.0E+06uV
- PID 1.0E+06uV to 5.0E+06uV
- PID 5.0E+06uV and Greater



# Legend

- FID 0 to 5.0E+05uV
- FID 5.0E+05uV to 1.0E+06uV
- FID 1.0E+06uV to 5.0E+06uV
- FID 5.0E+06uV and Greater





# Legend

- ◆ XSD 0 to 5.0E+05uV
- ◆ XSD 5.0E+05uV to 1.0E+06uV
- ◆ XSD 1.0E+06uV to 5.0E+06uV
- XSD 5.0E+06uV and Greater



# APPENDIX A

# **MiHpt Equipment Description**



# **MiHpt Equipment Description**

The MiHpt probe is approximately 24-inches in length and 1.5-inches in diameter. The probe is driven into the ground at the nominal rate of 12-inches per minute using a DPT rig.

The MiHpt probe was developed by Geoprobe Systems<sup>®</sup> and contains three separate systems: the soil Electrical Conductivity, or EC tool; the Hydraulic Profiling Tool, or HPT; and the Membrane Interface Probe, or MIP. EC, HPT parameters, MIP chemical response, MIP operating parameters, rate of push speed and temperature are collected by the MiHpt Field Instrument, and displayed continuously in real time during each push of the probe.

**EC:** Soil electrical conductivity, the inverse of soil resistivity, is measured using a dipole arrangement. In this process, an alternating electrical current is transmitted through the soil from the center, isolated pin of the probe. This current is then passed back to the probe body. The voltage response of the imposed current to the soil is measured across these same two points. Conductivity is measured in Siemens/meter, and due to the low conductivity of earth materials, the EC probe uses milliSiemens/meter (mS/m). The probe is reasonably accurate in the range of 5 to 400 mS/m.

The electrical properties of soil vary by geological setting. Therefore, conductivity measurements will vary both in magnitude and the relative change from one soil type to another in each geological setting. In general, at a given location, lower conductivity values are characteristic of larger particles such as cobbles and sands, while higher conductivities are characteristic of finer sized particles such as finer sand, silts and clays. Observed conductivities significantly higher than 400 mS/m are indicative of ionic materials other than soil. Examples include saltwater intrusion, presence of ionic chemicals from storage or injection, or potentially soil mixtures with metallic compounds.

**HPT:** The HPT portion of the system is used to create high resolution, real-time profiles of soil hydraulic properties, which can be used to infer permeability and hydraulic conductivity. The HPT system consists of a controller, a pump, a transfer line (trunkline) which is pre-strung through the DPT rods, a pressure transducer, a permeable screen, and a field computer.

HPT screening is performed simultaneously with the MIP and EC logging. As the tool is advanced, water is pumped through the trunkline and passes into the soil through the permeable screen. The flow is regulated as to be as constant as possible. The pressure required to inject the constant flow of water into the soil, known as the HPT pressure, is monitored by the pressure transducer and recorded on the field computer in pounds per square inch (psi) versus depth. The flow rate of the water into the soil formation is also measured and recorded in milliliters per minute (mL/min) versus depth. Static pressure measurements (dissipation tests) can also be made by stopping at discrete intervals, allowing users to determine the static water level. The dissipation test provides an estimate of the static water level, based on the hydraulic head imposed on the probe at rest as compared to the pressure measured at the surface prior to starting each location push. Dissipation tests are best run in coarser grained materials (sands and gravels) to assure that the local ambient hydrostatic pressure is measured quickly and accurately.

To perform a dissipation test, the MiHpt probe is advanced to a depth below the water table and the HPT water flow is stopped. The pressure dissipation (reduction of pressure gradient caused by forcibly pumping water into the formation) is monitored until a stable value is observed. The dissipation usually takes the shape of a curve approaching an inflection point or stable value. The stable value is then used for the hydraulic pressure at that depth and can be

used to estimate static water depth. The HPT software can also provide an estimate of K (a value used in hydrogeologic calculations) to provide an interpretation of the hydraulic permeability of the formation.

MIP: The MIP portion of the probe is used to create high resolution, real-time profiles of subsurface VOC contamination. The operating principle is based on heating the soil and/or water around a semi-permeable polymer membrane to 121° Celsius (C), which allows VOCs to partition across this membrane. The MIP can be used in saturated or unsaturated soils, as water does not pass through the membrane. Nitrogen is used as an inert carrier gas, and travels from a surface supply down a transfer tubing which sweeps across the back of the membrane and returns any captured VOCs to the installed detectors at the surface. It takes approximately 60 seconds for the nitrogen gas stream to travel through 150 feet of inert tubing and reach the detectors.

**COLUMBIA** utilizes three chemical detectors on the MIP: a Photo Ionization Detector (PID), a Flame Ionization Detector (FID) and a Halogen Specific Detector (XSD), mounted on a laboratory grade SRI 8610C gas chromatograph (GC). The output signal from the detectors is captured by the MIP/EC data logging system installed on a laptop computer.

The PID detector consists of a special ultraviolet (UV) lamp mounted on a thermostatically controlled, low volume, flow-through cell. The temperature is adjustable from ambient temperature to 250°C. The 10.2 electron volt (eV) UV lamp emits energy at a wavelength of 120 nanometers, which is sufficient to ionize most aromatics such as benzene, toluene, xylene, etc., and many other molecules such as hydrogen sulfide (H<sub>2</sub>S), hexane, and ethanol whose ionization potential is below 10.2 eV. The PID also emits a response for chlorinated compounds containing double-bonded carbons (halogenated ethylenes), such as trichloroethylene (TCE) and tetrachloroethylene (PCE). Methanol and water, which have ionization potentials greater than 10.2 eV, do not respond on the PID. Since the PID is non-destructive, it is often run first in series with other detectors for multiple analyses from a single injection.

The FID utilizes a hydrogen flame to combust compounds in the carrier gas. The FID responds linearly over several orders of magnitude, and the response is very stable from day to day. This detector responds to any molecule with a carbon-hydrogen bond, but poorly to compounds such as H<sub>2</sub>S, carbon tetrachloride, or ammonia. The carrier gas effluent from the GC column is mixed with hydrogen and burned. This combustion ionizes the analyte molecules. A collector electrode attracts the negative ions to the electrometer amplifier, producing an analog signal, which is directed to the data system input.

The XSD detector consists of a ceramic probe, platinum wire (anode) and platinum bead (cathode) mounted inside a high temperature reactor. The XSD is sensitive to halogen atoms including bromine, chlorine and fluorine. The detector reactor combusts the incoming sample into a stream of air and converts halogenated organics into free halogen atoms. The free halogen atoms will then react with alkali atoms on the surface of the electrically charged platinum bead, which functions as an electron emitter. When this reaction takes place, the current is measured and transmitted to the data system.

Depth in feet is measured and recorded using a precision potentiometer with a 100-inch linear range. The potentiometer is mounted onto the mast of the DPT rig and a counter-weight anchored to the foot of the rig. Measurements are recorded on the down stroke of the mast, as the tooling string is pushed into the ground, and is accurate within  $1/10^{th}$  of an inch. The

reference elevation (depth) reported for each individual boring is established by setting the data logger to zero feet with the membrane on the MIP/EC probe aligned with the ground surface. True boring elevations can be established with the addition of survey data if provided for in the scope of work.

# **MiHpt System Performance Test**

As a quality control check, the MIP system response is evaluated prior to and upon completion of each MIP location. An aqueous phase performance test is performed using specific compounds designed to evaluate the sensitivity of the particular probe, transfer line and detector suite to be used. The resulting values are recorded and compared to predetermined values.

The EC dipole is also evaluated using a brass and stainless steel test jig, resulting in known values of 55 and 290 mS. Results must fall within 10% of the expected values; otherwise corrective action must be performed.

The HPT sensor is also evaluated using static (no flow) and dynamic (with flow at approximately 270ml/min) hydraulic pressure measurements at two different head elevations, 6-inches apart. The difference for each test should be 0.2 psi, +/- 10%; otherwise corrective action must be performed.

# **General MiHpt Log Interpretation**

Each MiHpt log includes six separate graphs of data. The Y axis on all graphs is depth. The first three graphs are displays of measures of chemical detector response: PID, FID, and XSD, measured in microvolts ( $\mu V$ ). These graphs are a linear scale, and provide a relative comparison of total detector response between boring locations. The fourth graph displays HPT pressure in psi and flow rate measured in mL/min. In general, higher HPT pressure readings and lower flow rates indicate lower soil permeability, while lower HPT pressure readings and higher flow rate readings indicate higher soil permeability. The fifth graph shows estimated K value, in feet/day (ft/day), indicating the hydraulic permeability of the formation. The static groundwater level is also displayed on the graphs. The sixth graph displays the EC, measured in mS/m. Lower soil conductivities are indicative of coarser grained particles, such as sands and silty sands, and higher soil conductivities are indicative of finer grained particles, such as clays and silty clays.

The HPT pressure and electrical conductivity can be used to identify hydraulic permeable layers, confining units and preferential migration pathways. This information is useful for creating contaminate fate and transport models, selecting monitoring well location and screen intervals, and targeting zones for remedial injections.

# **Interpreting MIP Results and Comparison to Sampling and Laboratory Analyses**

A typically configured MIP system is effective at profiling the relative distribution of certain VOCs and relative soil types versus depth. The typical MIP system will detected VOCs with boiling points of 121°C or less; with vapor pressures above approximately 0.14 psi; and with non-polar hydrophobic compound structures. The sensitivity or in-situ detection level of a MIP system is dependent on many different factors. **COLUMBIA's** systems and protocols are standardized to provide reliable and comparable detection and logging of chlorinated VOCs (CVOCs) on the order of 200 ppb in-situ concentrations. Petroleum based VOCs are reliably logged at 1 part per million (ppm) in-situ concentrations. Each of **COLUMBIA's** MIP system

configurations are performance tested prior to use and if requested, MIP systems may be specially configured for atypical compounds of concern (COCs) and site conditions.

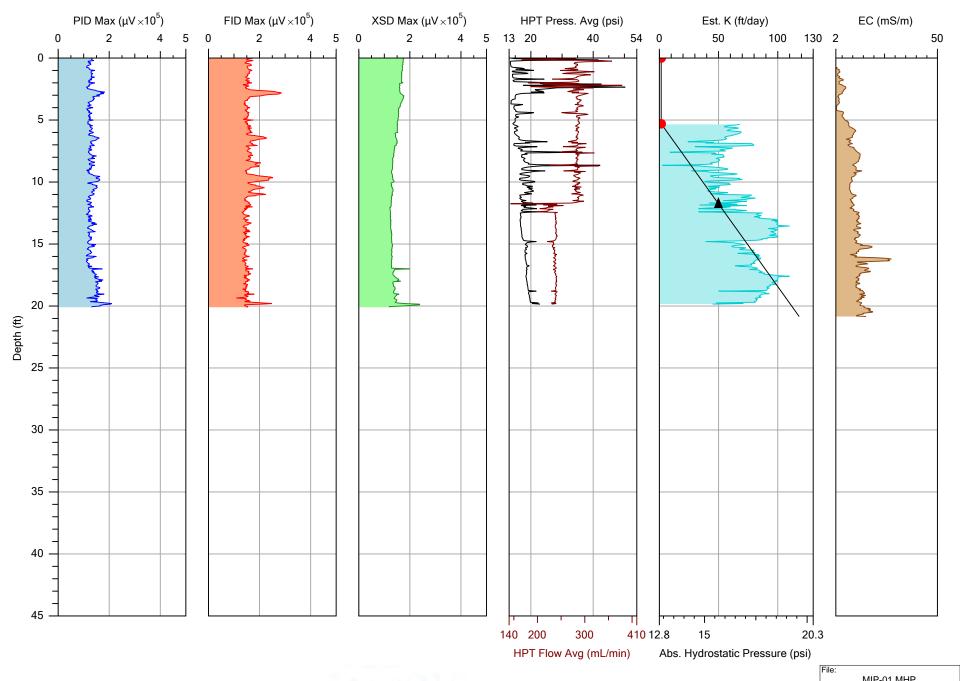
An understanding of the principles of operation and performance of the configured MIP detectors is essential to properly interpreting the MIP log results. For example, a CVOC with an ionization potential greater than 10.2 eV will respond on the XSD but not on the PID equipped with a 10.2 eV lamp. A hydrophillic compound such as an alcohol or ketone will normally be scrubbed out of the MIP gas stream by the MIP Membrane and the installed dryer and never reach the detectors. A CVOC with a small number of chlorine atoms such as vinyl chloride or cis 1,2-Dichloroethylene (DCE) will have a lower response on the XSD than a CVOC containing three or four chlorine atoms. Each shortfall in detector or system performance can be overcome by properly configuring and testing the MIP system for the site specific COCs prior to use. Additionally, the in-field performance tests performed before and after each boring are critical to monitor the performance of the MIP system from the membrane through to the data logging system.

Generalized correlations between MIP response and laboratory sample results can be inferred, but cannot be viewed as a linear comparison. MIP response and laboratory results are collected, analyzed and reported in different units and by different procedures, so correlation is not an exact one-to-one comparison. For example, not all VOCs present and analyzed in laboratory instruments with compound separation are detected and measured by a typical MIP system. The MIP process uses a membrane extraction process from a heated zone of varying subsurface matrix of soil, water, and/or vapor. Soil and groundwater results involve the collection of a sample, extraction of sub-sample at the surface, and then transporting them to a laboratory for further extraction and analysis. These two processes are different by definition.

Unusual or invalid responses on the MIP system can result from malfunctions such as carrier or makeup gas leakage, gas flow blockage, heater failure, and carryover of water vapor or excessive chemical saturation. Each MIP detector will respond differently to each of these malfunctions. The most common cause of false positive responses for CVOCs is water carryover or blockage of carrier gas flow. The most common causes of false negative are improperly adjusted gas flows or leakage and inoperative detectors. **COLUMBIA's** operators are trained to recognize these problems and to take the appropriate corrective action in the field.

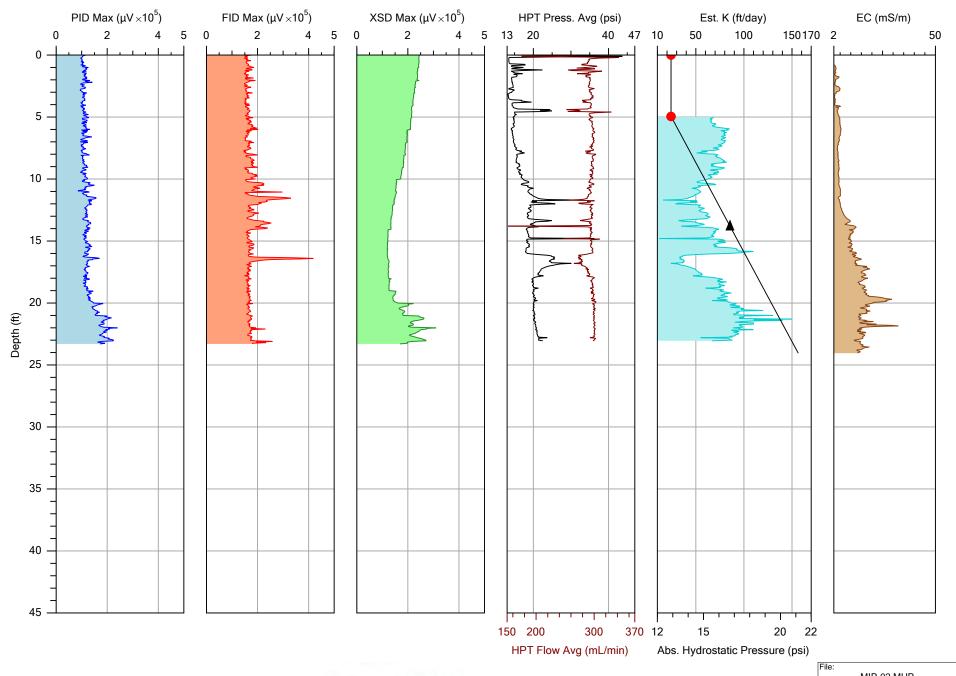
# APPENDIX B MiHpt Logs, 2013 Visit





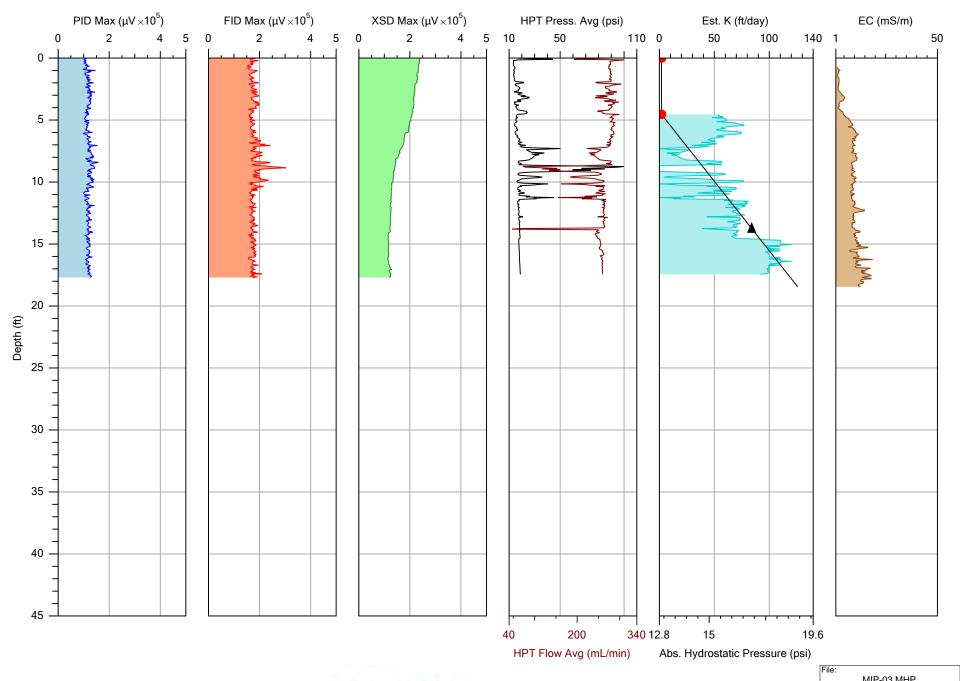


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URS	



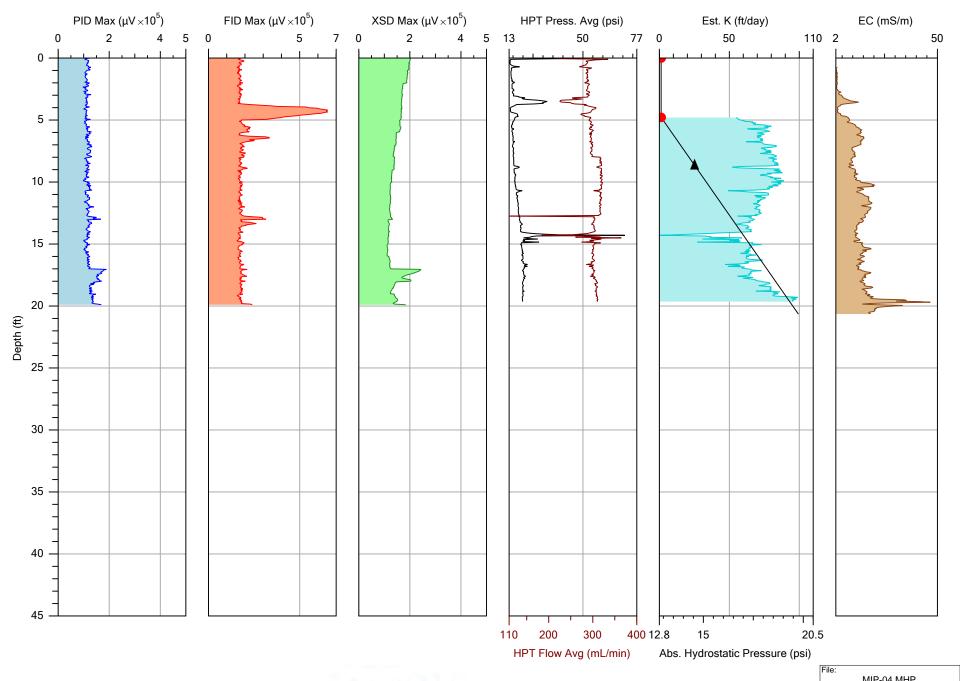


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Former Aerovox Facility	URS	



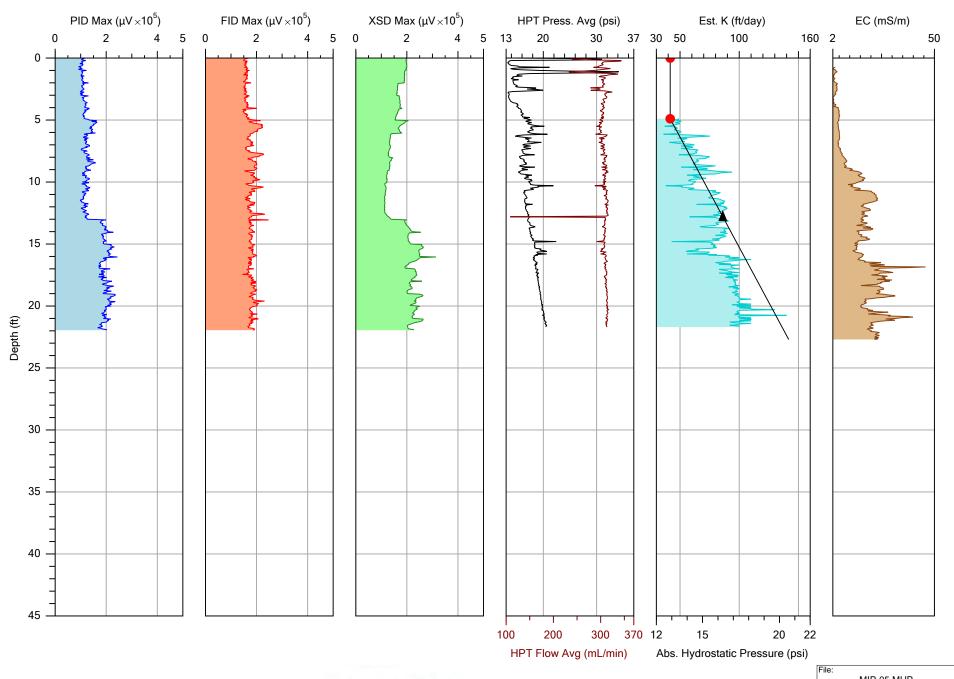


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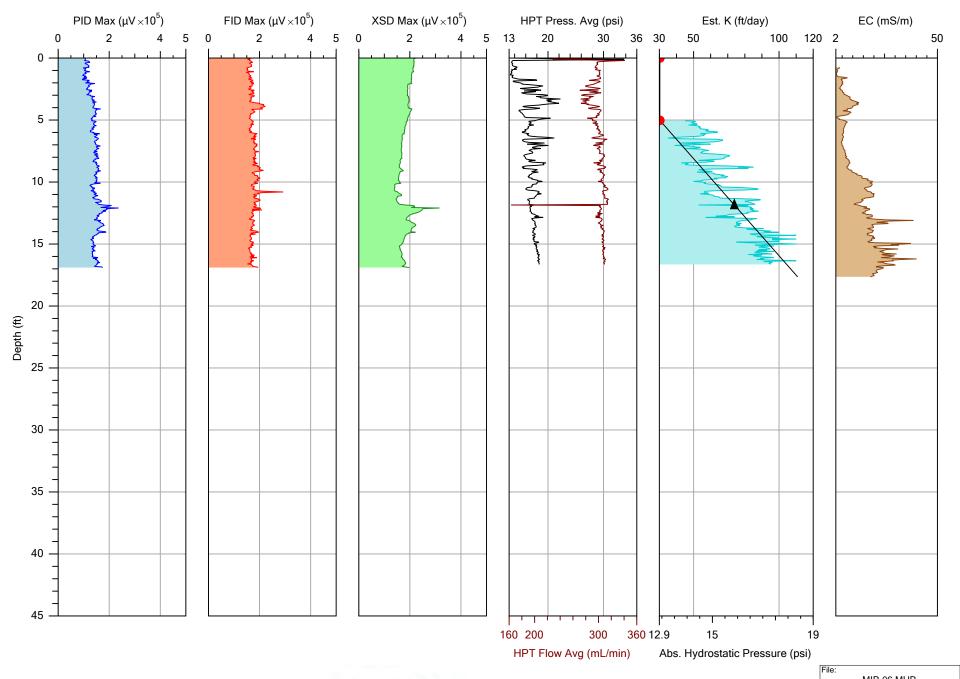


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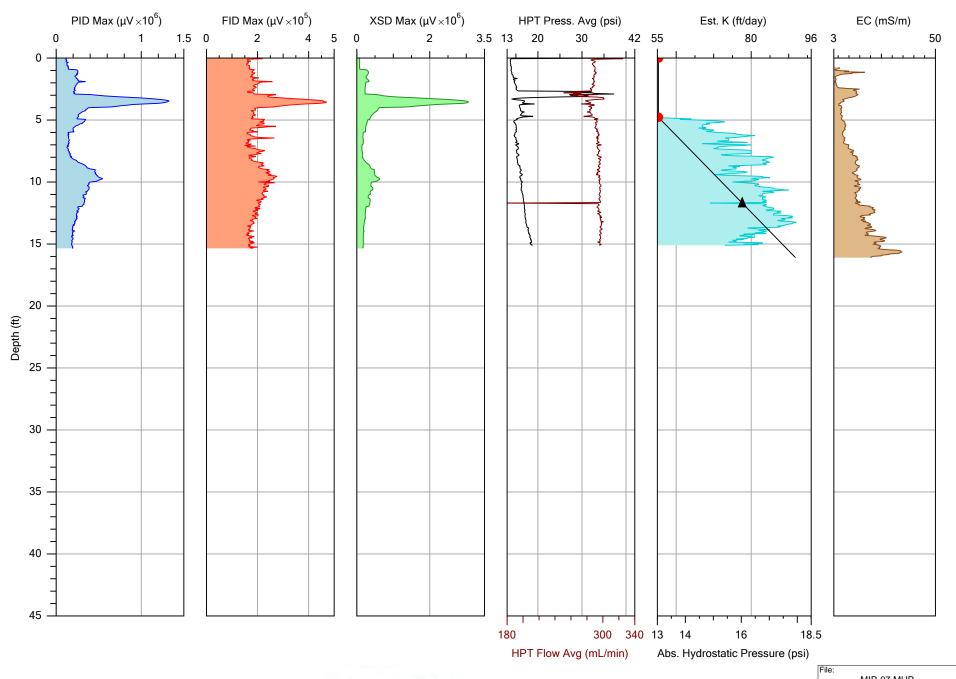


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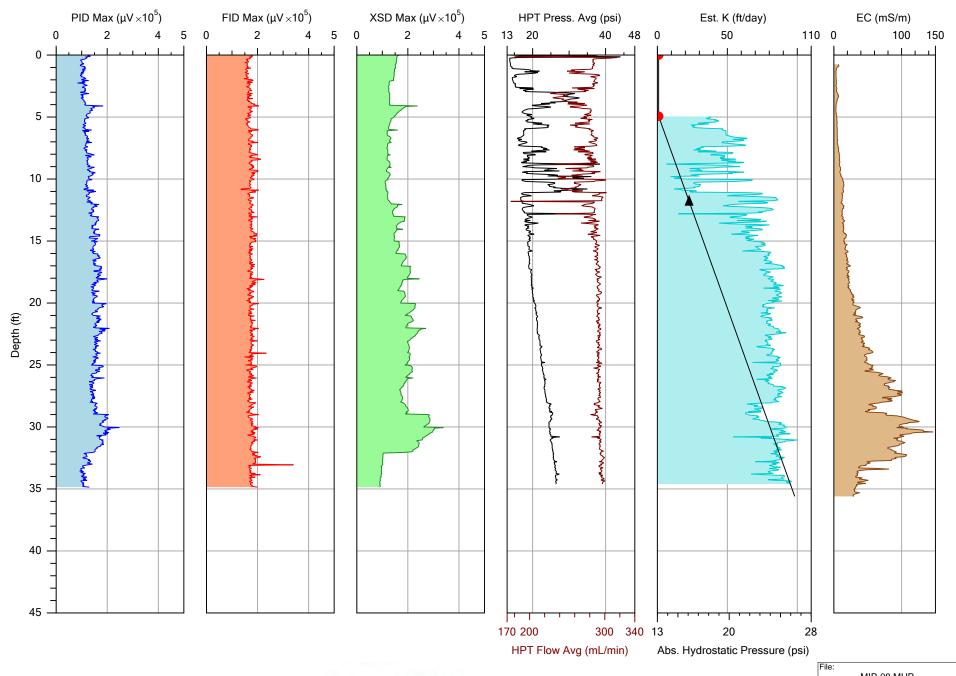


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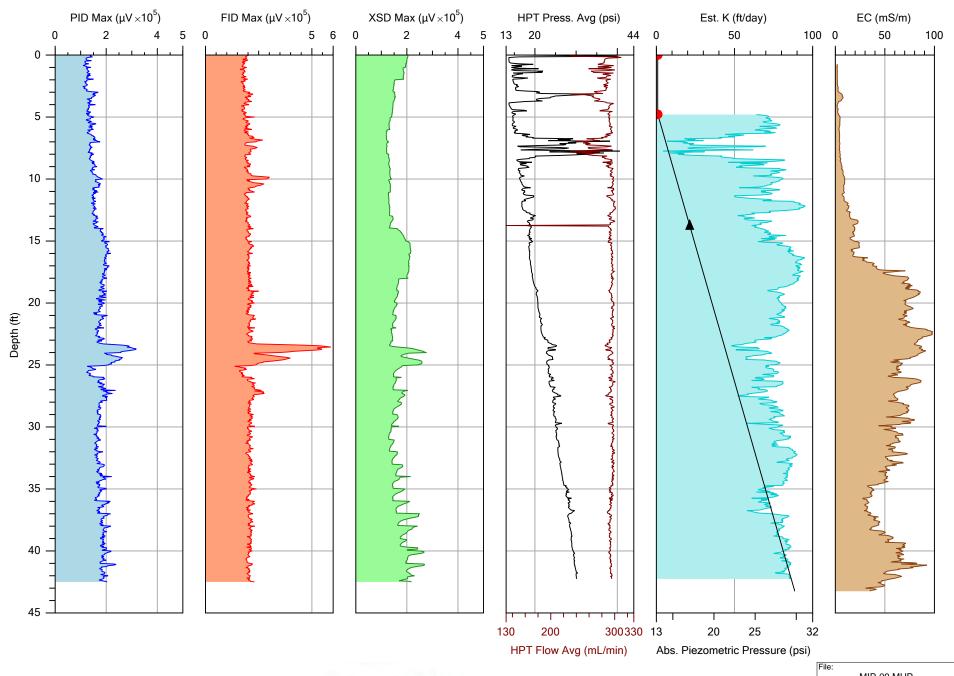


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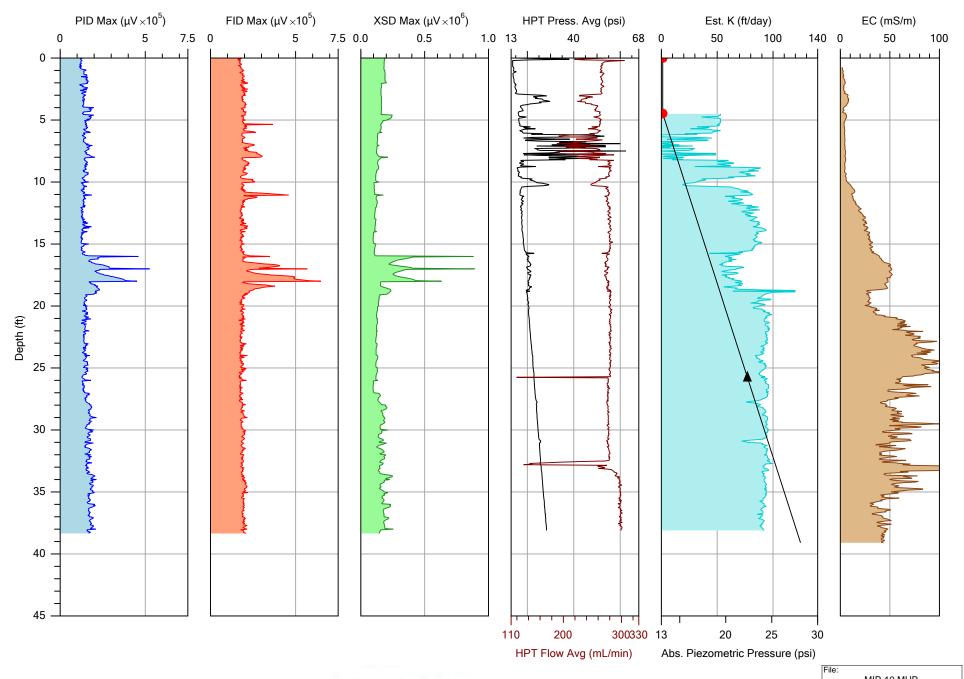


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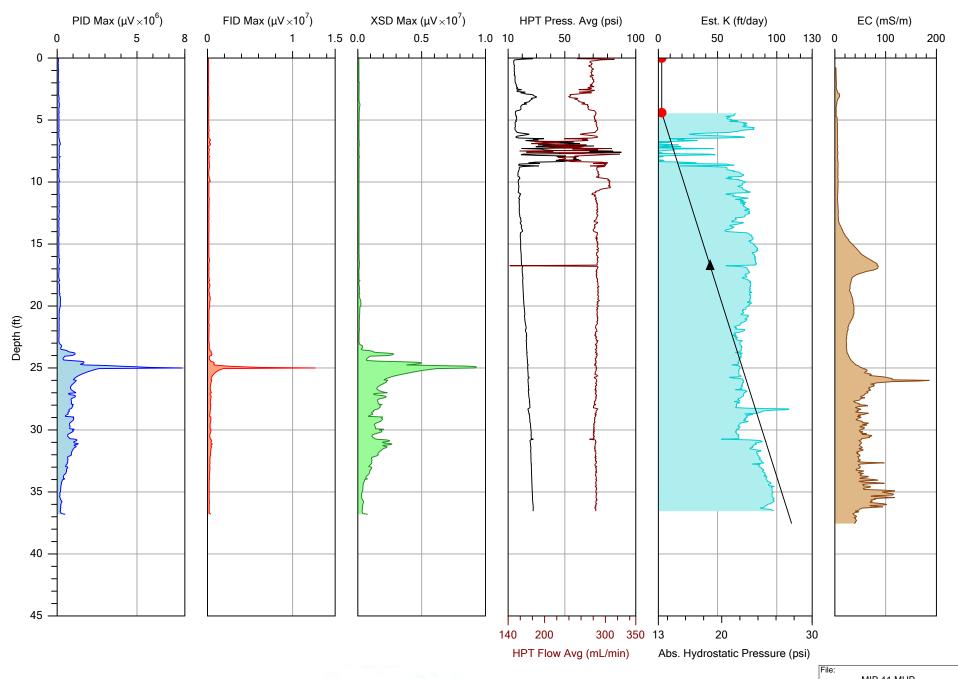


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Columbia Technologies	MMA	11/19/2013
Project ID:	Client:	Location:
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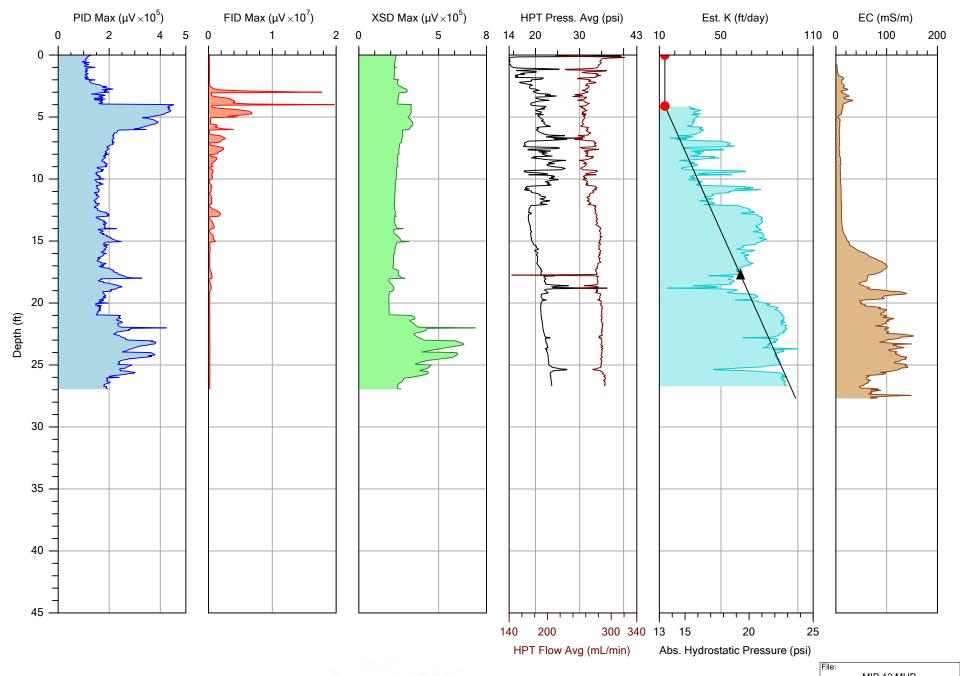


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



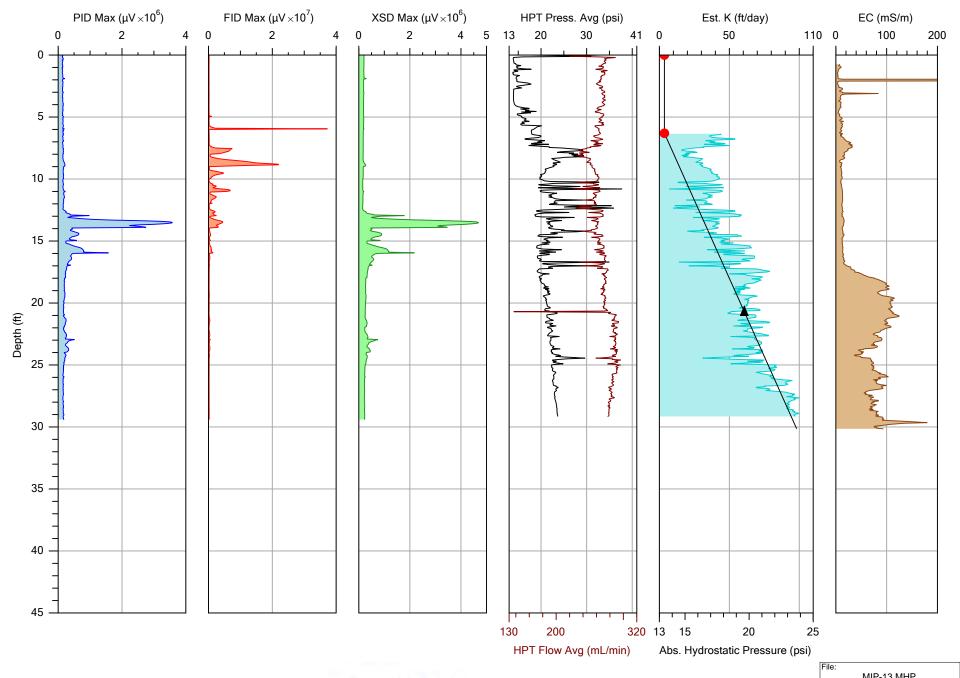


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



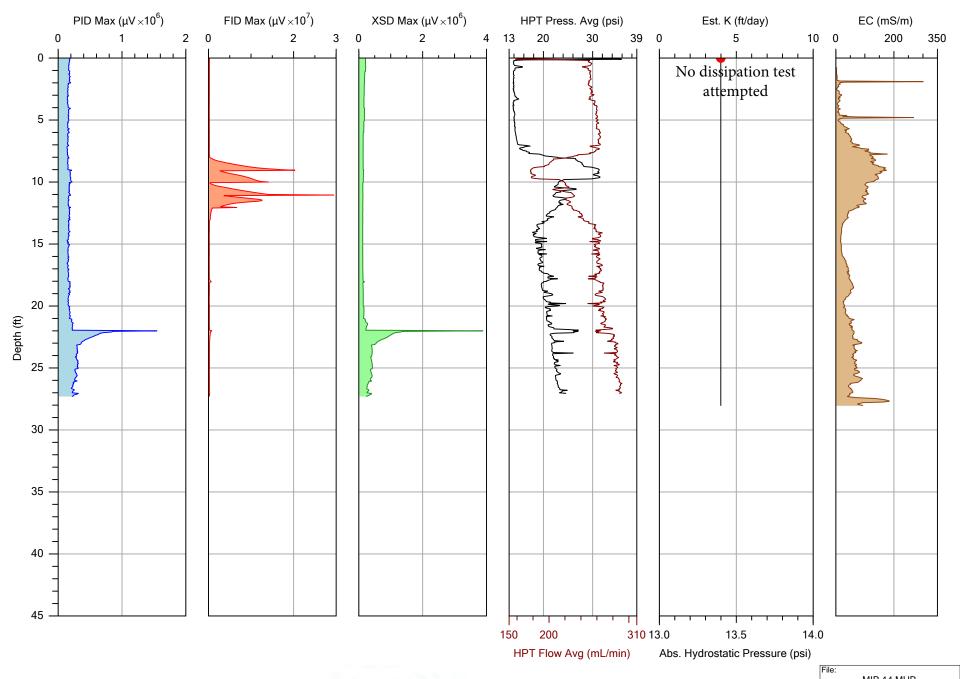


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



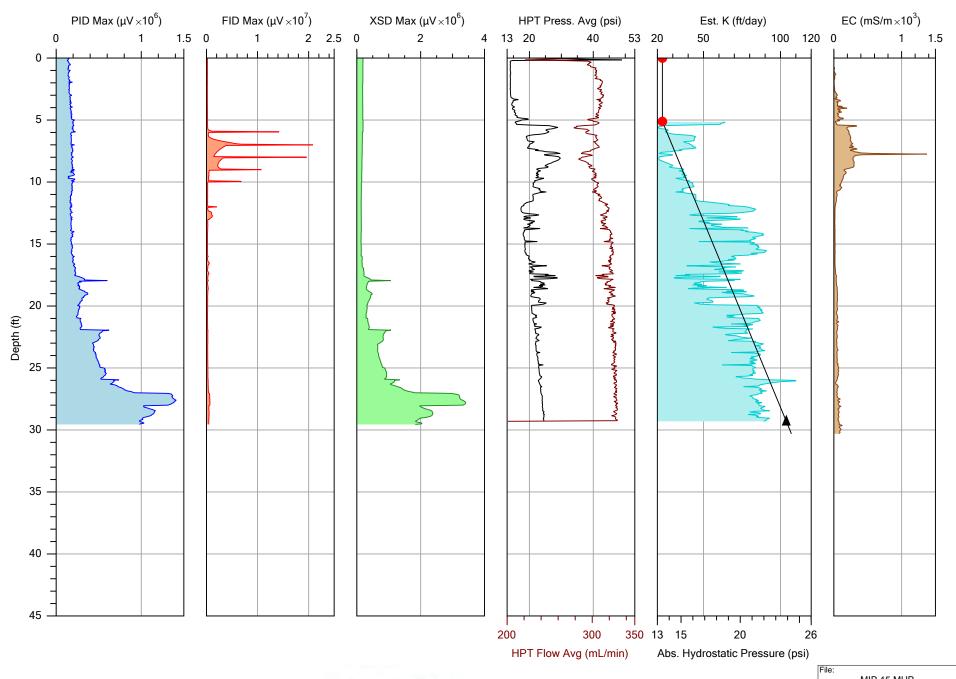


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Project ID:	Client:	Location:
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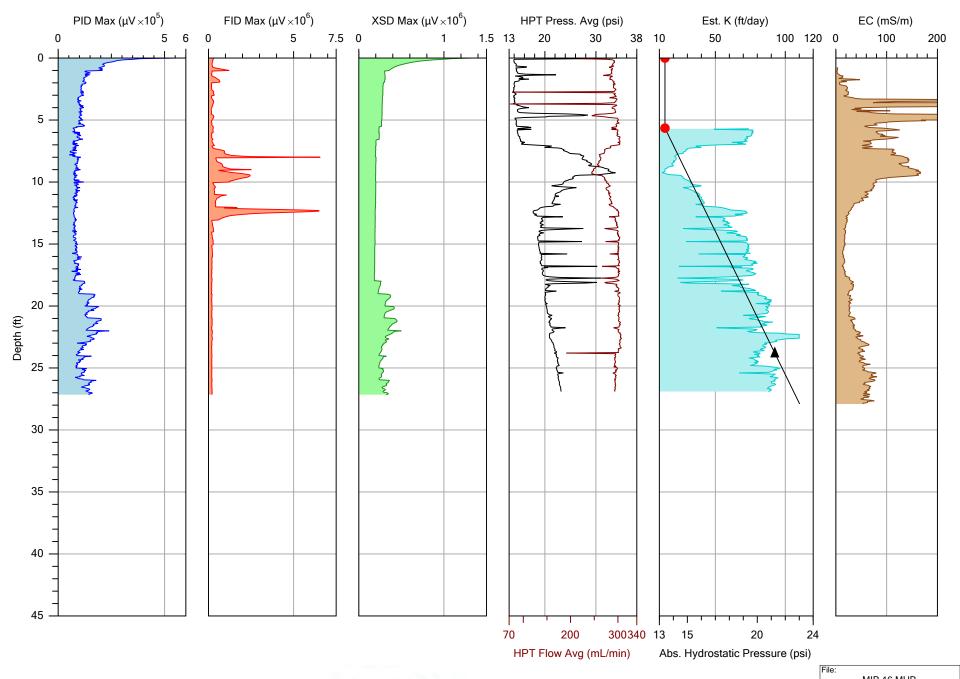


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Columbia Technologies	MMA	11/20/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



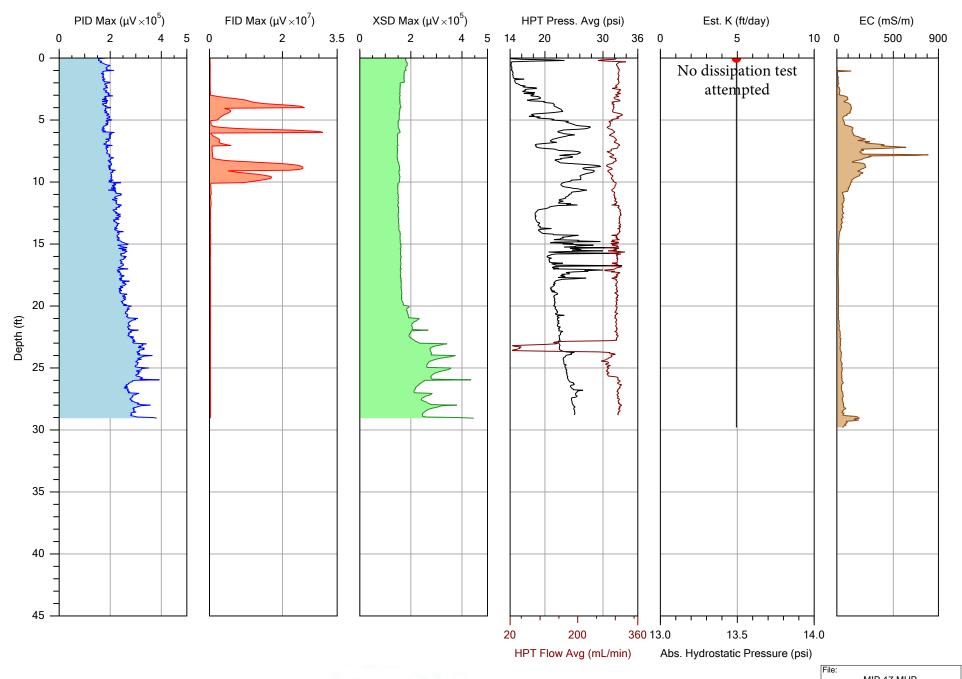
	COLUMBIA
-	<b>TECHNOLOGIES</b>

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Columbia Technologies	MMA	11/20/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



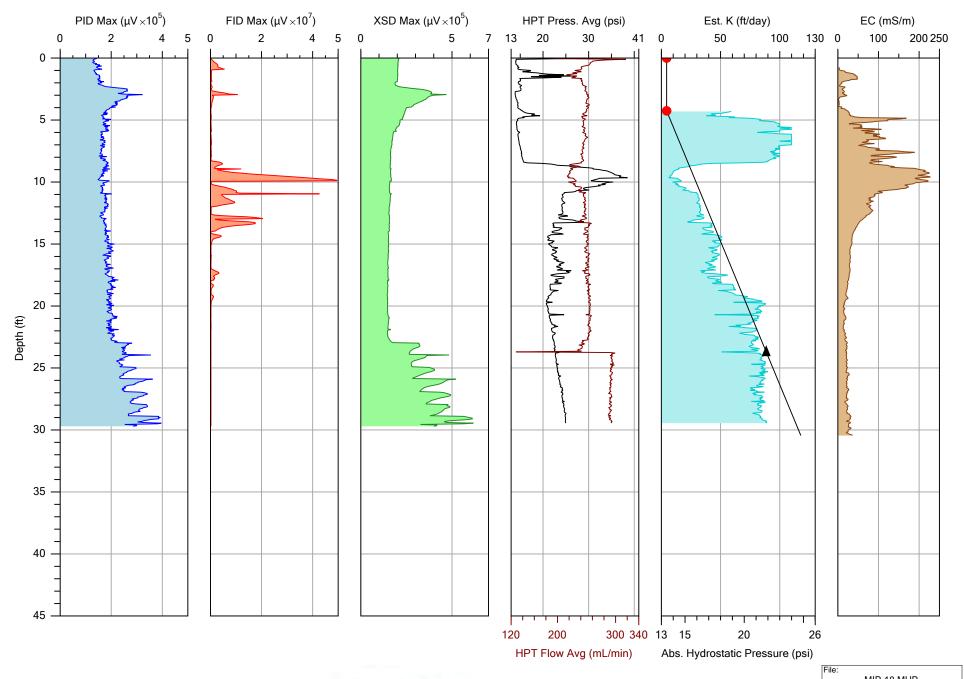


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



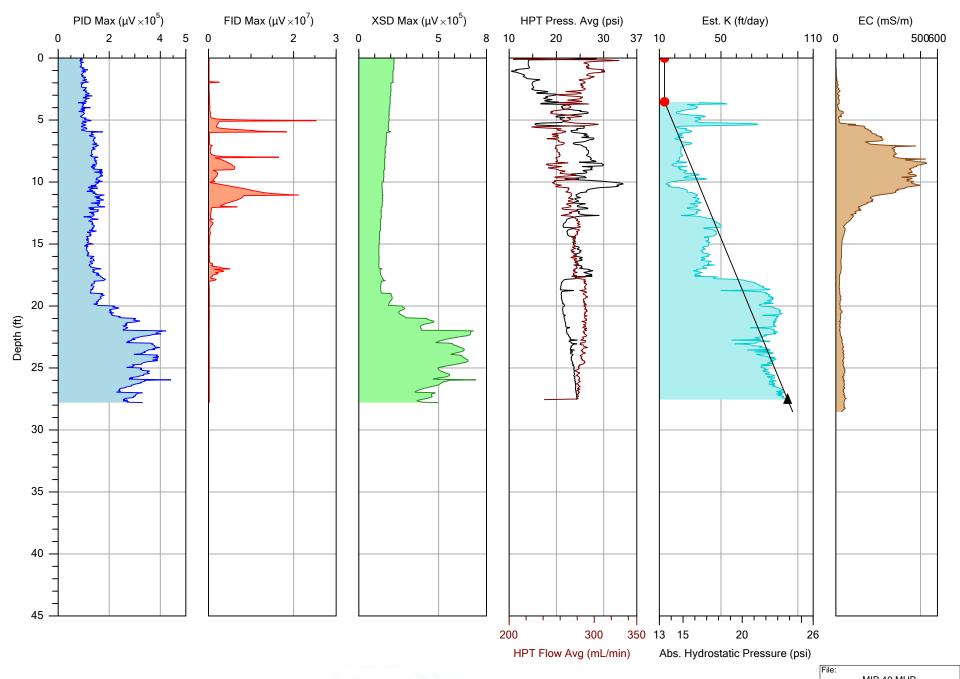


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



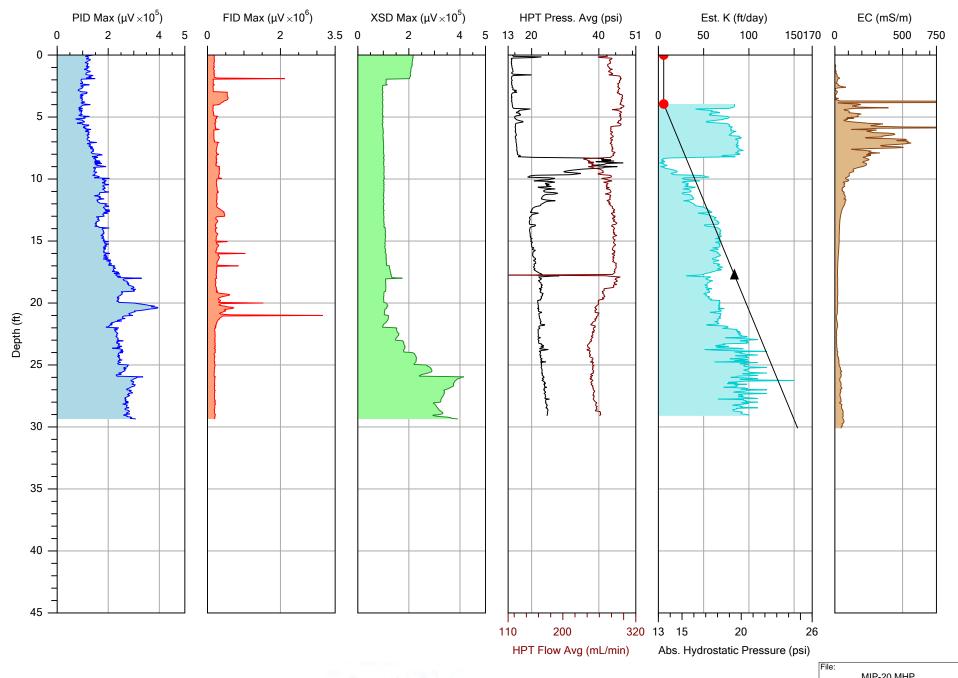


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Former Aerovox Facility	URS	



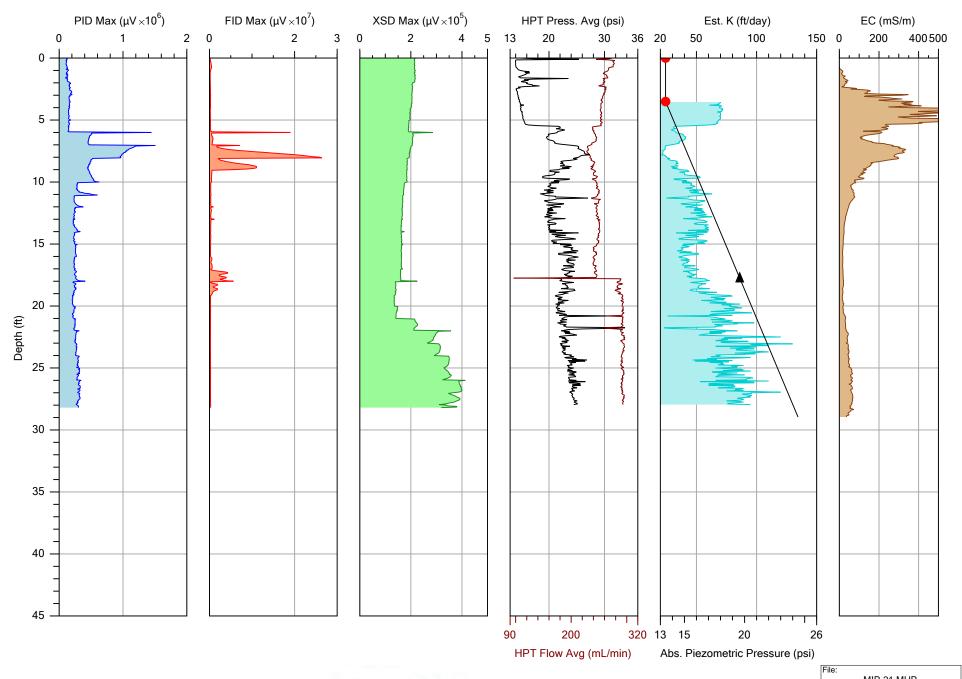


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



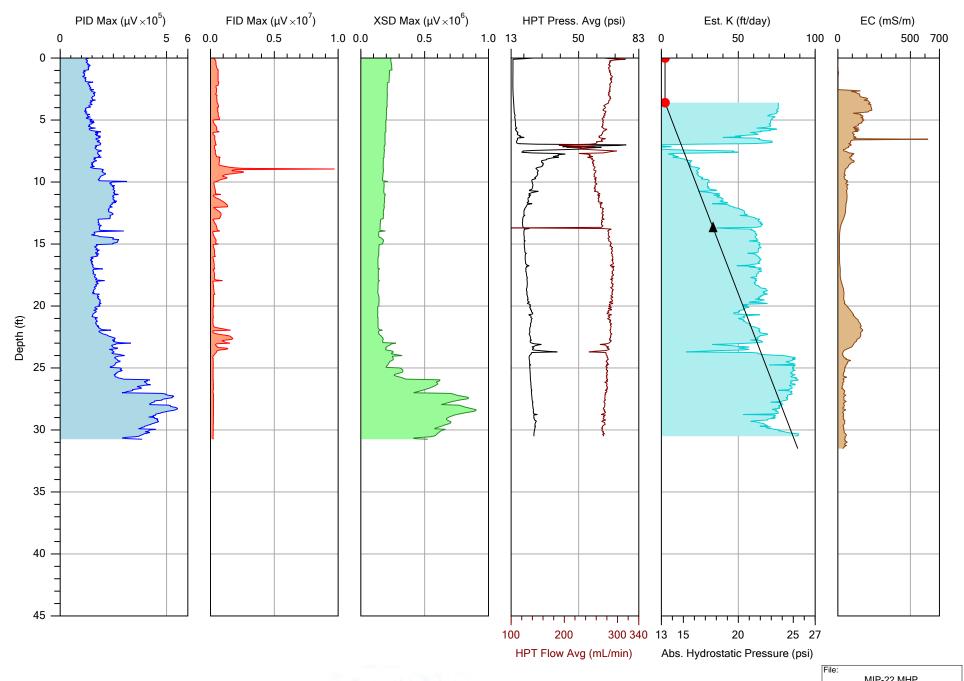


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



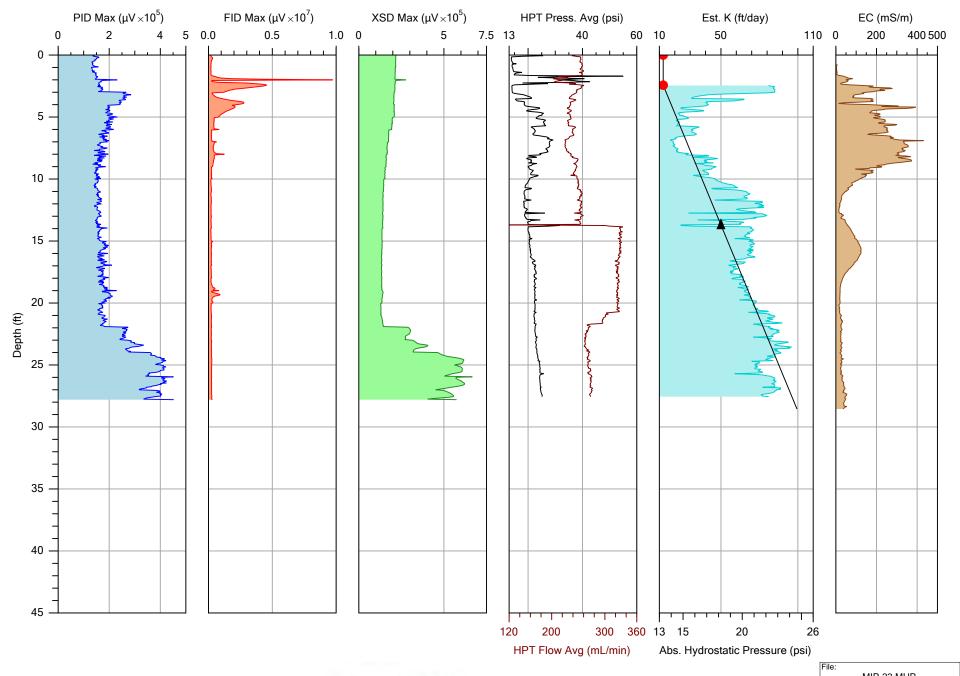


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



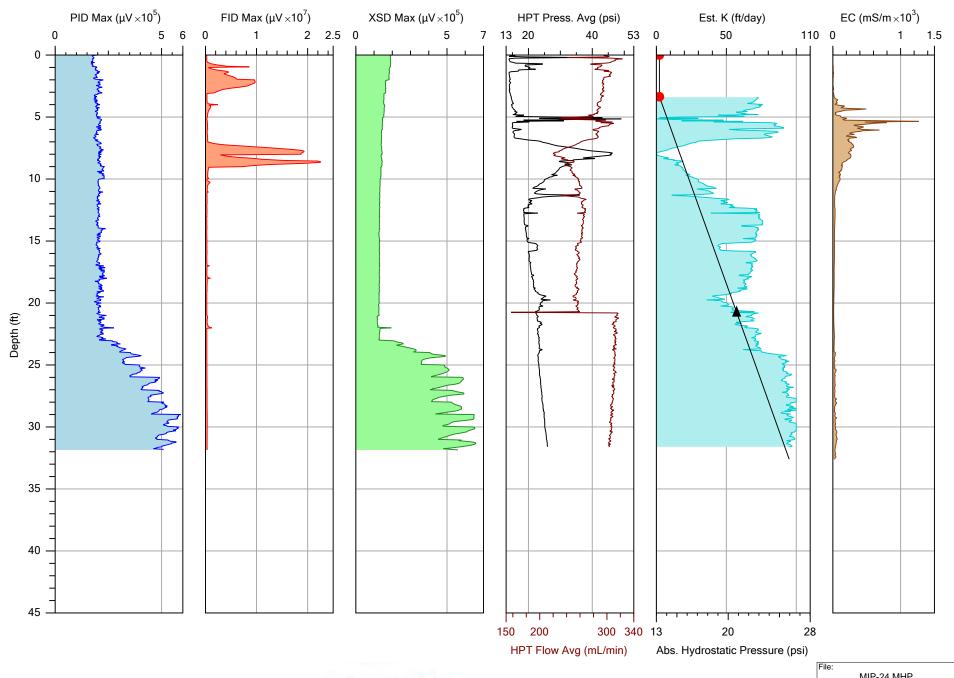


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Columbia Technologies	MMA	11/22/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



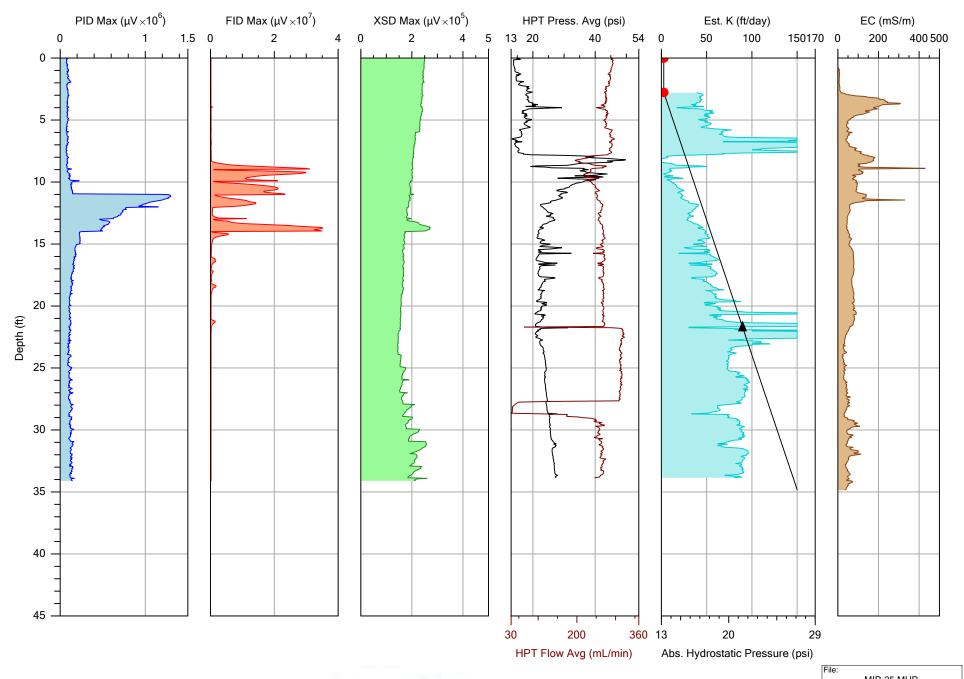


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



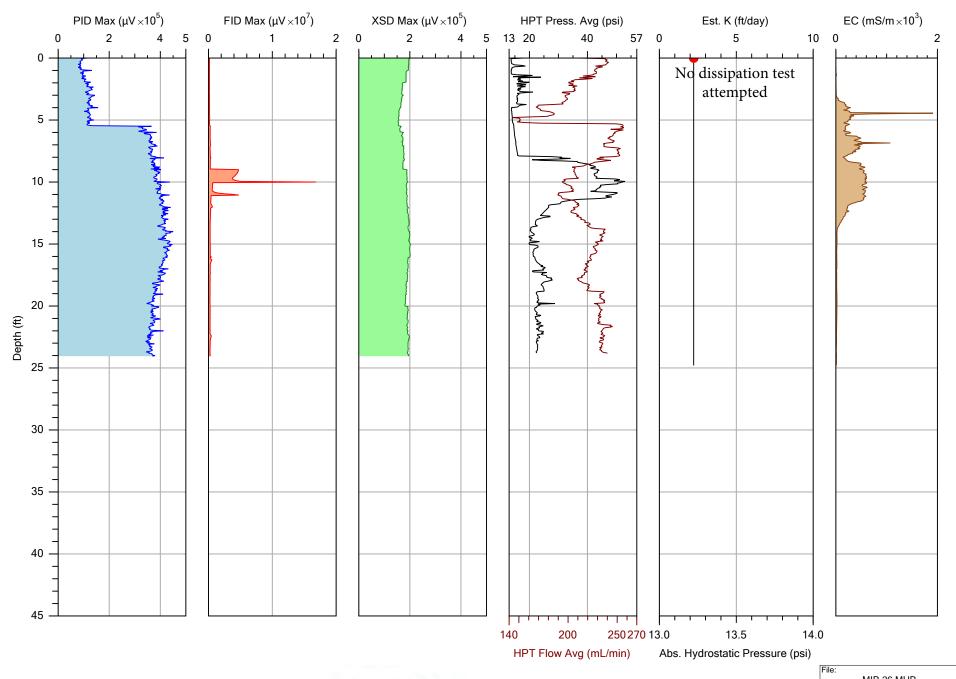


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Columbia Technologies	MMA	11/22/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



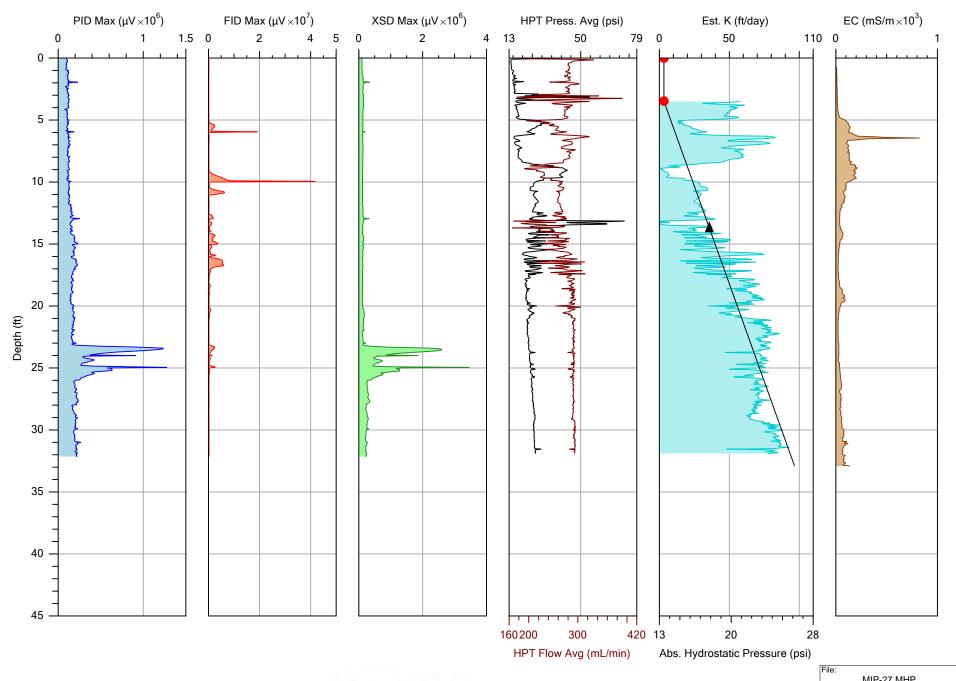


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Columbia Technologies	MMA	11/22/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



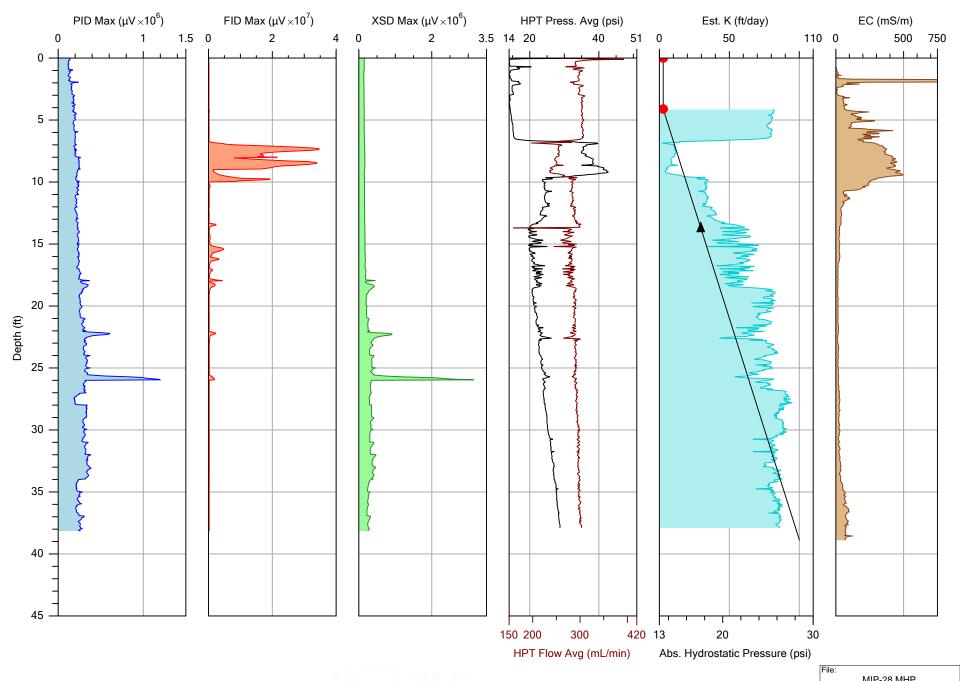


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Columbia Technologies	MMA	11/22/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



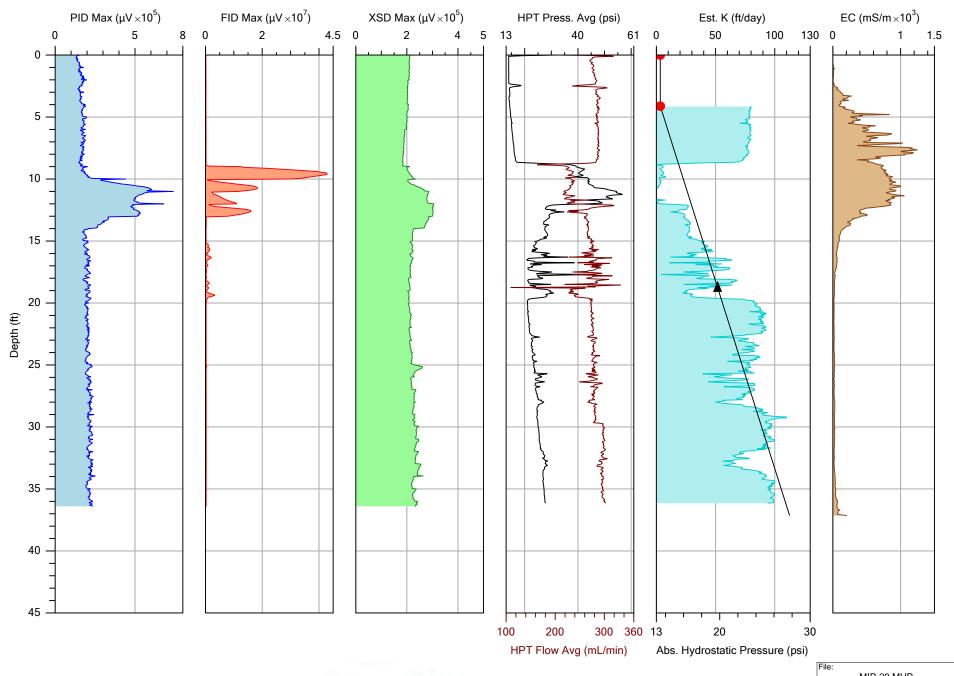


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URS		
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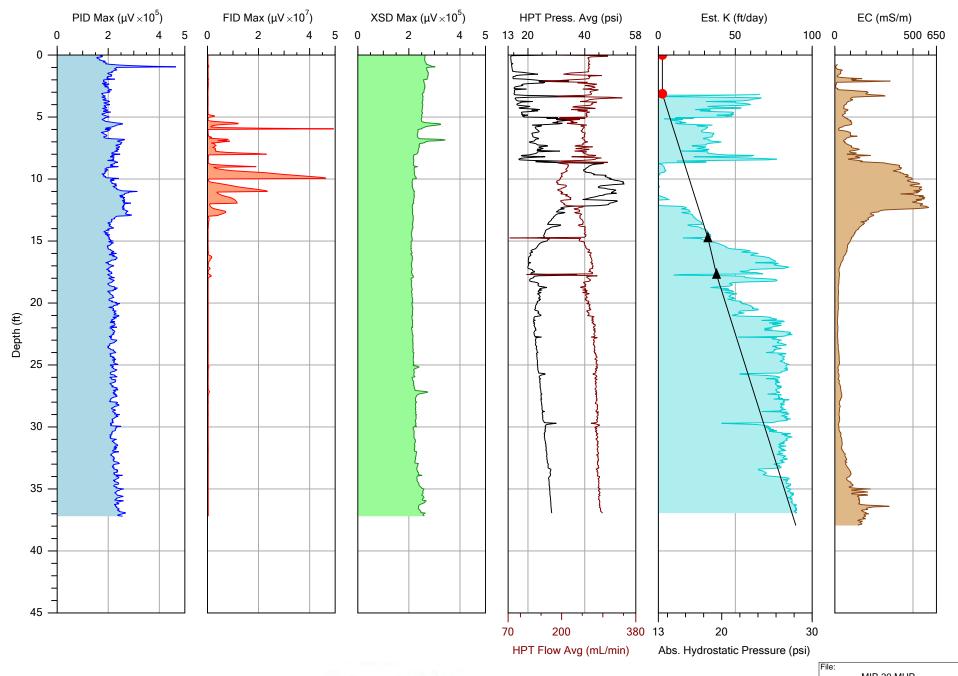


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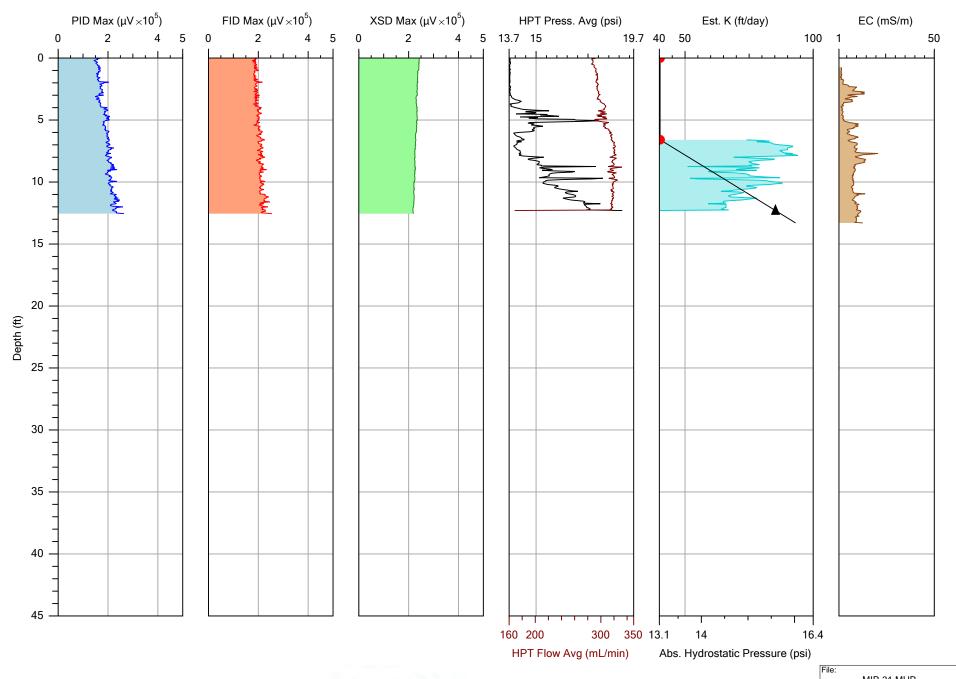


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Former Aerovox Facility	URS	



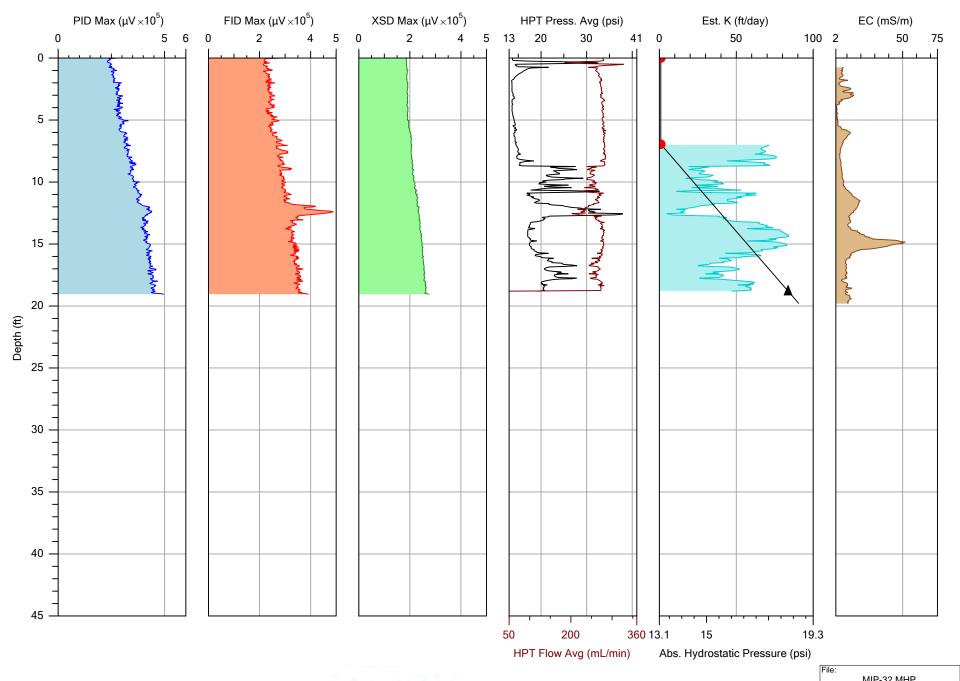


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Columbia Technologies	MMA	11/26/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



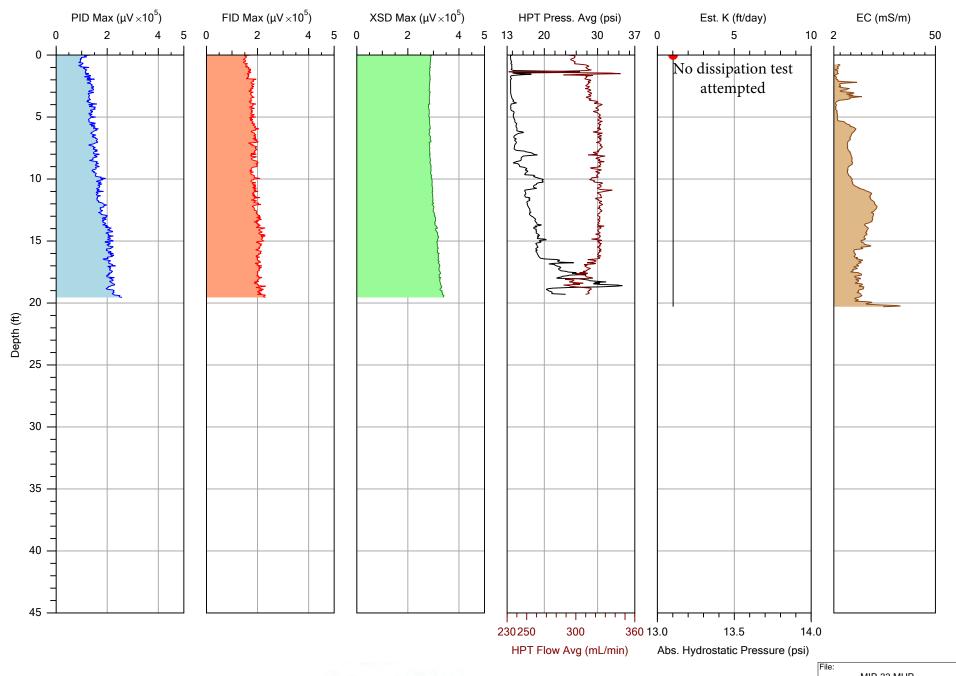


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Columbia Technologies	MMA	11/23/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



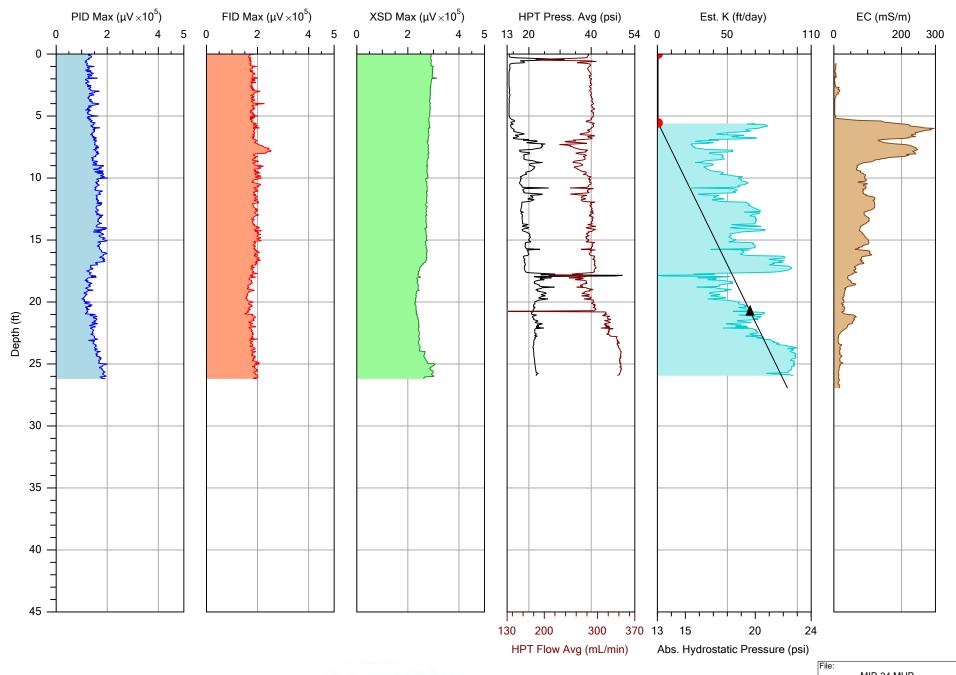


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MMA	11/23/2013	
Client:	Location:	
URS		
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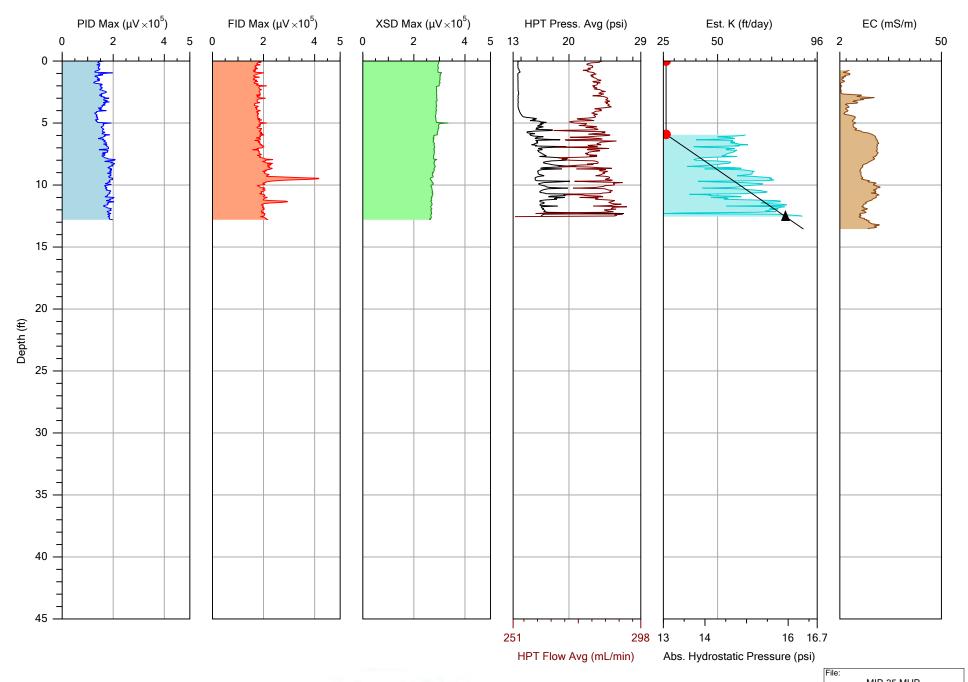


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Columbia Technologies	MMA	11/23/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



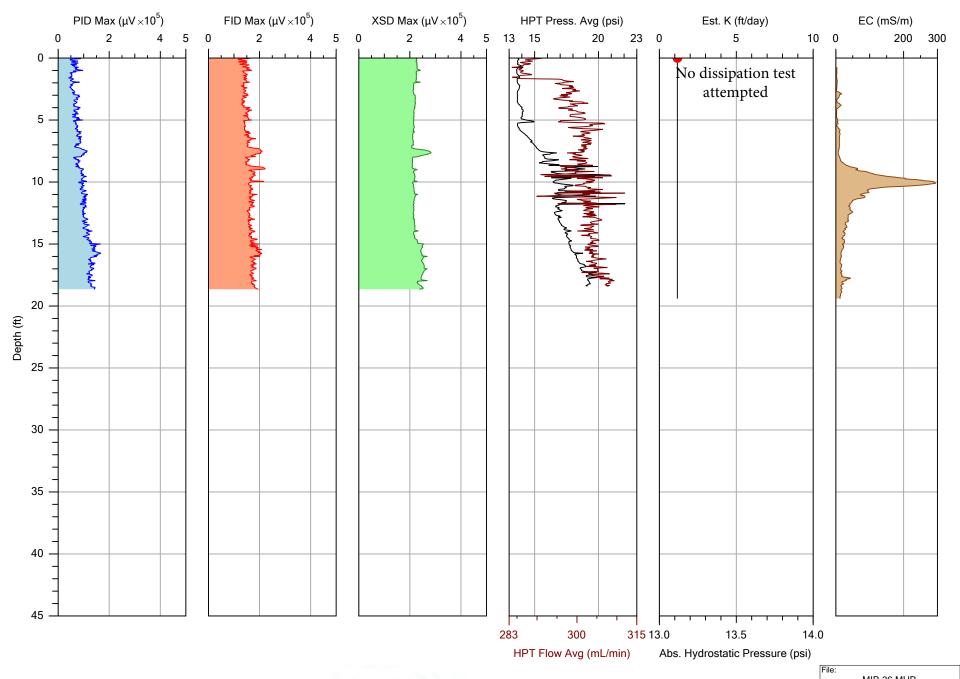


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Former Aerovox Facility	URS	



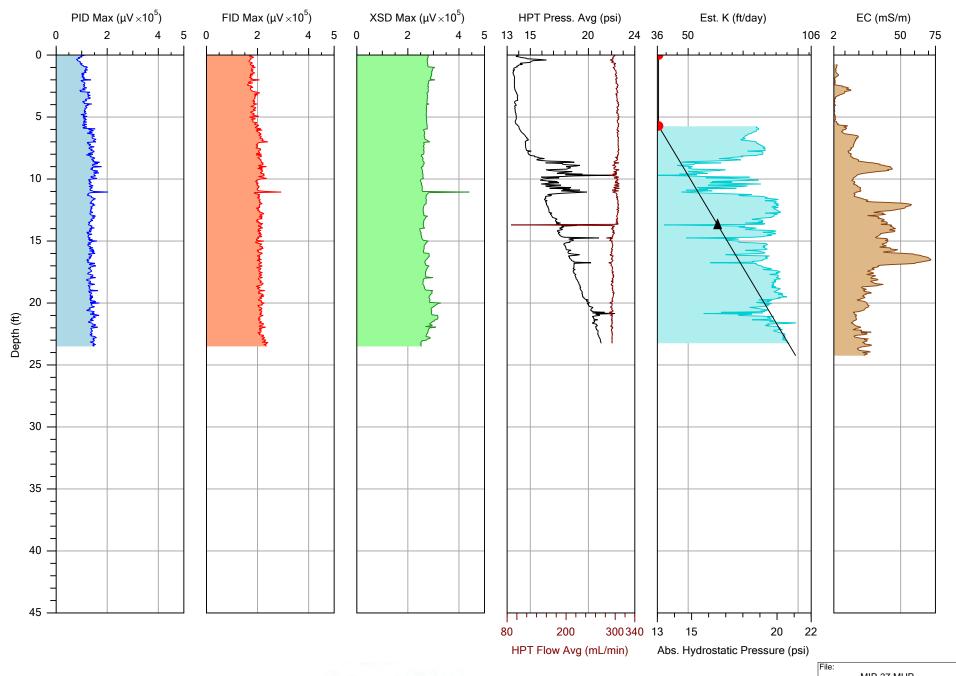
	COLUMBIA
0 0	TECHNOLOGIES

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Columbia Technologies	MMA	11/23/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



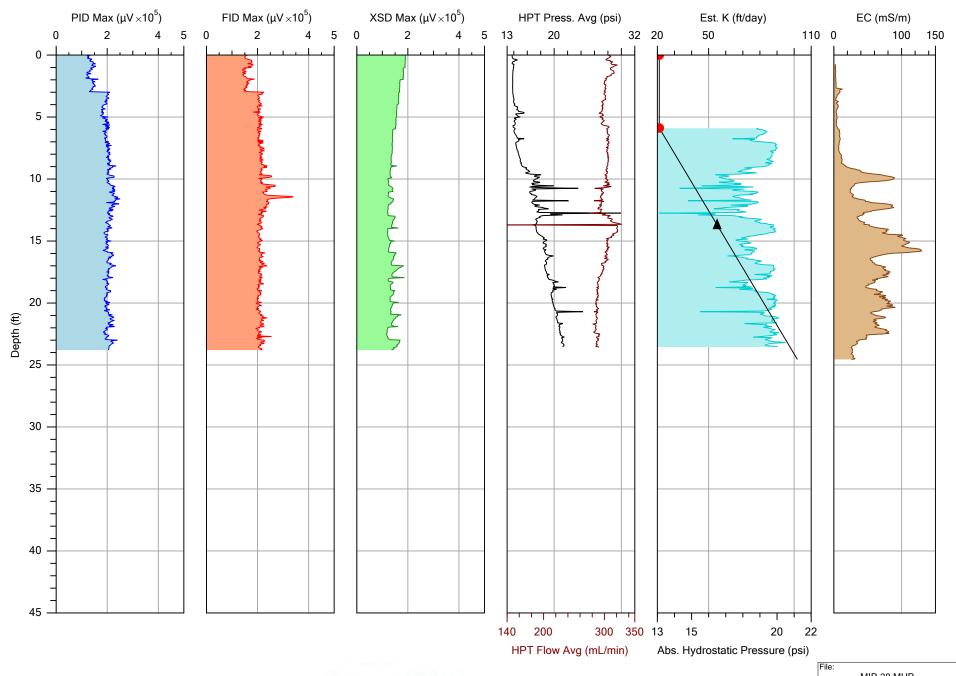


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



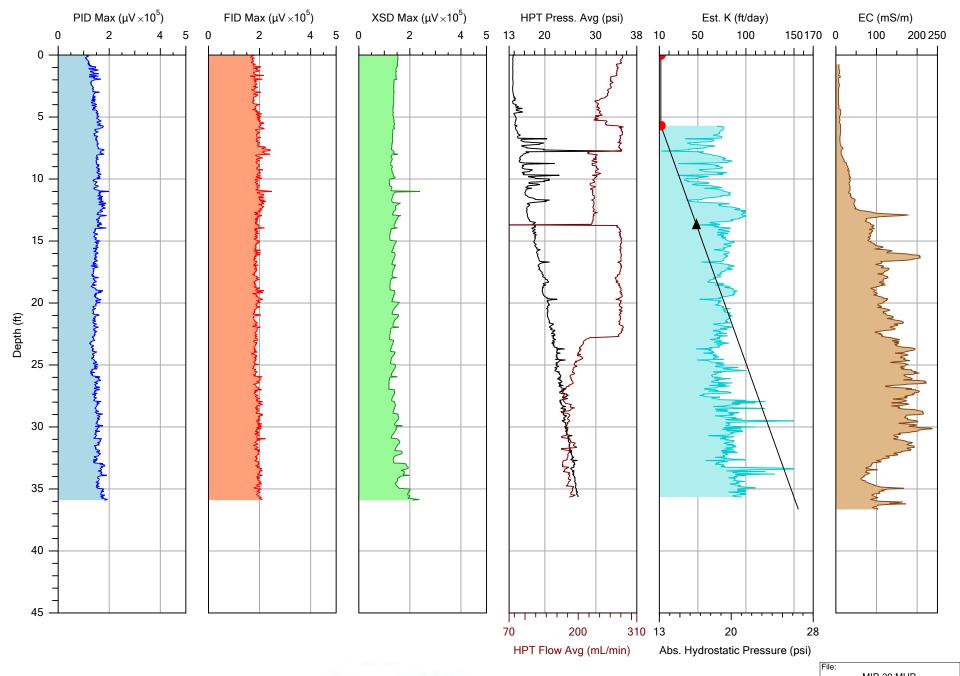


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Columbia Technologies	MMA	11/23/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



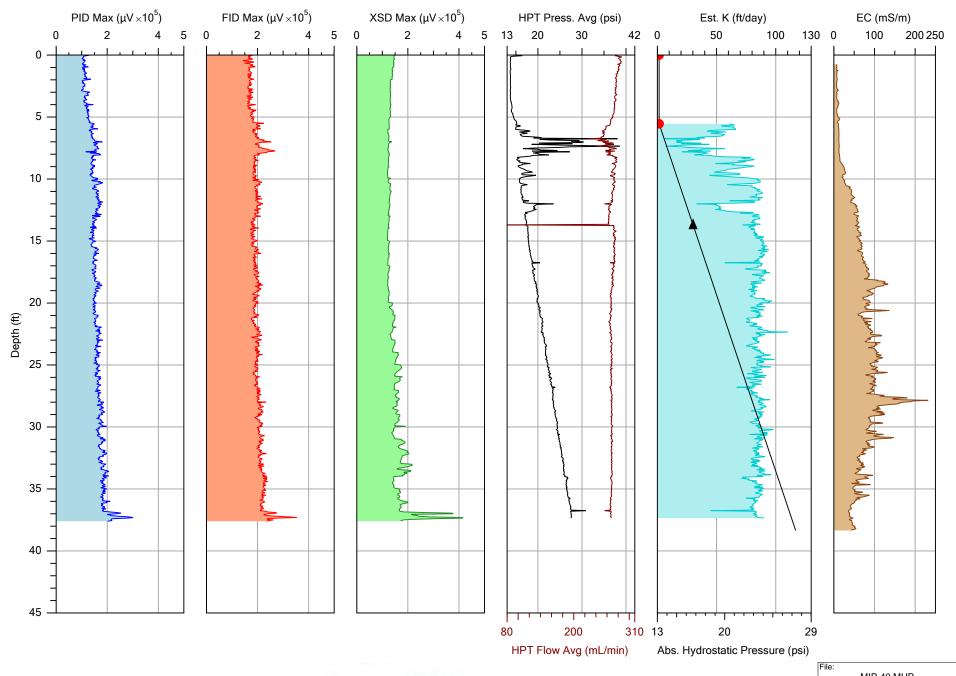


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Columbia Technologies	MMA	11/24/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



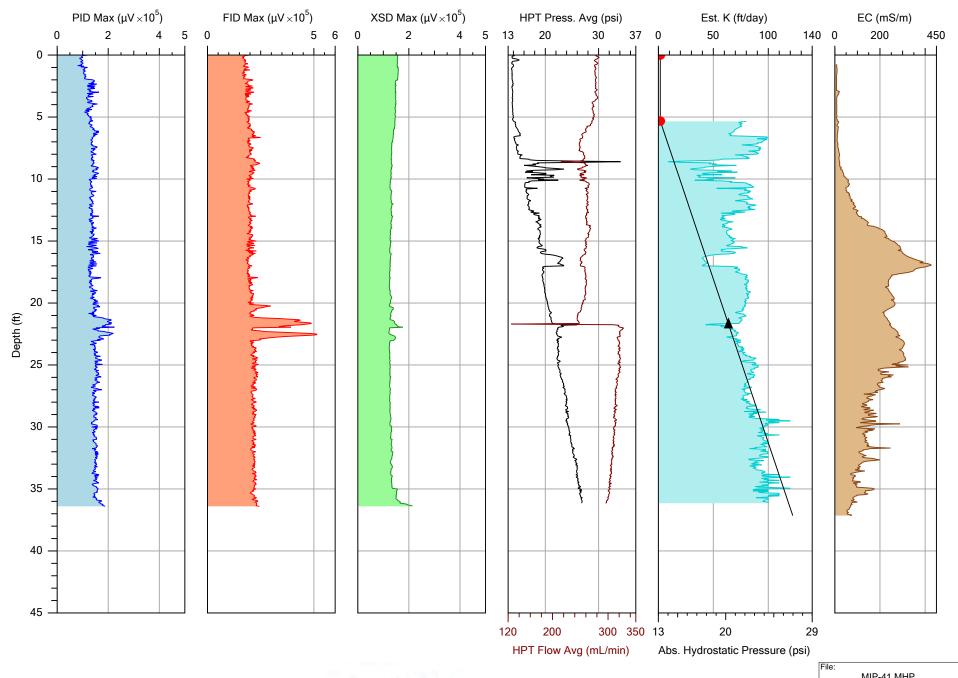


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Columbia Technologies	MMA	11/24/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



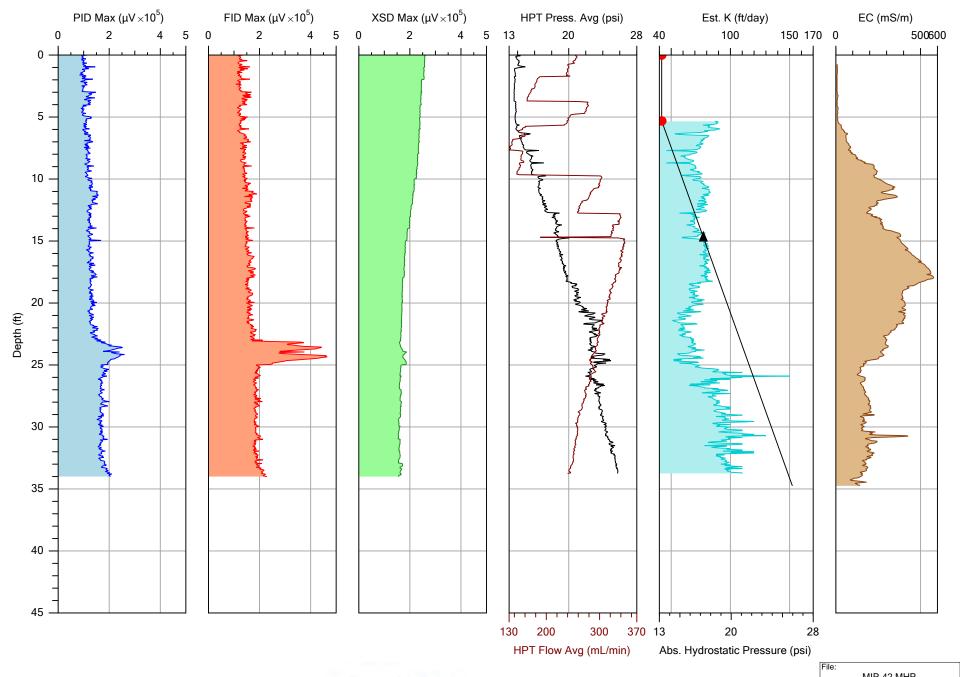


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Columbia Technologies	MMA	11/24/2013	
Project ID:	Client:	Location:	
Former Aerovox Facility	URS		



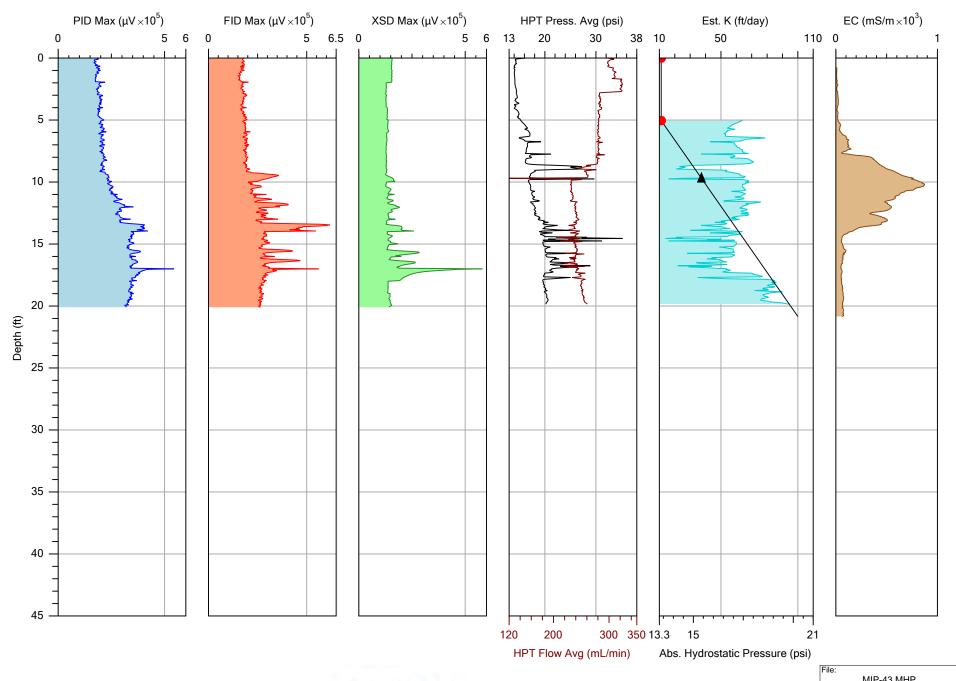


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Columbia Technologies	MMA	11/24/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



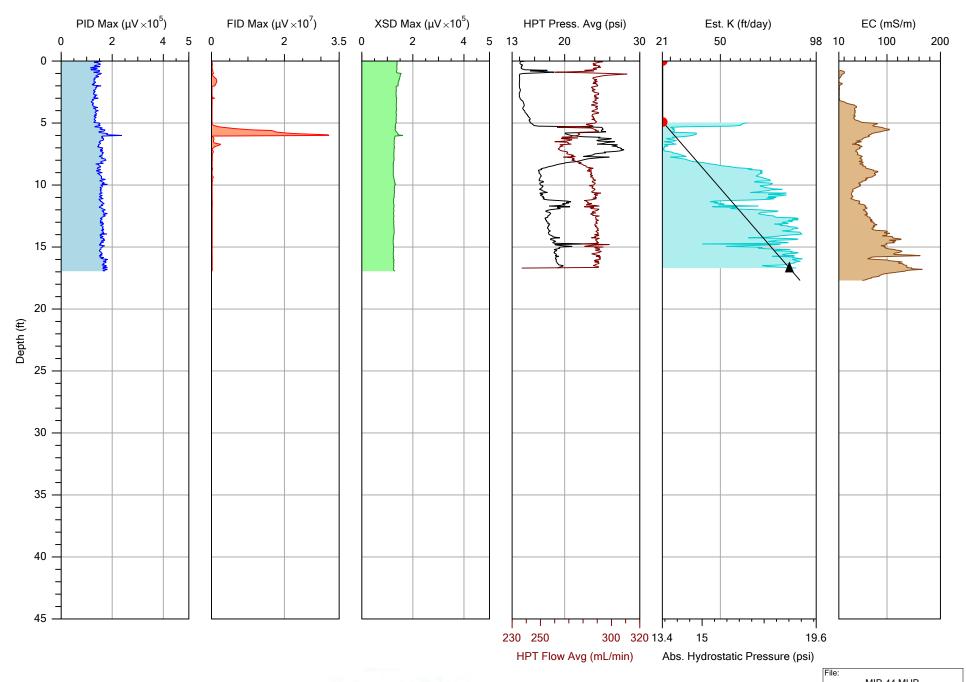


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Columbia Technologies	MMA	11/24/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	





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MMA	11/25/2013	
Client:	Location:	
URS		
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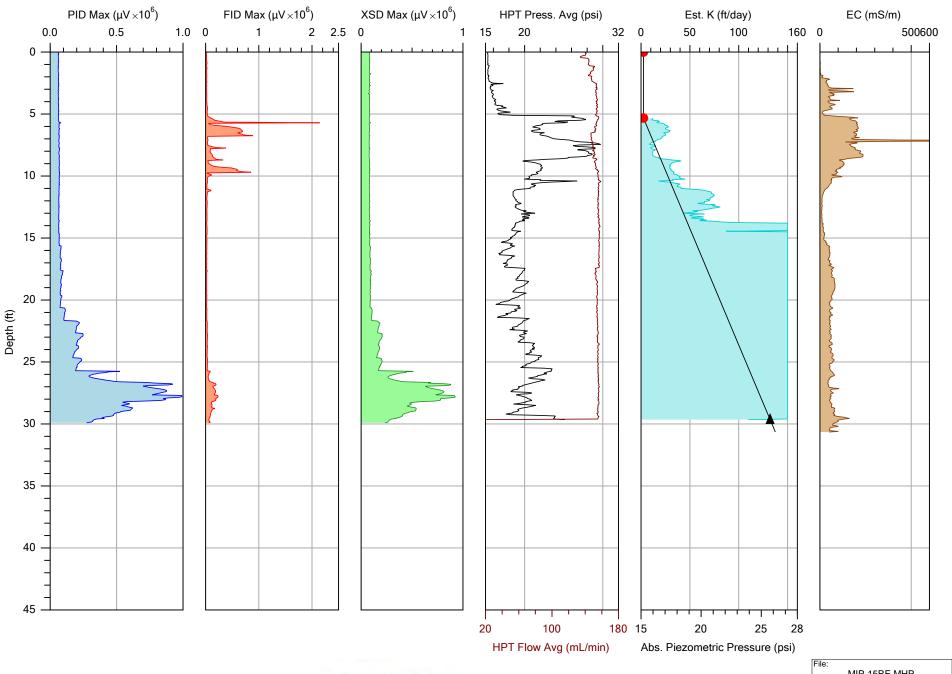




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Columbia Technologies	MMA	11/25/2013
Project ID:	Client:	Location:
Former Aerovox Facility	URS	

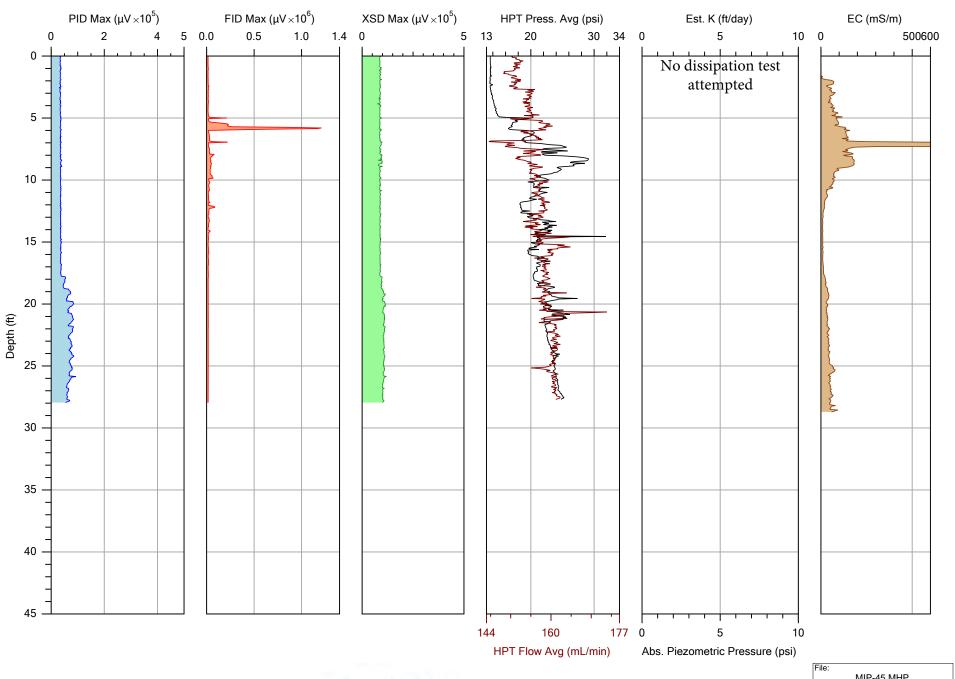
## APPENDIX C MiHpt Logs, 2014 Visit





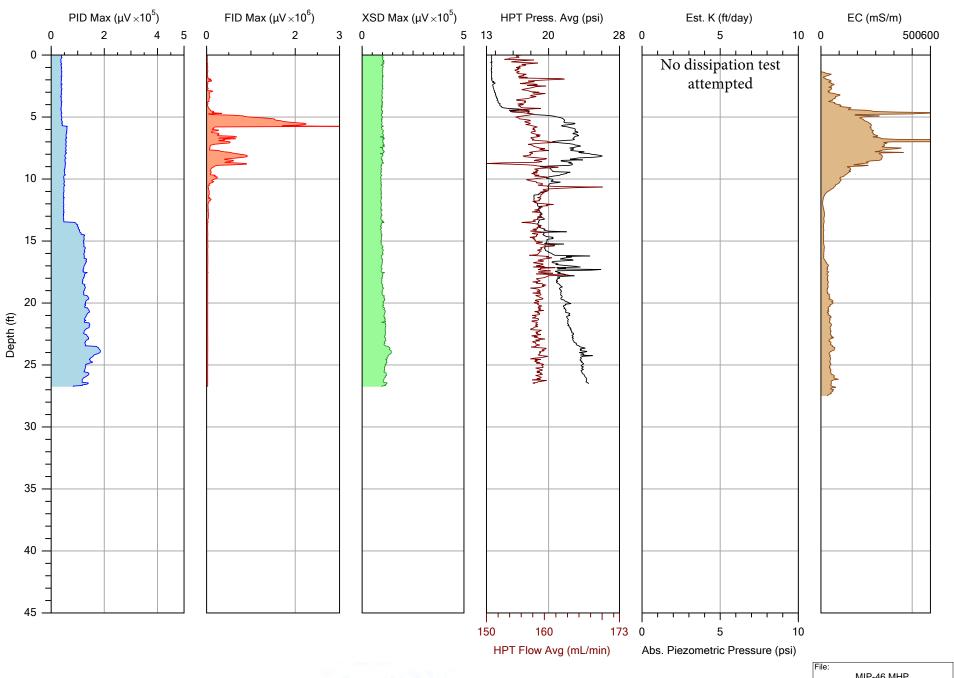
COLUMBIA
ECHNOLOGIES

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COLUMBIA Technologies	DJM	7/15/2014
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



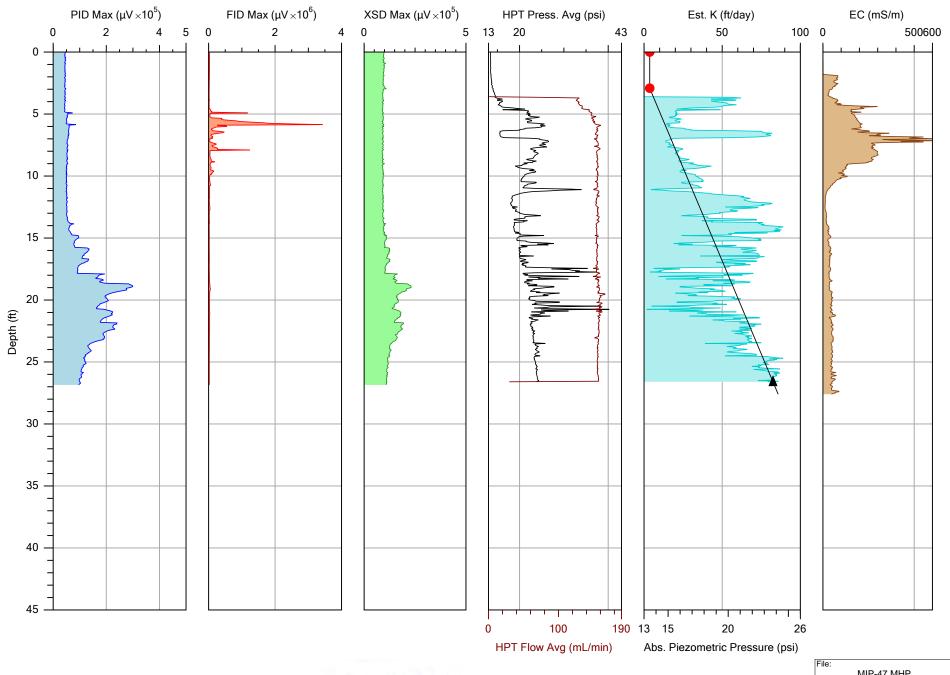


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Project ID:	Client:	Location:
Former Aerovox Facility	URS	



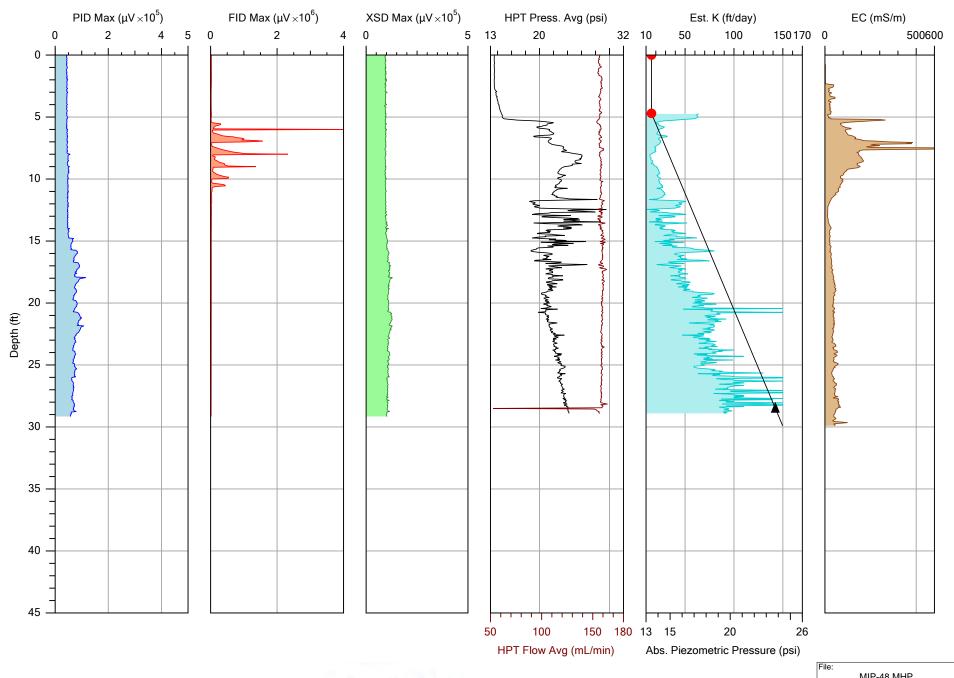


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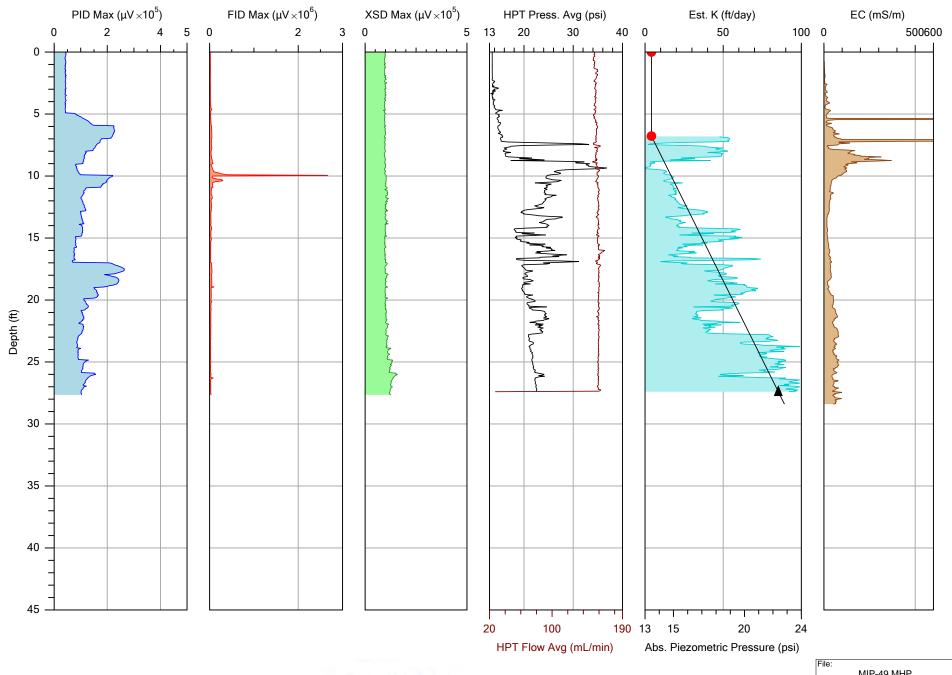
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0	TECHNOLOGIES

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Former Aerovox Facility	URS	



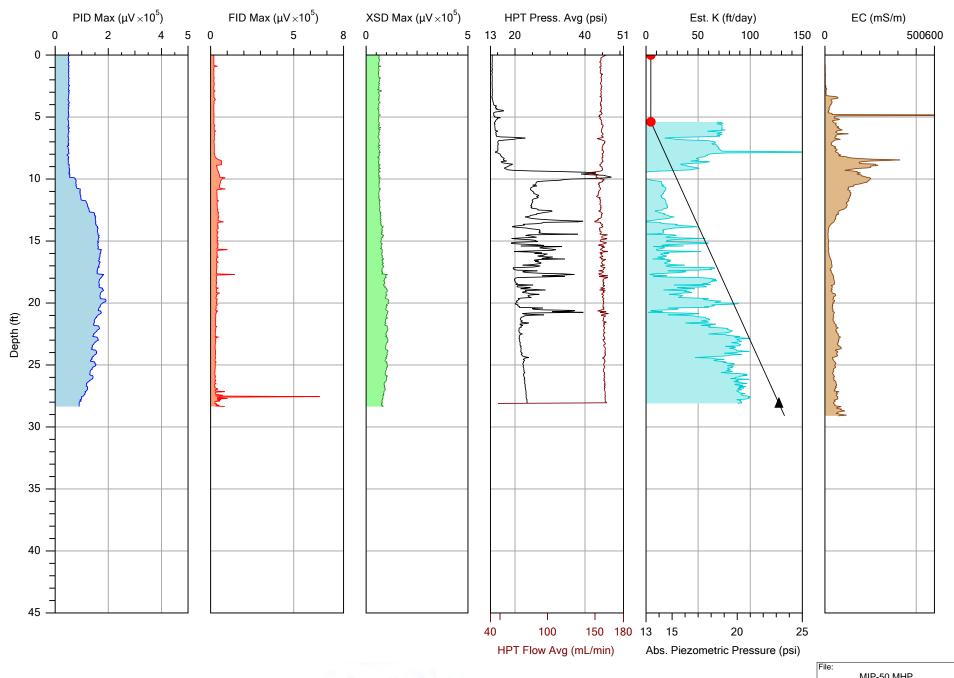


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COLUMBIA Technologies	DJM	7/14/2014
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



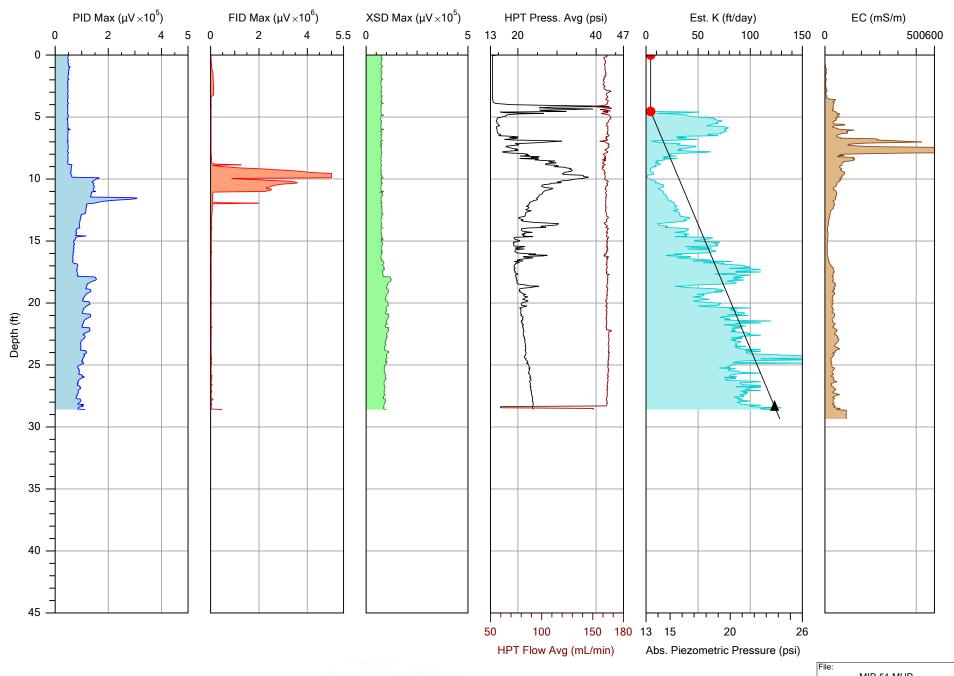
COLUMBIA
TECHNOLOGIES

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COLUMBIA Technologies	DJM	7/14/2014
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



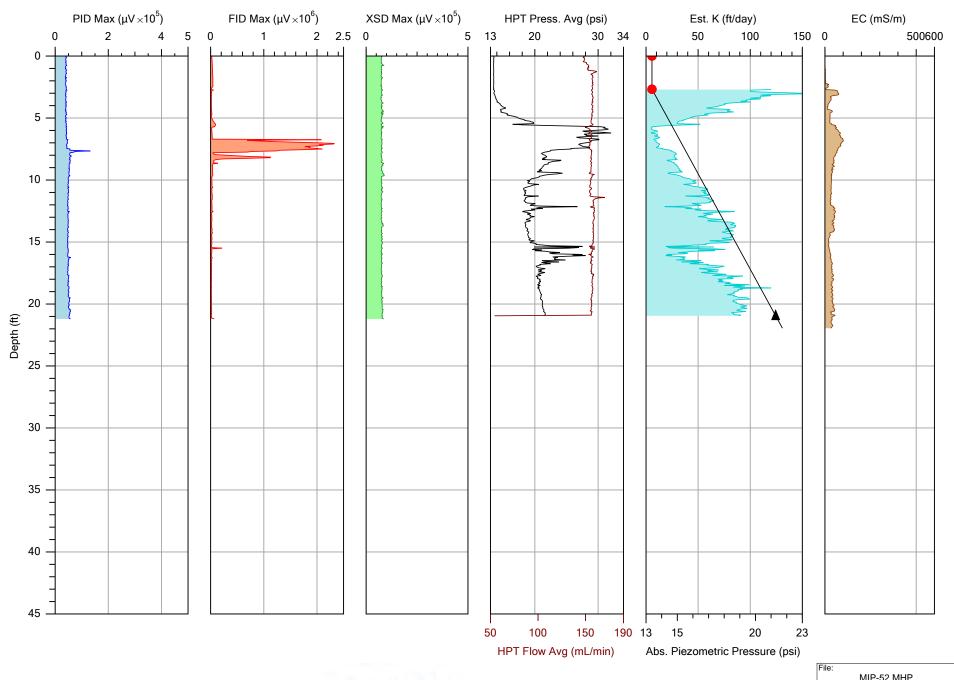


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COLUMBIA Technologies	DJM	7/15/2014
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



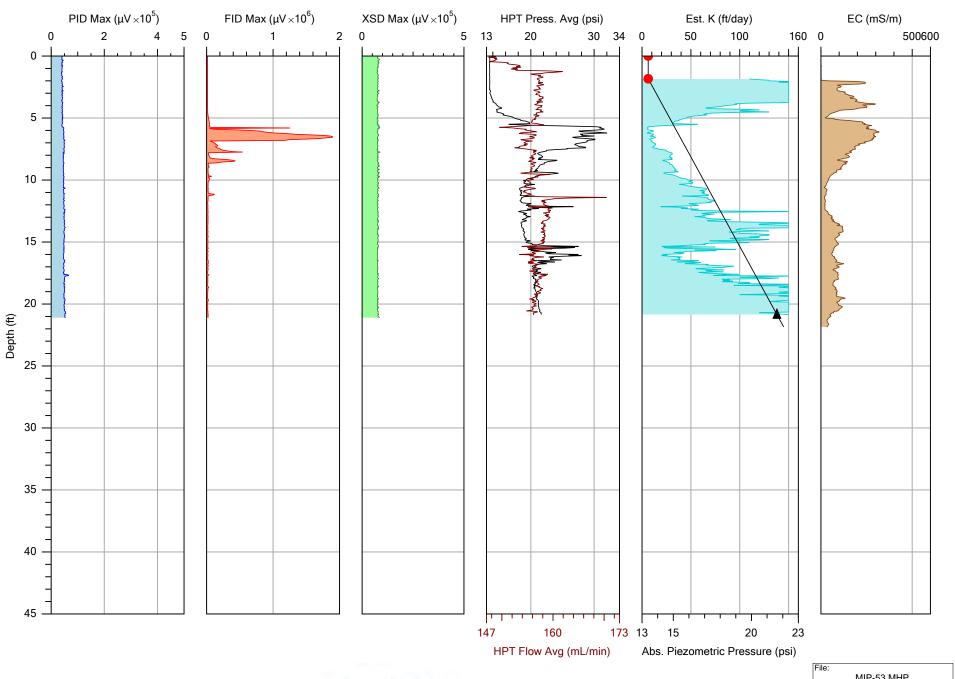


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Company:	Operator:	Date:
COLUMBIA Technologies	DJM	7/15/2014
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



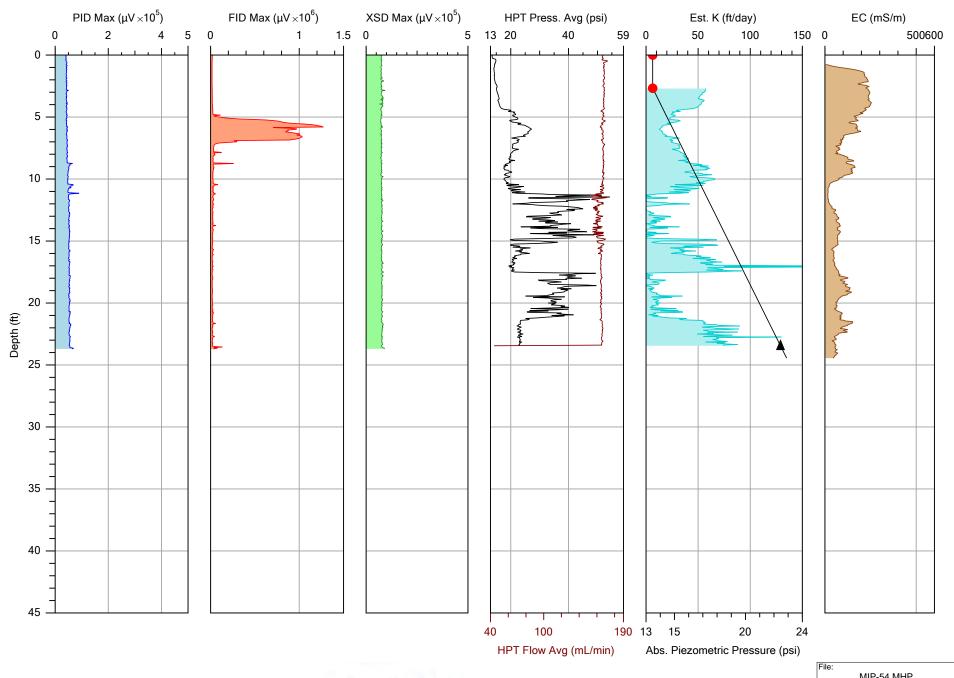


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Former Aerovox Facility	URS	



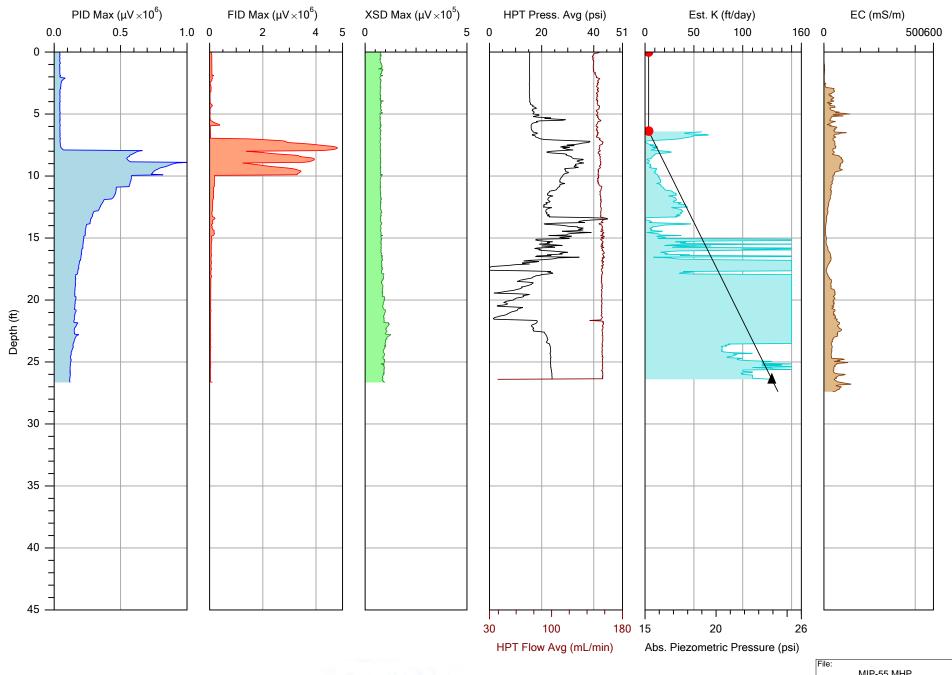


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COLUMBIA Technologies	DJM	7/15/2014
Project ID:	Client:	Location:
Former Aerovox Facility	URS	





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Company:	Operator:	Date:
COLUMBIA Technologies	DJM	7/15/2014
Project ID:	Client:	Location:
Former Aerovox Facility	URS	



	COLUMBIA
-	<b>TECHNOLOGIES</b>

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COLUMBIA Technologies	DJM	7/15/2014
Project ID:	Client:	Location:
Former Aerovox Facility	URS	

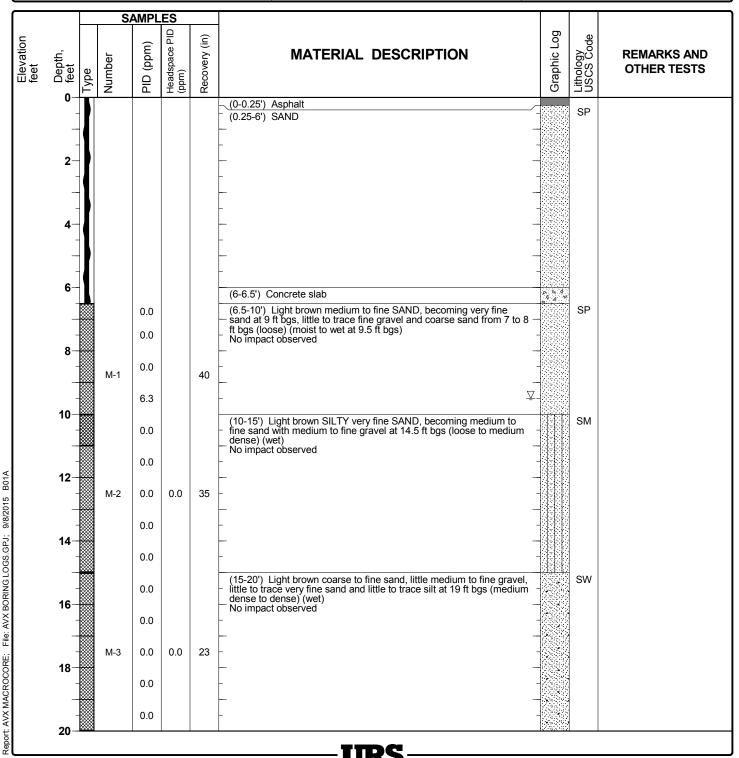
Appendix E. Boring and Well Construction Logs

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B01A

Date(s) Drilled 12/11/2013 - 12/17/2013	Logged By	J. Currier/J. Harshman	Checked By	J. Harshman
Drilling Method Auger/Geoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	22.0 feet
Drill Rig Type CME 85/6620 DT	Drilling Contractor	Geosearch	Surface Elevation	12.73 ft
Groundwater Level During Drilling 9.5 ft bgs	Sampling Method(s)	Auger/Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706958.1 E 814630.2

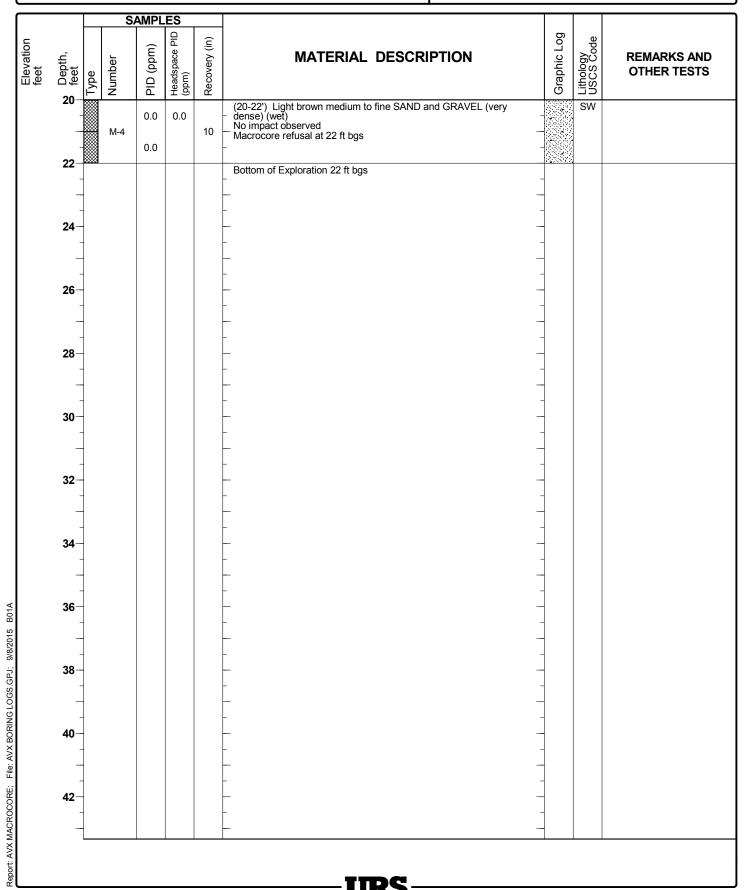


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B01A

Sheet 2 of 2

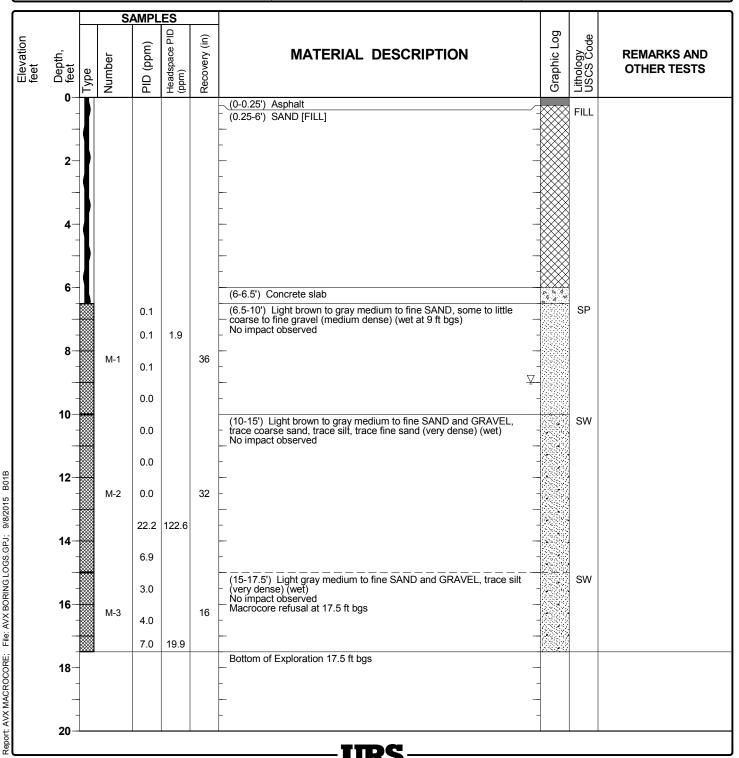


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B01B

Date(s) Drilled 12/11/2013 - 12/17/2013	Logged By	J. Currier/J. Harshman	Checked By	J. Harshman
Drilling Method Auger/Geoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	17.5 feet
Drill Rig Type CME 85/6620 DT	Drilling Contractor	Geosearch	Surface Elevation	12.49 ft
Groundwater Level During Drilling 9 ft bgs	Sampling Method(s)	Auger/Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706857.3 E 814632.3

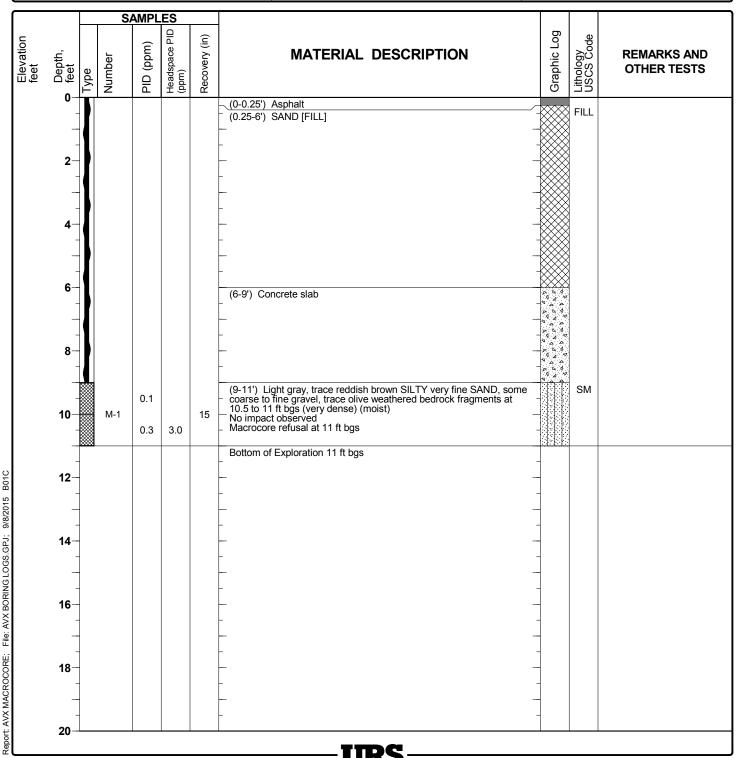


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B01C

Date(s) Drilled	12/11/2013 - 12/17/2013	Logged By	J. Currier/J. Harshman	Checked By	J. Harshman
Drilling Method	Auger/Geoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	11.0 feet
Drill Rig Type	CME 85/6620 DT	Drilling Contractor	Geosearch	Surface Elevation	11.42 ft
Groundwat During Dril		Sampling Method(s)	Auger/Macrocore	Hammer Data	Direct Push
Borehole Backfill	Grout, cold patch asphalt at surface	Location		Coordinates	N 2706757.7 E 814632.7



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring B01D**

Date(s)	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	11.46 ft
Groundwater Level During Drilling NE	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706658.3 E 814631.3

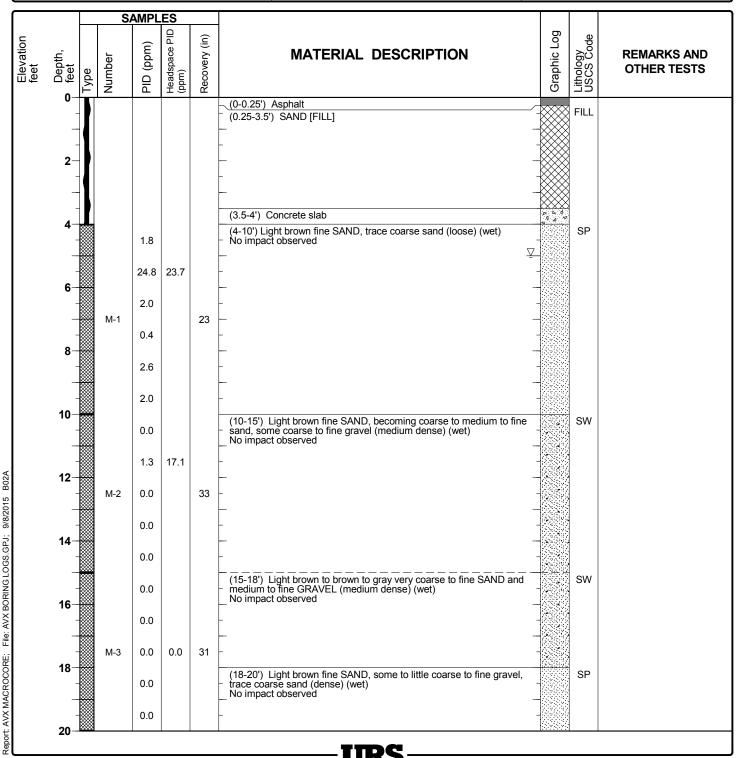
$\overline{}$			SAMPI	ES					
Elevation feet	Depth, feet Tvoe	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	2		1.7	3.4		(0-0.25') Asphalt  (0.25-3') Light brown to brown coarse to fine SAND and coarse to fine GRAVEL, little to some silt, little to some very fine sand (medium dense) (moist)  No impact observed		SW	
	4	M-1	0		34	(3-5') Yellowish red to brown to light brown medium to fine SAND, some silt, little medium to fine gravel (loose to medium dense) (moist) No impact observed		SW	
	6	M-2	0 0.4 0	0.6	24	(5-8') Light brown coarse to medium to fine poorly-graded SAND, trace coarse to fine gravel, little to trace very fine silty sand 7-8 ft bgs, possible piece of fractured bedrock at 8 ft bgs (loose to medium dense) (moist) No impact observed Macrocore refusal at 8.0 ft bgs		SP	
	8		0			Bottom of Exploration 8 ft bgs			
	10-								
	12-					- - - -			
	14-					- - - -			
	16— —					- - - -	-		
	18-					- - - -			
	20					URS			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B02A

Date(s) Drilled 12/11/2013 - 12/18/2013	Logged By	J. Currier/J. Harshman	Checked By	J. Harshman
Drilling Method Auger/Geoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	22.5 feet
Drill Rig Type CME 85/6620 DT	Drilling Contractor	Geosearch	Surface Elevation	11.29 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Auger/Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706958.7 E 814729.7

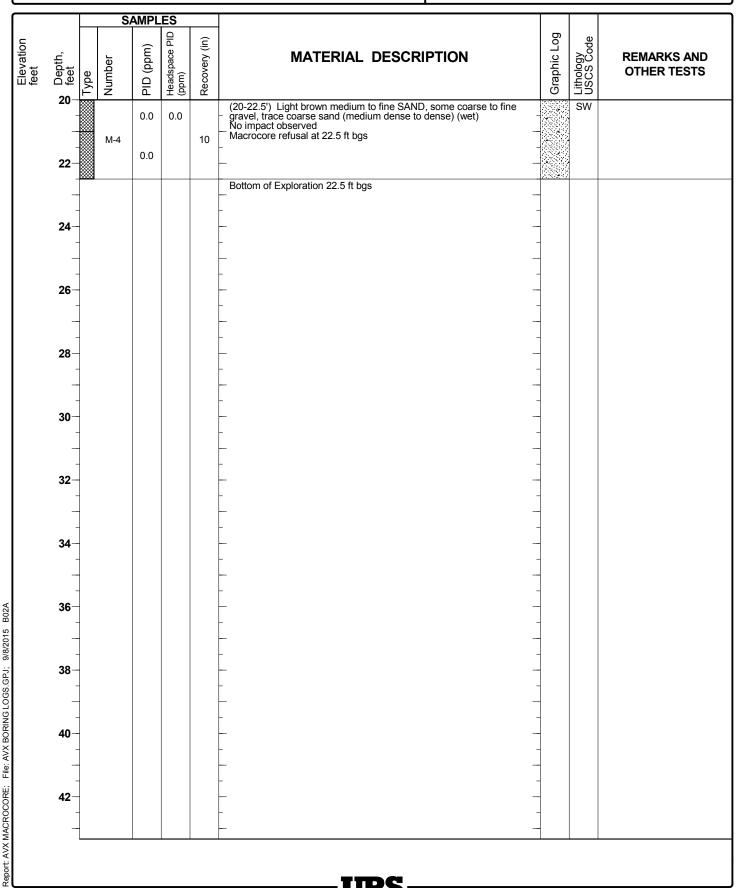


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B02A

Sheet 2 of 2

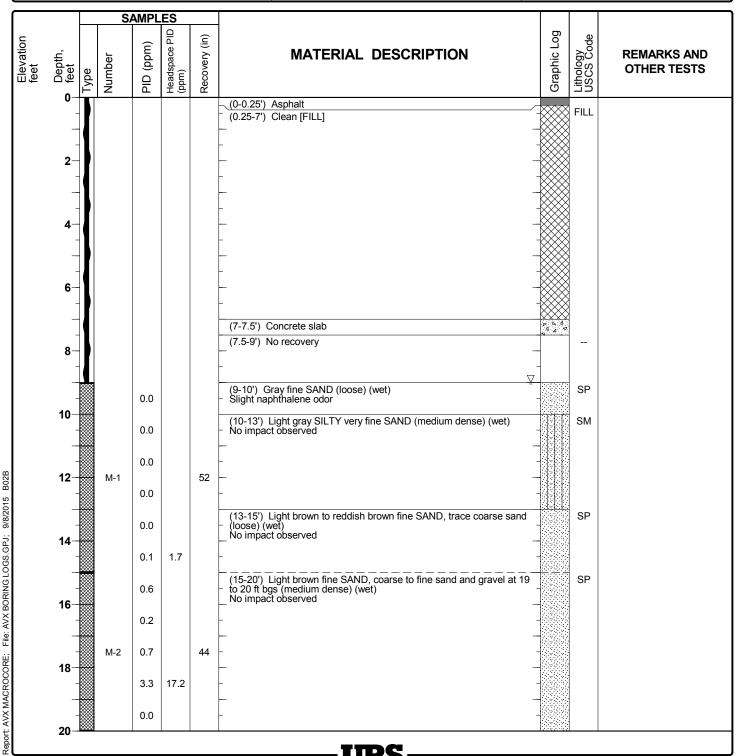


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B02B

Date(s) Drilled	12/11/2013 - 12/17/2013	Logged By	J. Currier/J. Harshman	Checked By	J. Harshman
Drilling Method	Auger/Geoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	27.0 feet
Drill Rig Type	CME 85/6620 DT	Drilling Contractor	Geosearch	Surface Elevation	10.76 ft
Groundwat During Drill		Sampling Method(s)	Auger/Macrocore	Hammer Data	Direct Push
Borehole Backfill	Grout, cold patch asphalt at surface	Location		Coordinates	N 2706858.7 E 814728.0



Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **Log of Boring B02B**

Sheet 2 of 2

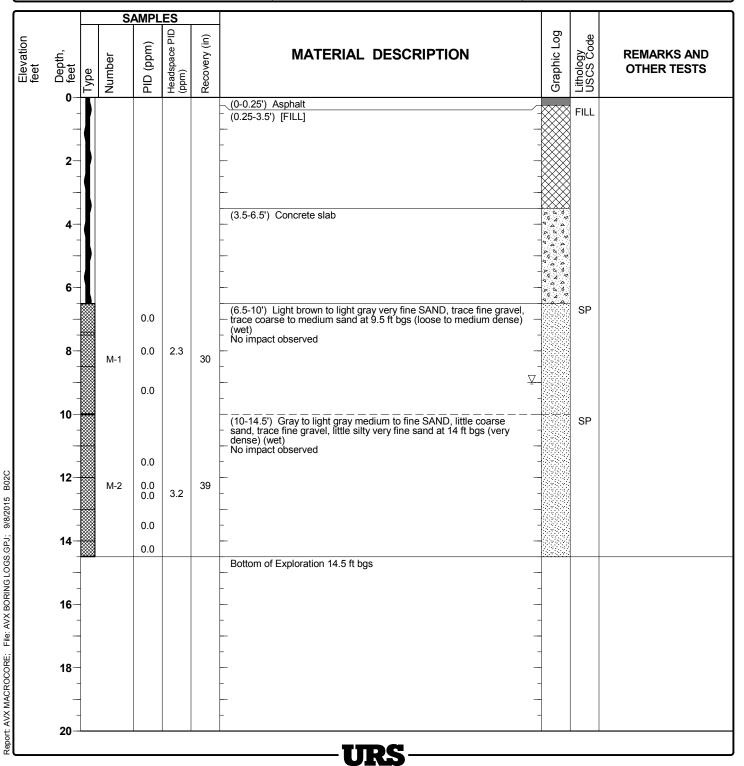
			SA	AMPL	ES					
Elevation feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	20-			0.0			(20-22') Light brown coarse to fine SAND, some to little medium to fine gravel (medium dense) (wet) No impact observed	-	SW	
	- <b>22</b> —			0.1			(22-24') Light brown fine to very fine SAND, some to little medium to fine gravel (medium dense) (wet)	- -	SW	
	_		M-3	0.5 1.8	4.0	32	fine gravel (medium dense) (wet) No impact observed	- - -		
	<b>24</b>			1.5			(24-25') Coarse to fine SAND and GRAVEL (wet) No impact observed		SW	
	- 26-		M-4	1.3		13	(25-26') Light brown coarse to fine SAND, little medium to fine gravel (medium dense) (wet) No impact observed		SW	
	-			1.9	9.5		(26-27') [WEATHERED BEDROCK] fragments (dense) (moist)  No impact observed Macrocore refusal at 27 ft bgs  Bottom of Exploration 27 ft bgs		ВК	
	28-						- - -	_		
	30-							-		
	30 <sup>-</sup> -									
	32-							_		
	_							_		
	34- -						- - -	-		
	36 <u> </u>						- 	_		
	-						- - -	_		
	<b>38</b> -							_		
	40-						- -	-		
	-  -							1		
	42-									
	7									

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B02C

Date(s) Drilled 12/11/2013 - 12/17/2013	Logged By	J. Currier/J. Harshman	Checked By	J. Harshman
Drilling Method Auger/Geoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	14.5 feet
Drill Rig Type CME 85/6620 DT	Drilling Contractor	Geosearch	Surface Elevation	9.61 ft
Groundwater Level During Drilling 9 ft bgs	Sampling Method(s)	Auger/Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706759.0 E 814729.2



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B02D

Date(s)	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	26.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	10.65 ft
Groundwater Level During Drilling 8 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706660.0 E 814730.0

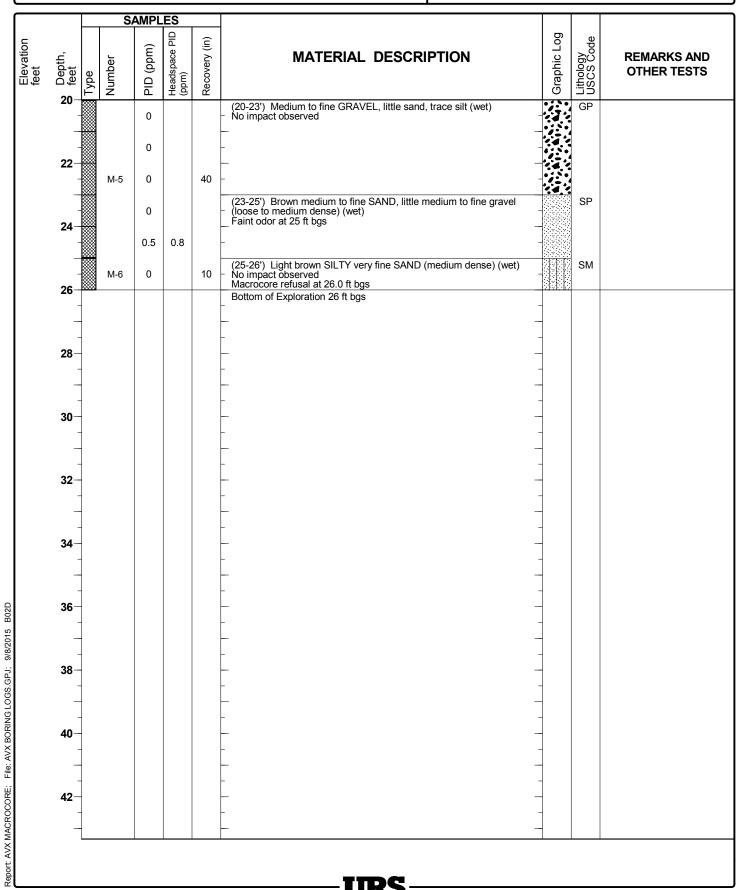
	_		AMPL	.ES					
Elevation feet	Depth, feet Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	U-		0	0.0		(0-0.25') Asphalt (0.25-2') Light brown coarse to medium to fine SAND and medium		SW	
			0			(0.25-2') Light brown coarse to medium to fine SAND and medium to fine GRAVEL (loose to medium dense) (dry)  No impact observed			
	2					(2-5') Brown to brownish vellow fine to very fine SAND, trace coarse		SP	
		M-1	0		42	(2-5') Brown to brownish yellow fine to very fine SAND, trace coarse to medium sand, trace silt, trace fine gravel (loose) (dry)  No impact observed			
	4		0						
	7		0			_			
	-		0	0.0		(5-8') Light brown medium to fine SAND, trace coarse sand, trace coarse to fine gravel, trace silt (dry)  No impact observed		SP	
	6		0			No impact observed			
	-					_			
	8	M-2	0		50	(8-10') Brown SILTY very fine SAND, little fine gravel (dense) (wet)		sw	
	-		0			No impact observed		SVV	
			0			_			
	10		0	0.0		(10-13') Light brown to gray coarse to medium to fine SAND, little coarse to fine gravel (dense) (wet)  No impact observed		sw	
			0			_ no impact observed			
	12				-4	_			
		M-3	0		51	(13-15') SILTY very fine SAND, trace medium sand, trace fine		SP	
	14		0			gravel (wet) No impact observed			
	-		0			_			
			0	0.0		(15-18') Light brown to brown coarse to medium to fine SAND and GRAVEL (dense) (wet)		GW	
	16		0			No impact observed			
		M-4	0		56				
	18	101-4				(18-20') Medium to fine SAND, little to trace fine gravel, trace silt		SP	
			0			(medium dense) (wet) No impact observed			
	20		0			<u>-</u>			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B02D

Sheet 2 of 2

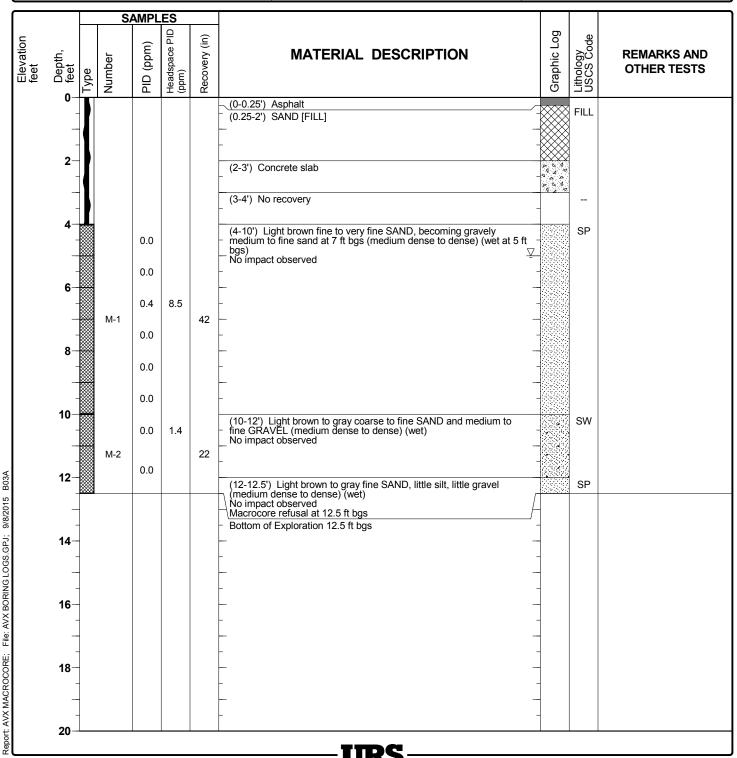


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B03A

Date(s) 12/11/2013 - 12/18/2013	Logged By	J. Currier/J. Harshman	Checked By	J. Harshman
Drilling Method Auger/Geoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	12.5 feet
Drill Rig Type CME 85/6620 DT	Drilling Contractor	Geosearch	Surface Elevation	9.16 ft
Groundwater Level 5 ft bgs During Drilling	Sampling Method(s)	Auger/Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt	at surface Location		Coordinates	N 2706957.5 E 814829.0

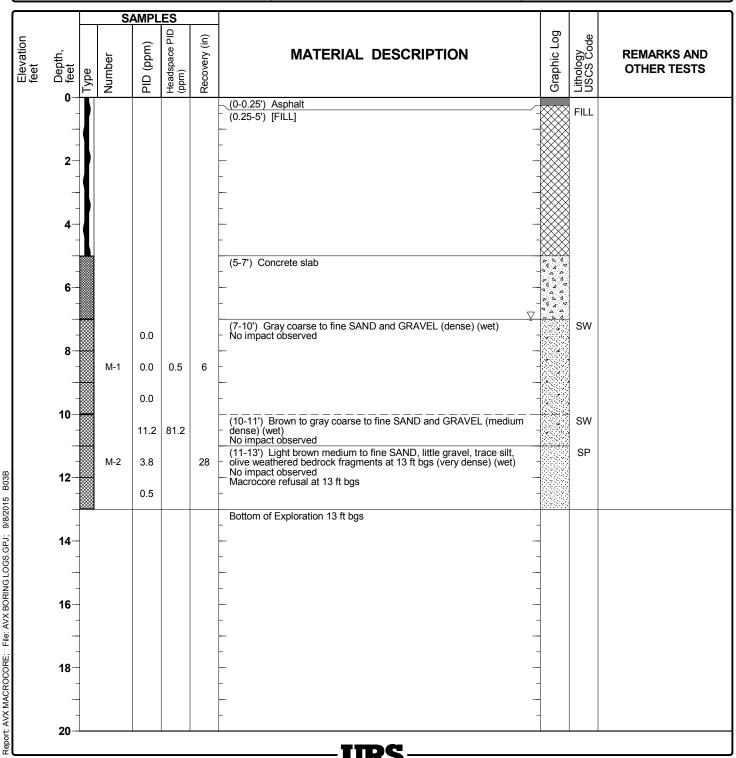


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B03B

Date(s) Drilled	12/11/2013 - 12/18/2013	Logged By	J. Currier/J. Harshman	Checked By	J. Harshman
Drilling Method	Auger/Geoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	13.0 feet
Drill Rig Type	CME 85/6620 DT	Drilling Contractor	Geosearch	Surface Elevation	8.80 ft
Groundwate During Drill		Sampling Method(s)	Auger/Macrocore	Hammer Data	Direct Push
Borehole Backfill	Grout, cold patch asphalt at surface	Location		Coordinates	N 2706857.0 E 814830.0



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# **Log of Boring B03C**

Date(s)	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	30.5 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	9.89 ft
Groundwater Level During Drilling 7 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706758.5 E 814832.8

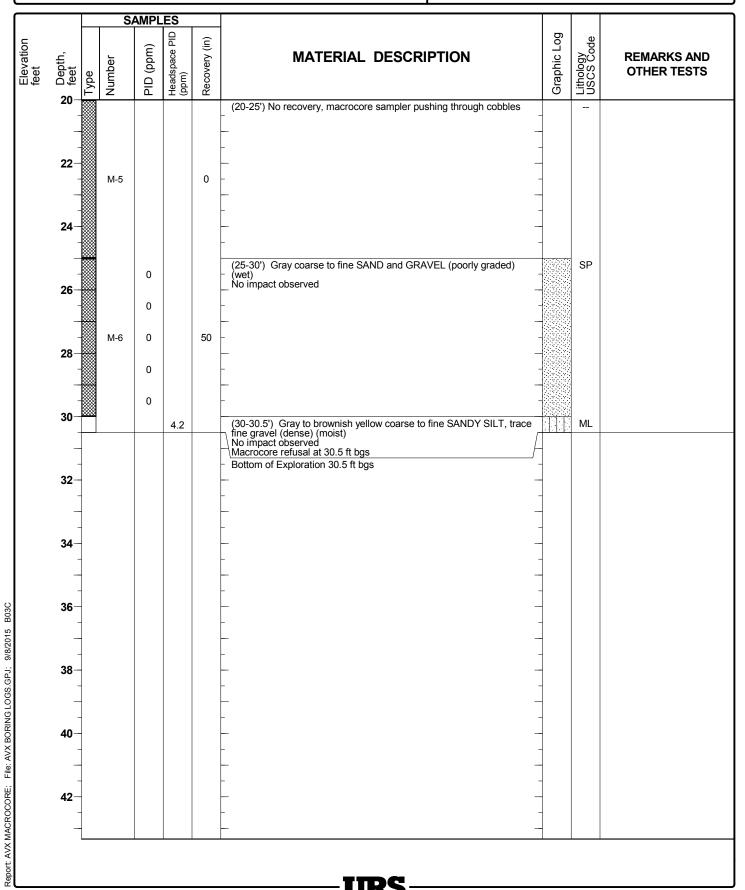
-			SA	AMPL	.ES					
Elevation feet	- 11	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0	<b>\</b>		0			(0-0.25') Asphalt (0.25-5') Brown to gray coarse to medium to fine SAND, little coarse		sw	
	_			0			(0.25-5') Brown to gray coarse to medium to fine SAND, little coarse to fine gravel (medium dense) (dry) No impact observed			
	2						_			
	-		M-1	0		39				
	4			0			- 			
				0						
	_			0.3			(5-10') Gray to greenish gray coarse to medium to fine SAND, with coarse to fine gravel, little silt, little very fine sand, cobbles (dense) (moist to wet at 7 ft bgs)  No impact observed		SW	
	6-			0			-			
			M-2	0		41	<u> </u>			
	8-			0						
				0						
	10						(10-12') Gray to light gray coarse to medium to fine SAND, trace		SP	
				0			(10-12') Gray to light gray coarse to medium to fine SAND, trace fine gravel (loose) (wet) No impact observed			
	12—			0						
	-		M-3	0		48	(12-15') Light gray SILTY medium to fine to very fine SAND, trace medium to fine gravel, trace coarse sand (loose) (wet) No impact observed		SW	
				0						
	14			0			-			
				0			(15-20') Light gray GRAVELLY fine SAND, some medium to fine pink to white to gray grayel with quartz, poorly-graded/well-sorted,		SP	
	16			0			possible garnet present (loose) (wet) No impact observed			
	-									
	18		M-4	0.5		39	- -			
				0.7	13.2		- -			
	20			0.4						
							URS—			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B03C**

Sheet 2 of 2



Project Location: New Bedford, Massachusetts

**Project Number:** 39744051

# Log of Boring B03D

Date(s) 12/5/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	25.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	10.05 ft
Groundwater Level During Drilling 8 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706661.4 E 814830.4

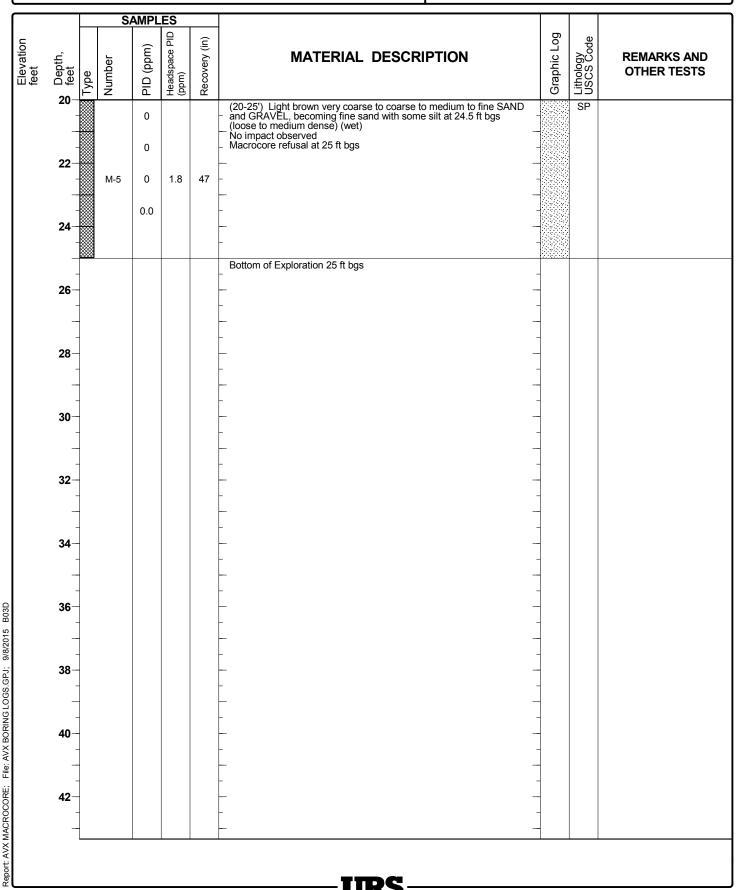
			S	AMPL	ES					
Elevation feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0- - 2- - - - 4-		M-1	0 0 0	0.2	38	(0-0.25') Asphalt  (0.25-5') Brown to light brown coarse to medium to fine SAND and GRAVEL (dense) (dry) No impact observed		SW	
	6—			0 0			(5-7') Light brown coarse to medium to fine SAND and GRAVEL (dense) (dry) No impact observed  (7-8') Light brown SILTY very fine SAND (dense) (moist)		SW	
	8- - - 10-		M-2	0 0 0	0.0	36	No impact observed  (8-10') Light brown medium to fine SAND, little coarse sand, little coarse to fine gravel (dense) (wet)  No impact observed  (10-15') Light brown to gray very coarse to coarse to medium to fine	- - - -	SW	
	 12   14		M-3	0 0	0.3	44	(10-15') Light brown to gray very coarse to coarse to medium to fine SAND, becoming fine sand at 14.5 ft bgs, some to little coarse to fine gravel, cobbles (dense) (wet)  No impact observed			
	16-		M	0 0	2.0	<b>5</b> 0	(15-20') Light brown very coarse to coarse to medium to fine SAND, trace coarse to medium to fine gravel, cobbles (loose to medium dense) (wet) No impact observed		SP	
	18- - - - 20-		M-4	0 0	3.0	58	- - - -			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B03D

Sheet 2 of 2

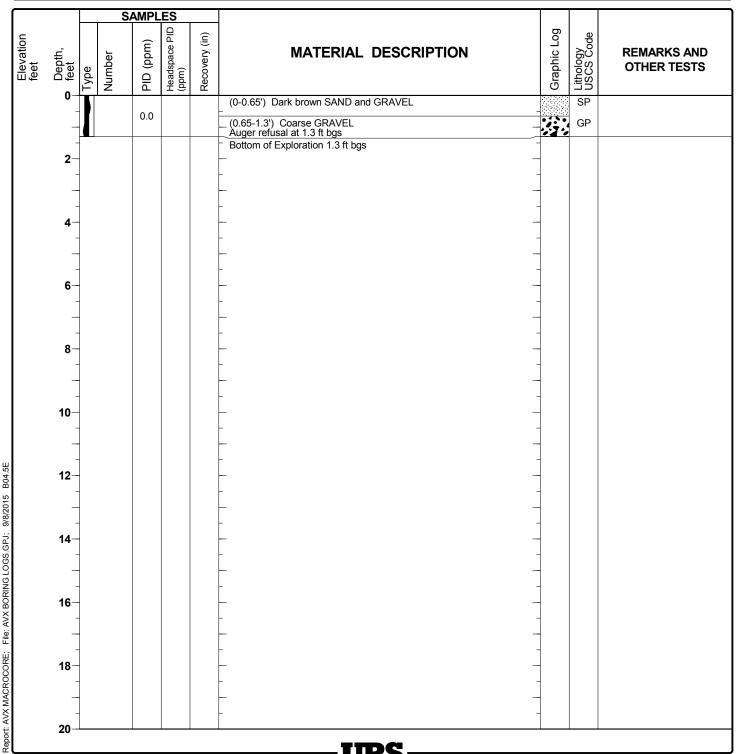


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B04.5E**

Date(s) Drilled 12/13/2013	Logged By	J. Currier	Checked By	J. Harshman
Drilling Method Hand Auger	Drill Bit Size/Type	NA	Total Depth of Borehole	1.3 feet
Drill Rig Type <b>NA</b>	Drilling Contractor	NA	Surface Elevation	9.10 ft
Groundwater Level NE During Drilling	Sampling Method(s)	Hand Auger	Hammer Data	NA
Borehole Backfill Sand backfill	Location		Coordinates	N 2706601.4 E 815008.2



**Project Location: New Bedford, Massachusetts** 

**Project Number:** 39744051

# Log of Boring B04A

Date(s) Drilled 12/5/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	20.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	8.21 ft
Groundwater Level During Drilling 7 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706955.7 E 814927.9

Elevation feet Denth	<u> </u>		AMPL (md	Headspace PID (bpm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND
feet Per	Type	Number	PID (ppm)	Headsp (ppm)	Recove		Graph	Litholc USCS	OTHER TESTS
			0			(0-0.25') Asphalt (0.25-5') Light brown [FILL], coarse to fine sand and gravel, trace cobbles, trace orange fabric (dense) (dry)		FILL	
			0			cossion, adde drange rashe (denies) (ary)			
		M-1	0	0.0	37				
			0			_			
	_		0			_			
	5		0			(5-10') Brown to light brown coarse to fine SAND, little coarse to fine gravel, trace cobble (dense becoming medium dense) (moist to wet at 7 ft bgs)		sw	
			0			No impact observed			
		M-2	0		37	<u>-</u>			
			0			_			
			0.6	3.8		_			
•	10		0.4			(10-13') Very coarse to coarse to fine SAND (loose to medium dense) (wet) No impact observed		SP	
			1.1	10.2		_ No impact observed			
		M-3	0.3		54	_			
			0.8			(13-15') Brown to gray SILTY very fine SAND, some coarse to medium sand, little medium to fine gravel (very dense) (wet) No impact observed		sw	
			0.5			_ No impact observed			
•	15		5.4			(15-18') Light brown to brownish yellow very coarse to fine SAND and medium to fine GRAVEL (loose) (wet) No impact observed		SP	
			5.6	38.5		_ No impact observed			
		M-4	2.1		41		Homeon and the second		
			1.0			(18-20') Brown medium to fine SAND, trace coarse sand, trace fine gravel (wet) No impact observed		sw	
			3.7			Macrocore refusal at 20 ft bgs			
:	20					Bottom of Exploration 20 ft bgs	rayvisivi.		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B04B

Date(s) Drilled 12/5/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	15.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.99 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706856.1 E 814926.9

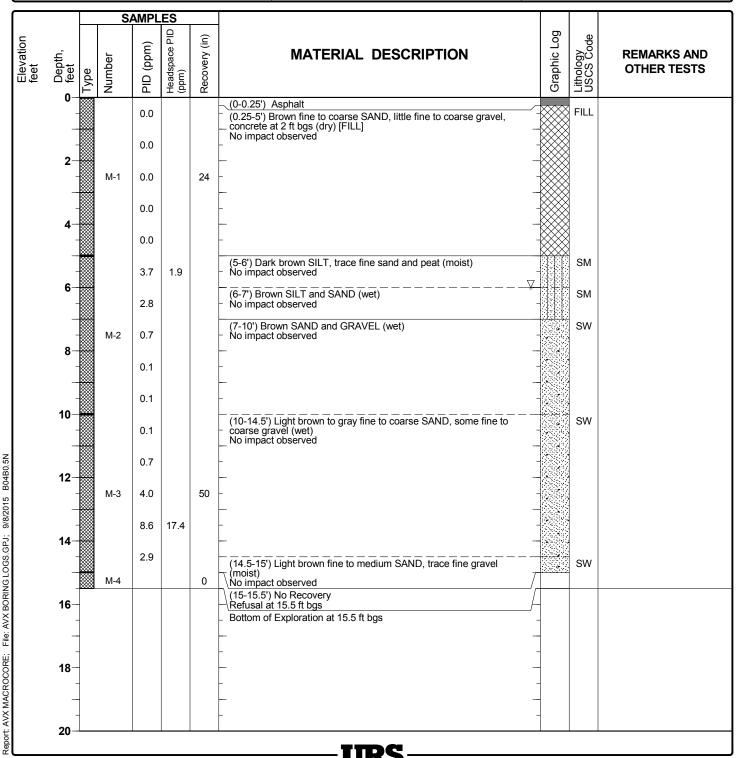
_									
Elevation feet Depth,	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
2-			0			(0-0.25') Asphalt  (0.25-2') Gray to brown coarse to fine SAND, some coarse to fine gravel (medium dense) (dry) No impact observed  (2-2.5') Concrete slab		SP	
- - - 4-		M-1	1.2	20	41	(2.5-4') Gray to brown coarse to fine SAND, some coarse to fine gravel (medium dense) (dry) No impact observed		SP	
- - - 6-			2.3	0.7		(4-5') Dark brown highly organic PEAT (medium dense) No impact observed  (5-7') Brown coarse to fine SAND, some coarse to fine gravel, trace cobbles (medium dense) (wet) No impact observed	- 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	sw	
- - 8-		M-2	0		49	(7-8') Light gray coarse to fine SAND, trace fine gravel (wet) No impact observed		SP	
- - -10			0			(8-10') Brown coarse to fine SAND, some coarse to fine gravel, trace cobbles (medium dense) (wet) No impact observed	- - -	SW	
- - - 12-			1.2 5.3			(10-12.5') Light gray to light brown coarse to fine SAND and coarse to fine GRAVEL, trace cobbles (dense) (wet) No impact observed	- - -	SW	
- - -14		M-3	0.4	7.1	54	(12.5-14.5') Light gray coarse to fine SAND, some fine gravel (very dense) (moist)  No impact observed		SW	
- - 16-			7			(14.5-15') Olive green [WEATHERED BEDROCK] fragments No impact observed Macrocore refusal at 15 ft bgs Bottom of Exploration 15 ft bgs	V C < V L	WBR	
- - 18-	-					- - - -	- - -		
- - 20-						_ 	_		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### Log of Boring B04B0.5N

Date(s) 7/17/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	15.5 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	5.93 ft
Groundwater Level During Drilling 6 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706863.4 E 814926.7



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring B04BN**

Date(s) 7/16/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	13.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.97 ft
Groundwater Level During Drilling 3.5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706871.0 E 814927.3

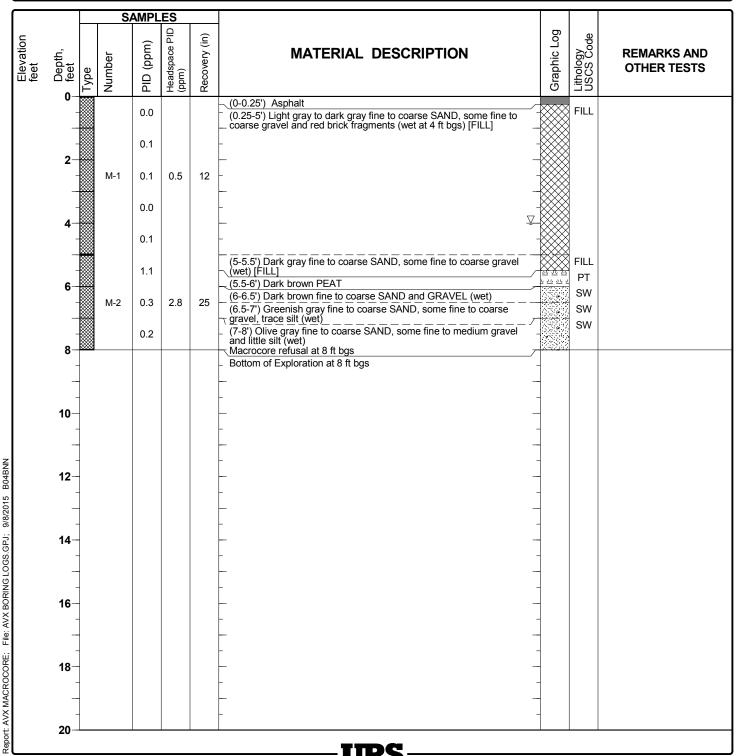
Section   Sect				S	AMPL	ES					
10   37.9   (-0-25) Asphalt   (-0-25) Asphalt	Elevation feet	I É	l ype	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	
M-1   257.3   140   42   (2.4.5)   Dark gray to brown fine to coarse GRAVEL, little fine to		_ 						(0.25-2') Light brown to light gray fine to coarse SAND, some fine to coarse gravel, possible timber and coal cinder at 1-1.5 ft bgs (damp)[FILL] No impact observed		FILL	
1.9 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.3 1.2 1.2 1.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		-		M-1			42	=		FILL	
1.2		4				11.1				FILL	
No impact observed  10  10  10  10  10  10  10  10  10  1		6			1.2			(wet) [FILL]		SW	
10		-		M-2		1.3	39	No impact observed			
10		8-			2.1						
12— M-3   3.0   30   -		10						(10-13') Light gray coarse to fine SAND, little to some fine to		SW	
14- 16- 18- 18- 18- 18- 18- 18- 18- 18		12		M-3			30	No impact observed  Macrocore Refusal at 13 ft bgs			
14- 16- 18- 18-		-			5.9	13.1		Bottom of Exploration 13 ft bgs			
16- - - - - 18- - - - -		14-						- - - -			
18- - - - - - -		16-							-		
		-							-		
		18-									
URS		20							_		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring B04BNN**

Date(s) 7/17/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.37 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706885.4 E 814927.3

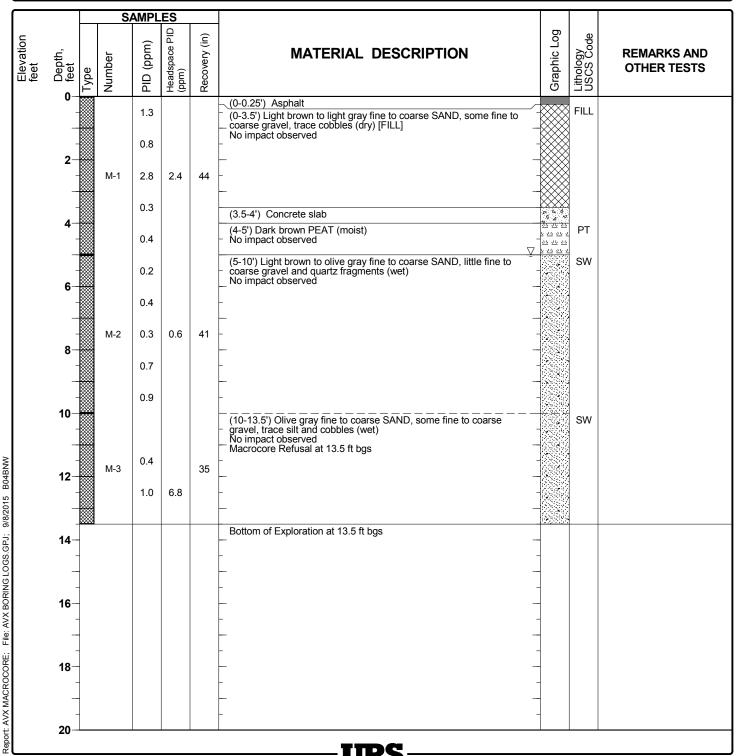


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B04BNW**

Date(s) Drilled 7/17/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	13.5 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.24 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706871.2 E 814911.7

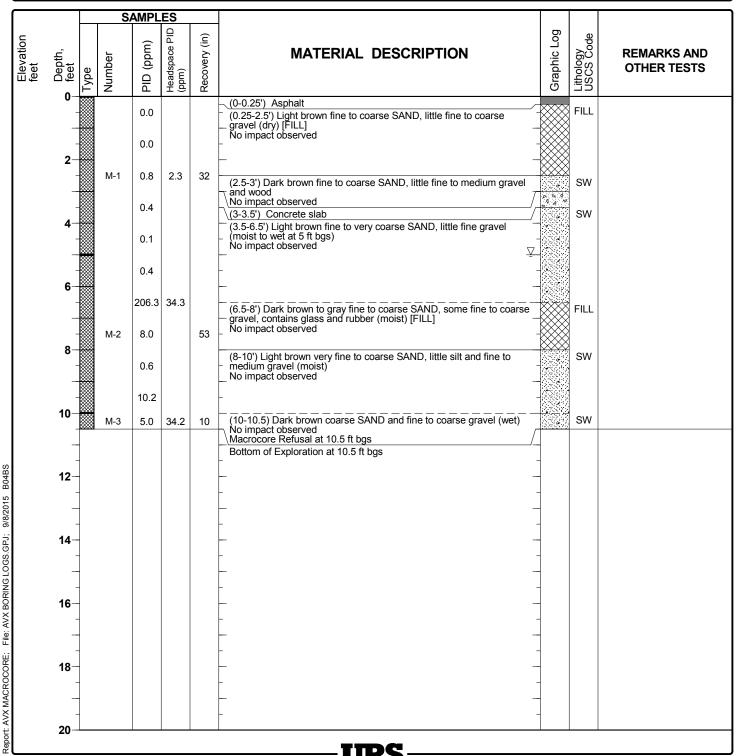


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### Log of Boring B04BS

Date(s) Drilled 7/17/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	10.5 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.33 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706844.1 E 814926.2

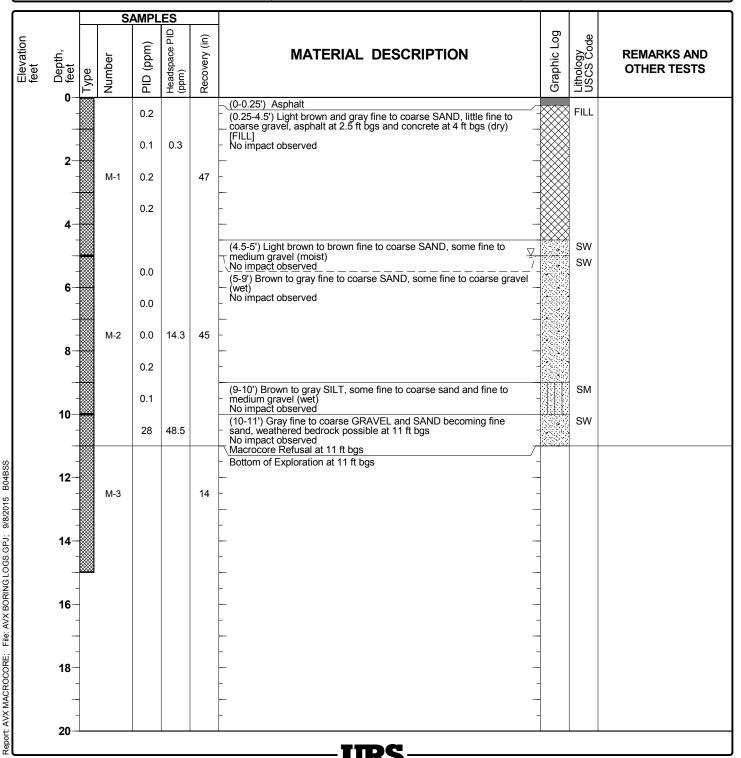


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring B04BSS**

Date(s) 7/17/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	11.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	7.23 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706829.3 E 814925.8



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring B04BSSS**

Sheet 1 of 1

Date(s) 7/17/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	20.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	8.21 ft
Groundwater Level During Drilling 7.5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706814.5 E 814925.7

			S	AMPL	ES					
Elevation feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0-			0.0			(0-0.25') Asphalt	***	FILL	
	÷			0.1			(0.25-4.5') Light brown to reddish brown fine to coarse SAND, some fine to coarse gravel, asphalt at 3 ft bgs and concrete at 4 ft bgs, trace cobbles (dry) [FILL] No impact observed			
	-		M-1	0.0	0.1	43				
	-			0.0						
	-			0.0			(4.5-5') Light brown fine to coarse SAND, some gravel with quartz		sw	
	5-			0.3			Tragments (dry)  No impact observed  (5-10') Light brown to gray fine to coarse SAND and GRAVEL (wet at		SW	
	=			0.7			7.5 ft bgs) No impact observed			
			M-2	3.4		36	lacksquare			
	_			1.4						
	40			10.1	26.0					
	10-			1.3			(10-12') Brown to gray coarse SAND and fine to medium GRAVEL (wet) No impact observed		SW	
				1.7	3.8					
			M-3	0.4		57	(12-15') Brown to gray fine to coarse SAND, some fine to coarse gravel, trace silt (wet) No impact observed		SW	
	-			0.1						
	15-			0.8						
				0.3			(15-20') Brown to gray fine to coarse SAND and GRAVEL, fine sand with trace fine gravel, weathered bedrock fragments observed at 18-20 ft bgs		SW	
	-			1.4			No impact observed Macrocore Refusal at 20 ft bgs			
	-		M-4	2.3		52	  -  -			
	-			8.9	45.0		 			
	20-			8.0			Pottom of Evaluation at 20 ft has			
	-						Bottom of Exploration at 20 ft bgs			
							IIRS			

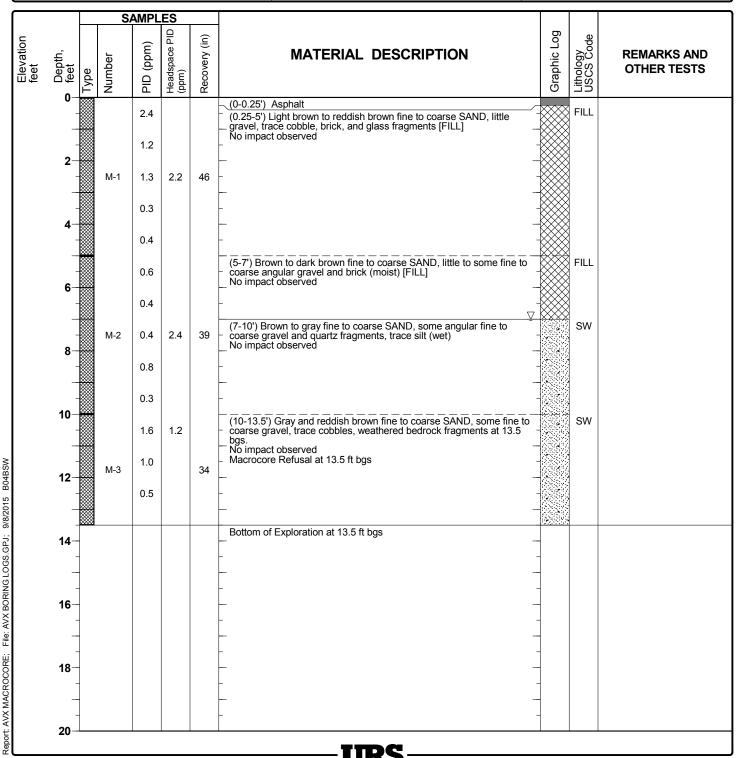
**URS** 

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B04BSW

Date(s) 7/17/2014	ļ	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprob</b>	е	Drill Bit Size/Type	NA	Total Depth of Borehole	13.5 feet
Drill Rig Type <b>6620 DT</b>		Drilling Contractor	Geosearch	Surface Elevation	6.66 ft
Groundwater Level During Drilling	7 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill <b>Grout, co</b>	ld patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706842.1 E 814910.7



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring B04BW**

Date(s) Drilled 7/16/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	16.5 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.26 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706856.5 E 814911.6

			S	AMPL						
Elevation feet		Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0-			1.1			(0-0.25') Asphalt		FILL	
	_			2.7			(0.25-5') Light brown very fine to coarse SAND, little fine to medium gravel, concrete at 3 ft bgs underlain by brick and morter fragments, peat at 5 ft bgs, cobbles at 5 ft bgs (dry) [FILL]  No impact observed			
	<b>2</b> -		M-1	2.6		49				
	4-			4.4	3.0					
	_			3.0			- ▽			
	6-			1.6	2.2		(5-6') Dark brown very fine to medium SAND, some silt, trace peat at 5 ft bgs (wet) No impact observed		SP	
	-			0.5			(6-7') Light gray fine to medium SAND, trace cobble (dry)  No impact observed		SW	
	- - 8-		M-2	0.8		50	(7-10') Reddish brown to brownish yellow transitioning to light brown at 8 ft bgs fine to coarse SAND, little to some fine to coarse gravel, trace silt (dense) (moist)  No impact observed		sw	
	-			0.8			No impact observed			
	10 <del>-</del>			0.5			_			
	10 - -			0.4			(10-15') Light brown to gray very fine to coarse SAND, little to some fine to coarse gravel, trace silt (wet) No impact observed		SW	
	40			1.9			_			
	12 <u> </u>		M-3	8.8		50				
	-			4.8			_			
	14			20.1	43.0					
	_			20.1	75.0		(15-16.5') Light brown to gray fine to coarse GRAVEL, with fine to		GW	
	16 <del>-</del>		M-4	2.1	34.0	19	- coarse sand, sand content increases with depth (wet) No impact observed Macrocore Refusal at 16.5 ft bgs			
	_						Bottom of Exploration 16.5 ft bgs			
	4-						-	-		
	18-									
	-						_			
	20									
	-*			_		_	——URS——			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **Log of Boring B04BWW**

Date(s) 7/17/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	17.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.60 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (B04B area)	Coordinates	N 2706857.1 E 814896.8

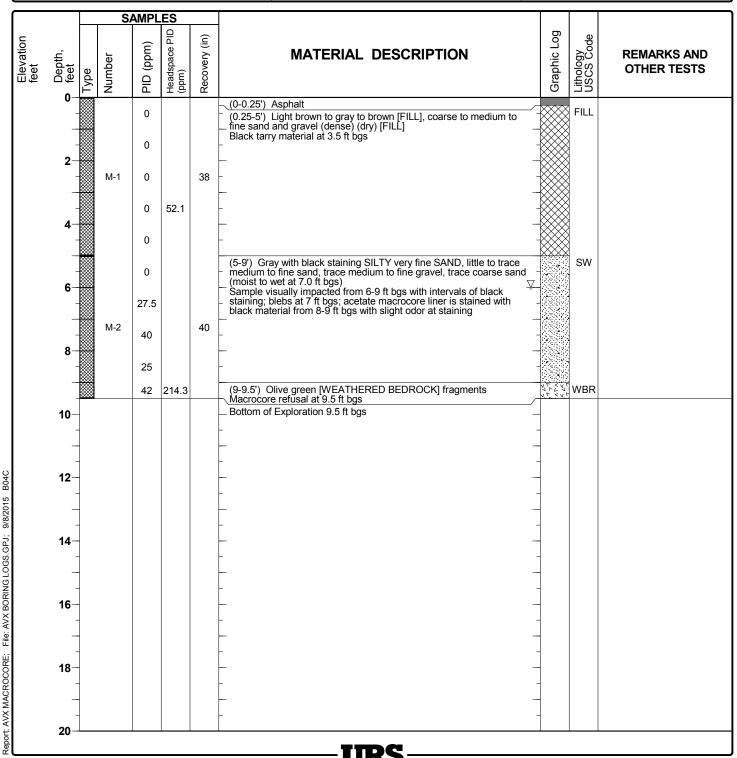
			SAMPL	ES					
Elevation feet	Depth, feet Tvpe	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0	<b> </b>	0.9			(0-0.25') Asphalt	-XXX	FILL	
			1.5	0.2		(0.25-4.5') Light brown to gray fine to coarse SAND, little fine to coarse gravel, 3" concrete at 3 ft bgs (dry) [FILL]  No impact observed	-		
	2	M-1	0.7		47				
	4		0.3			_			
	-	•	0.6			(4.5-5') Dark brown PEAT (moist)  No impact observed  (5-9.5') Brown fine to coarse SAND and GRAVEL (wet) Sheen observed at 7.5 ft bgs	7 2 2 2	PT SW	
	6		1.0						
	8	M-2	1.2		43	_			
			3.1			_			
	10		3.6	11.0		(9.5-10') Light brown fine SAND, some silt (moist)  No impact observed  (10.12') Olive gray fine to coarse SAND and GRAVEL (wet)		SM SW	
			8.0	30.6		(10-12') Olive gray fine to coarse SAND and GRAVEL (wet) Sheen observed from 10-12 ft bgs			
	12	M-3	0.9		47	(12-12.5') Olive gray very fine SAND and SILT (moist) No impact observed		SM SW	
	-		2.2			(12.5-15') Olive gray fine SAND, some fine to coarse gravel, trace silt (wet) - No impact observed		SVV	
	14		5.7			<del>-</del> -			
	16	M-4	3.1	18.6	15	(15-17') Light brown to brown fine to coarse SAND and GRAVEL (wet) Sheen observed at 16.5 ft bgs		SW	
			9.2	15.7		Macrocore Refusal at 17 ft bgs  Bottom of Exploration at 17 ft bgs			
	18-						1		
						- - -	-		
	20								

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B04C

Date(s) Drilled 12/5/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	9.5 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	7.97 ft
Groundwater Level During Drilling 6 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706757.7 E 814927.5

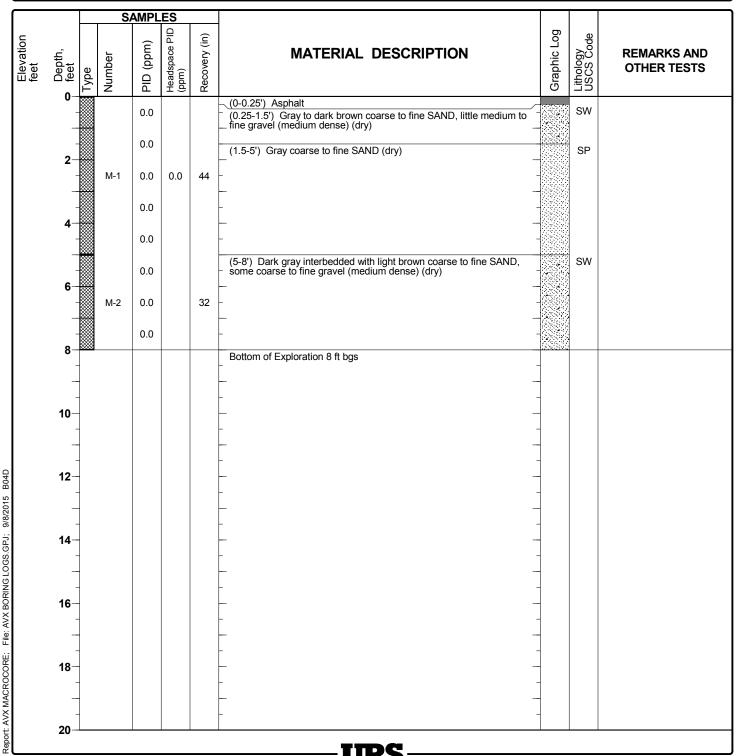


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B04D

Date(s)	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	9.46 ft
Groundwater Level During Drilling NE	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706668.3 E 814928.3

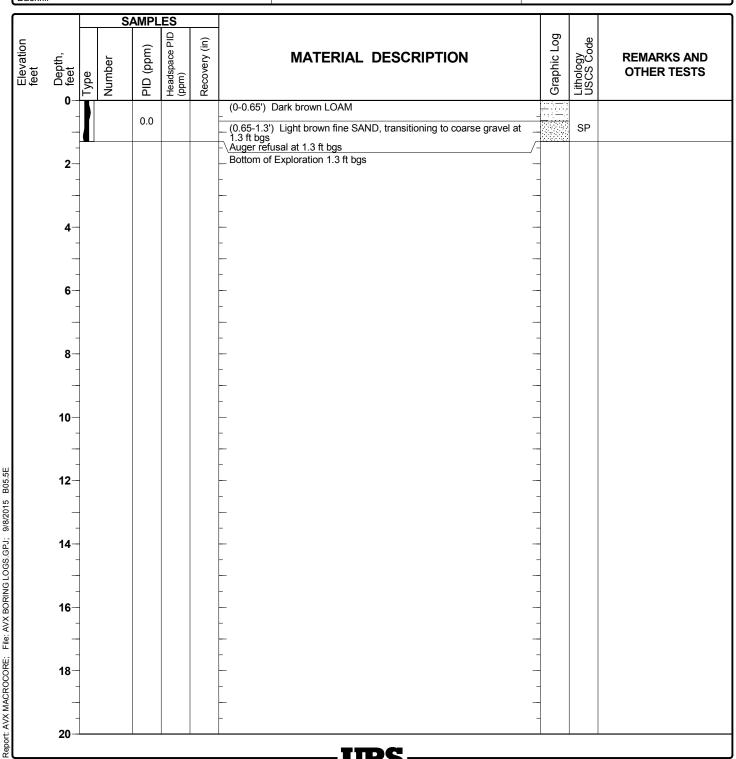


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B05.5E

Date(s) Drilled 12/13/2013	Lo	ogged By	J. Currier	Checked By	J. Harshman
Drilling Method Hand Auger		rill Bit ze/Type	NA	Total Depth of Borehole	1.3 feet
Drill Rig Type <b>NA</b>		rilling ontractor	NA	Surface Elevation	7.97 ft
Groundwater Level NE During Drilling		ampling ethod(s)	Hand Auger	Hammer Data	NA
Borehole Backfill Sand backfill	Loc	ocation		Coordinates	N 2706602.4 E 815080.3



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B05A

Date(s) Drilled 12/5/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	21.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	7.84 ft
Groundwater Level During Drilling 7 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706957.2 E 815029.6

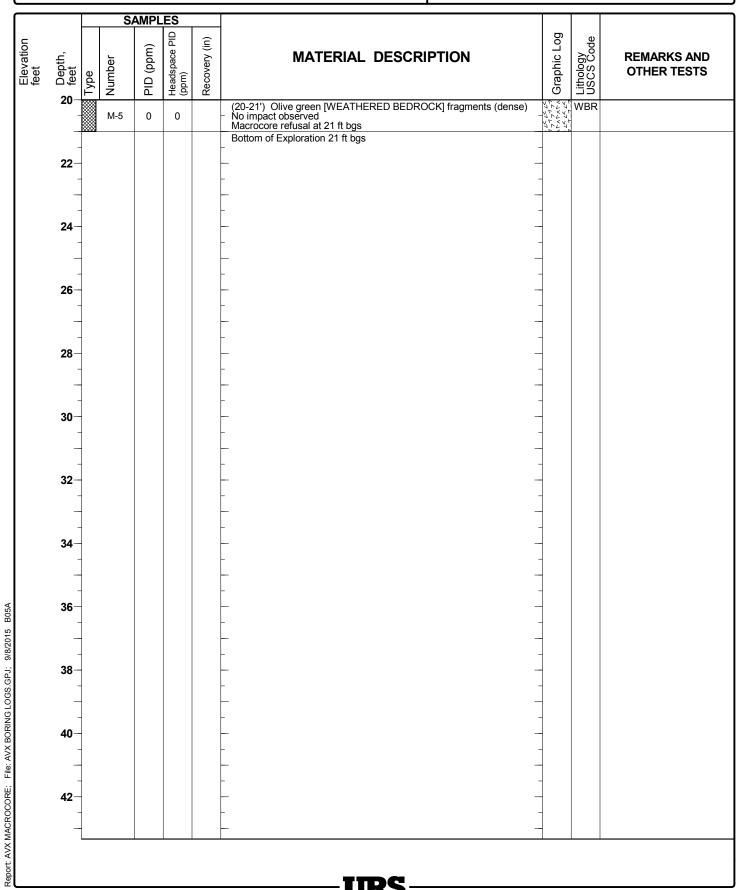
			SA	MPL	ES					
Elevation feet	11-	- Abe	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0			(0-0.25') Asphalt	- 188	SW	
	-			0			(0.25-5') Brown to light brown coarse to fine SAND and GRAVEL, concrete fragments 4.5-5 ft bgs (medium dense) (dry) No impact observed			
	2		M-1	0		43				
	4			0			_			
				11.9	30.0					
	6			3.0	50.2		(5-9') Brown coarse to fine SAND, some coarse to fine gravel (well graded) (medium dense) (moist to wet at 7 ft bgs) No impact observed		sw	
				8.0				$\nabla$		
	8		M-2	0.1		43				
	-			0.0						
	10			0.0			(9-10') Brown coarse to fine SAND (medium dense) (moist) No impact observed		SW	
				0			(10-13') Gray medium to fine SAND, with intervals of silty very fine sand, trace coarse sand (medium dense) (wet) No impact observed		SP	
	12			0						
	12		M-3	0		55	-	-		
	14			0			(13-15') Brownish yellow coarse to medium to fine SAND, little medium to fine gravel (medium dense) (wet) No impact observed		SW	
	-			8.0	3.4					
	16			0			(15-20') Brown coarse to fine SAND and GRAVEL (loose) (wet) No impact observed		SW	
				0						
	18		M-4	5.4	13.2	38				
				6.2						
	20			1.2						

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B05A

Sheet 2 of 2



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **Log of Boring B05B**

Date(s)	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	17.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.92 ft
Groundwater Level During Drilling 3 to 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706858.9 E 815029.5

			SA	MPL	<b>ES</b>	<u> </u>		g	(I)	
Elevation feet	- 11	lype	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0			(0-0.25') Asphalt (0.25-1') Weathered concrete fragments (possible old slab)	A 4 A A		
	2			0			(1-5.5') Black to dark brown coarse to medium to fine SAND, red brick fragments, medium to fine gravel (loose) (wet) [FILL] No impact observed		SP	
	-		M-1	0	0.0	42	_			
	4			0				z J		
	4			0			-			
	6			0			(5.5-9.5') Dark brown highly organic PEAT, little silt, little sand (moist)	- 77 77 77 77 77 77 77 77 77 77 77 77 77	PT	
	-			0			No impact observed	70 70 70 70 70 70 70 70 70		
	8-		M-2	0	0.0	40	- -	70 40 40 4 40 40 40 40 4 40 40 40 4		
	-			0				70 40 40 4 70 40 40 4		
	10			0			(9.5-10') Brown coarse to medium to fine SAND and GRAVEL (medium dense) (wet) No impact observed	7	SW SW	
	-			0.7			(10-15') Brown to light brown coarse to medium SAND and — GRAVEL, intervals of silty fine sand (medium dense to dense) (wet) No impact observed			
	12		M-3	1.2		43	<u> </u>			
	-			2.8						
	14			3.0	14.5					
	16		M-4	0.9	41.0		(15-17') Brownish yellow coarse to medium to fine SAND and GRAVEL (loose to medium dense) (wet) No impact observed		SW	
			T	0.9			Macrocore refusal at 17 ft bgs			
	18-						Bottom of Exploration 17 ft bgs	-		
	-							-		
	20						-	1		

**Project Location: New Bedford, Massachusetts** 

**Project Number:** 39744051

# **Log of Boring B05C**

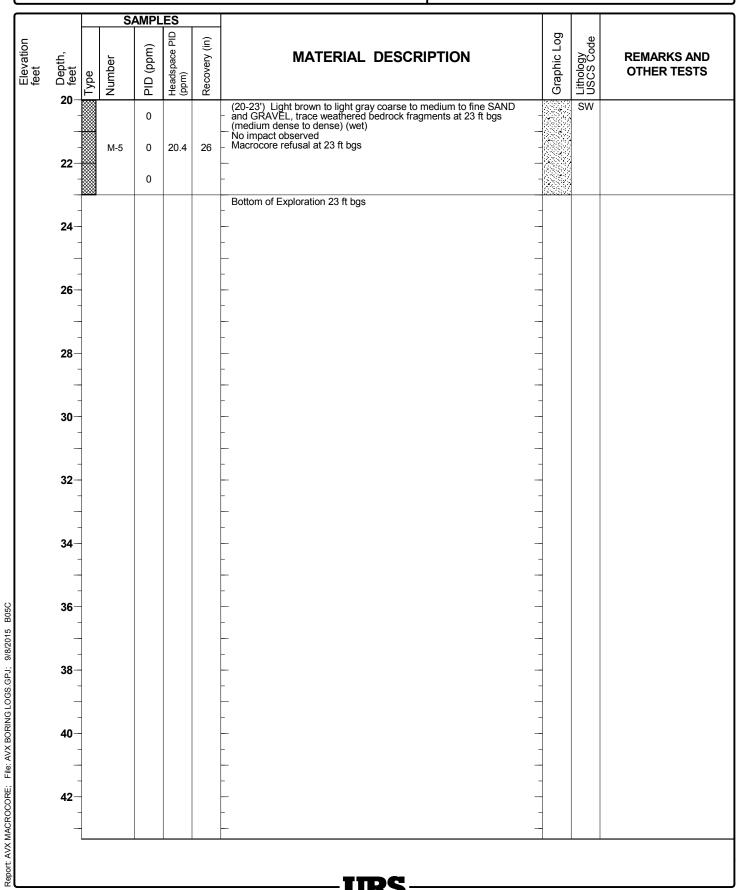
Date(s) Drilled 12/6/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	23.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	8.29 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706757.3 E 815028.8

			S	AMPL	ES					
Elevation feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0 - - 2- - - - 4-		M-1	0 0 0	5.0	40	(0-0.25') Asphalt (0.25-2') Black to dark brown medium to fine SAND, red brick fragments, medium to fine gravel [FILL] No impact observed  (2-5') Light brown fine to very fine SAND (loose) (dry) No impact observed		FILL	
	6- -			0 0			(5-6') Light brown fine to very fine SAND (loose) (dry) No impact observed  (6-10') Brown to light brown coarse to fine SAND and GRAVEL (medium dense) (wet) No impact observed	-	SP SW	
	8- - - 10-		M-2	0 0 0	2.1	40	(10-11') Brown to gray very coarse to fine SAND and fine GRAVEL (loose) (wet)		SW	
	12- - - - 14-		M-3	0 0	9.0	50	No impact observed  (11-15') Light brown fine to very fine SAND, some medium to fine gravel, some cobbles (dense to medium dense) (wet)  No impact observed		SW	
	16-		M4	0 0 0	7.1	40	(15-20') Brown to gray very coarse to fine SAND and medium to fine GRAVEL, little to trace coarse to medium gravel (poorly graded/well sorted) (loose) (wet) No impact observed		SP	
	18		M-4	0 0	7.1	40	- - -			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B05C**



**Project Location: New Bedford, Massachusetts** 

**Project Number:** 39744051

## Log of Boring B05D

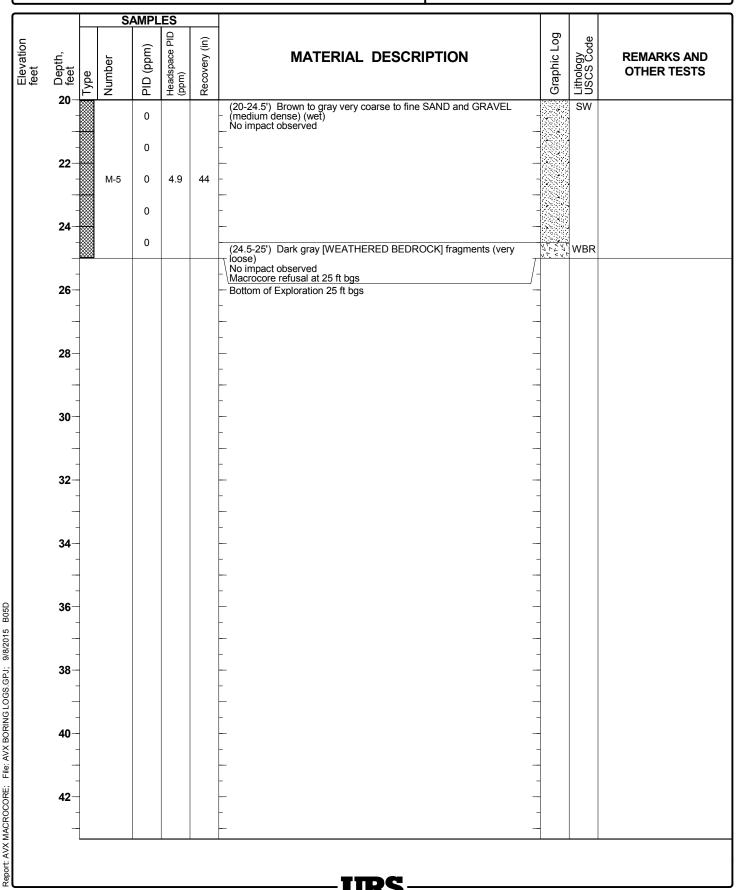
Date(s) Drilled 12/6/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	25.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	8.45 ft
Groundwater Level During Drilling 7 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706658.5 E 815029.8

	-		SA	AMPL	.ES	ı				
Elevation feet		Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0-			0			(0-0.25') Asphalt (0.25-1') Brown medium to fine SAND, some gravel (dense) (dry) No impact observed		SW	
	2-			0			(1-5') Light brown fine to very fine SAND (loose to medium dense) (dry) No impact observed		SP	
	_		M-1	0	0	42	_	_		
	4-			0						
	_			0			(5-7.5') Light brown fine to very fine SAND, trace dark brown medium to fine sand and gravel at 6 ft bgs (loose) (dry)		SP	
	6-			0			No impact observed			
	_		M-2	0	0.3	42	(7.5-8') Light brown SANDY SILT (soft) (wet)	<b>Z</b>   -	ML	
	8-			0			No impact observed  (8-10') Light brown to brownish yellow coarse to medium to fine SAND and GRAVEL (loose) (wet)  No impact observed		SW	
	10-			0			_			
	_			0			(10-15') Light brown to gray very coarse to coarse to fine SAND, some coarse to fine gravel (medium dense) (wet) No impact observed		SW	
	12 <u>-</u>			0			_			
	_		M-3	0	0.4	50	- - -			
	14-			0						
	_			0			(15-19') Brown to gray very coarse to fine SAND and GRAVEL (loose to medium dense) (wet) No impact observed		SW	
	16 - -			0			· -			
	18 <u>-</u>		M-4	0	2.5	40	_			
	_			0			(19-20') Light brown SILTY very fine SAND, little coarse to medium		SP	
	20			0			to fine gravel at 19.5 ft bgs (medium dense) (wet)  No impact observed			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B05D

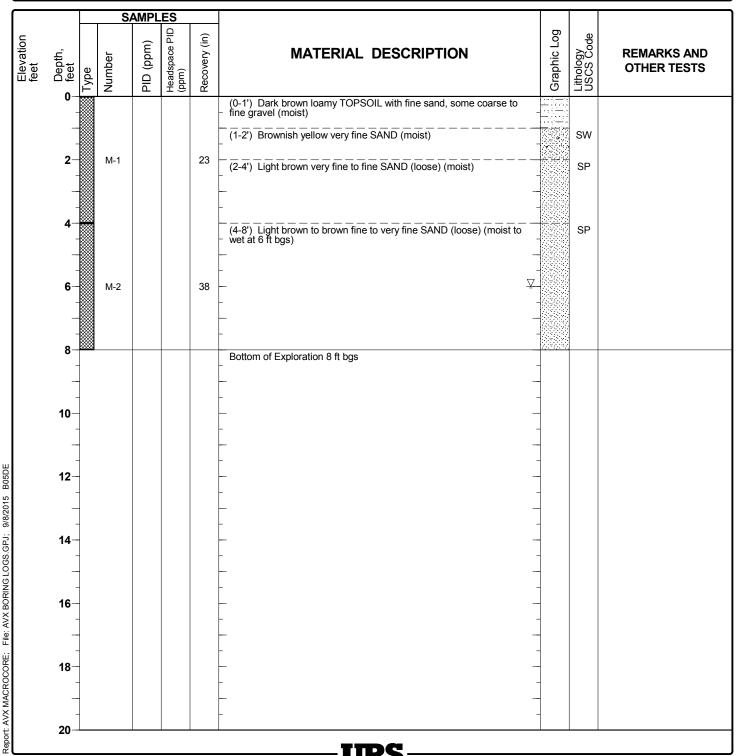


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B05DE**

Date(s)	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	8.31 ft
Groundwater Level During Drilling 6 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfilled to surface	Location	Titleist property	Coordinates	N 2706615.6 E 815049.5

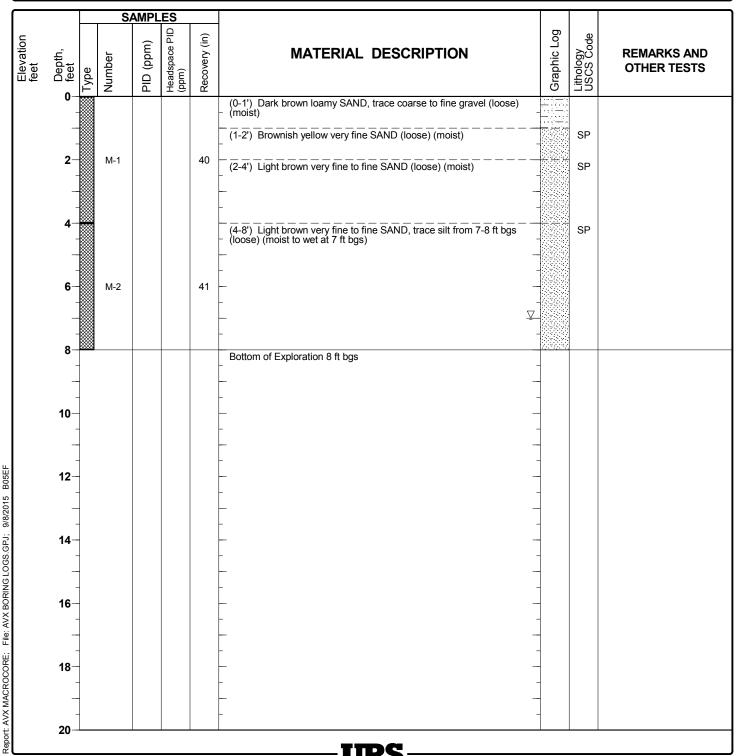


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B05EF**

Date(s)	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	8.98 ft
Groundwater Level During Drilling 7 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfilled to surface	Location	Titleist property	Coordinates	N 2706570.8 E 815030.9

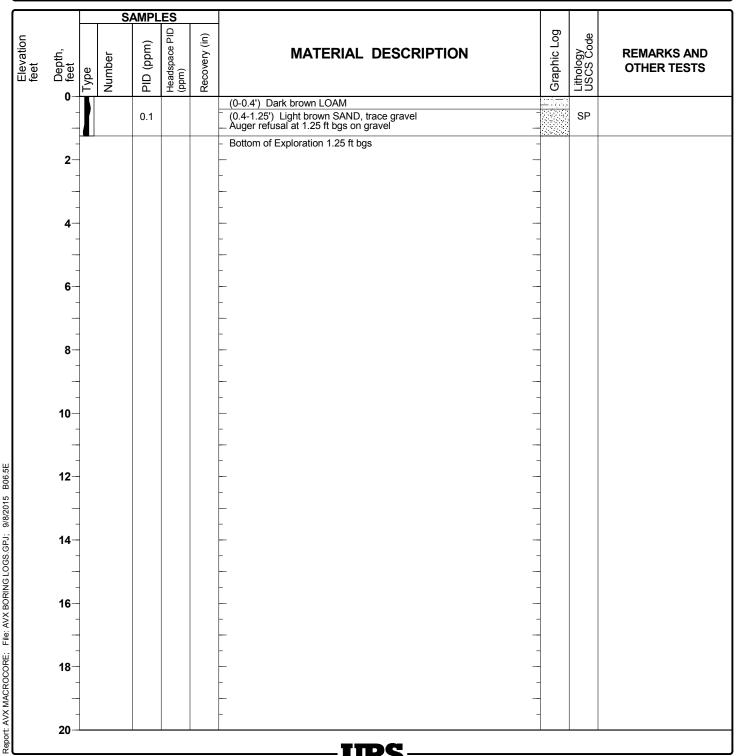


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B06.5E

Date(s) Drilled 12/13/2013	Logged By	J. Currier	Checked By	J. Harshman
Drilling Method Hand Auger	Drill Bit Size/Type	NA	Total Depth of Borehole	1.3 feet
Drill Rig Type <b>NA</b>	Drilling Contractor	NA	Surface Elevation	7.29 ft
Groundwater Level During Drilling NE	Sampling Method(s)	Hand Auger	Hammer Data	NA
Borehole Backfill Sand backfill	Location		Coordinates	N 2706603.6 E 815178.0

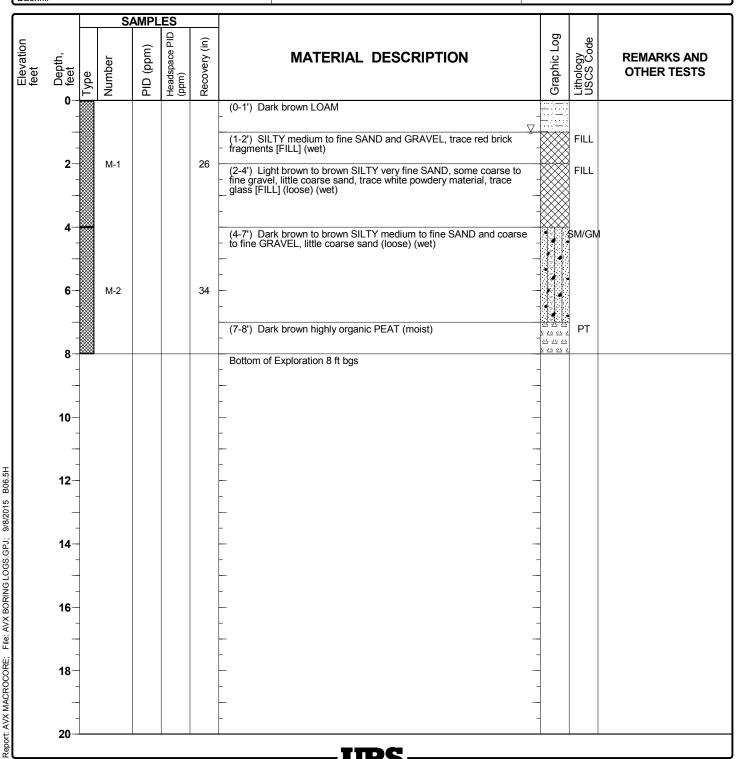


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B06.5H

Date(s)	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	8.09 ft
Groundwater Level During Drilling 1 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfilled to surface	Location	Titleist property	Coordinates	N 2706424.9 E 815203.9

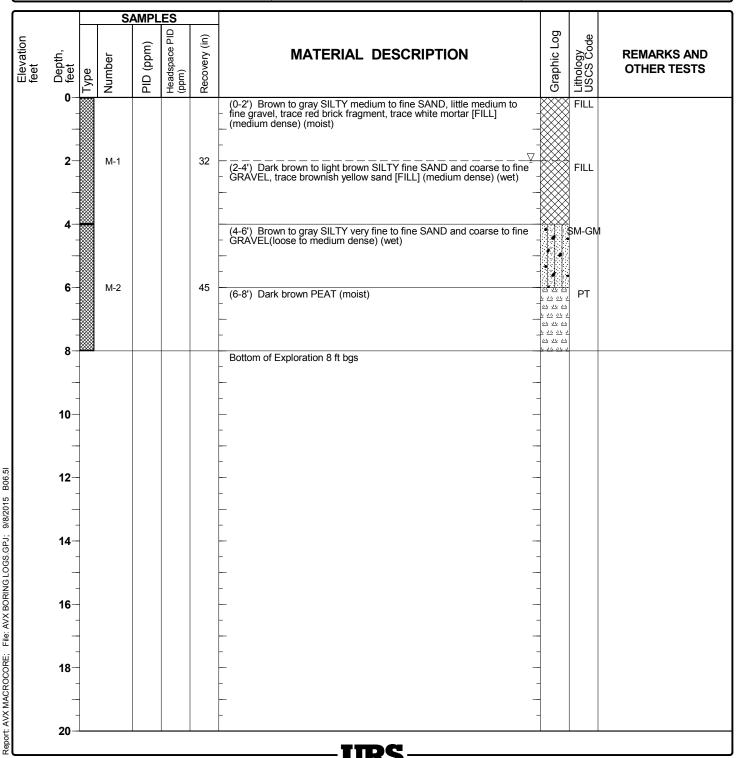


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B06.5I

Date(s) 4/29/2014	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	7.23 ft
Groundwater Level During Drilling 2 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfill Borehole backfilled to surface	Location	Titleist property	Coordinates	N 2706385.7 E 815205.0

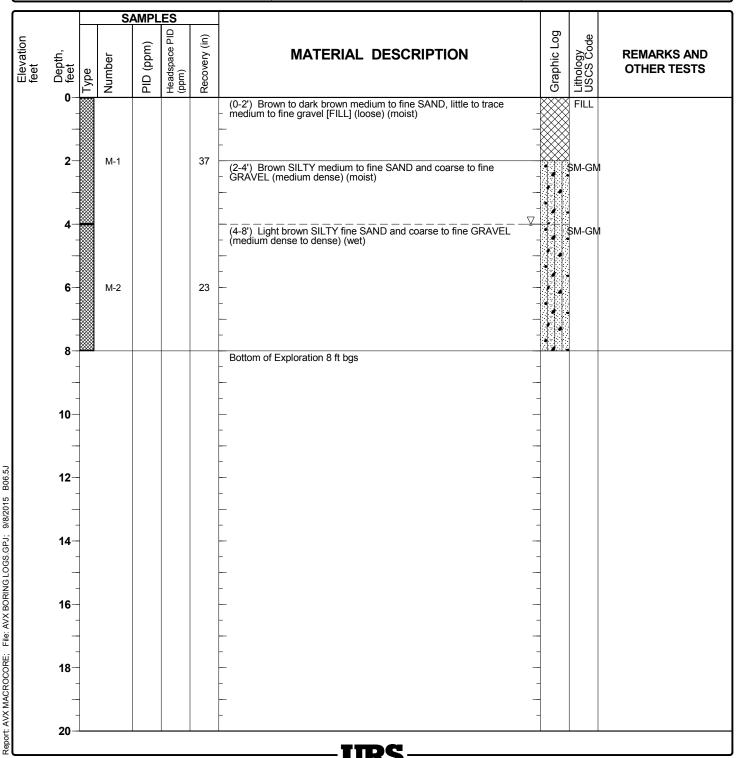


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B06.5J

Date(s) 4/29/2014	Logged By	J. Harshman	Checked By
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole 8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data NA
Borehole Backfilled to surface	Location	Titleist property	Coordinates N 2706345.8 E 815204.4



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B06A

Sheet 1 of 2

Date(s) Drilled 12/9/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	27.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	7.34 ft
Groundwater Level During Drilling 6 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706958.4 E 815127.8

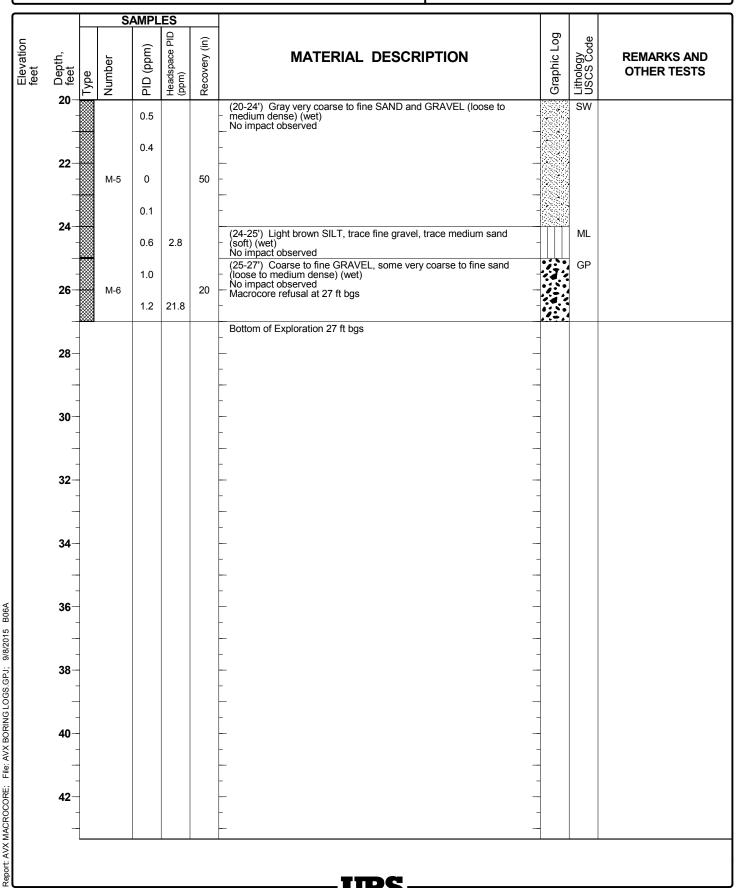
			S	AMPL	ES					
Elevation feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0-			0			(0-0.25') Asphalt (0-25-5') Light brown to dark brown to brownish yellow coarse to fine	XXX	FILL	
	_						(0.25-5') Light brown to dark brown to brownish yellow coarse to fine SAND and GRAVEL, pink insulation fabric, cobbles (loose to medium dense) (dry) [FILL]			
	2-			0			- -			
	-		M-1	0	0.3	34				
	_			0			_			
	4-			0			_ -			
	_						(5-6') Light brown to gray coarse to fine SAND with fine gravel		sw	
	6-			0			- (loose) (dry) No impact observed  (6-10') Fine to very fine SAND, trace fine gravel, trace coarse sand		SP	
	_			0			(o-10) The to very line SAND, trace line gravel, trace coarse sand  (wet)  No impact observed		. 31	
ı	-		M-2	0		36	_			
	8-			0.2			<del>-</del> -			
	_			0.4	0.7		_			
	10-			0.4	0.7		(10-13') Gray coarse to fine SAND, little to trace fine gravel (loose)		sw	
	_			0			(wet) No impact observed			
	-			0			-			
	12- -		M-3	0		51				
	_			0			(13-15') Brownish yellow medium to fine SAND, trace medium to fine gravel (loose) (wet) No impact observed		SP	
l	14-						No impact observed			
	-			0.1	0.5		(45.47) Provision valley against to fine CAND (lease) (val)		CD.	
	16 <del>-</del>			0.6	4.0		(15-17') Brownish yellow coarse to fine SAND (loose) (wet) No impact observed		SP	
	-01			0.4						
	- 18-		M-4	0		52	(17-20') Gray fine to very fine SAND, trace medium to fine gravel at 20 ft bgs (loose) (wet) No impact observed		SP	
	-			0			-			
	=			0.1			-			
	20						<u> </u>	<u>Kawasii</u>	:	

**URS** 

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B06A**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### Log of Boring B06B

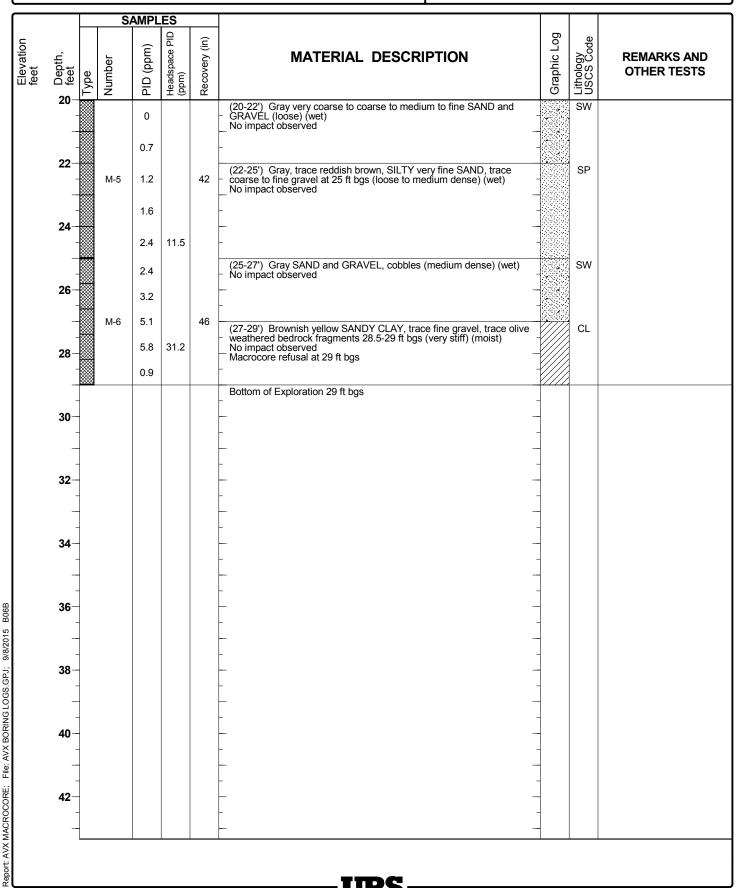
Date(s) Drilled 12/9/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	29.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	6.19 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore/2-ft Split Spoon	Hammer Data	Direct Push/Autohammer
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706859.7 E 815126.6

		,	SAMPL	ES					
Elevation feet	Depth, feet Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0		0			(0-0.25') Asphalt (0.25-5') Brown to black coarse to fine SAND, GRAVEL, black		FILL	
						(0.25-5') Brown to black coarse to fine SAND, GRAVEL, black cinder, red brick fragments, mortar (moist to wet at 4 ft bgs) [FILL]	$\bowtie$		
	2		0			- -			
		M-1	0	2.2	38				
	-		0						
	4		0			<u>-</u> -			
						(5-10.5') Brown highly organic PEAT, trace fine gravel (moist)	* ** ** * ****************************	PT	
	6		0			(5-10.5') Brown highly organic PEAT, trace fine gravel (moist)  Strong sulfur odor No impact observed	25 25 25 2 5 25 25 2 25 25 25 2		
			0			_	6 46 46 4 8 46 46 46		
		M-2	0		30	-	25 25 25 2 5 25 25 2 25 25 25 2		
	8		3.9				5 25 25 2 5 25 25 25 5 25 25 25		
						-	20 20 20 20 20 20 20 2		
	10		4.5	9.4		- -	8 88 88 8 8 88 88 8 8 88 88 8		
	-		1.9	1.2		(10.5-11') Reddish brown medium to fine SAND, little to trace gravel (loose) (wet) No impact observed		sw	
	-		0.6			(No impact observed / (11-15') Light brown to gray very coarse to coarse to medium to fine		SW	
	12	M-3	0.1		46	(11-15') Light brown to gray very coarse to coarse to medium to fine  SAND and GRAVEL (loose) (wet)  No impact observed			
						-			
	14		0.0			- -			
	-		0.0			-			
	-		0			(15-18') Gray fine to very fine SAND, trace coarse sand (loose)  - (wet)		SP	
	16		0			No impact observed			
	-					-			
	18	M-4	0	0.6	54	(18-20') Gray very coarse to fine SAND and GRAVEL (loose to		SP	
			0			( 10-20 ) Gray very coarse to line SAND and GRAVEL (loose to — medium dense) (wet) — No impact observed —		JF	
	-		0			_			
	20	<u>a</u>				URS—	<u> </u>		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B06B**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **Log of Boring B06C**

Date(s) Drilled 12/9/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	19.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	7.65 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706759.9 E 815127.4

		S	AMPL						
Elevation feet Depth,	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
- - - 2-			0			(0-0.25') Asphalt (0.25-3') Brown to light brown SAND, GRAVEL, red brick fragments, black cinder (loose to medium dense) (dry) [FILL] No impact observed		FILL	
- -		M-1	0	0.0	50	(3-5') Light brown very fine to fine SAND, trace coarse to medium		SP	
4- -			0			sand (loose) (dry) No impact observed	- - -		
6			0			(5-10') Brown to reddish brown coarse to medium to fine SAND, little fine to very fine sand from 5-6 ft bgs(loose) (wet) No impact observed	  -  -	SP	
- - 8- -		M-2	0 0	0.0	41	- - - - -			
  10 			0			(10-12') Brown to gray coarse to medium to fine SAND (loose) (wet) No impact observed	- - -	SP	
- 12- - -		M-3	0	16.3	54	(12-15') Light brown to gray very fine SAND, trace fine gravel at 14.5 ft bgs (loose to medium dense) (wet) No impact observed	- - -	SP	
14 			0			- - -	- - -		
16-			0			(15-17') Brown medium to fine SAND, little coarse sand (loose) - (wet) No impact observed	_ _ _	SP	
  18		M-4	0		40	(17-19') Light brown coarse to fine SAND and GRAVEL (medium dense) (wet) No impact observed Macrocore refusal at 19 ft bgs	- -	SW	
_			0.8	10.4		Bottom of Exploration 19 ft bgs	] -		

Project Location: New Bedford, Massachusetts

**Project Number:** 39744051

# Log of Boring B06D

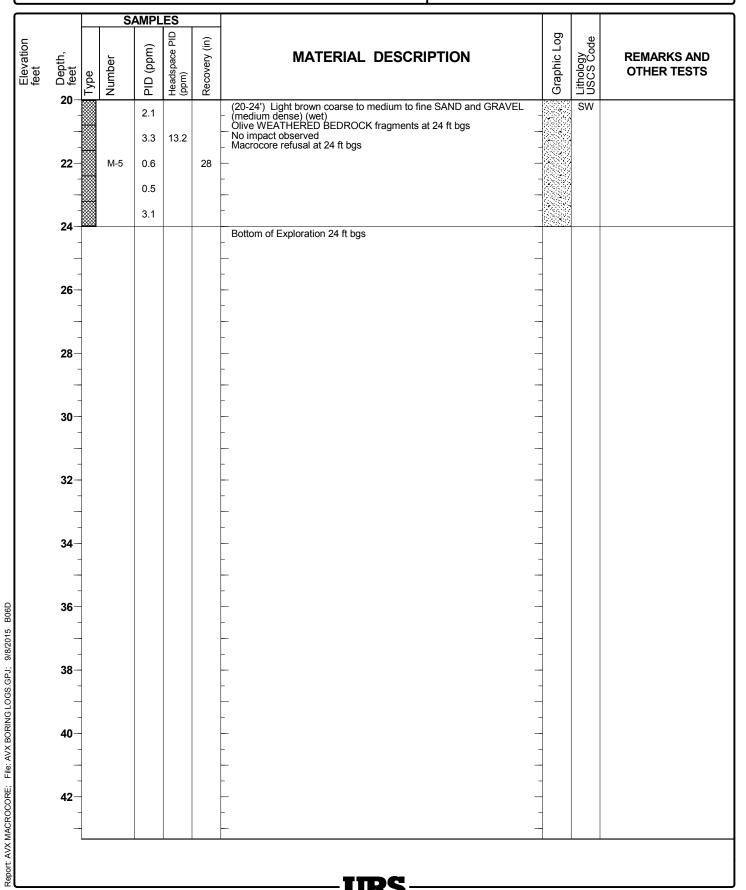
Date(s) Drilled 12/6/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	24.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	7.79 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706659.7 E 815129.3

			S	AMPL	ES					
feet	- 1	Туре	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS ANI OTHER TESTS
	0	▓		0			(0-0.25') Asphalt (0.25-3') Cobbles and concrete fragments [FILL]	-	FILL	
	-						(0.25-3) Cobbles and concrete fragments [FILL]	-		
				0			_	-		
	2							-		
			M-1	0.1	4.2	28				
	-			0			(3-5') Brown to brownish yellow SILTY medium to fine SAND, trace fine gravel, trace cobbles (loose to medium dense) (moist to wet)  No impact observed		SW	
	4-						_ No impact observed			
	-			0			<u></u>	,		
				0.6	0.8		(5-10') Light brown to light gray fine to very fine SAND, trace silt, trace coarse sand, trace fine gravel (loose) (wet)		SP	
	6-			0.0	0.0		No impact observed			
	-			0.1						
	-			_						
	8		M-2	0		46				
	•			0						
	-							$\dashv$		
				0.1				-		
	10			0.1			(10-13') Light brown becoming light gray very fine SAND, trace coarse sand (loose) (wet) No impact observed		SP	
	_			0.1			No impact observed			
	-			0.3				-		
	12							-		
			M-3	0.7		52		-		
				0.5			(13-15') Coarse to medium to fine SAND and GRAVEL (loose) (wet)  No impact observed	-	SW	
	14							-		
	-			2.2	8.5			-		
					07.0		(15-16') Light brown medium to fine SAND, some medium to fine		SW	
	16			6.2	67.8		gravel (looše) (wet) No impact observed			
	-			0.6			(16-20') Coarse to medium to fine GRAVEL, some coarse to fine sand (loose to medium dense) (wet)		GW	
	-						_ No impact observed			
	40		M-4	1.3		50	_			
	18			2.7			-			
	-			,						
	-			2.8						
	20_	***					I	المنحنية	l .	

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B06D

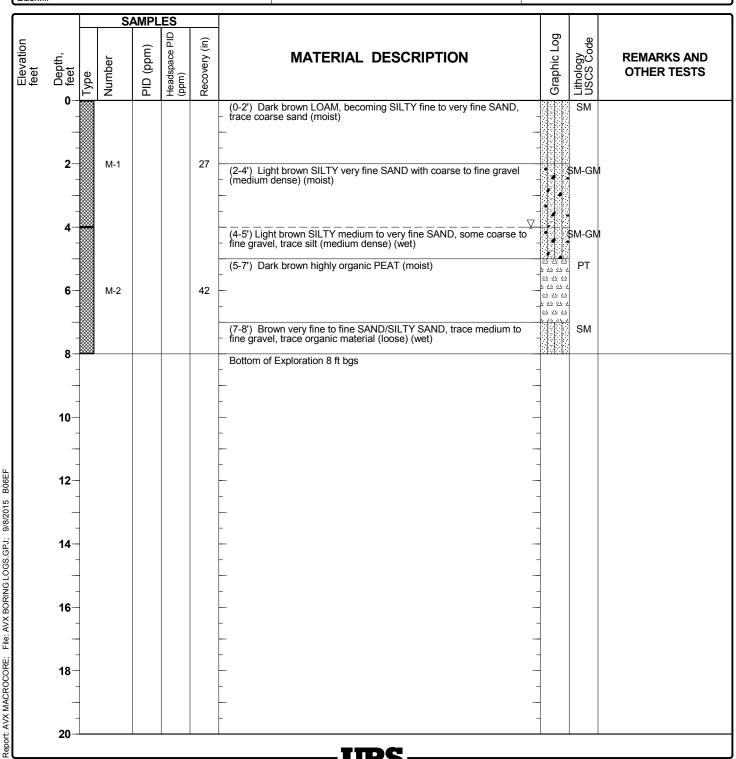


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B06EF**

Date(s) 4/28/2014	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	8.11 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfilled to surface	Location	Titleist property	Coordinates	N 2706573.0 E 815125.1



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **Log of Boring B07.5BC**

Date(s) Drilled 12/18/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	19.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	4.91 ft
Groundwater Level During Drilling 3 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706811.9 E 815274.9

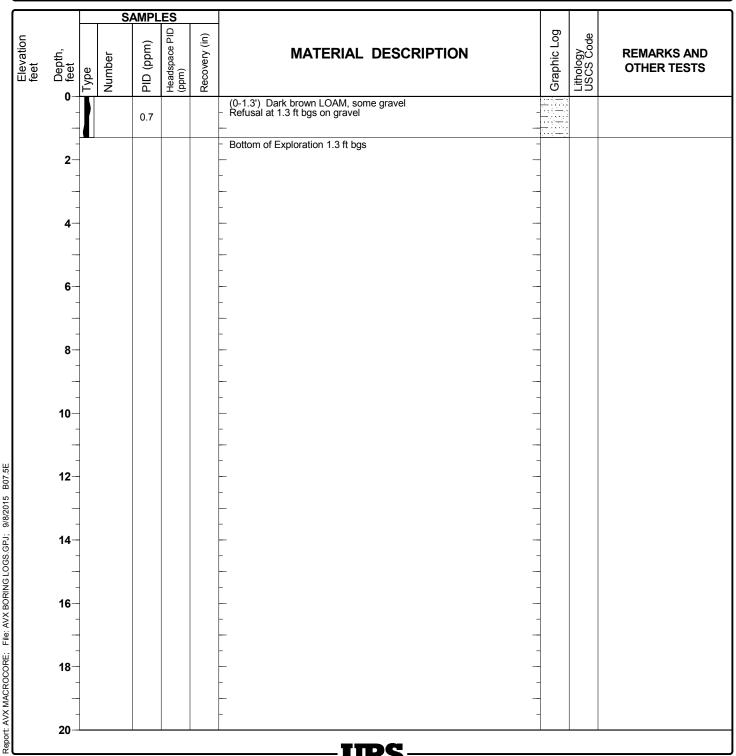
_			SA	AMPL	ES Q	(1		g	Φ	
Elevation feet		lype	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.0			(0-0.25') Asphalt (0.25-5') Dark brown to black [FILL], medium to fine sand, gravel, red brick fragments, black cinder (medium dense) (wet at 3 ft bgs)		FILL	
	-			0.0			red brick fragments, black cinder (medium dense) (wet at 3 ft bgs) 			
	2		M-1	0.0	0.2	22	_			
			IVI- I		0.2	32	<u> </u>			
	4			0.0			- 			
	-			0.0			_			
				0.0			(5-10') Brown to reddish brown highly organic [PEAT], trace silt (wet) No impact observed	77 77 77 77 77 77 7 77 77 7	PT	
	6			0.2				77 77 77 77 77 77 77 77 77		
	-		M-1	0.0		55	<del>-</del> ' -	77 77 77 77 77 77 77 77 77		
	8-			0.7	3.1			77 77 77 77 77 77 77 77 77 77 77 77		
	-				0.1		_	27 27 27 2 27 27 27 2 27 27 27 27		
	10			0.0			(10-12') Dark brown coarse to fine SAND little very coarse sand	6 36 36 3 35 35 35 3	SP	
				0.0			(10-12') Dark brown coarse to fine SAND, little very coarse sand, little fine gravel (loose) (wet) No impact observed			
	12—			0.0						
	12		M-3	0.0	0.0	42	(12-15') Gray coarse to fine SAND and GRAVEL (loose) (wet) No impact observed		SW	
	-			0.0						
	14			0.0						
	_						(15-19') Light gray becoming light brown at 18.5 ft bgs coarse to fine SAND, little medium to fine gravel, trace silt, possible rock fragments		SP	
	16			0.0			at 19 ft bgs (medium dense to dense) (wet) No impact observed			
	-		M-4	0.0		NR	_ Macrocore refusal at 19 ft bgs			
	18			0.0						
	.5			0.0			-			
	-						Bottom of Exploration 19 ft bgs	1		
	20						URS			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B07.5E**

Date(s) Drilled 12/13	3/2013	Logged By	J. Currier	Checked By	J. Harshman
Drilling Method <b>Hand</b>		Drill Bit Size/Type	NA	Total Depth of Borehole	1.3 feet
Drill Rig Type <b>NA</b>		Drilling Contractor	NA	Surface Elevation	6.43 ft
Groundwater Leve During Drilling		Sampling Method(s)	Hand Auger	Hammer Data	NA
Borehole Backfill <b>Sand</b>	d backfill	Location		Coordinates	N 2706603.1 E 815280.1

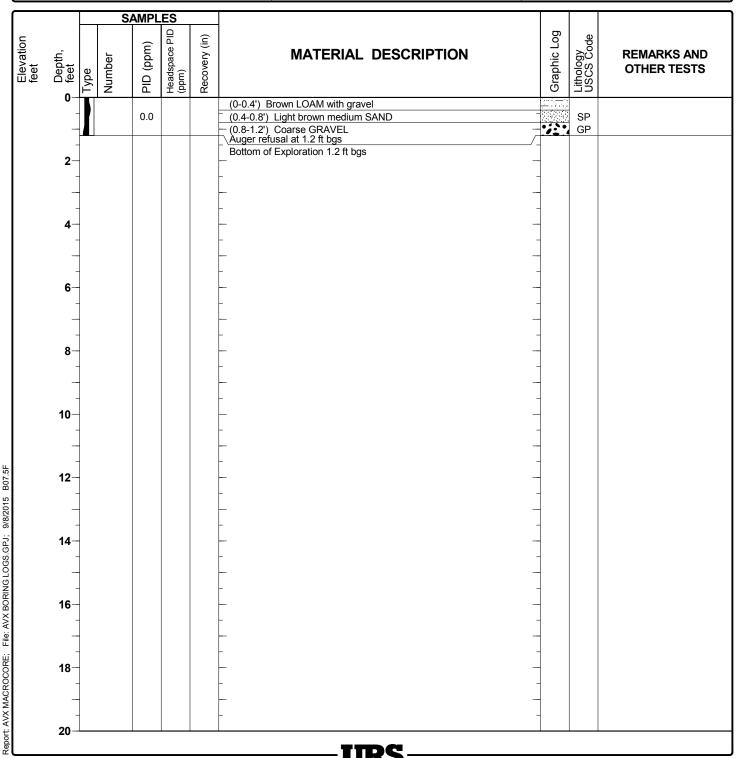


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B07.5F

Date(s) Drilled <b>12/13/2013</b>	Logged By	J. Currier	Checked By	J. Harshman
Drilling Method Hand Auger	Drill Bit Size/Type	NA	Total Depth of Borehole	1.2 feet
Drill Rig Type NA	Drilling Contractor	NA	Surface Elevation	5.34 ft
Groundwater Level During Drilling NE	Sampling Method(s)	Hand Auger	Hammer Data	NA
Borehole Backfill Sand backfill	Location		Coordinates	N 2706557.0 E 815361.8



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## Log of Boring B07A

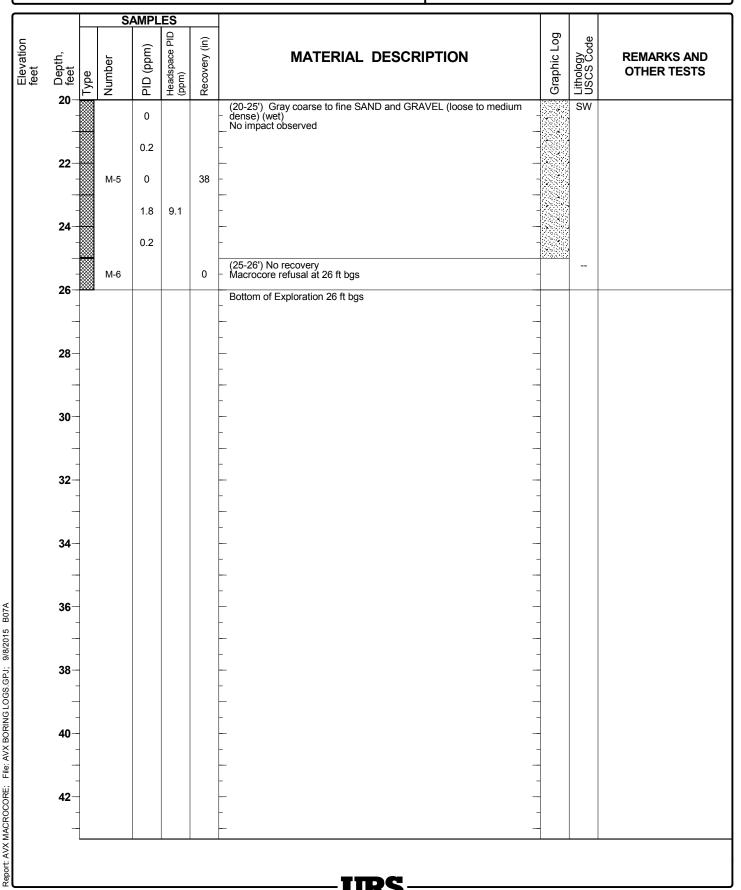
Date(s) Drilled 12/9/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	26.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	7.03 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706960.0 E 815226.3

			SAMPL	ES	1				
Elevation feet	Depth, feet Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0		0			(0-0.25') Asphalt (0.25-5') Light brown, trace black [FILL], coarse to fine sand and gravel, trace black cinder (medium dense to dense) (dry)		FILL	
	2-		0			- -			
		M-1	0.3	14.1	45	<u> </u>			
	4		0			- - - -			
	_		0			(5-7') Reddish brown SILTY medium to fine SAND, trace coarse sand (medium dense) (wet) No impact observed		SP	
	6		0						
	8	M-2	0		50	(7-10') Gray coarse to medium to fine SAND and GRAVEL (loose to medium dense)  No impact observed		SW	
			0.3	0.8		- - -			
	10		1.2			(10-12') Gray coarse to fine SAND and GRAVEL (loose to medium dense) (wet)  No impact observed		sw	
	12		4.3	13.7		No impact observed			
	12	M-3	0.9		50	(12-15') Brownish yellow very coarse to coarse to medium to fine SAND and fine GRAVEL (loose to medium dense) (wet)  No impact observed		SP	
	14		1.6			- -			
			0.7			(15-17') Brownish yellow to reddish brown coarse to fine SAND, little very coarse sand (loose) (wet)		SP	
	16		0.9			No impact observed			
	18	M-4	0.9		53	(17-18') Gray coarse to fine SAND (loose) (wet)  No impact observed		SP	
	.5		0.9			(18-20') Gray very coarse to fine SAND and fine GRAVEL (loose)  (wet)  No impact observed		SW	
	20		2.0	4.2		-			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B07A**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B07B

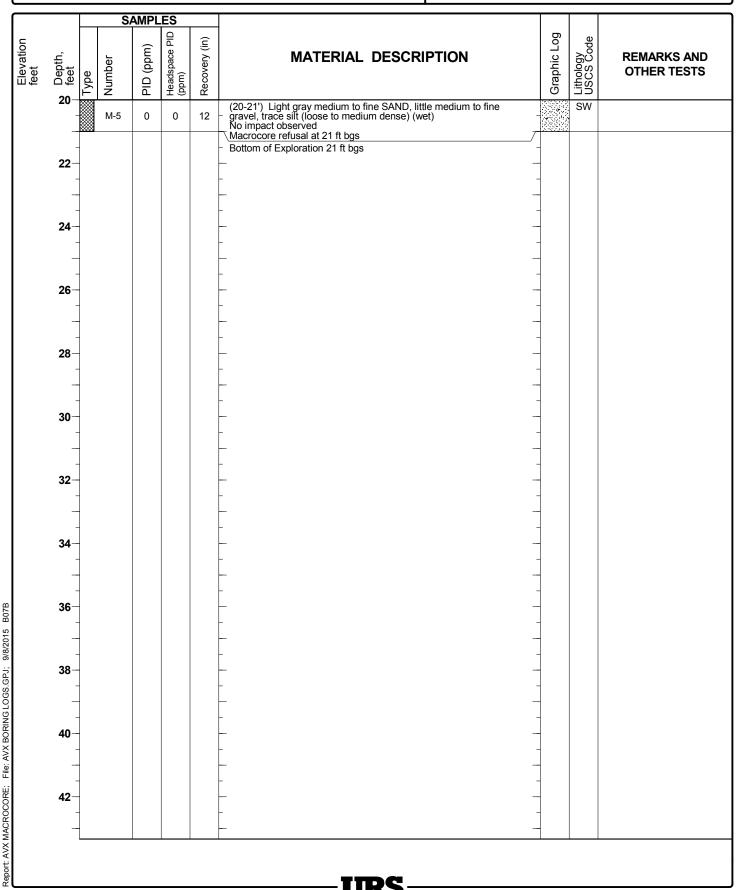
Date(s) Drilled 12/10/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	21.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.33 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706861.3 E 815226.4

			SA	MPL	ES					
Elevation feet	- 11	lype	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0-			0			(0-0.25') Asphalt	-	FILL	
	_						(0.25-5') [FILL], red brick fragments, sand, trace silt (loose to medium dense) (dry) No impact observed	-		
	2			0			-  -  -			
	-		M-1	0	3.3	13				
	-			0				-		
	4			0						
	_						(5-10') Gray coarse to fine SAND, little coarse to fine gravel (loose	· XXX	SP	
	6			0			(5-10') Gray coarse to fine SAND, little coarse to fine gravel (loose to medium dense) (wet) No impact observed			
	-			0						
			M-2	0	0.1	33				
	8			0						
	-									
	10			0			(40.45) David to serve to serve to fire CAND assessment for		OW	
	-			0			(10-15') Brown to gray coarse to fine SAND, some medium to fine gravel, 2-inch layer of peat at 12.5 ft bgs (loose to medium dense) (wet)		SW	
				0			No impact observed			
	12		M-3	0.9		17				
	_		0							
	14			1.6						
	-			6.9	13.4					
	_			1.4			(15-20') Brown to gray coarse to fine SAND, some coarse to fine gravel (medium dense) (wet) No impact observed		SP	
	16			2.6			No Impact observed			
	18		M-4	6.2		50		  - 		
	-			6.3	9.3					
				0			<del>-</del> -			
	20	<b>×</b>					URS——	<u> Herrin</u>		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B07B**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring B07C**

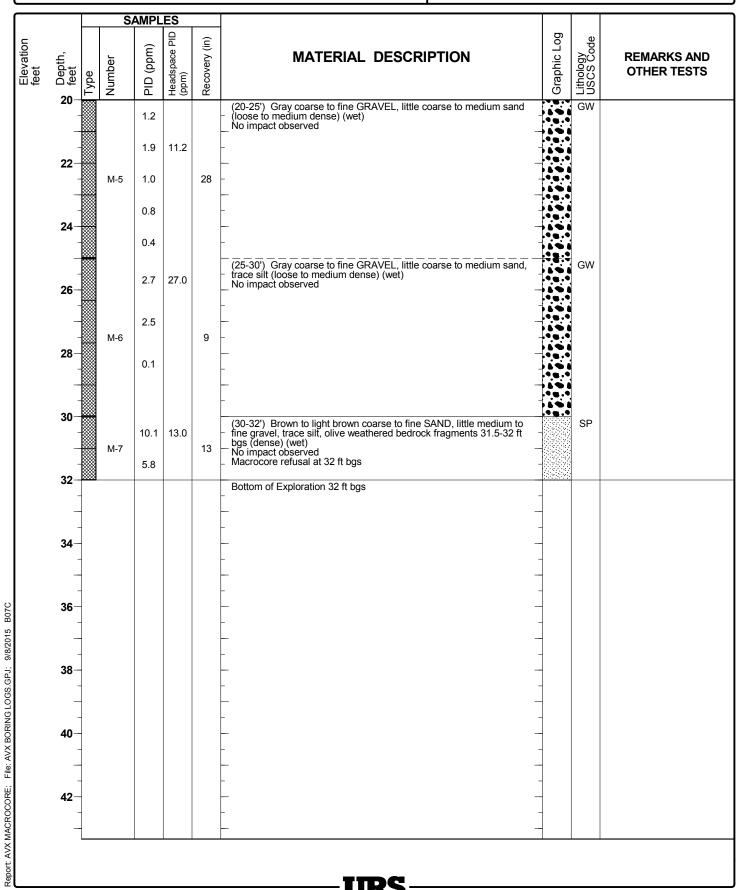
Date(s) Drilled <b>12/10/2013</b>	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	32.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.85 ft
Groundwater Level During Drilling 3 to 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706760.3 E 815227.9

			S	AMPL	ES					
Elevation feet	Depth, feet	l ype	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0	- ⊥ ፠			13	LE.	(0-5') [FILL], sand, gravel, concrete fragments, brick fragments		FILL	
				0.0			(loose to médium dense) (wet)			
	-			0.0			_	-		
	2		M-1	0.0		25				
	-		IVI- I	0.0		25		-		
	4			0.0			_	₹-		
	4			0.3	20.0		-			
	-						(5-13') Dark brown PEAT (medium dense)  No impact observed	* ** ** * * * * * *	PT	
	6			1.8	2.6		No impact observed	77 77 77 77 77 77		
	-			2.0			_	77 77 77 77 77 77 77 77 77		
			M-2	0.8		21		# 45 45 45 4 # 45 45 45 4		
	8		IVI-Z	0.0		21	_			
	-			0.5			_	77 77 77 77 77 77 77 77 77		
				5.9	8.5		-	77 77 77 77 77 77		
	10						_	- 27 27 27 - 27 27 27		
				8.0	2.6		_	77 77 77 77 77 77 77 77 77		
	-			0.7				- 27 27 27 - 27 27 27 - 27 27 27		
	12		M-3	0.2		43	_	77 77 77 		
	-		0	0.2			(13-15') Dark brown coarse to medium SAND little medium to fine	7 47 47 47 4 77 47 47	SW	
	14-			0.0			(13-15') Dark brown coarse to medium SAND, little medium to fine gravel (loose to medium dense) (wet) No impact observed			
	14			0.0			_			
	-						(15-18') Gray coarse to medium SAND, little medium to coarse gravel (loose to medium dense) (wet)		SW	
	16			0.0			gravel (loose to medium dense) (wet) No impact observed			
				0.0						
			M-4	0.0	0.9	38	<del>-</del> -			
	18						(18-20') Gray coarse to fine GRAVEL, little coarse to medium sand,		GW	
				0.0			trace silt (loose to medium dense) (wet) No impact observed			
				0.0			_			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B07C



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# **Log of Boring B07D**

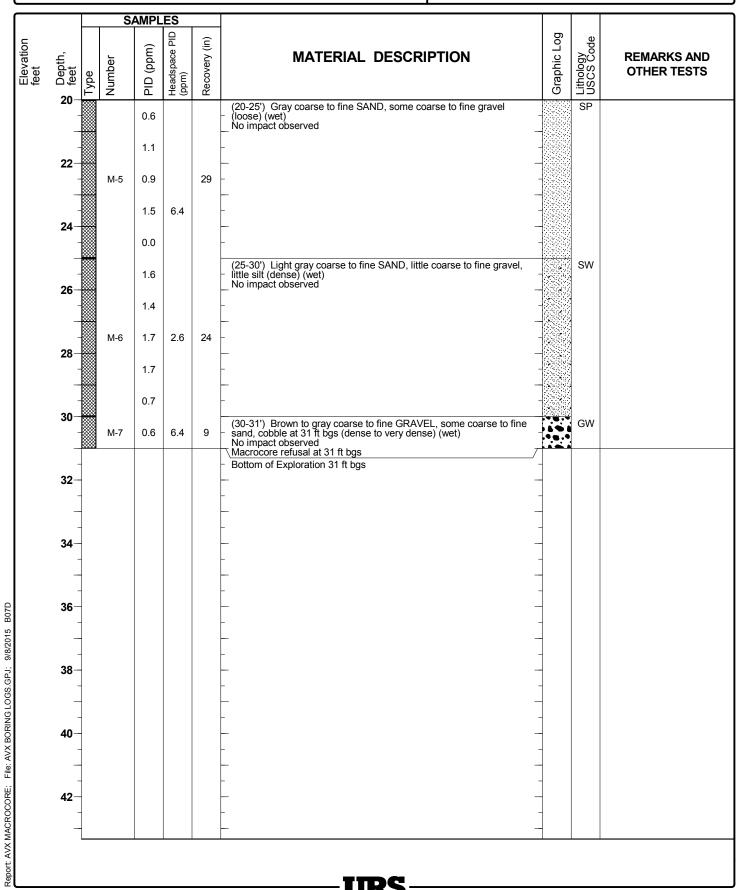
Date(s) 12/10/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	31.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	7.01 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706660.9 E 815229.3

			SA	AMPL	ES					
feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0-	<b>\</b>		1.9	10.4		(0-0.25') Asphalt (0.25-5') Light brown coarse to fine SAND, little medium to fine gravel, trace silt (medium dense to dense) (moist)	-	SP	
	-			0.0			gravel, trace silt (medium dense to dense) (moist)     No impact observed			
	2-		M-1	1.0		23				
	 _			0.5				- (50%)50% - (50%)50% - (50%)50%		
	4			0.1						
	_			9.0	15.9		(5-6') Gray to brown GRAVELY SAND (loose) (wet)  No impact observed	$\nabla$	sw	
	6-				13.9		(6-8') Dark brown PEAT (medium dense)	7 77 77 37 37 37 37 37 37 37 37 37 37 37		
				8.9			No impact observed	70 70 70 70 70 70 70 70 70	<u>»</u>	
	8-		M-2	8.4		52	(8-10') Brown medium to fine SAND (medium dense) (wet)	4 44 44		
	-			6.3			No impact observed	_		
	10			0.3			(10-13.5') Light brown medium to fine SAND 1" seam of medium to		SW	
	_			0.0			(10-13.5') Light brown medium to fine SAND, 1" seam of medium to fine sand with some gravel at 12.5 ft bgs (medium dense) (wet) No impact observed			
	12 <u>-</u>			0.0			_			
	_		M-3	0.0	0.0	46	_			
	14-			0.0			(13.5-15') Gray GRAVELY coarse to fine SAND (loose to medium — dense) (wet)		sw-sv	V
	-			0.0			No impact observed			
	- 16−			0.0			(15-20') Gray to brown coarse to fine SANDY GRAVEL (medium dense) (wet) No impact observed		GW	
	-			0.0						
	40		M-4	0.0	0.7	31	_			
	18 <del>-</del>			0.0						
	_			0.0						
	20—	×××			1	1	URS—	,• <u>e</u> .•	<u> </u>	l

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B07D**

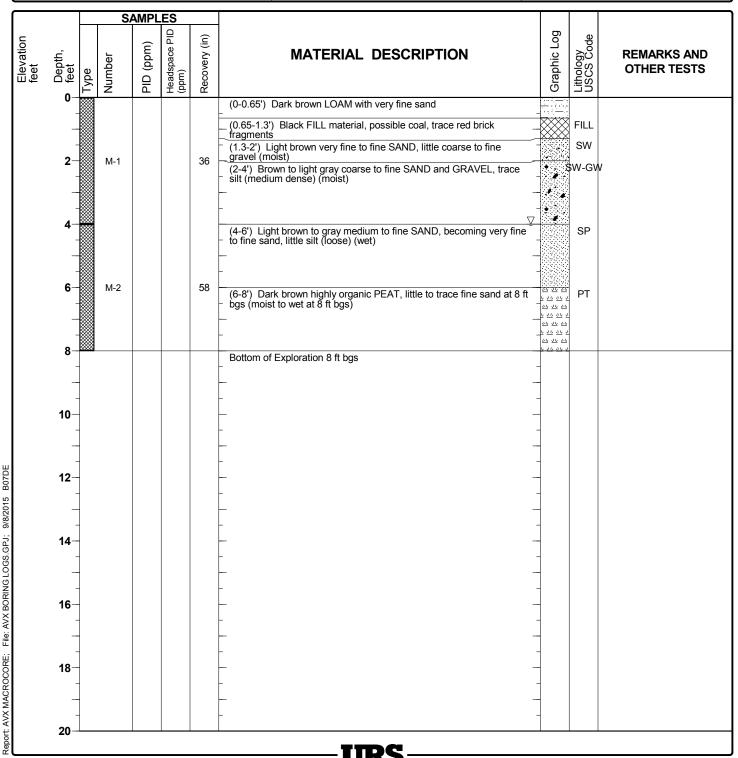


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B07DE**

Date(s) Drilled 4/28/2014	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	7.07 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfill Borehole backfilled to surface	Location	Titleist property	Coordinates	N 2706623.6 E 815232.9

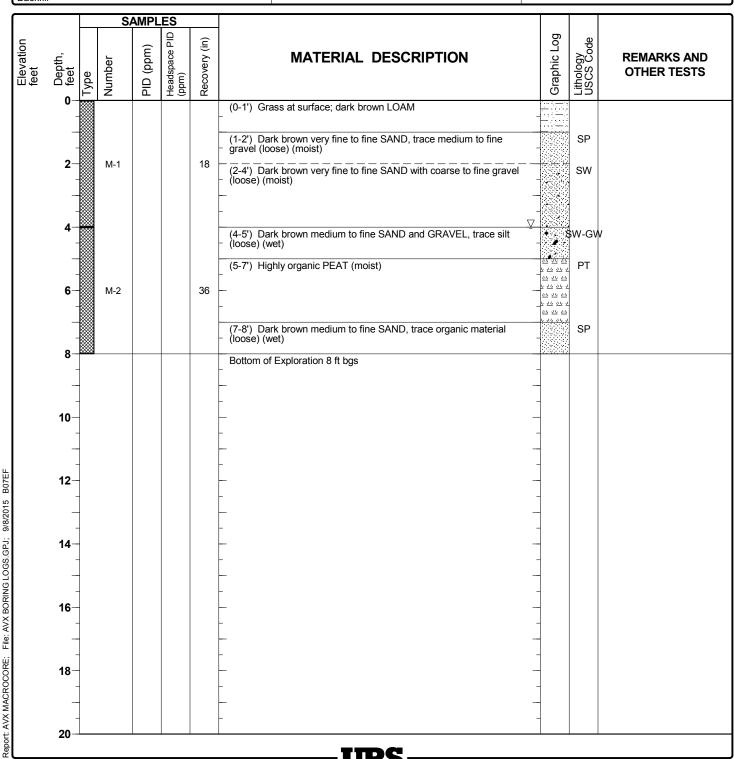


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B07EF**

Date(s)	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	6.85 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfilled to surface	Location	Titleist property	Coordinates	N 2706574.0 E 815217.2

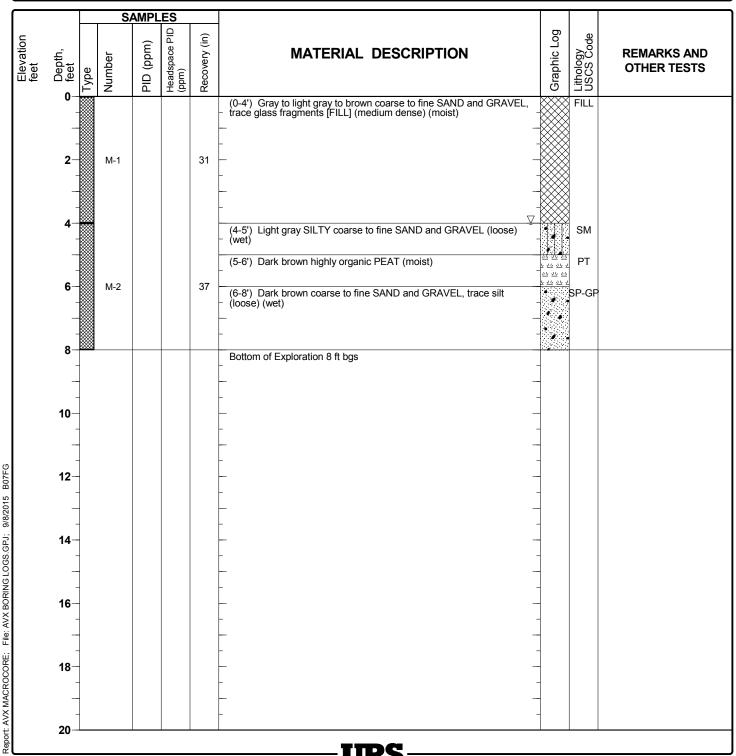


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B07FG**

Date(s) 4/28/2014	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	7.05 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfill Borehole backfilled to surface	Location	Titleist property	Coordinates	N 2706516.3 E 815239.1

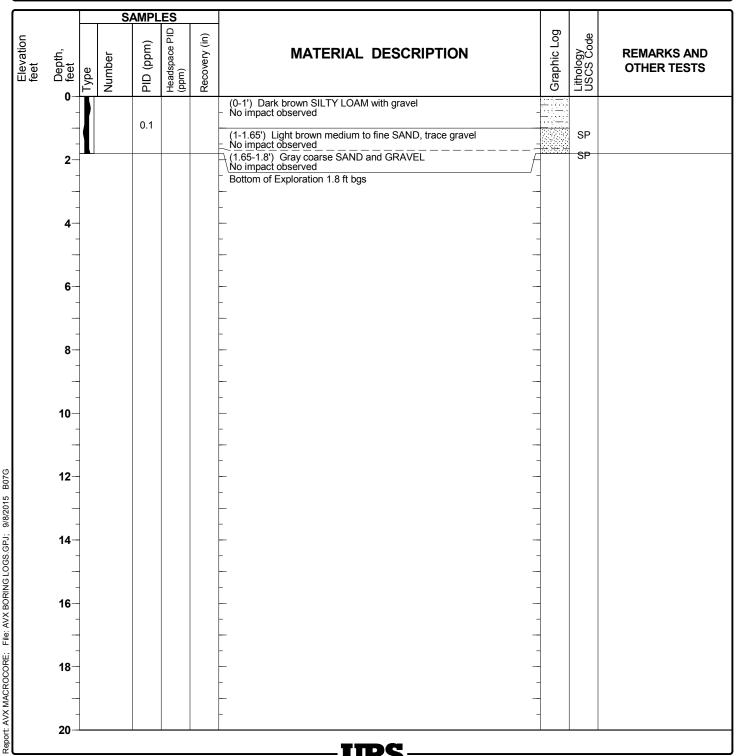


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B07G**

Date(s) Drilled 12/13/2013	Logged By	J. Currier	Checked By	J. Harshman
Drilling Method Hand Auger	Drill Bit Size/Type	NA	Total Depth of Borehole	1.8 feet
Drill Rig Type NA	Drilling Contractor	NA	Surface Elevation	5.82 ft
Groundwater Level During Drilling	Sampling Method(s)	Hand Auger	Hammer Data	NA
Borehole Backfill Sand backfill	Location		Coordinates	N 2706509.1 E 815335.2

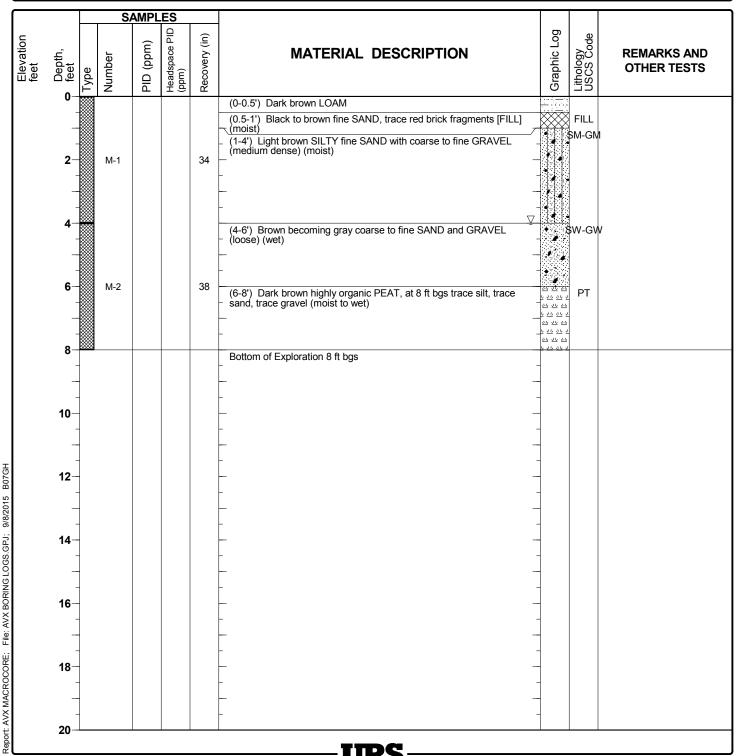


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B07GH**

Date(s)	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	6.88 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfilled to surface	Location	Titleist property	Coordinates	N 2706467.7 E 815246.9

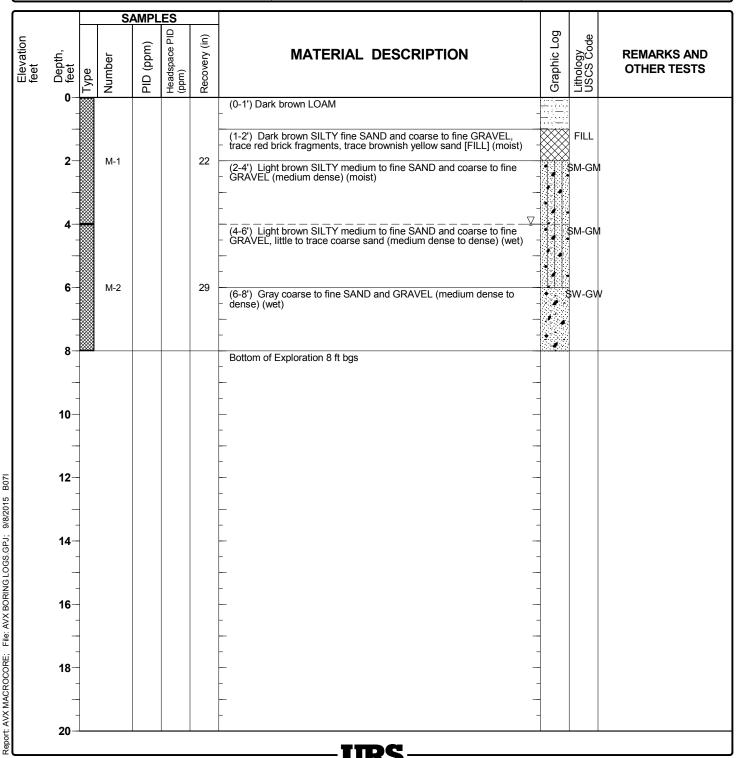


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B07I

Date(s) 4/29/2014	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	6.88 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfill Borehole backfilled to surface	Location	Titleist property	Coordinates	N 2706383.5 E 815236.7

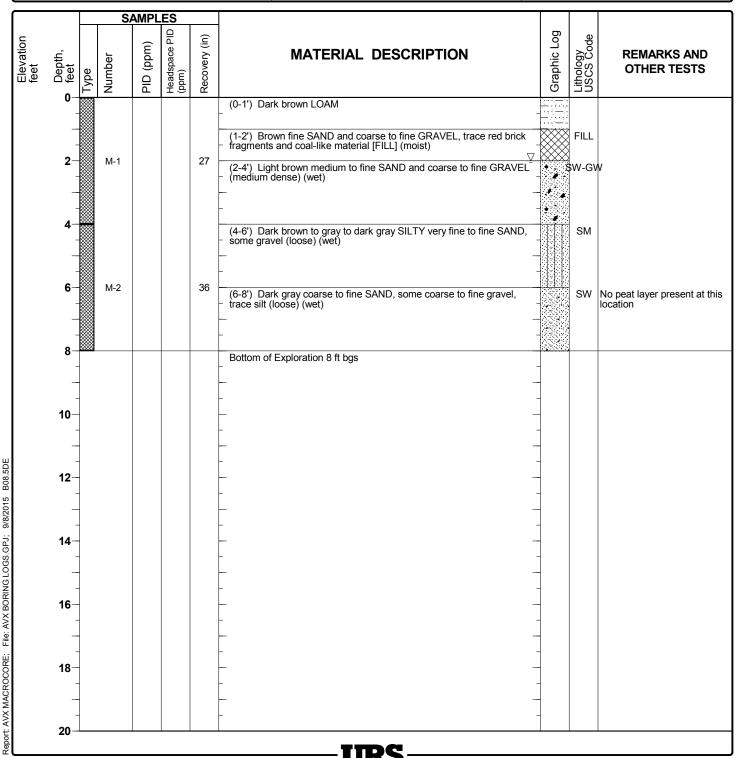


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B08.5DE**

Date(s) Drilled 4/28/2014	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	5.71 ft
Groundwater Level 2 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfill Borehole backfilled to surface	Location	Titleist property	Coordinates	N 2706621.0 E 815395.6

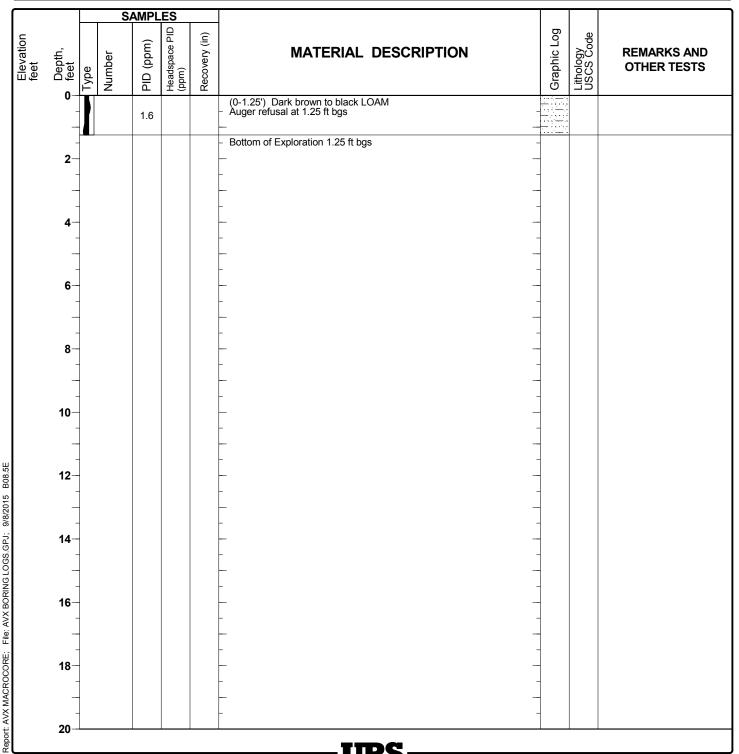


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B08.5E

Date(s) Drilled 12/13/2013	Logged By	J. Currier	Checked By	J. Harshman
Drilling Method <b>Hand Auger</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	1.3 feet
Drill Rig Type <b>NA</b>	Drilling Contractor	NA	Surface Elevation	5.71 ft
Groundwater Level During Drilling NE	Sampling Method(s)	Hand Auger	Hammer Data	NA
Borehole Backfill Sand backfill	Location		Coordinates	N 2706607.1 E 815371.5

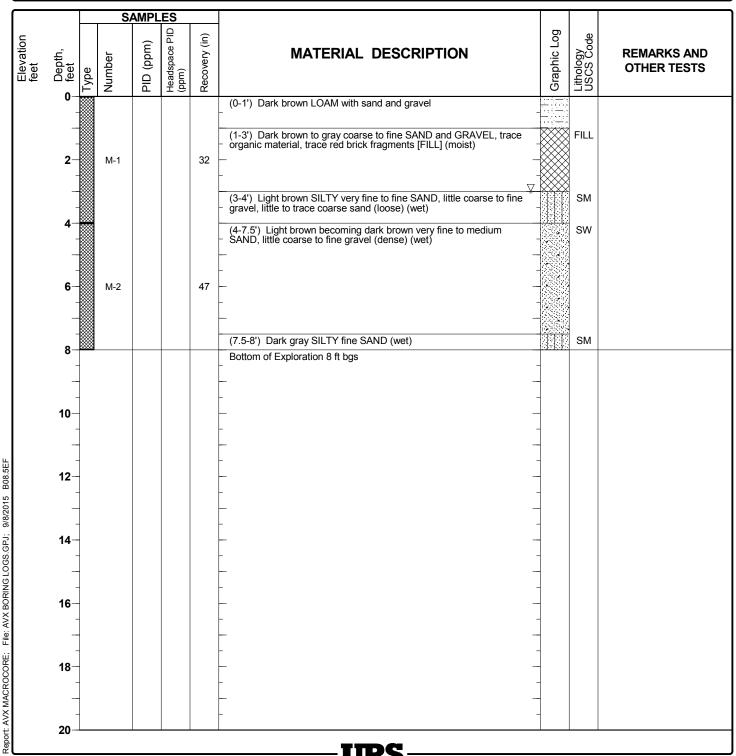


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B08.5EF

Date(s)	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	5.43 ft
Groundwater Level During Drilling 3 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfilled to surface	Location	Titleist property	Coordinates	N 2706573.5 E 815381.1

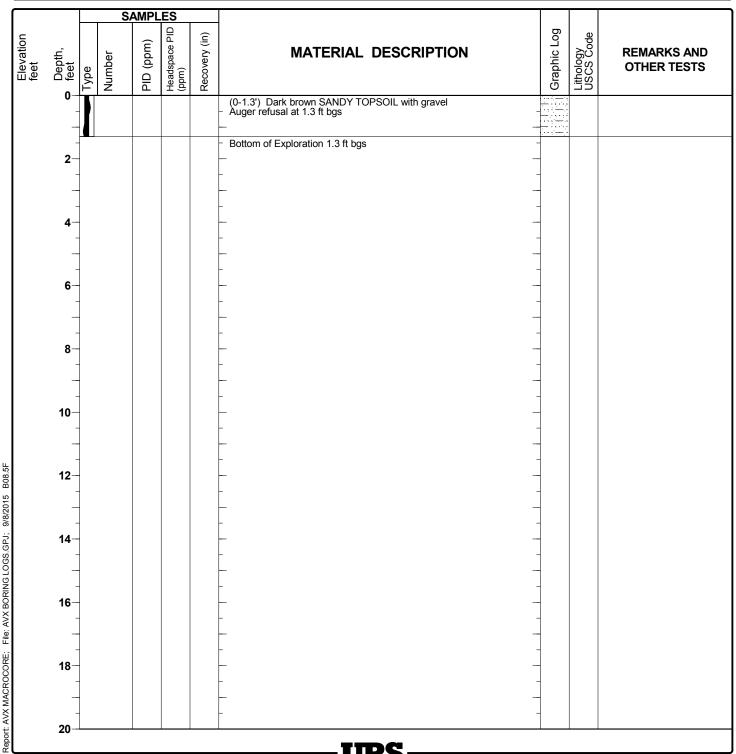


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B08.5F

Date(s) Drilled 12/13/2013	Logged By	J. Currier	Checked By	J. Harshman
Drilling Method Hand Auger	Drill Bit Size/Type	NA	Total Depth of Borehole	1.3 feet
Drill Rig Type <b>NA</b>	Drilling Contractor	NA	Surface Elevation	6.05 ft
Groundwater Level During Drilling NE	Sampling Method(s)	Hand Auger	Hammer Data	NA
Borehole Backfill Sand backfill	Location		Coordinates	N 2706563.8 E 815279.5



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B08A

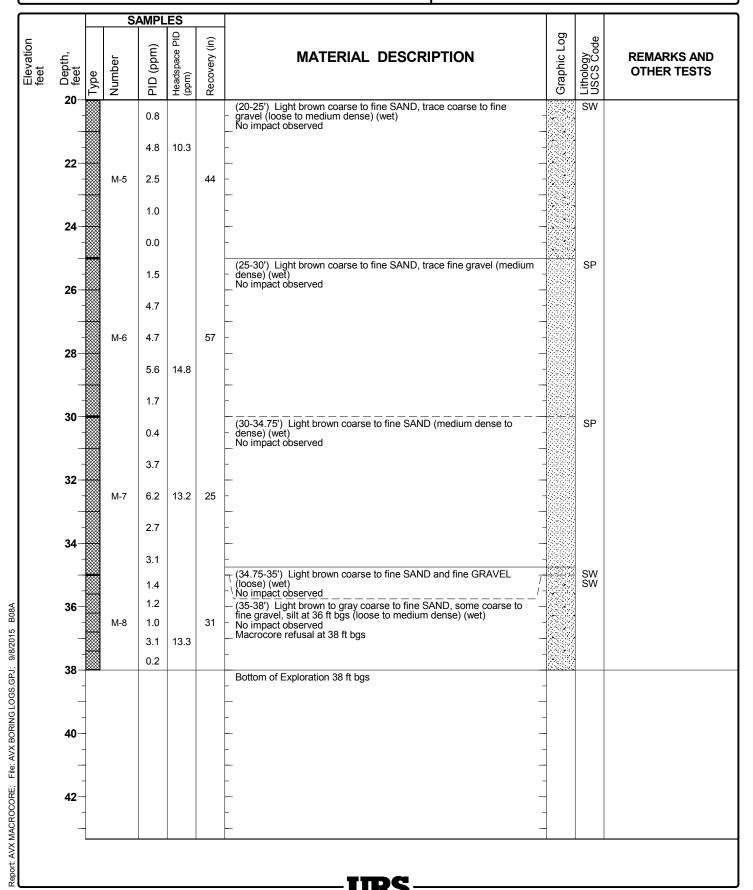
Date(s) Drilled 12/11/2013 - 12/12/2013	Logged By	J. Currier/J. Harshman	Checked By	J. Harshman
Drilling Method Auger/Geoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	38.0 feet
Drill Rig Type CME 85/6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.80 ft
Groundwater Level 5 ft bgs During Drilling	Sampling Method(s)	Auger/Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at sur	face Location		Coordinates	N 2706961.7 E 815323.2

			S	AMPL	ES					
Elevation feet	11-	lype	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.0			(0-0.25') Asphalt (0.25-3') Light brown to brown [FILL], sand, gravel, brick fragments, glass, concrete at 2.5 to 3 ft bgs (very dense to dense)		FILL	
			M-1	0.0		32	_ glass, concrete at 2.5 to 3 it bgs (very dense to dense)			
	2			0.0			<u> </u>			
	_	<b>×</b>				NA	(3-5') Concrete slab	P 6 4		
	4							A A A A A A A A A A A A A A A A A A A		
	_			0.0			(5-10') Brown to gray coarse to fine SAND, little coarse to fine gravel, trace gray silt 8.7-10 ft bgs (medium dense to dense) (wet)  No impact observed	7 4 4	sw	
	6-						No impact observed			
	-			0.0						
	8-		M-2	0.0	0.0	47				
	-			0.0			<u> </u>			
	10			0.0						
				0.0			(10-15') Brownish yellow to gray coarse to fine SAND, little medium to fine gravel (medium dense) (wet) No impact observed		SW	
	12			0.0						
	12		M-3	0.0	2.7	58				
				0.0			-			
	14			0.0			<del>-</del> -			
	-			0.5			(15-18.5') Light brown coarse to fine SAND, little medium to fine gravel (medium dense to dense) (wet)		sw	
	16			0.4			No impact observed			
			M-4	0.2		60				
	18		4							
				0.4			(18.5-20') Medium to fine GRAVELY coarse to fine SAND (loose to medium dense) (wet) No impact observed		sw	
	20			8.0			- 1.0past 00001100			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B08A



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B08B

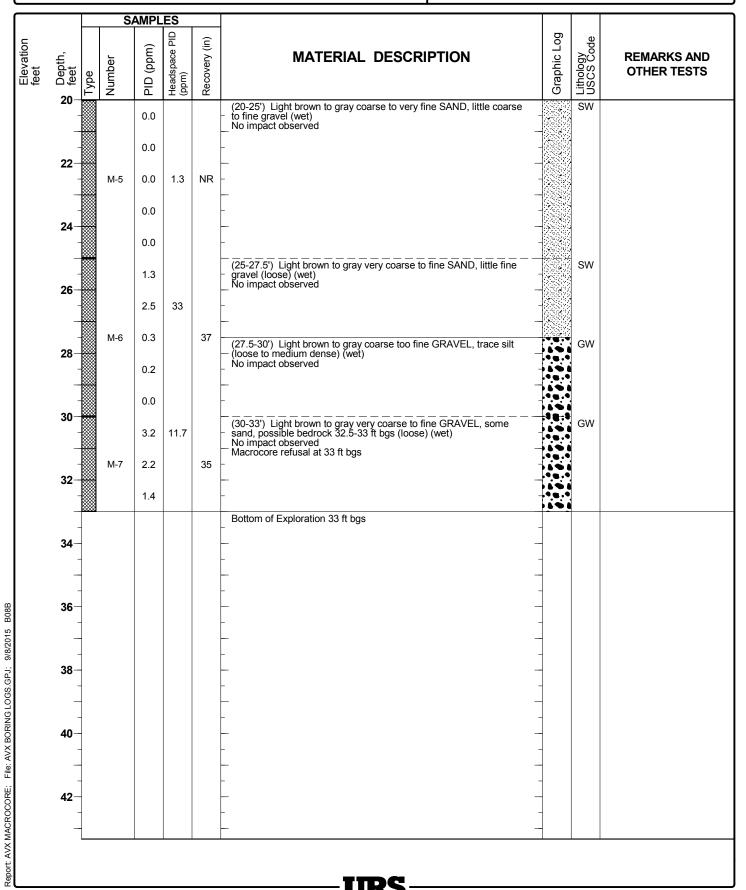
Date(s) 12/11/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	33.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.55 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706862.2 E 815326.0

			SA	MPL	ES					
Elevation feet		Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.2			(0-0.25') Asphalt (0.25-3.5') Dark brown to black [FILL], sand, brick, concrete, gravel (loose to medium dense)	-	FILL	
	2			0.1			-			
	2		M-1	0.0	8.8	45				
	4			0.0			(3.5-5') Black coarse to fine SAND, trace medium to fine gravel (loose to medium dense) (wet)		SP	
	-			0.2			Naphthalene odor observed			
	6-			0.4			(5-9.5') Black to dark brown PEAT, one-inch layer of thin black roofing material/fill (loose) (wet)	777 777 777 777 777 777 777 777 777 77		
	-			0.7				\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		
	8-		M-2	3.0		50		77 77 77 77 77 77 77 77 77		
	-			4.7	4.2			77 77 77 77 77 77 7 77 77 77 77 77 77		
	10			0.3			(9.5-10') Dark brown to gray coarse to fine SAND, trace fine gravel (100se)	7 2 2 2	SW	
				0.4			\No impact observed (10-15') Very coarse to fine SAND, little coarse to fine gravel (loose to medium dense) (wet) No impact observed	-' - -		
	12			0.0						
			M-3	2.1	4.1	36				
	14			0.6						
				0.8	3.3		(15-20') Very coarse to fine SAND, some coarse to fine gravel		SW	
	16			0.0	0.0		- (medium dense) (wet) No impact observed			
	_		M-4	0.0		30				
	18			0.0						
	-			0.0			<u> </u>			
	20	<b>***</b>					URS	123335		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B08B



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring B08BC**

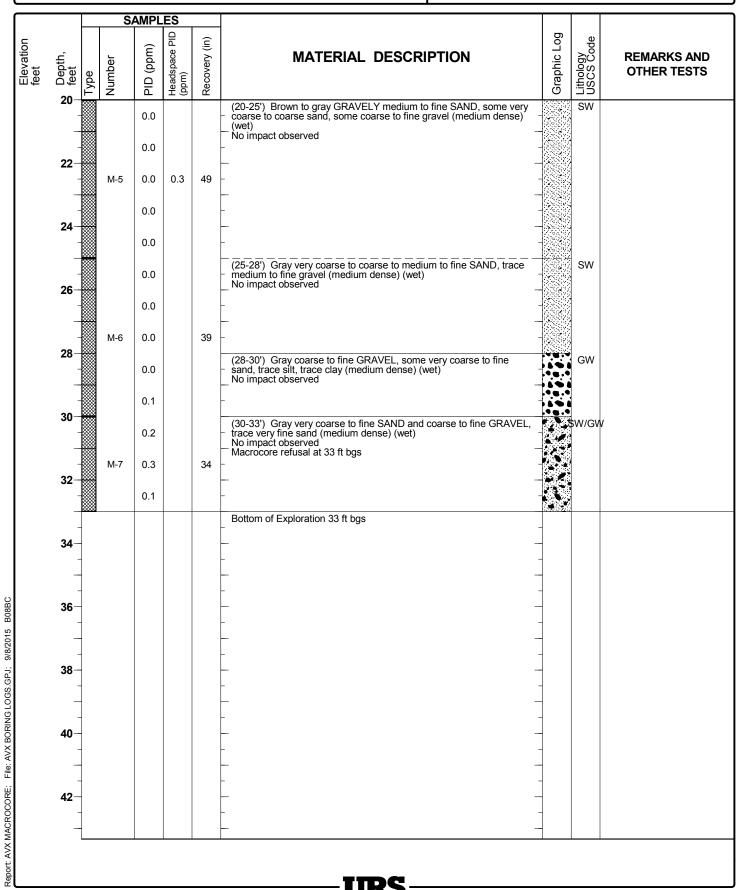
Date(s)	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	33.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	4.27 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706810.6 E 815326.5

			SA	AMPL	ES					
Elevation feet		Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0-	∭'		0.0			(0-0.25') Asphalt		FILL	
	-			0.0			(0.25-5') Dark brown to black to light brown [FILL], asphalt fragments, concrete, black cinder, glass, medium to fine sand from 3 to 4 ft bgs, little medium to fine gravel and glass from 4 to 5 ft bgs (medium dense) (wet at 4 ft bgs)	-		
	2- - -		M-1	0.0	0.9	32	_			
	4			0.0			_	$_{\triangledown}$		
	4			0.0			-			
	6			6.1	2.0		(5-9.5') Brown to reddish brown highly organic [PEAT], trace silt (moist) No impact observed	77 77 77 77 77 77 77 77 77 77 77 77	PT	
	-			2.1			_	77 77 77 77 77 77 77 77 77 77 77 77		
	8-		M-2	1.7		42	_	77 77 77 77 77 77 77 77 77		
	-			1.4			_	77 77 77 77 77 77 77 77 77		
	10			0.3			(9.5-10') Medium to fine SAND (loose) (wet)  No impact observed	<u> </u>	SP	
	_			0.0			(10-15') Brown to gray very coarse to fine SAND, trace medium to fine gravel (loose) (wet)  No impact observed		SW	
	12—			0.0			- -			
	_		M-3	0.0	1.4	52	_			
	14 <del>-</del>			0.0						
	- -			0.0			(15-20') Same as above, with lens of very fine gray sand from 17 to		SW	
	16 <u> </u>			0.0			- 17.5 ft bgs No impact observed		GVV	
	-			0.0			_			
	18		M-4	0.0	0.7	57	_			
	- -			0.0			_			
	20			0.0			-			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### Log of Boring B08BC

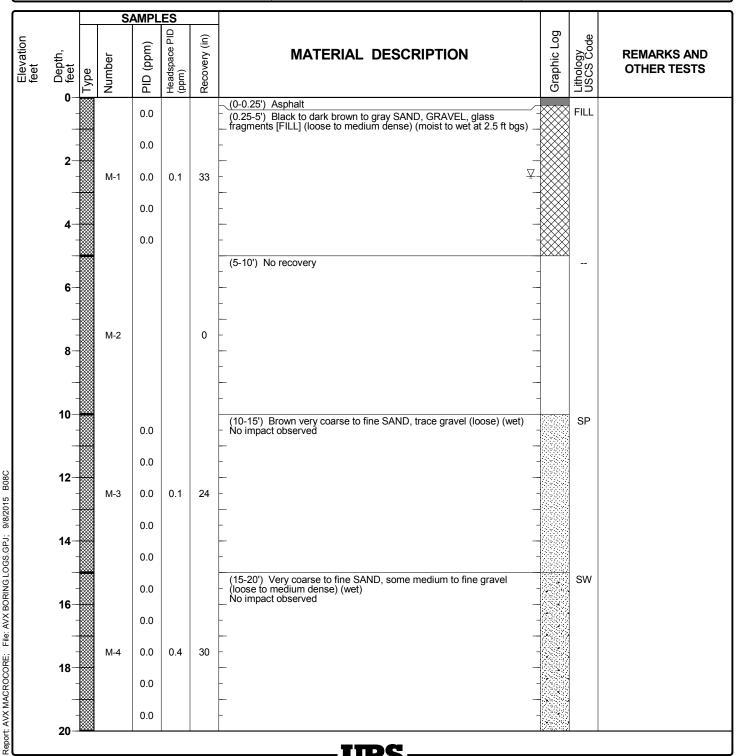


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B08C

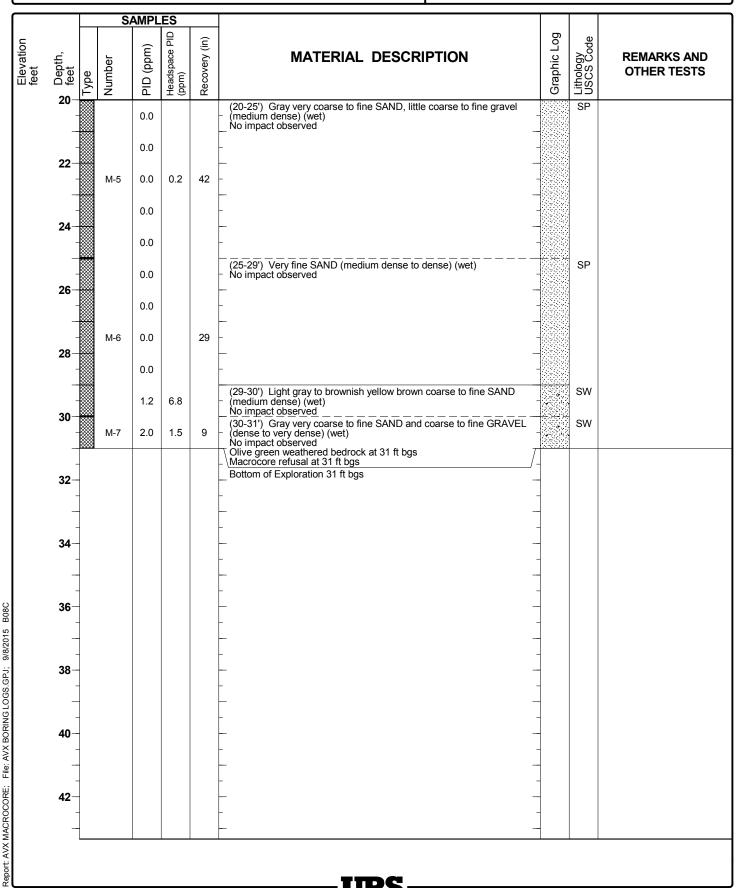
Date(s) 12/11/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	31.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	4.67 ft
Groundwater Level During Drilling 2.5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706762.5 E 815327.9



Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B08C



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## Log of Boring B08D

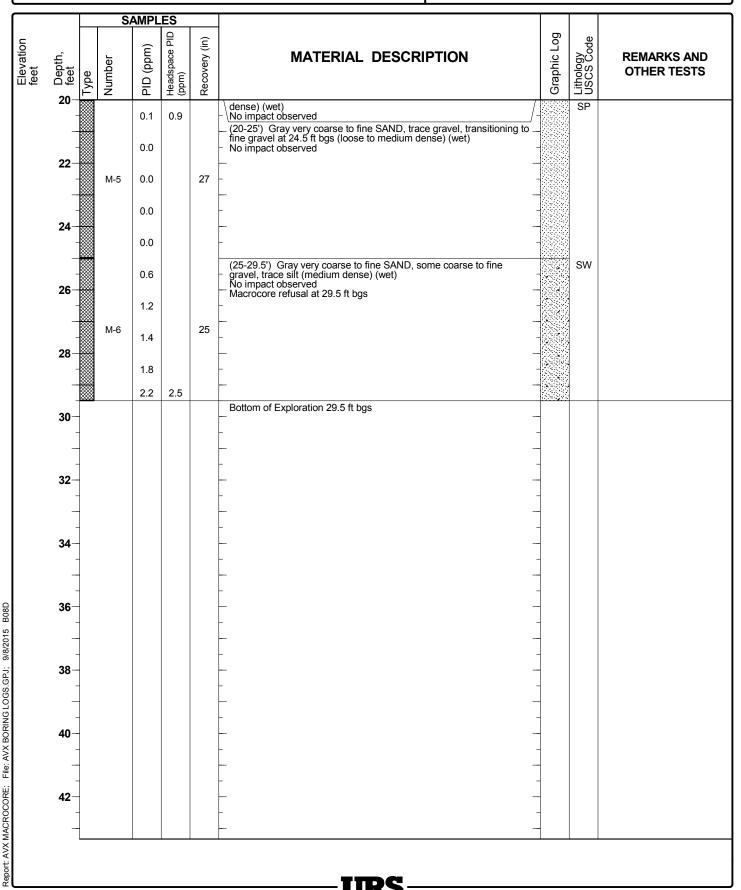
Date(s)	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	29.5 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.84 ft
Groundwater Level During Drilling 2 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706663.1 E 815329.4

	-		S	AMPL	ES					
Elevation feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS ANI OTHER TESTS
	- 			0.0			(0-0.25') Asphalt (0.25-2') Dark brown coarse to fine SAND and GRAVEL (medium dense) (dry) No impact observed		GW	
	<b>2</b> -		M-1	0.0	0.8	38	(2-5') Brown to light brown SILTY fine to very fine SAND, trace fine gravel, trace coarse sand (loose to medium dense) (wet)  No impact observed		SP	
	4			0.0						
	6-			0.0			(5-10') Light brown to gray coarse to fine SAND, some medium to fine gravel (medium dense) (wet)  No impact observed		SW	
	-		M-2	0.0		30	-  -  -  -			
	8-			0.0	0.3					
	10 - -			25.6	0.0		(10-14.5') Dark brown PEAT (medium dense) (wet)  No impact observed			
	12 -		M-3	11.9 16.4	27.5	47	- - - -	-F 3F 3F 3 2F 3F 3F 3 -F 3F 3F 3F -F 3F 3F 3F 3		
	 - 14_			52.3					1	
	- 			25.2	0.0		(14.5-15') Dark brown coarse to fine SAND, little medium to fine gravel, trace silt (wet) No impact observed (15-19.5') Light brown coarse to fine SAND (medium dense to	/	SW SW	
	16- - -			1.0			dense) (wet) No impact observed			
	18 <u>-</u>		M-4	0.1		42				
	20			0.0			(19.5-20') Light brown GRAVELY coarse to fine SAND (medium		SW	

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B08D

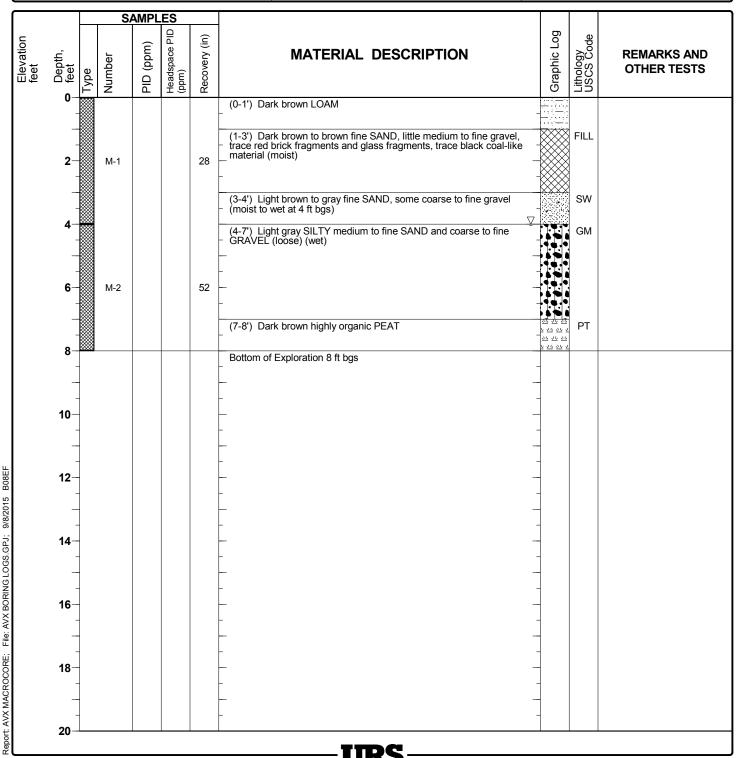


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B08EF**

Date(s) Drilled 4/28/2014	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	5.33 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfill Borehole backfilled to surface	Location	Titleist property	Coordinates	N 2706575.6 E 815332.2

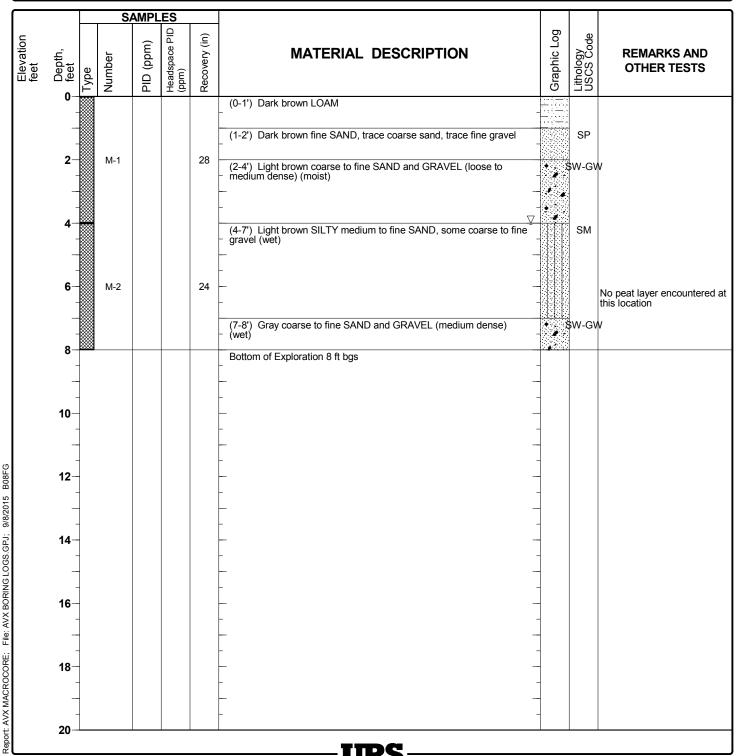


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B08FG**

Date(s) 4/28/2014	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	5.82 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfill Borehole backfilled to surface	Location	Titleist property	Coordinates	N 2706513.5 E 815329.2

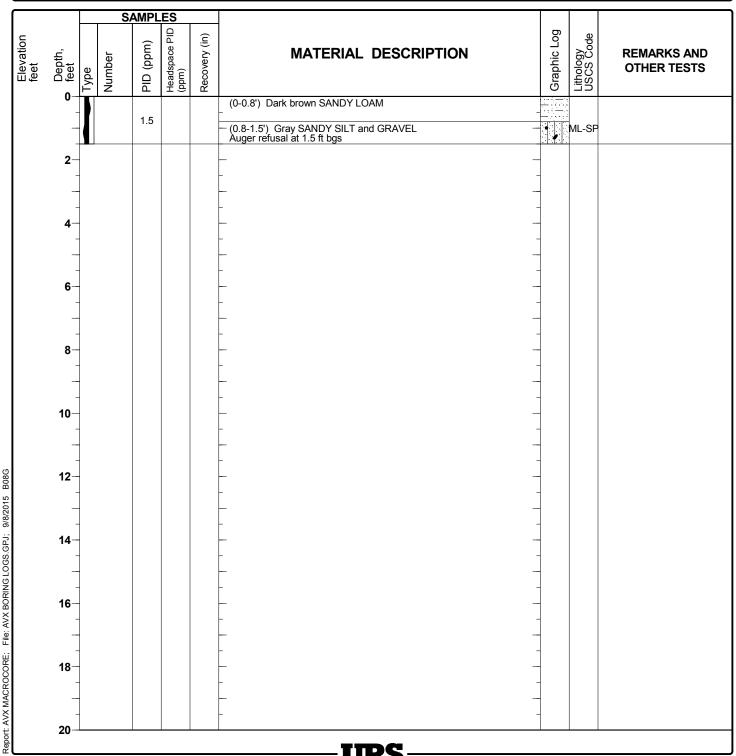


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B08G

Date(s) Drilled 12/13/2013	Logged By J. C	Currier	Checked By	J. Harshman
Drilling Method Hand Auger	Drill Bit Size/Type NA		Total Depth of Borehole	1.5 feet
Drill Rig Type NA	Drilling Contractor NA		Surface Elevation	6.67 ft
Groundwater Level NE During Drilling	Sampling Method(s)	nd Auger	Hammer Data	NA
Borehole Backfill Sand backfill	Location		Coordinates	N 2706510.6 E 815278.8

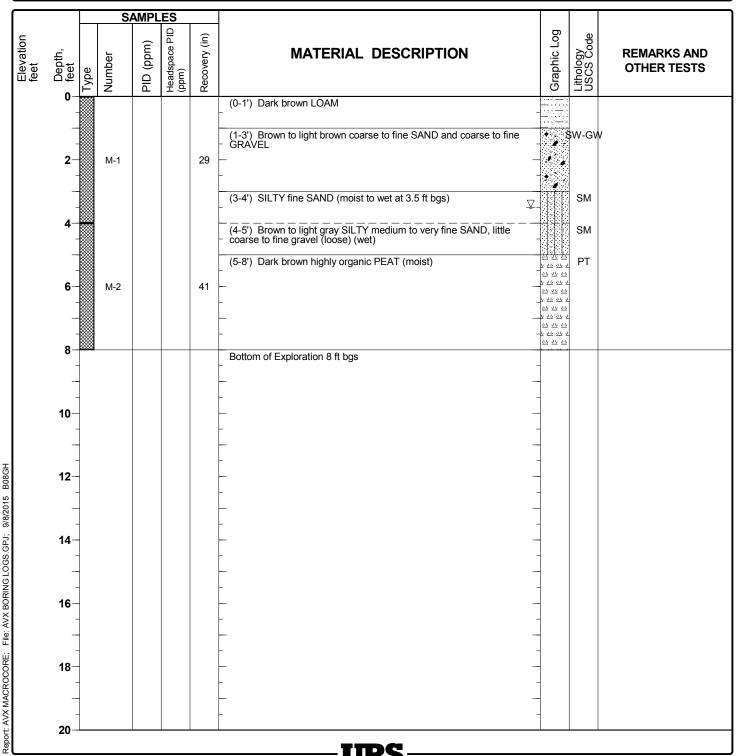


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B08GH

Date(s)	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	8.0 feet
Drill Rig Type	Drilling Contractor	Geosearch	Surface Elevation	6.40 ft
Groundwater Level During Drilling 3.5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	NA
Borehole Backfilled to surface	Location	Titleist property	Coordinates	N 2706465.3 E 815299.5

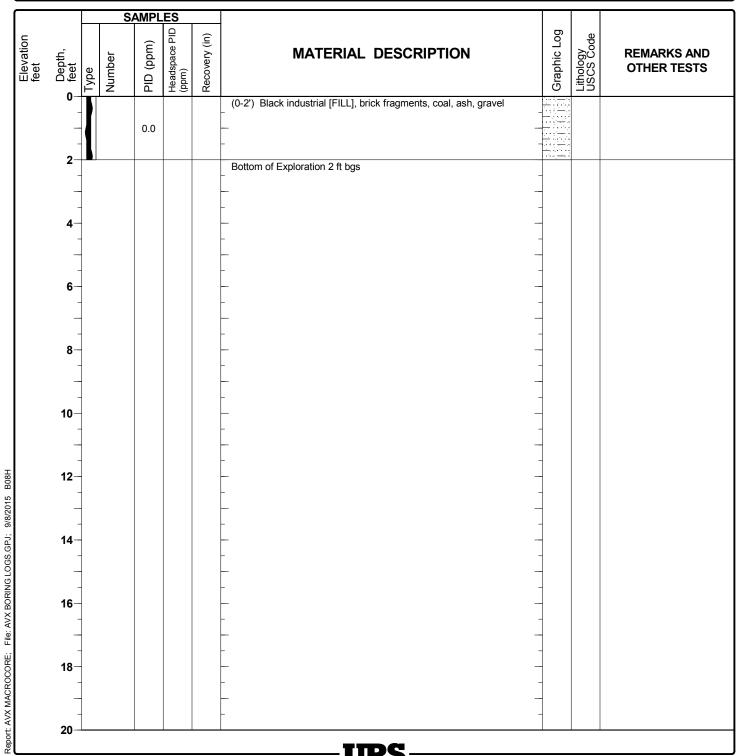


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring B08H

Date(s) Drilled 12/13/2013	Logged By	J. Currier	Checked By	J. Harshman
Drilling Method Hand Auger	Drill Bit Size/Type	NA	Total Depth of Borehole	2.0 feet
Drill Rig Type <b>NA</b>	Drilling Contractor	NA	Surface Elevation	6.67 ft
Groundwater Level During Drilling NE	Sampling Method(s)	Hand Auger	Hammer Data	NA
Borehole Backfill Sand backfill	Location		Coordinates	N 2706440.7 E 815251.5



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B09A

Date(s) Drilled 12/11/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	37.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	6.57 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706961.7 E 815426.5

			SA	MPL	ES					
Elevation feet	- ⊢	- ype	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	2			0.0			(0-0.25') Asphalt (0.25-2.5') Light brown SAND, some coarse to fine gravel (medium dense to dense) No impact observed		SW	
	4		M-1	0.0	3.0	39	(2.5-2.8') Concrete slab  (2.8-5') Medium to fine SAND, trace coarse to fine gravel (medium dense) No impact observed	p 5 4	SW	
	6			0.0			(5-6') Brown coarse to fine SAND (medium dense) (wet) No impact observed  (6-6.3') SILT, some medium to fine sand (soft) (wet) No impact observed		SP ML SW	
	8		M-2	0.0	0.0	NR	(No impact observed (A.3-10') Brown to black coarse to fine SAND, little coarse to fine gravel (medium dense) (wet) No impact observed (A.3-10') No impact observed (A.3-10') No impact observed (A.3-10') No impact observed		5vv	
	10			0.0			(10-15') Light brown coarse to very fine SAND, trace medium to fine		sw	
	12			0.0			(10-15') Light brown coarse to very fine SAND, trace medium to fine gravel (loose to medium dense) (wet) No impact observed			
	14		M-3	0.3	1.1	NR				
	16			0.0			(15-17.5') Medium to fine SAND (medium dense) (wet)  No impact observed		SP	
	-		M-4	0.0	0.8	NR	(17.5-20') Gray SILTY very fine SAND (dense) (wet)		SM	
	18			0.0			─ No impact observed			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **Log of Boring B09A**

			S	AMPL	ES					
Elevation feet	Depth, feet	Туре	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	20-			0.9			(20-22') Gray very coarse to fine SAND (loose) (wet)  No impact observed	-	SP	
	- 22-			0.9				- -		
	- -		M-5	1.2	7.3	55	(22-25') Gray coarse to fine GRAVEL with very coarse to fine sand, trace silt (medium dense) (wet)  No impact observed	- -	SW	
	24-			0.2			- - -	- - - -		
	- 26-			0.3			(25-30') Brown to brownish yellow coarse to fine SAND and GRAVEL (medium dense) (wet) No impact observed		SW	
	-			1.5			- 	-		
	<b>28</b> -		M-6	2.0	17.7	55	- - -			
	30-			0.8			- (20.25)) Croude light hypura coars to fine CAND and CDAVEL	-  S.	CW	
	-			1.1			(30-35') Gray to light brown coarse to fine SAND and GRAVEL, trace cobbles (loose to medium dense) No impact observed		SW	
	32-		M-7	0.5		56	_ -	- -		
	34-			0.6			- - -			
	_			1.3	13.5		(35.37) Light brown to brownish vellow coarse to fine SAND and		SW	
	36- -		M-8	0.6 0.7 0.5	28.8	37	(35-37') Light brown to brownish yellow coarse to fine SAND and GRAVEL (medium dense to loose) (wet) No impact observed Macrocore refusal at 37 ft bgs	- - -		
	_			0.0			Bottom of Exploration 37 ft bgs	<u>                                      </u>		
	38-						_ -			
	_						_			
	40-							-		
	_						<del>-</del> -	1		
	42-							1		
							——URS——			

**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B09B

Date(s) 12/12/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	35.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.30 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706862.5 E 815427.2

			SA	MPL	ES					
feet	11-	l ype	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0	▓		0.0			(0-0.25') Asphalt (0.25-5') [FILL], mortar, black cinder, glass, red brick, coarse to fine sand, coarse to fine gravel, silt (medium dense)		FILL	
				0.0			sailu, coalse to line gravel, siit (medidin derise)			
	2		M-1	0.0	1.1	24	- -			
	-			0.0			- -			
	4			0.0						
	-			0.0			(5-8') Dark brown to reddish brown [PEAT] (loose) (moist)  No impact observed	* ** ** * * * * * * * * * * * * * *	PT	
	6-			0.3	1.3		- -	77 77 77 77 77 77 77 77 77		
	_		M-2	0.0		41	- -	77 77 77 77 77 77 77 77 77		
	8			0.0			(8-10') Light brown to gray coarse to fine SAND, little medium to fine gravel (medium dense) No impact observed		SW	
	-			0.0						
	10			0.0			(10-15') Light brown to gray coarse to fine SAND, trace gravel (dense) No impact observed		SW	
	40			0.0						
	12		M-3	0.0	0.8	54	<del>-</del> -			
	44			0.0						
	14			0.0			- -			
	16			0.0			(15-18') Light brown medium to fine SAND (dense) (wet) No impact observed		SP	
	16			0.1						
	18		M-4	0.3		40				
	.5			0.2			(18-20') Light brown coarse to fine SAND, little medium to fine gravel (medium dense) (wet) No impact observed		SW	
	20			3.5	17.8		- -			

**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring B09B**

			S	AMPL						
Elevation feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	20-			6.2	85		(20-25') Light brown coarse to very fine SAND (loose to medium dense) (wet) No impact observed	- 800	SP	
	-			0.9						
	22-		M-5	1.6		NR	-			
	24-			2.7						
	-			1.5				_		
	- 26-			2.1			(25-30') Brownish yellow coarse to fine SAND, little coarse to fine gravel, little silt (loose) No impact observed		SW	
	_			2.7	20.7	45	- -	_		
	28-		M-6	0.7		15	-  -			
	_			2.2						
	30- -			1.0			(30-31') Light brown coarse to fine SAND and coarse to fine GRAVEL (loose) (wet) No impact observed		sw	
l	32-			1.1			(31-32') Light brown coarse to fine SAND (medium dense) (wet/saturated) No impact observed	_	SP	
ſ	_		M-7	2.1	18.3	51	(32-35') Coarse to fine SAND, some coarse to fine gravel, trace silt at 34 ft bgs (medium dense) (wet) No impact observed Macrocore refusal at 35 ft bgs	-	SW	
	34-			0.6			-  -			
	-			0.2			Bottom of Exploration 35 ft bgs		3	
	36-							_		
	-						_ -	_		
	<b>38</b> -						 -	_		
	-						-	-		
	40-						<del>-</del> -			
	42-						<del>-</del> -			
	<b>42</b>						- -			
				l	I			l	l	I
							——URS——			

**Project Location: New Bedford, Massachusetts** 

**Project Number:** 39744051

# **Log of Boring B09C**

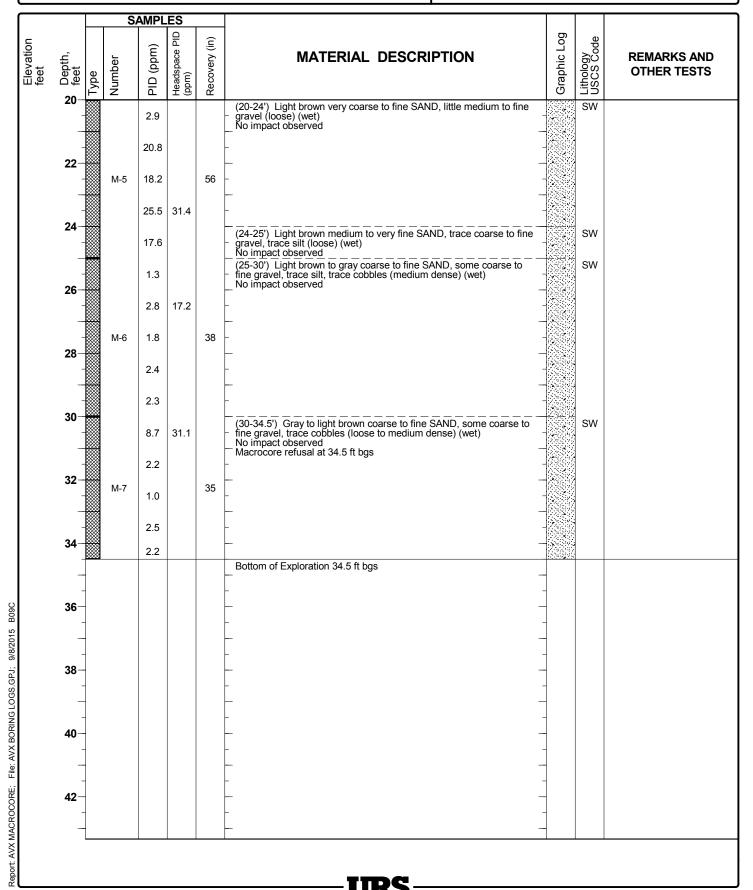
Date(s) Drilled 12/13/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	34.5 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	4.45 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706763.9 E 815429.9

			S	AMPL	ES					
Elevation feet		Туре	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0	1	M-1	0.0 0.0 0.0 0.0 0.0 0.0 4.6	5.7	34	(0-0.25') Asphalt  (0.25-5') Dark brown [FILL], medium to fine sand, gravel, black cinder, glass (loose to medium dense) (moist to wet at 4 ft bgs)  (5-10') Brown to dark brown [PEAT], one inch seam of fill material including red brick, glass, gravel, sand at 5 ft bgs (loose to medium dense) (wet)	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	FILL	
	10- - - 12- -		M-2 M-3	1.1 1.2 20.3 0.0 0.0 0.0	23.2	47	(10-15') Light brown coarse to fine SAND, little fine gravel, trace medium gravel, two-inch seam of light brown very fine sand and silt at 13 ft bgs (loose) (wet)  No impact observed	- 1		
	16		M-4	0.0 0.5 0.0 0.1 2.3 4.0	43.5	58	(15-20') Dark brown to light brown coarse to fine SAND, little coarse to fine gravel, trace silt (loose to medium dense) (wet) No impact observed		SW	

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B09C**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B09D

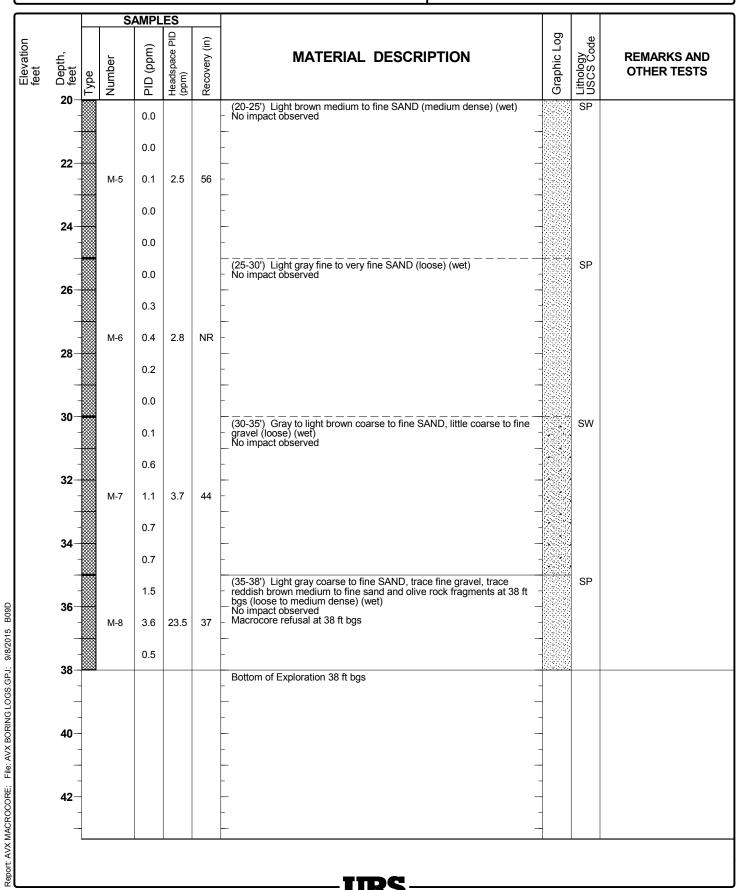
Date(s)	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	38.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.03 ft
Groundwater Level During Drilling 3 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706664.1 E 815429.3

			SAMPL	ES					
Elevation feet	Depth, feet Tvpe	er	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0		0.0			(0-0.25') Asphalt (0.25-5') Dark brown [FILL], medium to fine sand, black cinder, trace		FILL	
						(0.25-5') Dark brown [FILL], medium to fine sand, black cinder, trace medium to fine gravel, trace silt (medium dense) (moist to wet at 3 ft bgs)	-		
	2		0.0				-		
		M-1	0.0	2.0	38		z 💥		
	-		0.0				-		
	4		0.0						
	-					(5-6') Dark brown [FILL], black cinder, red brick, coarse to fine sand		FILL	
	6		0.0			(medium dense) (wet)  (6-7.5') Light brown to brown coarse to fine SAND, little medium to		sw	
	-		0.0			(or .3) Fight blowin obtained as to line SAND, fittle filedidin to fine gravel (loose) (wet)  No impact observed		SVV	
		M-2	0.3		45	(7.5-8') Dark gray [FILL], concrete fragments (loose) (wet)		FILL	
	8		0.6			(8-10') Brown [PEAT] (medium dense to dense) (wet) No impact observed	- * * * * * * * * * * * * * * * * * * *	рт	
	-			40.0			25 25 25 2 25 25 25 25 25 25 25 2		
	10		8.0	18.2		(10_11.5') Dark gray coarse to fine SAND, some medium to fine	****	sw	
			1.9			(10-11.5') Dark gray coarse to fine SAND, some medium to fine gravel (medium dense) (wet) No impact observed			
			8.5			(11.5-14') Brown [PEAT] (dense) (wet)  No impact observed	7 77 77 77 77 77	PT	
	12	M-3	32.2		49	─ No impact observed -	* * * * *		
			43.3	27.8			4 35 35 3 35 35 35 35 4 35 35 3		
	14		43.3	21.0		(14-15') Brown to gray coarse to fine SAND, little coarse to fine	7 27 27 27 27 27	sw	
	-		9.5			gravel (medium dense) (wet) No impact observed	-		
	40		0.9	2.0		(15-20') Light brown to gray medium to fine SAND, transitioning to fine to very fine SAND, trace coarse sand, trace coarse gravel (loose) (wet)	-	SP	
	16		0.7			No impact observed			
		M-4	0.0		57				
	18	7							
			0.1			_			
	20		0.1						

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B09D**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# Log of Boring B10A

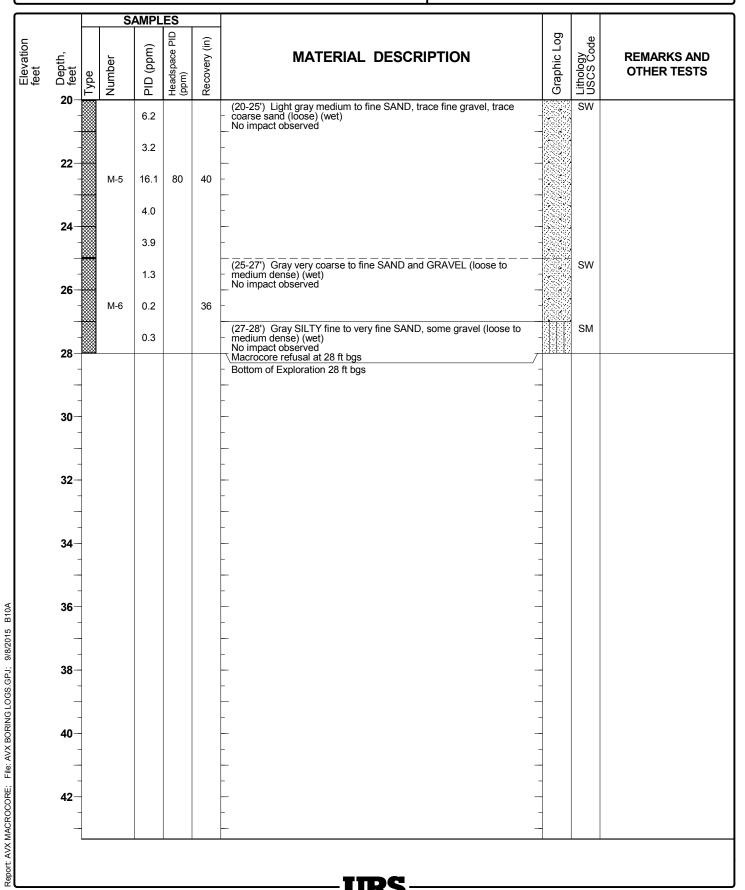
Date(s) 12/16/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	28.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.60 ft
Groundwater Level During Drilling 8 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706963.2 E 815519.5

			SA	AMPL	.ES					
Elevation feet	- 11	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0	<b>\</b>		0.0			(0-0.25') Asphalt (0.25-5') Light brown to black [FILL], coarse to fine sand, gravel, black cinder, glass (medium dense) (dry)		FILL	
	-			0.0			black cinder, glass (medium dense) (dry) 			
	2-		M 1		0.7	16	<u> </u>	-		
	-		M-1	0.0	0.7	16		-		
	4			0.0			_	-		
				0.0			_			
	•			0.0			(5-8') Reddish brown highly organic [PEAT], trace silt (loose to medium dense) (moist) No impact observed	77 77 77 77 77 77 77 77 77 77 77 77	PT	
	6 <del>-</del> -			0.5	0.3		· -	77 77 77 6 77 77 77 77 77 77		
	-		M-2	0.0		48	<del>-</del> -	-6 378 378 3 378 378 378 -6 378 378 3		
	8-			0.0			(8-10') Brown to gray coarse to fine SAND, some medium to fine gravel (loose) (wet) No impact observed	_ <u> </u>	sw	
	_						No impact observed			
	10			0.0			(10-12') Brown becoming light gray coarse to fine SAND, trace		SP	
	-			0.0			(10-12') Brown becoming light gray coarse to fine SAND, trace coarse to fine gravel (loose) (wet) No impact observed			
	12—			0.0						
	'-		M-3	0.0	0.1	58	(12-15') Brown becoming light gray very fine SAND and SILT (loose) (wet) Slight naphthalene odor	) _	SM	
				0.0			-			
	14			0.0				- 3		
				0.0			(15-19') Coarse to fine SAND and GRAVEL (loose to medium dense) (wet)		sw	
	16						Dark brown to black NAPL-like color observed			
				6.8			- -			
	18 <del>-</del>		M-4	4.1		53	<u>-</u>			
	-			7.9	70.3					
				6.7			(19-20') Light gray very fine SAND and SILT (wet) No impact observed	-	SM	
	20−₽	××4			ı		URS—	nasakida.	1	

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B10A**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## Log of Boring B10B

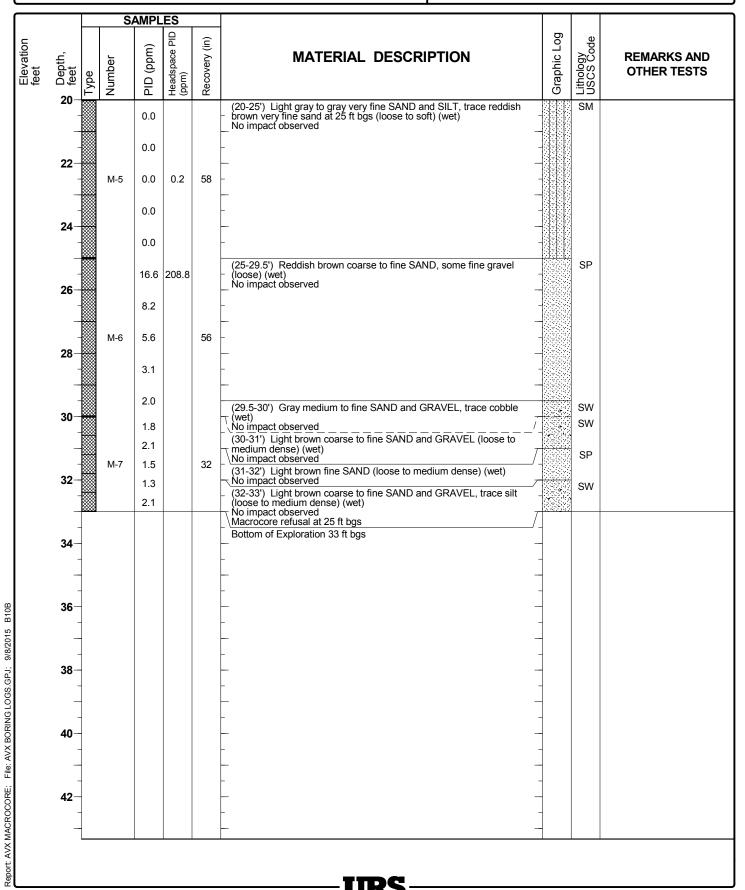
Date(s)	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	33.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.06 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706861.7 E 815515.2

			SAMP	ĻES					
Elevation feet	Depth, feet Tvpe	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	U-		0.2	16.1		(0-0.25') Asphalt (0.25-5') Brown to black to gray [FILL], coarse to fine sand, grayel.	-	FILL	
			0.0			(0.25-5') Brown to black to gray [FILL], coarse to fine sand, gravel, black cinder, red brick, concrete (medium dense) (moist to wet at 4 ft bgs)			
	2	M-	1 0.1		32				
			0.0			- - - - -			
	4		0.0			-			
			1.0			(5-9') Brown to reddish brown highly organic [PEAT], trace silt (moist)	7 77 77 77 77 77 77 7 77 77 77	PT	
	6		2.0	11.0			6 35 36 3 37 37 37 6 37 37 3 37 37 37		
	8	M-:	2 1.8		42		77 77 77 77 77 77 77 77 77 77 77 77		
	-		1.6				77 77 77 7 77 77 7		
	10		0.0			(9-10') Brown coarse to fine SAND and GRAVEL (medium dense) (wet)		SW	
	10		0.0			(10-12') Brown to gray very coarse to fine SAND, intervals of finer sand, little to trace medium to fine gravel (loose) (wet) No impact observed		SW	
	12		0.0						
	12	M-	3 0.0	4.1	58	(12-15') Light gray very fine SAND (loose) (wet) No impact observed		SP	
	14		0.0						
	-		0.0						
	16		0.0			(15-20') Light gray fine to very fine SAND (loose) (wet) No impact observed		SP	
	-		0.0						
	18	M-	4 0.0	0.2	50				
			0.0						
	20		0.0						
	20-					URS—			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### Log of Boring B10B



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring B10C**

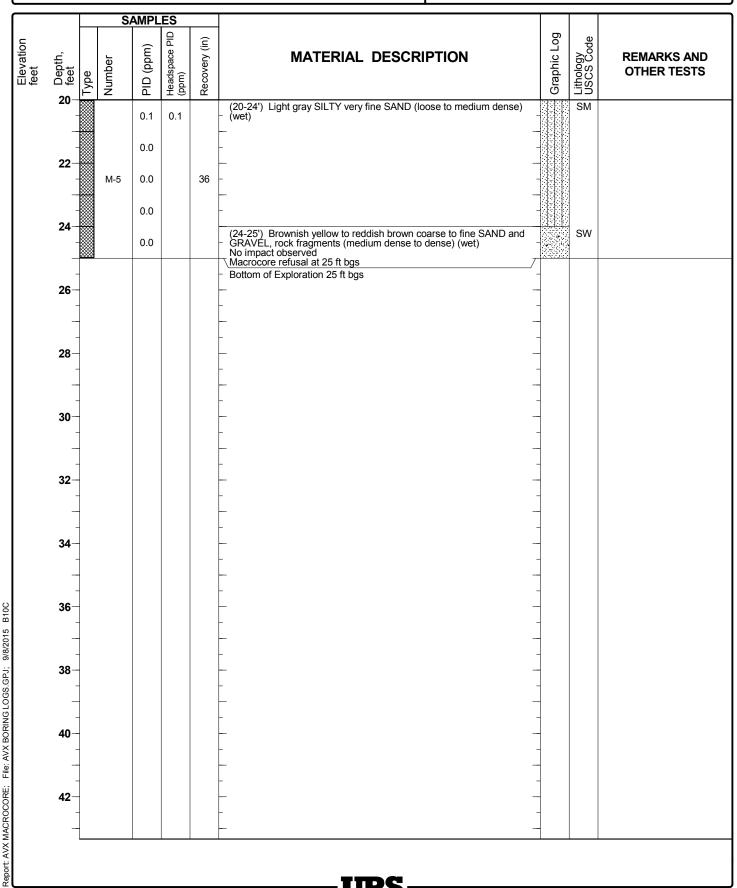
Date(s) Drilled 12/16/2013	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	25.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	5.27 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706765.1 E 815514.4

			SA	AMPL	ES					
Elevation feet	- 11	l ype	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.0			(0-0.25') Asphalt  (0-25-5') Brown to light brown medium to fine SAND, some coarse	- 85.3	sw	
	2			0.0			(0.25-5') Brown to light brown medium to fine SAND, some coarse to medium to fine SAND, some coarse to medium to fine gravel, little to trace silt at 4 ft bgs (medium dense) (moist to wet at 4 ft bgs)	- -		
	2		M-1	0.0	1.7	44				
				0.0			-			
	4			0.0			<u> </u>			
	-			0.0			(5-9.5') Dark brown to black medium to fine SAND and GRAVEL (loose to medium dense) (wet)	- (2) - (2)	sw	
	6			0.0			- - -			
	8-		M-2	0.0	0.4	26				
	-			0.0						
	-			0.0			(9.5-10') Highly organic [PEAT] (wet)	7 77 77 7 72 70 77	PT	
	10			12.5			(10-13') Brown highly organic [PEAT], trace silt (moist) Organic/peat odor	77 77 77 77 77 77 77 77 77 77 77 77	PT	
	12—			46.6	6.1			77 77 77 77 77 77 77 77 77 77 77 77		
	12		M-3	2.1		47	-	20 20 20 20 20 20 20 20 20 20 20 20		
	14			0.0			(13-15') Fine to very fine SAND, trace coarse sand (loose) (wet)		SP	
	14			0.0						
	16			0.0			(15-17') Light brown to gray fine to very fine SAND, little to trace coarse to medium sand (loose) (wet)		SP	
	-			0.0			-			
	18		M-4	0.0	0.1	58	(17-20') Light gray SILTY very fine SAND (loose) (wet) No impact observed		SM	
	10			0.0						
	20-			0.0			-			
	20-						URS—			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B10C**

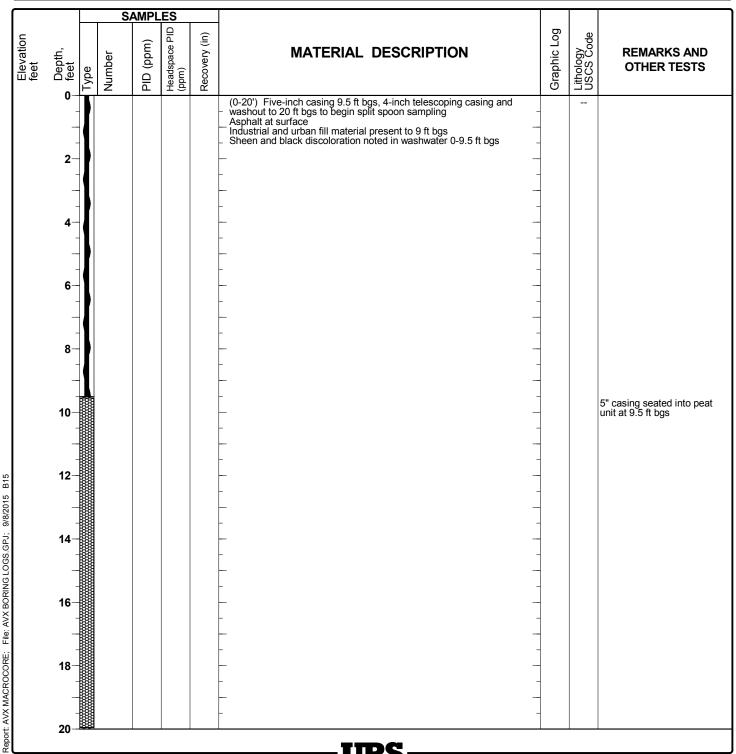


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **Log of Boring B15**

Date(s) Drilled	2/20/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method	5" an 4" Casing, Roller Bit (Drive & Wash)	Drill Bit Size/Type	Roller Bit	Total Depth of Borehole	28.0 feet
Drill Rig Type	CME 85	Drilling Contractor	Geosearch	Surface Elevation	6.02 ft
Groundwat During Dril		Sampling Method(s)	2-ft Split Spoon	Hammer Data	Autohammer
Borehole Backfill	Borehole abandoned, grouted to surface	Location	Eastern area of Aerovox property near Acushnet River	Coordinates	N 2706994.5 E 815594.2



Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **Log of Boring B15**

22	T					1		
22 24 26 30 32 34 36	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
24 26 30 32 34 36	S-1	1.0 1.4 1.0 1.2	26.5	12	(20-22') Brownish yellow coarse to fine SAND and GRAVEL, some medium to fine sand lenses 20.5 to 21 ft bgs (loose) (wet)  No impact observed	- -	SW	
26 	S-2	2.5 0.4 2.5 1.2	35	18	(22-24') Brownish yellow medium to fine SAND, little coarse sand, little medium to fine gravel (loose) (wet) No impact observed	- -	SW	
28 30- 32- 34- 36- 38-	S-3	2.0 2.0 2.4 1.6	7.3	8	(24-26') Gray coarse to fine SAND and GRAVEL (loose) (wet) No impact observed	- - -	W-GW	1
30- 32- 34- 36- 38-	S-4	1.4 1.2 0.6 0.3	10.2	17	(26-28') Light gray coarse to fine SAND and GRAVEL, becoming silty very fine sand with little to trace medium to fine sand and medium to fine gravel with depth (wet) (loose)  No impact observed Split spoon refusal at 28 ft bgs	- -	SW	
32- 34- 36- 38-	<u> </u>				Bottom of Exploration 28.0 ft bgs	120000		
32- 34- 36- 38-					- -	]		
32- 34- 36- 38-					-	+		
34- 36- 38-					_ -	]		
34- 36- 38-						-		
34- 36- 38-					_	1		
36- - - - 38-						]		
36- - - - 38-					-	1		
36- - - - 38-								
38-					_	-		
38-						1		
38-					- -	]		
-						-		
-					- -			
40-						-		
40-					<u></u>	1		
40					-	-		
						-		
_					- -	1		
					-	-		
42					<del>-</del> -	1		
_						4		
		-						

**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring B15GS**

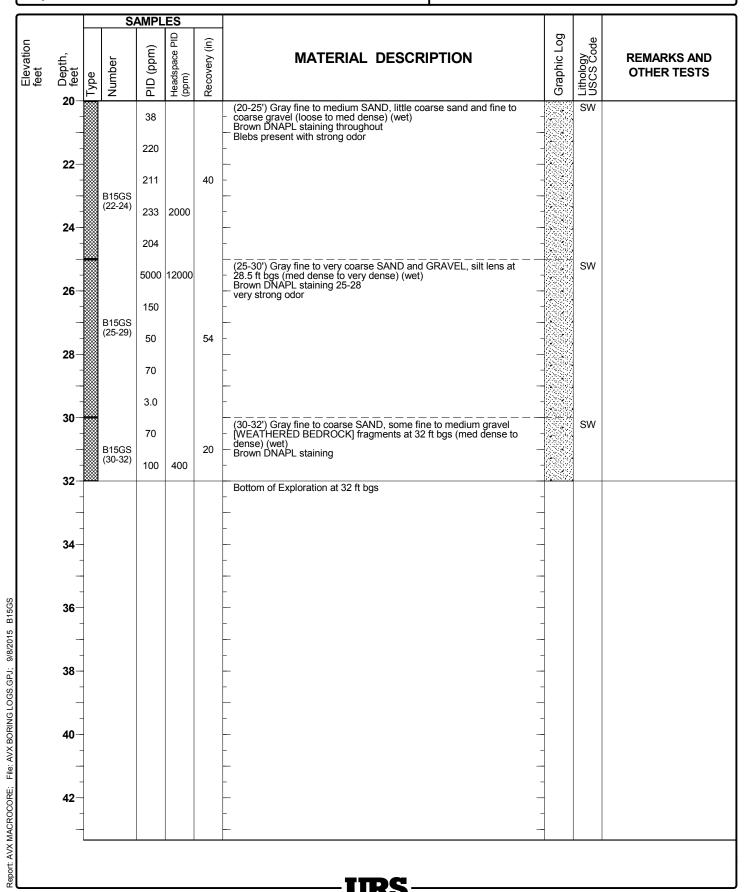
Date(s) Drilled <b>4/21/2015</b>	Logged By	J. Harshman	Checked By			
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole 32.0 feet			
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation			
Groundwater Level During Drilling 3 ft bgs	Sampling Method(s)	Macrocore	Hammer Data Direct Push			
Borehole Backfill Grout, cold patch asphalt at surface	Location	Near location of MW-15, MIP-48, and UV-34				

		SA	AMPL	ES					
Elevation feet	Depth, feet Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0		0.0			Asphalt at Surface  (0.2-2') Light brown fine to medium SAND, little fine to medium gravel (loose to med dense) (dry)  No impact observed		FILL	
	2-		0.0	0.0	26	(2-5') Dark brown to black fine to medium SAND, some fine to medium gravel, with metal shavings, coal like material, and brick fragments [FILL]		FILL	
	4		0.0			No impact observed			
	6-	B15GS (4-7)	0.0			(5-7') Fine to coarse SAND, with industrial materials (wet) [FILL]  No impact observed		FILL	
	8-		0.0	6.6	24	(7-9') Dark gray to black very fine SILTY GYTTJA, some marine shells (damp) No impact observed		ML	
	10		0.0			(9-10') PEAT, some fine to medium sand and organics (damp to wet)  No impact observed	77 47 47 77 47 47 77 47 47 77 47 47	PT	
	-		0.0			(10-15') Gray to light brown fine to coarse SAND, some fine to coarse gravel at 14 ft bgs (med dense) (wet)  No impact observed		SW	
	12-		0.0	4.3	40				
	14-		0.0					0.44	
	16	B15GS (15-17)	85 60	450		(15-20') Gray fine to very coarse SAND, some fine to coarse gravel (med dense) (wet) Naphthalene odor at 15-17 ft bgs Light brown oily staining at 15-19 ft bgs		SW	
	18		3.9		54				
	20		0.0						

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring B15GS**

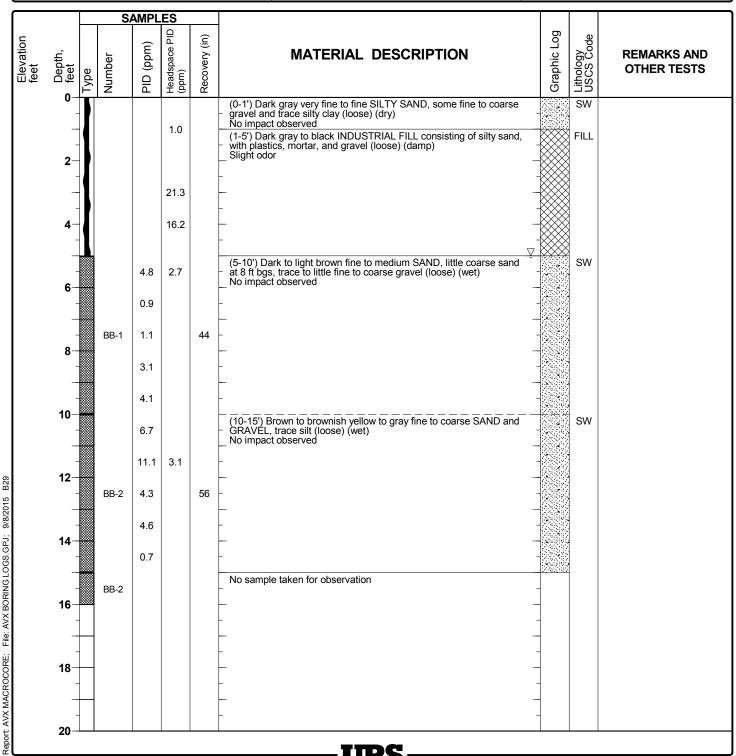


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring B29**

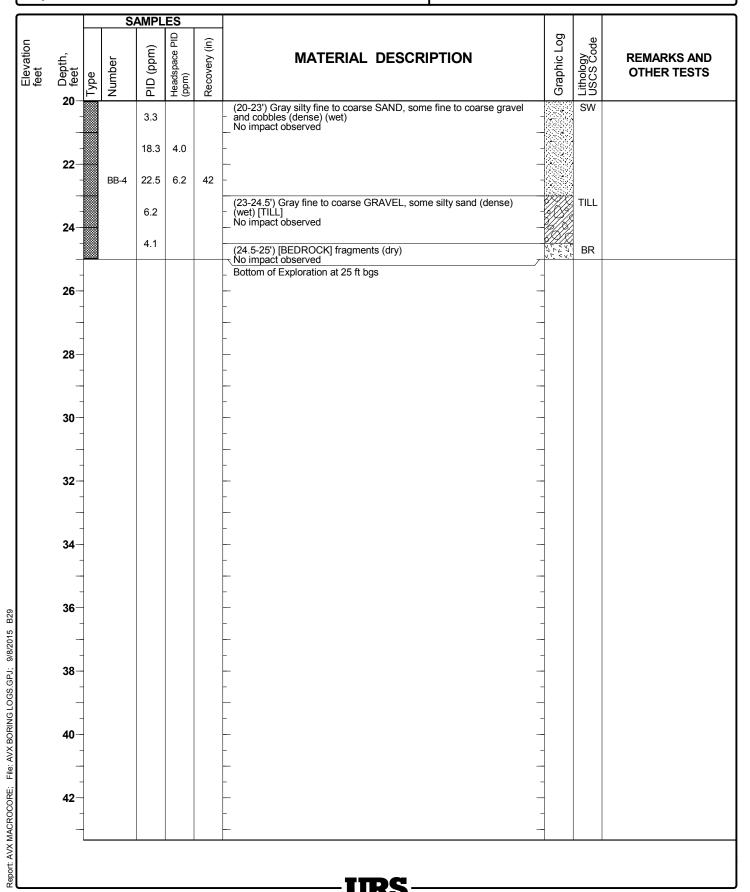
Date(s) Drilled	7/30/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method	6" Sonic	Drill Bit Size/Type	6"Sonic	Total Depth of Borehole	25.0 feet
Drill Rig Type	8140 track-mounted Sonic Rig	Drilling Contractor	Major	Surface Elevation	5.54 ft
Groundwat During Dril		Sampling Method(s)	5-ft Sonic Coring	Hammer Data	Sonic
Borehole Backfill	Grout, cold patch asphalt at surface	Location	Aerovox	Coordinates	N 2707042.1 E 815534.0



Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring B29**

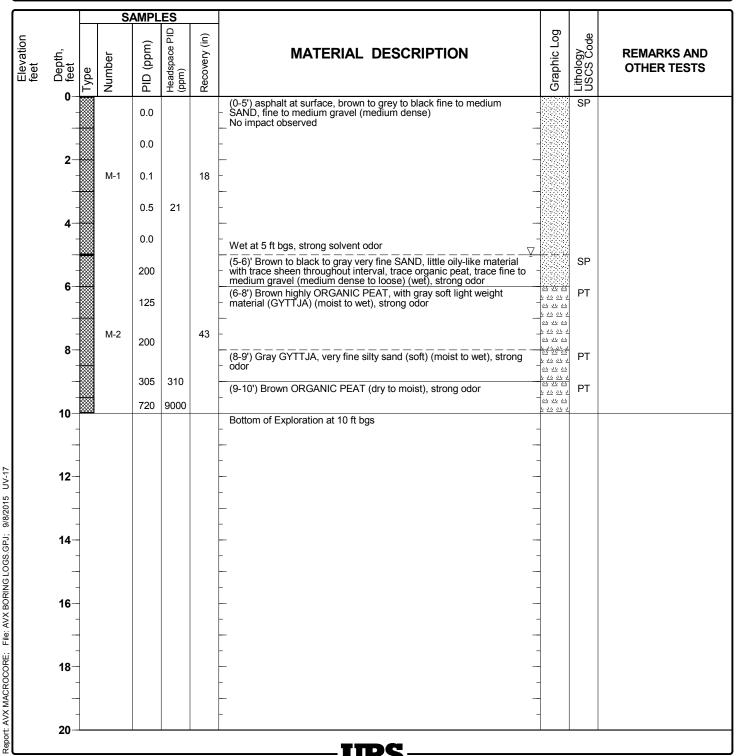


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### Log of Boring UV-17

Date(s) 4/1/2015 - 4/1/2015	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	10.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Zebra	Surface Elevation	
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Geoprobe Direct Push
Borehole Backfill Grout, cold patch aspha	alt at surface Location	Near South drainage ditch		



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring MIP03**

Date(s) Drilled 12/19/2013	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	15.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	6.74 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2707027.6 E 815023.8

			SA	MPL	ES					
Elevation feet	- 11	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.0			(0-0.25') Asphalt (0.25-5') Light brown to brownish yellow fine SAND, trace medium to fine gravel, trace silt at 4 ft bgs, trace coarse sand 4 to 5 ft bgs (loose) (wet at 4 ft bgs) No impact observed		SW	
	2			0.0			(loose) (wet at 4 ft bgs)  No impact observed			
	_		M-1	0.0	1.8	24	- 			
	4-			0.0						
	_			0.0			(5-7') Light brown medium to fine SAND, some to little medium to fine gravel, little to trace coarse sand (loose to medium dense) (wet)		SW	
	6			0.0			fine gravel, little to trace coarse sand (loose to medium dense) (wet)  No impact observed			
	-		M-2	0.0	1.7	50	(7-10') Light brown coarse to fine SAND, some to little medium to fine gravel, little to trace silt at 8 ft bgs (loose to medium dense)		SW	
	8-			0.0			(wet) No impact observed 			
	10			0.0						
	10			0.0			(10-14') Light brown medium to fine SAND, trace coarse to fine gravel, trace fine gravel (loose to medium dense) (wet) No impact observed		SP	
	12			0.0			- 			
	_		M-3	0.0	0.2	51	- - -			
	14			0.0			(14-15') Light gray fine SAND, some coarse to fine gravel, trace silt		SW	
	46			0.0			(medium dense to dense) (wet) No impact observed Macrocore refusal at 15 ft bgs  Bottom of Exploration 15 ft bgs			
	16-						- - -			
	18-						- -	-		
	-						- - -			
	20									

**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring MIP11**

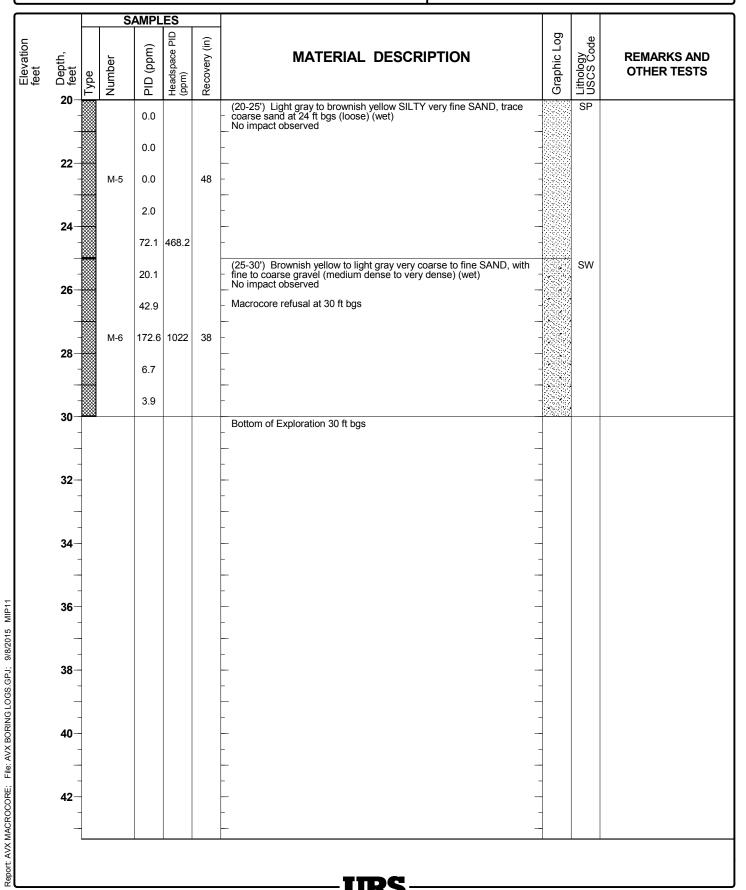
Date(s) 12/19/2013	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	30.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.01 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2707021.8 E 815424.0

			SA	MPL	ES					
Elevation feet	11-	adk -	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.0			(0-0.25') Asphalt (0.25-4') Light brown medium to very fine SAND, some medium to fine gravel, trace coarse sand, trace silt (medium dense to loose)		SW	
	2			0.0			(wet at 4 ft bgs)  No impact observed  —			
	-		M-1	0.0	4.7	35	<u>-</u>			
	4			0.0			(4-5') Reddish brown coarse to fine SAND, trace fine gravel (loose) (wet)		SP	
	-			0.0			No impact observed (5-6') Reddish brown coarse to fine SAND, some coarse to fine gravel (loose) (wet) No impact observed		sw	
	6			0.0			(6-10') Light brown very fine SAND (loose to medium dense) (wet)  No impact observed		SP	
	8		M-2	0.0	0.2	47	- - -			
	- -			0.0			-  -			
	10			0.0			(10-15') Light brown very fine SAND, some to little coarse to fine sand 13 to 14 ft bgs (loose to medium dense) (wet)  No impact observed		SP	
	12			0.0						
	-		M-3	0.0	0.1	46	- - -			
	14			0.0			-  -			
	-			0.0			(15-20') Light brown to light gray fine to very fine SAND (loose to medium dense) (wet) No impact observed		SP	
	16			0.0						
	18		M-4	0.0	1.5	54	_ 			
	-			0.0			-  -			
	20	▓		0.0			URS—			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring MIP11



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## Log of Boring MIP11(2)

Sheet 1 of 2

Date(s) Drilled 7/22/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	37.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.01 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property	Coordinates	N 2707021.8 E 815424.0

			SA	AMPL	.ES					
Elevation feet	Depth, feet	Туре	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	U			0.0			(0-0.25') Asphalt		SW	
	_			0.0			(0.25-5') Brown to dark brown fine to coarse SAND, some fine to coarse gravel, trace silt and cobble (loose to medium dense) (wet at 4 ft bgs)  No impact observed			
	<b>2</b> -		M-1	0.0	2.1	37	_			
	-			0.0						
	4-			0.0			<u>-</u>			
	6-			0.0			(5-8.5') Brown fine to coarse SAND, little to some fine to coarse gravel (loose) (wet) No impact observed		SP	
	-			0.0			- -			
	8 <del>-</del>		M-2	0.0	1.4	55	- -			
	_			0.0			(8.5-10') Light brown very fine to medium SAND (wet)  No impact observed		SP	
	10			0.0			(10-11') Light brown fine to coarse SAND, some fine to medium  – gravel (loose) (wet)  No impact observed		SW	
1(2)	-			0.0			No impact observed  (11-15') Light brown very fine to coarse SAND, trace fine gravel  - (loose) (wet)  No impact observed		SP	
315 MIP1	12		M-3	0.0	1.5	57	No impact observed			
oj; 9/8/20	14			0.0						
LOGS.GF	-			0.0			(15.16.5') Light brown fine to coarse SAND (loose) (wet)		SP	
X BORING	16 <del>-</del>			0.0			(15-16.5') Light brown fine to coarse SAND (loose) (wet) No impact observed		OI	
File: AV.			M-4	0.1	2.6	53	(16.5-20') Light brown very fine to fine SAND (loose) (wet)  No impact observed		SP	
ROCORE;	18		141 4	0.2	2.0	- 55	<u></u>			
Report: AVX MACROCORE; File: AVX BORING LOGS GPJ; 9/8/2015 MIP11(2)	_			0.0						
Report:	20⊸	xxx <b>1</b>					TIDC	entigata'igata	1	

Project Location: New Bedford, Massachusetts

**Project Number:** 39744051

## Log of Boring MIP11(2)

Sheet 2 of 2

			SA	AMPL	ES					
Elevation feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	20-			0.0			(20-25') Light gray to light brown very fine SILTY SAND (loose to medium dense) (wet) No impact observed		SP	
	-			0.0						
	<b>22</b> -		M-5	2.4		56				
	_			5.8						
	24-			33.2	421					
	-			70			(25-27.5') Brownish yellow fine to medium SAND, some coarse sand at 27-27.5 ft bgs (loose) (wet) No impact observed		SP	
	26-			75						
	- 28-		M-6	369	520	44	(27.5-29') Gray to brownish yellow fine to coarse SAND and  — GRAVEL (wet)		SW	
	-			51			No impact observed			
	30-			12.3			(29-30') Gray fine to coarse SILTY SAND, little to some silt, little fine to coarse gravel and cobbles (medium dense to dense) (wet) No impact observed	-	SP	
	-			0.7			(30-31') Gray fine to medium SAND (loose to medium dense) (wet) No impact observed		SP	
	32-			0.1			(31-34') Gray fine to coarse SAND and GRAVEL (wet)  No impact observed		SW	
	-		M-7	3.7	6.6	41	- 			
	34-			0.3			(34.35') Light gray to brownish vallow GLACIAL TILL with fine to	6X4XX	TILL	
	_			0.4			(34-35') Light gray to brownish yellow GLACIAL TILL, with fine to medium silty sand, some coarse sand, little to some fine to coarse gravel (medium dense) (wet)		TILL	
	36-		M-8	0.7		15	<ul> <li>(35-37') Light gray GLACIAL TILL, some fine to coarse silty sand, fine to coarse gravel, and silt (dense) (wet)</li> <li>No impact observed</li> </ul>			
	-			0.8	18.2		Macrocore refusal at 37 ft bgs  Bottom of Exploration 37 ft bgs			
	38-									
	_						- _ _			
	40-						- 			
	_									
	42-									
	_	L								
							TIRS			

**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring MIP15**

Sheet 1 of 2

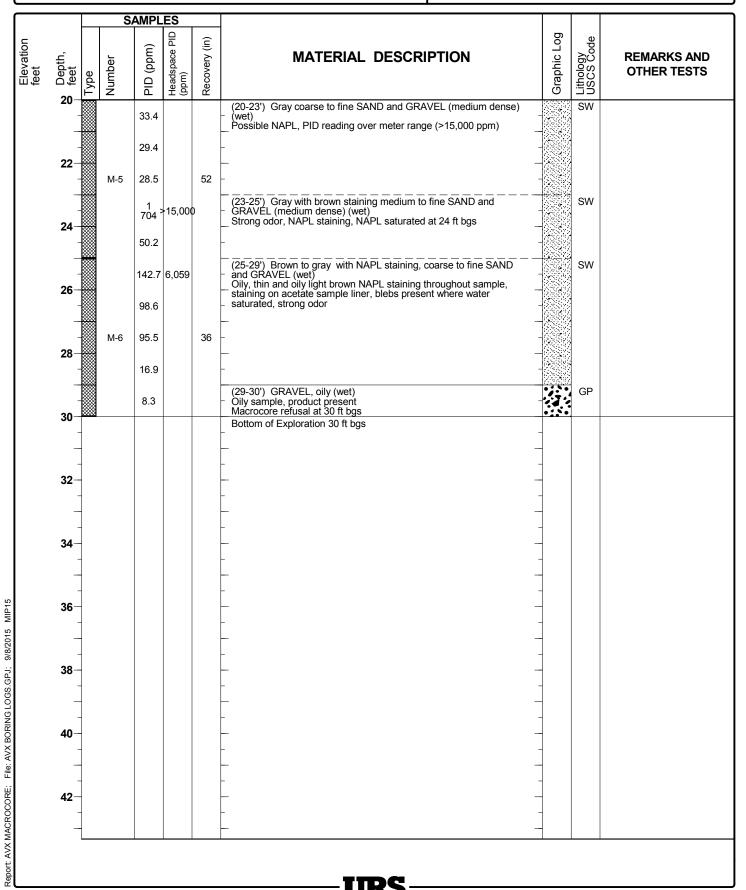
Date(s) Drilled 12/19/2013	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	30.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	5.57 ft
Groundwater Level During Drilling 0.25 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2707005.9 E 815601.1

			SA	MPL	ES				1	
Elevation feet Depth,	ΙÉ	- In	iadiiibei	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.0			(0-0.25') Asphalt	-	FILL	
	2			0.0			(0.25-5') Dark brown [FILL], medium to fine sand, gravel, black _ cinder, red brick, trace peat (medium dense) (wet) No impact observed	-		
	2	ı	M-1	0.0	1.5	29	-	$\overline{}$		
	4			0.0						
	<b>-</b>			0.0			-			
	6			0.0			(5-6') [FILL], medium to fine sand, red brick, rubber (wet)		FILL	
				0.0			(6-9') Black to dark gray [FILL], very fine silty material, trace peat, interval of black cinderlike material with yellow paint chips and petroleum-like odor 7 to 8 ft bgs, silty very fine sand lens and trace fine to coarse sand at 8.5 ft bgs (very soft to loose) (wet)  Slight petroleum odor 7 to 8 ft bgs		FILL	
	8	ı	VI-2	0.0		47	Slight petroleum odor 7 to 8 ft bgs			
				0.0	6.2					
_				0.0			(9-10') Brown highly organic PEAT (moist)  No impact observed	77 77 77 77 77 77 77 77 77 77 77 77	4	
1	0			0.0			(10-15') Brown becoming gray with depth, coarse to fine SAND and GRAVEL (loose to medium dense) (wet) No impact observed		SW	
1	2			0.0			_			
•	_	ı	M-3	0.0		38				
1	4			0.1	2.7		_			
•	-			0.0			_			
1	6			0.0			(15-20') Gray coarse to fine SAND and medium to fine GRAVEL, trace very fine sand (loose to medium dense) (wet) No impact observed		SW	
•				1.2			_ 			
1	8	ı	VI-4	5.4		32	_			
				8.8	62.3		_			
•	n_			5.8			<u>-</u>			
2	0	8					TTDC	<u> Rastati</u>	<u> </u>	

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP15**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring MIP23**

Sheet 1 of 2

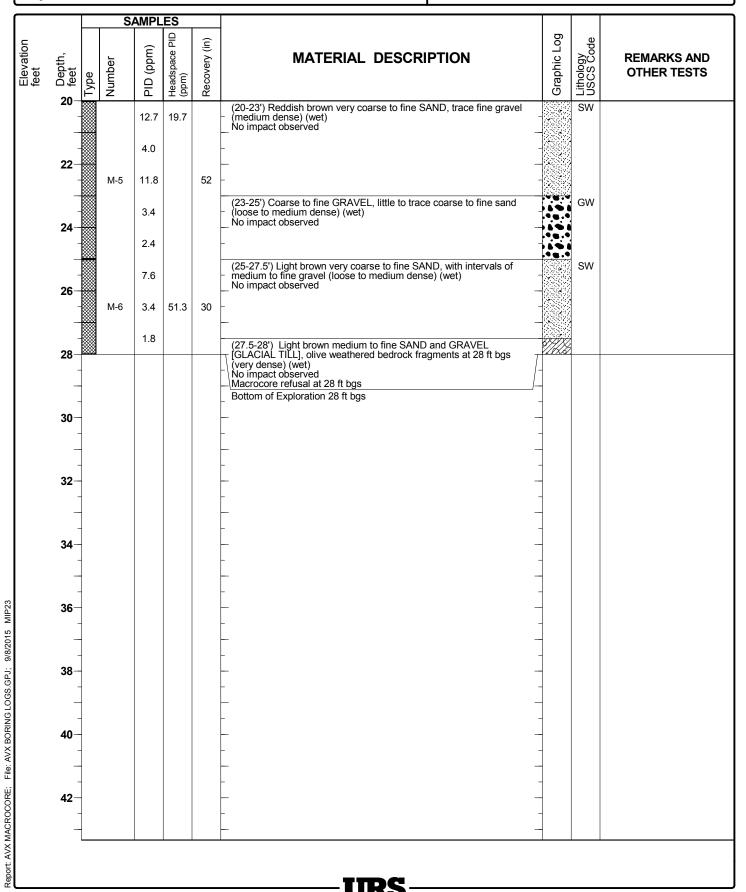
Date(s) 12/20/2013	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	28.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	4.61 ft
Groundwater Level During Drilling 3 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location		Coordinates	N 2706807.8 E 815566.6

			SA	MPL	ES					
Elevation feet	Depth, feet Tyne	Nimber		PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.0			(0-0.25') Asphalt		FILL	
	2			0.0			(0.25-5') Brown with black from 4 to 5 ft bgs, industrial [FILL], medium to fine sand and gravel, oily black cinder 4 to 5 ft bgs, red brick (wet at 3 ft bgs)  Dily appearance, machine oil/cutting oil odor 4 to 5 ft bgs			
	-	١	M-1	4.0		30		Z		
				1.2				-		
	4			15.0	132.8					
	6			1.2	14.1		(5-6') [FILL], red brick, silty fine sand (loose) (wet)  NAPL present. Light brown machine oil, oily blebs throughout, acetate liner stained with oil, machine oil odor		FILL	
				0.0			(6-7') Brown highly organic PEAT, trace silt (moist) No impact observed	77 77 77 77 77 77 77 77 77		
		١	M-2	0.0		36	(7-8') Gray SILTY very fine SAND (loose to soft) (wet) No impact observed	- 200	SP	
	8			0.3			(8-10') PEAT, little fine gravel, little silt (moist)  No impact observed	77 77 77 77 77 77 77 77 77 77 77 77	"	
				0.3			_	77 77 77 77 77 77 77 77 77		
	10			0.0			(10-13') Brown to gray coarse to fine SAND, little medium to fine gravel (loose) (wet) No impact observed		SW	
	12			0.0						
	12	١	VI-2	0.0	3.5	50				
	14-			0.0			(13-15') Gray to light gray SILTY very fine SAND (loose) (wet)  No impact observed		SP	
				0.0			_			
	16			0.0			(15-20') Light gray, trace reddish brown at 20 ft bgs, SILTY very fine SAND (loose) (wet) No impact observed		SP	
				0.0						
	18	١	VI-4	0.0	0.0	58				
				0.0						
	20			0.0						

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP23**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring MIP43**

Sheet 1 of 2

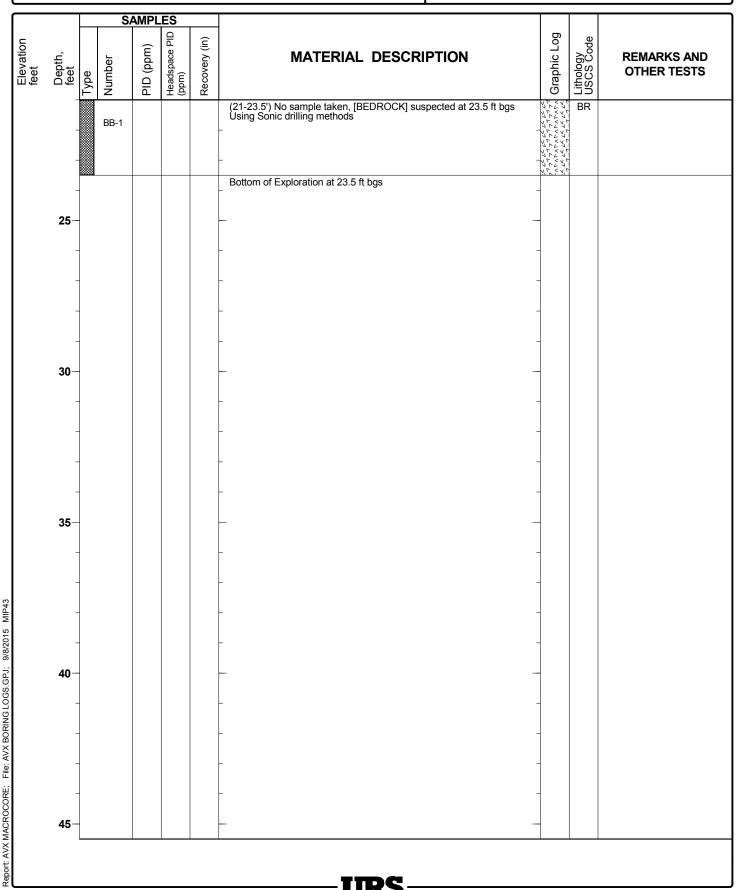
Date(s) Drilled 12/2	20/2013 - 7/29/2014	Logged By	J. Harshman	Checked By	
Drilling Method <b>Geo</b>	oprobe/6"Sonic	Drill Bit Size/Type	NA	Total Depth of Borehole	23.5 feet
Drill Rig Type <b>662</b>	20 DT/Sonic Rig	Drilling Contractor	Geosearch	Surface Elevation	6.31 ft
Groundwater Level During Drilling	evel 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill <b>Gro</b>	out, cold patch asphalt at surface	Location	Precix property	Coordinates	N 2707059.9 E 815483.3

			SA	AMPL	ES					
Elevation feet	Depth, feet	Туре	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.1			(0-0.25') Asphalt (0.25-5') Brown to black [FILL], medium to fine sand and gravel, trace black cinder, trace concrete (medium dense) (wet at 4 ft bgs)		FILL	
	-			0.0			-			
	_		M-1	0.3		28	-			
	_			1.1	26.7					
	5-			0.2	26.7		(5-8') Brown to gray medium to fine SAND, little coarse sand, little medium to fine gravel (loose) (wet)		sw	
				0.0			No impact observed			
	_		M-2	0.0		44	-			
				0.1	1.3		(8-10') Light brown SILTY very fine SAND (loose) (wet) No impact observed		SP	
	10-			0.1			(40.14) Light brown to light grov SILTV you fine SAND 2 inch long		SP	
	-			0.0			(10-14') Light brown to light gray SILTY very fine SAND, 2-inch lens of black fine sand at 13 ft bgs (medium dense) (wet)  No impact observed		SF	
2	_		M-3	0.0		58	-			
	_		IVI-3	0.4		36	-			
1000	_			0.8	4.8		(14-15') Coarse to fine SAND and GRAVEL (medium dense) (wet) No impact observed		sw	
	15			0.1			(15-18') Light brown to light gray medium to fine SAND, little to trace coarse sand (loose) (wet) No impact observed		SP	
	_			0.3			-			
Š			M-4	0.3		48	(18-20') Light brown coarse to fine SAND and medium to fine		SP	
VOOLET VOOLET	_			0.1			GRAVÉL (medium dense) (wet) No impact observed			
REPORT NAX INTERCOOLE, THE AVA DOMINATED COOLOGY, SIGNATOR INTER-	20			0.1			(20-21') Brownish yellow very coarse GRAVEL, some fine to coarse gravel with fine to coarse sand [TILL] No impact observed		TILL	

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP43**

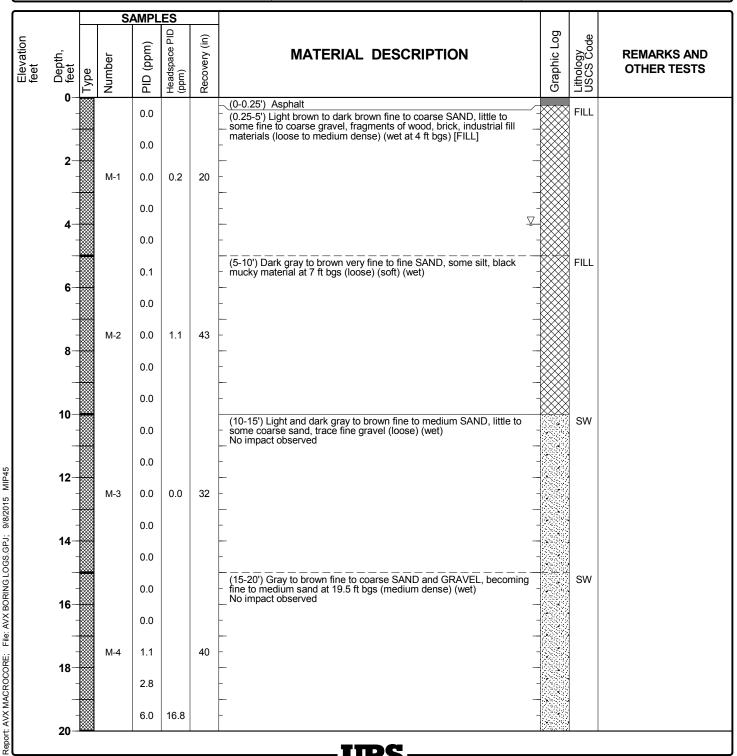


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **Log of Boring MIP45**

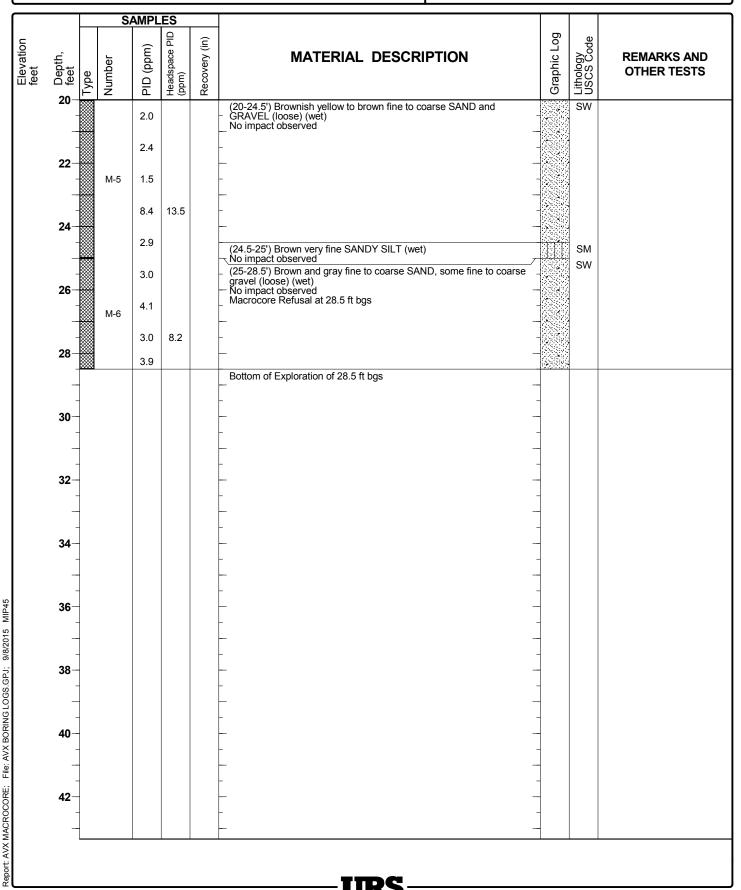
Date(s) 7/18/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	28.5 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.64 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (MW-15 area)	Coordinates	N 2706990.9 E 815608.0



Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **Log of Boring MIP45**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring MIP46**

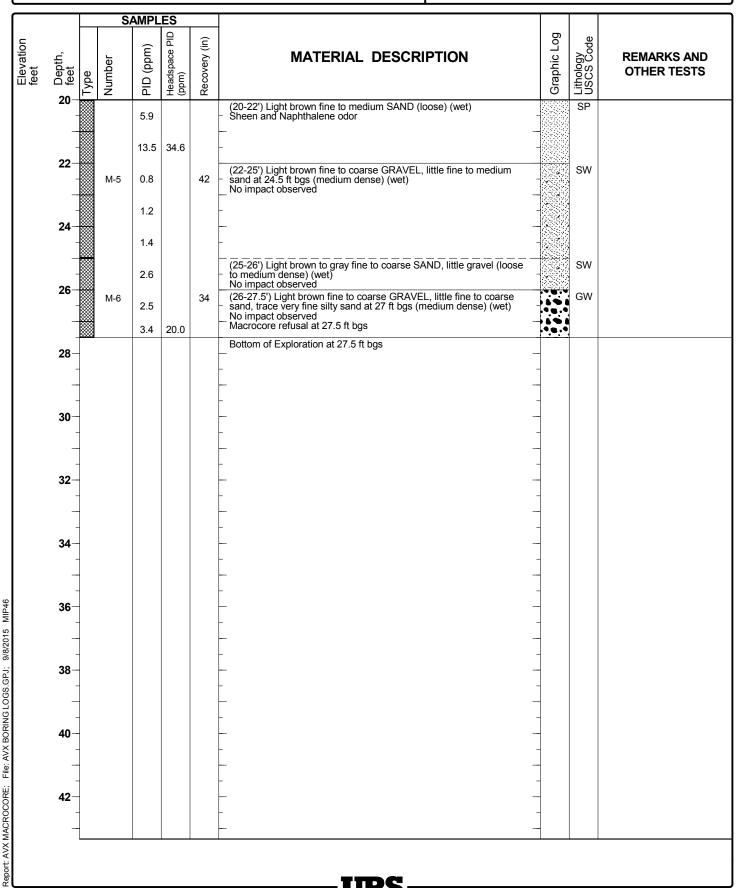
Date(s) Drilled 7/18/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	27.5 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.44 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (MW-15 area)	Coordinates	N 2707000.4 E 815607.2

			S	AMPL	ES					
Elevation feet		Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0			0.0			(0-0.25') Asphalt (0.25-5') Light brown to brown fine to coarse SAND, little fine sand	<b>***</b>	FILL	
	2			0.0			and silt, brick fragments, slag, mortar, black industrial materials (medium dense) (wet at 4 ft bgs) [FILL]			
	2		M-1	0.0	0.0	20				
				0.0						
	4			0.0			<del>-</del> -			
	6-			3.8			(5-9') Black and dark gray INDUSTRIAL FILL, trace red brick fragments, trace organic and cobbles at 7-9 ft bgs (loose) (very soft) (wet)		FILL	
				3.4			Naphthalene and petroleum odor			
	8-		M-2	2.6	22.5	33				
	-			1.7			-			
	10-			1.1			(9-10') Dark gray SANDY SILT, becoming fine to medium sand at 10 ft bgs (medium stiff) (wet) No impact observed		SM	
				1.5			(10-12') Dark brown and gray fine to medium SAND, some coarse sand, trace white ceramic tile, red brick (loose) (wet) [FILL] No impact observed		FILL	
	-			0.9			-			
	12 <del>-</del>		M-3	0.7	2.0	32	(12-15') Dark brown and gray fine to medium SAND, trace fine gravel and cobbles (wet) No impact observed		SW	
	14			1.2			-			
	14			0.9			-			
	16			2.3			(15-20') Brown to gray fine to medium SAND, becoming fine to coarse sand and gravel (medium dense) (wet)  No impact observed		SW	
	10			1.4			<u> </u>			
	10		M-4	5.6	31.7	49	-			
	18			2.7			-			
	20			1.9						
	20 <del>-</del>						URS—			

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP46**

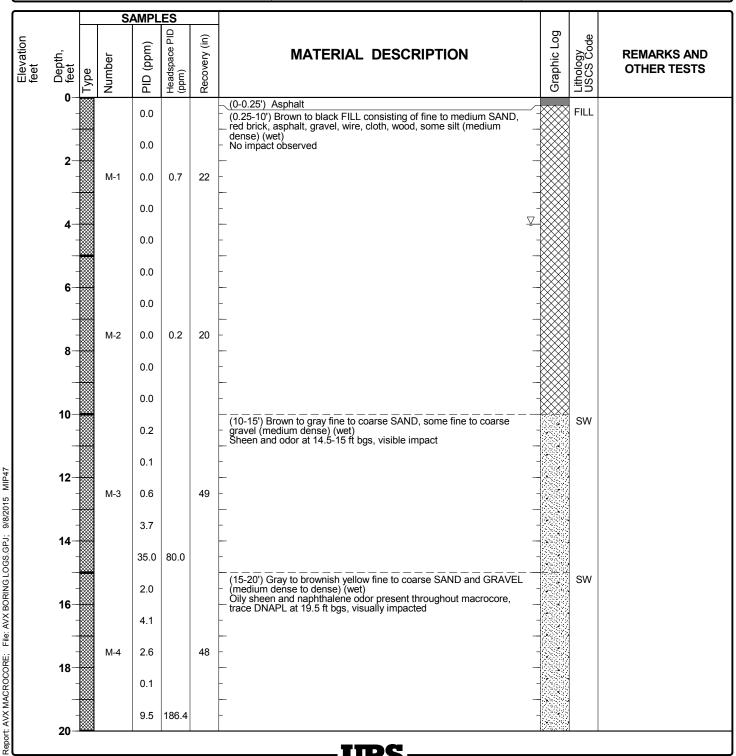


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **Log of Boring MIP47**

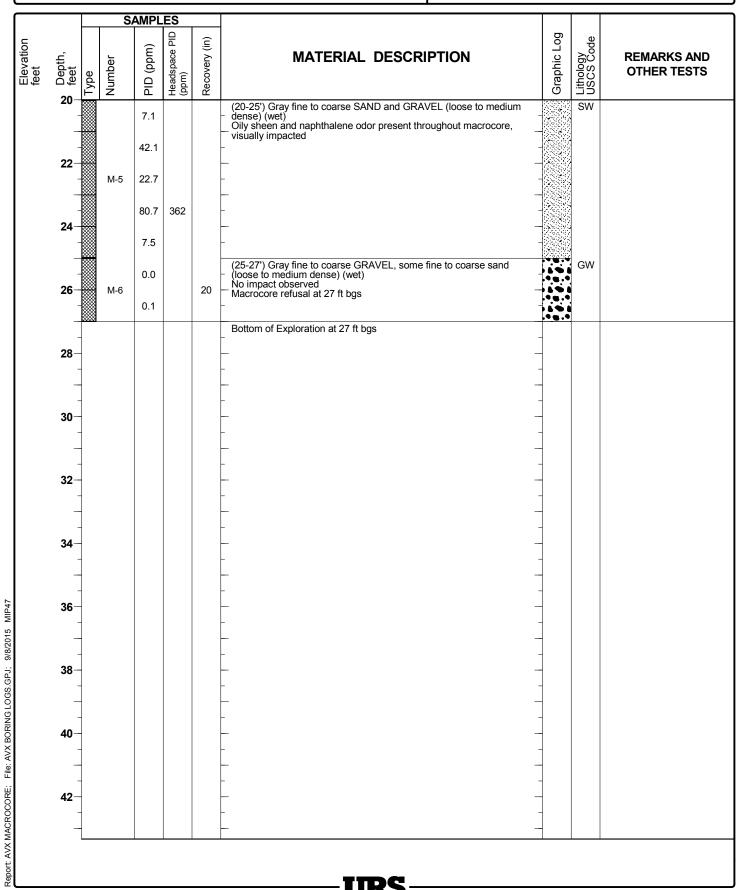
Date(s) Drilled 7/18/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	27.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.10 ft
Groundwater Level During Drilling 4 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (MW-15 area)	Coordinates	N 2707011.4 E 815607.2



Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP47**

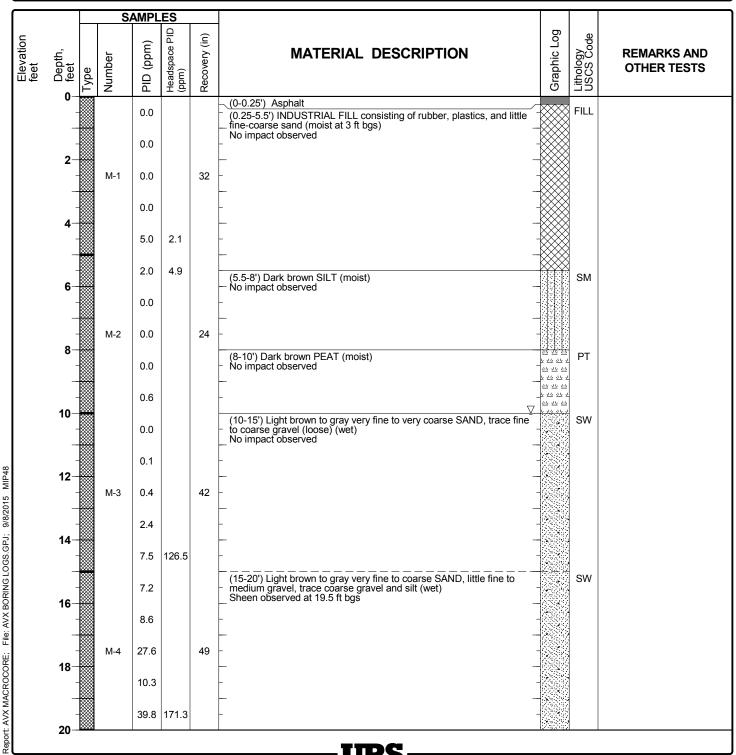


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **Log of Boring MIP48**

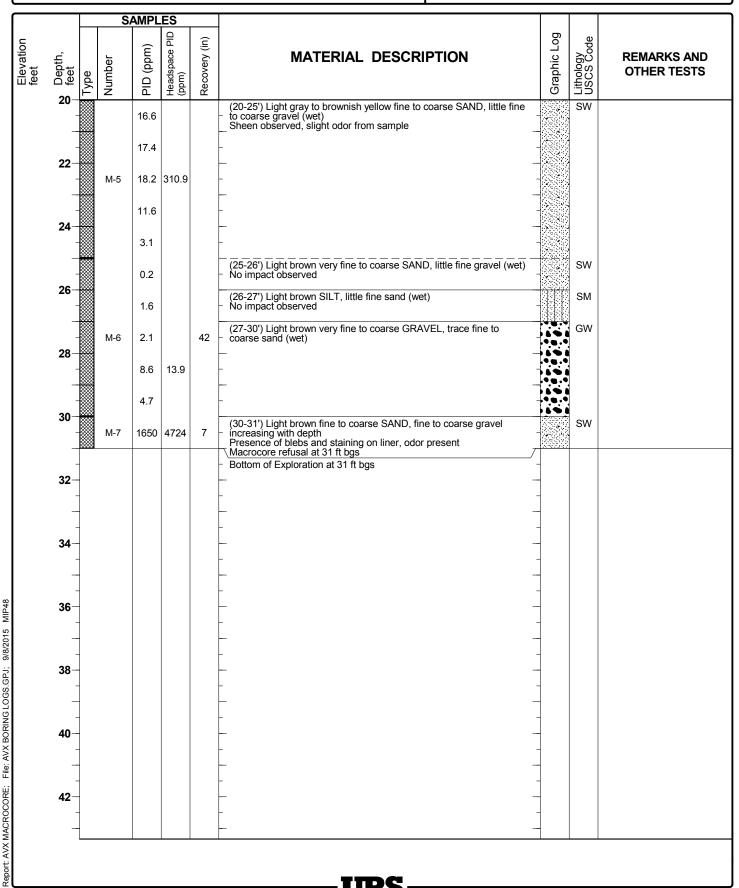
Date(s) 7/21/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	31.0 feet
Drill Rig Type <b>6620 DT</b>	Drilling Contractor	Geosearch	Surface Elevation	5.64 ft
Groundwater Level During Drilling 10 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (MW-15 area)	Coordinates	N 2707010.2 E 815595.2



Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP48**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring MIP49**

Sheet 1 of 2

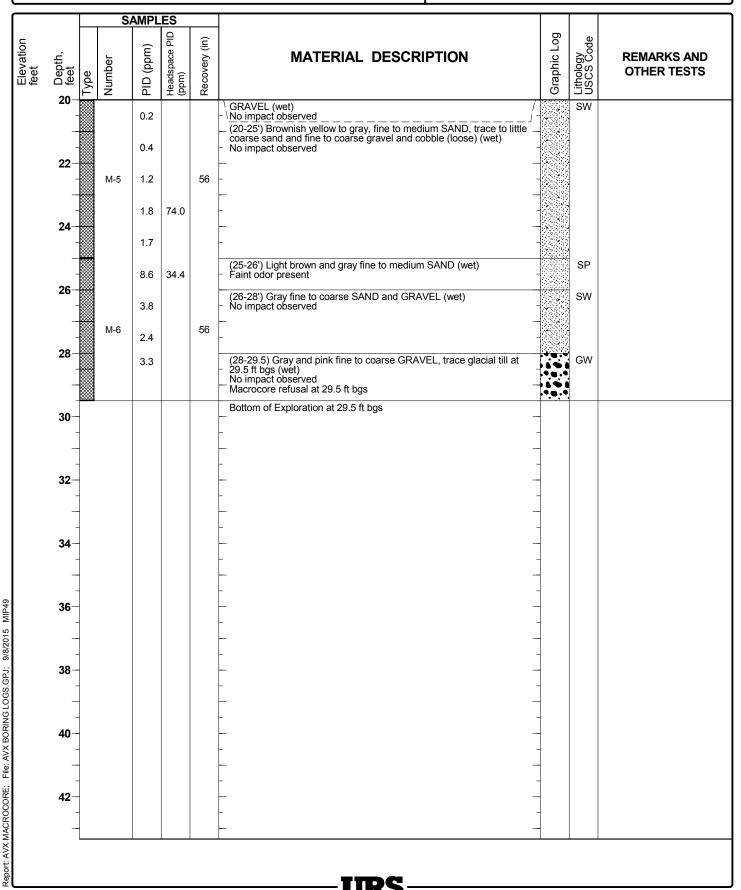
Date(s) Drilled 7/2	21/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Ge</b>	eoprobe	Drill Bit Size/Type	NA	Total Depth of Borehole	29.5 feet
Drill Rig Type 66	620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.69 ft
Groundwater L During Drilling		Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill <b>Gr</b>	rout, cold patch asphalt at surface	Location	Aerovox property (MW-15 area)	Coordinates	N 2707015.1 E 815581.8

			S	AMPL	ES					
Elevation feet		Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0-	<b>\</b>		1.5	5.5		(0-0.25') Asphalt (0.25-5') Dark brown fine to coarse SAND, some fine to coarse		FILL	
	_			0.1			(0.25-5') Dark brown fine to coarse SAND, some fine to coarse gravel (wet at 4 ft bgs) [FILL]  No impact observed			
	2-							-		
	_		M-1	0.1		29	_			
	4-			0.0				z		
	4			0.3				-		
	- -			18.5			(5-7') Dark brown very fine SAND and SILT, trace red brick, plastic, wood (moist) [FILL] No impact observed		FILL	
	6-			42.3	9.2		No impact observed			
	_			42.3	9.2		(7-10') Dark brown PEAT (moist)  No impact observed	* ** ** *	PT	
	8 <del>-</del>		M-2	12.6		18	No impact observed	77 77 77 77 77 77 77 77 77	1	
	-			3.8				77 77 77 77 77 77 7 77 77 7		
	_			1.2				77 77 77 77 77 77		
	10 <del>-</del>			3.8	8.0		(10-15') Dark brown very fine to coarse SAND, little fine to coarse gravel, trace silt		SW	
				2.0			No impact observed			
	12			2.0				-		
	_		M-3	8.0		33				
	14-			1.1						
	14			1.0						
	_			0.6			(15-17.5') Light brown to gray very fine to medium SAND, trace coarse gravel (loose) (wet)		SW	
	16			0.3			No impact observed			
	18		M-4	1.5		58	(17.5-19.5') Light brown to gray, very fine SAND, some silt (medium dense) (wet)		SM	
	_			2.2	15.4		No impact observed			
	-			1.9			(19.5-20') Brownish yellow fine to coarse SAND and fine to medium		sw	
	20— <u>s</u>	***			1		, , , , , , , , , , , , , , , , , , , ,	<u> Daeudel</u>		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **Log of Boring MIP49**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring MIP50E**

Sheet 1 of 2

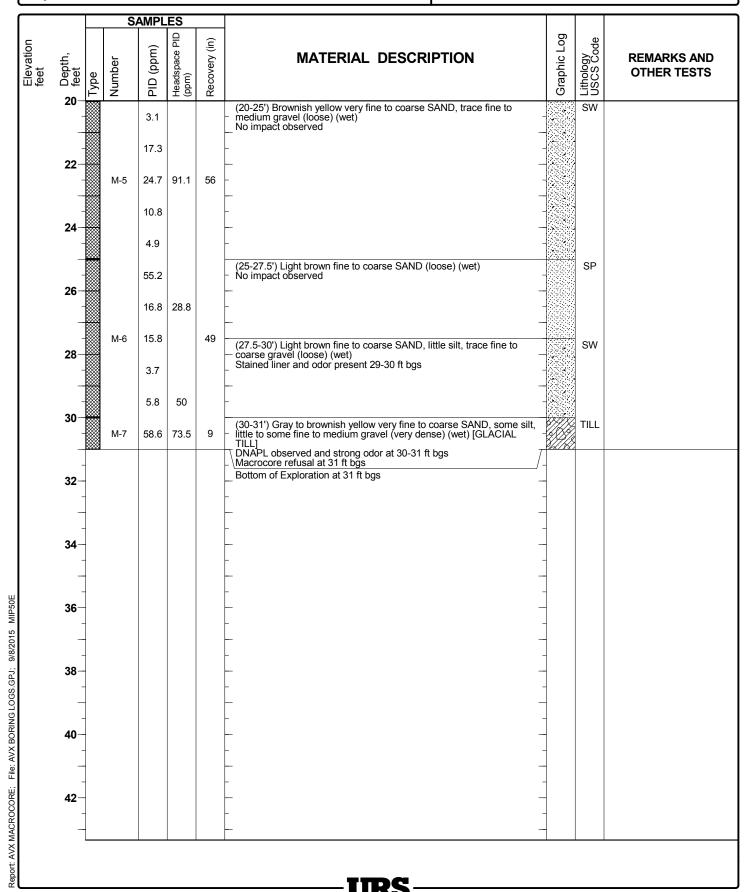
Date(s) 7/21/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	31.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.39 ft
Groundwater Level During Drilling 4.5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (MW-15 area)	Coordinates	N 2707000.5 E 815587.7

	T		S	AMPL	ES					
Elevation feet	- 11	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0	<b>\</b>		0.1			(0-0.25') Asphalt (0-25-5') Light brown and dark brown fine to coarse SAND trace fine		FILL	
	2—			0.0			(0.25-5') Light brown and dark brown fine to coarse SAND, trace fine to coarse gravel, fragments of red brick and plastic (loose) (wet at 4.5 ft bgs) [FILL] Petroleum odor at 4.5 ft bgs			
	-		M-1	0.0		30				
	4-			0.1						
	7			0.9	6.6					
	6-			0.0			(5-7.5') Dark brown and black fine to coarse SAND, little fine to coarse gravel, fragments of red rubber and plastic (loose) (wet)  [FILL]  No impact observed		FILL	
				0.3						
	8-		M-2	0.0	15.9	46	(7.5-9.5') Dark brown very fine SANDY SILT, 2" lense of marine — matter (shells) (loose to medium dense) (moist)		SM	
	-			0.2			No impact observed	- -		
	10			0.1			(9.5-10') Dark brown PEAT (loose to medium dense) (moist) No impact observed	* ** ** *	d	
	-			0.1			(10-12') Dark brown fine to coarse SAND, black cinder and silt (wet) [FILL]		FILL	
	12—			0.1						
	. <u>-</u>		M-3	0.0	5.5	50	(12-12.5') Dark brown PEAT (wet) No impact observed (12.5-15') Dark brown fine to coarse SAND, little to some silt and	P 27 27 3	PT SW	
	14-			0.1			fine to coarse gravel  No impact observed			
	-			1.0						
	16			2.6			(15-20') Gray to light brown very fine to coarse SAND, trace fine to medium gravel (loose-medium dense) (wet) No impact observed		SW	
				6.9						
	40		M-4	12.0		51	- -			
	18			8.0						
	-			110	66.1		<u></u>			
	20	.xxx1		ı	1		TIDC	nersanidž		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP50E**

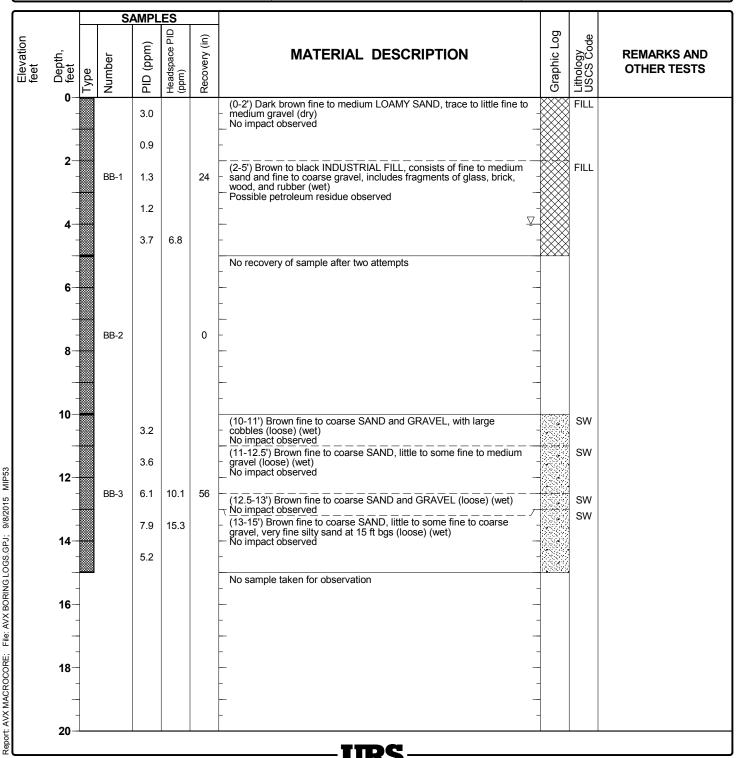


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP53**

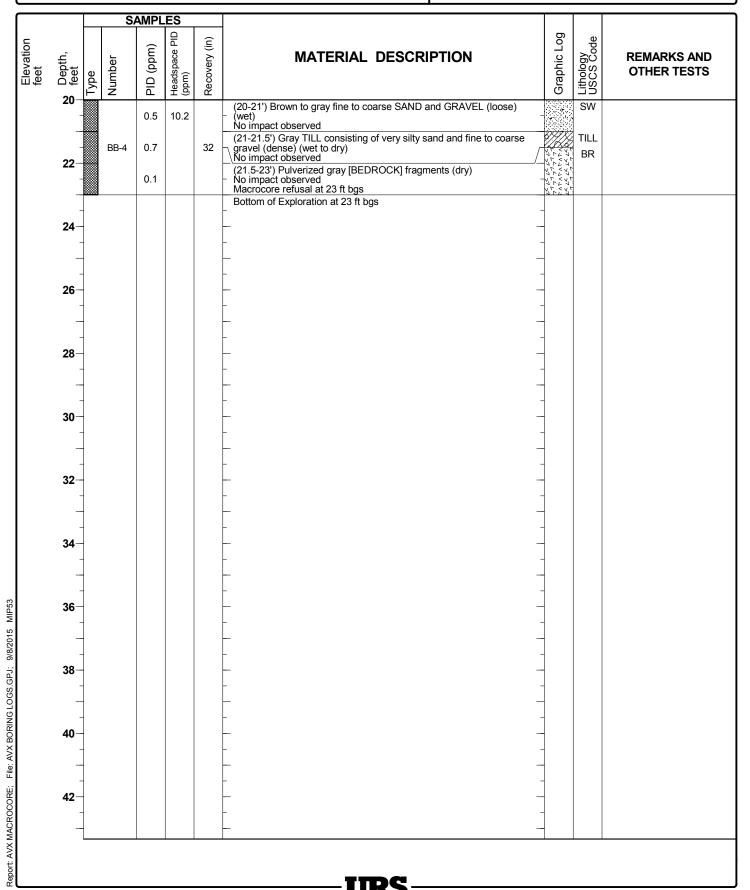
Date(s) Drilled	7/30/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method	6" Sonic	Drill Bit Size/Type	6"Sonic	Total Depth of Borehole	23.0 feet
Drill Rig Type	8140 track-mounted Sonic Rig	Drilling Contractor	Geosearch	Surface Elevation	5.29 ft
Groundwat During Dril		Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill	Grout, cold patch asphalt at surface	Location	Aerovox property (MW-15 area)	Coordinates	N 2707038.2 E 815563.8



Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP53**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **Log of Boring MIP54**

Sheet 1 of 2

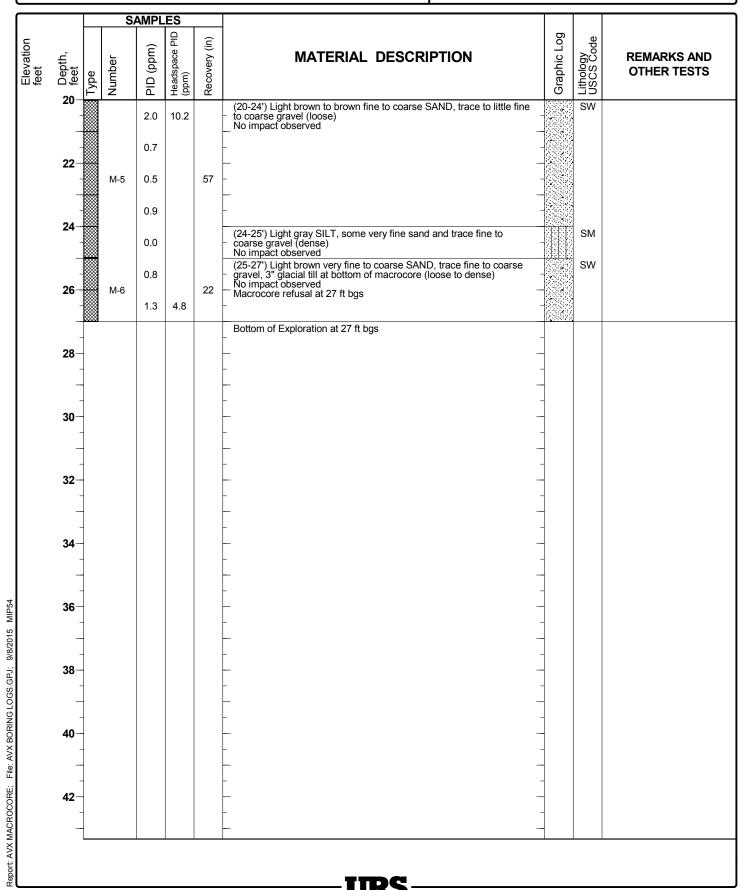
Date(s) Drilled 7/22/2014	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	27.0 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	5.43 ft
Groundwater Level During Drilling 5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (MW-15 area)	Coordinates	N 2707033.6 E 815552.5

			S	AMPL	.ES					
Elevation feet	Depth, feet	Type	Number	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0-	∭,		2.1			(0-0.25') Asphalt  (0-25-5') Light brown and dark brown fine to coarse SAND little to		FILL	
	 _ 2_			1.1			(0.25-5') Light brown and dark brown fine to coarse SAND, little to some fine to medium gravel and fragments of wood, asphalt, and rubber, 1/4" lense of fine to medium green sand at 4 ft bgs (loose)  [FILL]  Sweet odor at 4 ft bgs			
	_		M-1	0.8		29	-			
	-			0.2						
	4			8.3	16.3					
	_						(5-7') Dark brown SILT, some fine to medium gravel (loose) (wet)  - Trace sheen observed		SM	
	6-			0.0			I frace sheen observed			
	_			3.1			_			
	_		M-2	39.9	11.6	46	(7-9.5') Dark brown PEAT (moist) No impact observed	77 77 77 77 77 77 7 77 77 7	PT	
	8-			4.2			<del>-</del> -	77 77 77 77 77 77		
	_			0.9				77 77 77 77 77 77 77 77 77		
	10-						(9.5-10') Brown fine to coarse SAND, trace fine to medium gravel (loose) (moist)  No impact observed		SW SW	
	_			0.1			(10-12.5') Dark brown to gray fine to coarse SAND, little to some fine to coarse gravel (wet)			
	12—			0.0			No impact observed			
	-		M-3	0.0		57	(12.5-15') Brownish yellow very fine to medium SAND, trace coarse sand, fine gravel, and silt (loose)		sw	
	_			1.3	13.6		sand, fine gravel, and silt (loose)  No impact observed			
	14			0.3						
	_						(15-20') Brownish yellow fine to coarse GRAVEL, some fine to		GW	
	16 <del>-</del>			0.0			coarse sand (loosé) No impact observed			
	_			0.1						
	_		M-4	0.9		31	_			
	18			0.9			<del>-</del> -			
	_				0.0		_			
	20			1.5	9.2					

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### **Log of Boring MIP54**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## Log of Boring MIP55S

Sheet 1 of 2

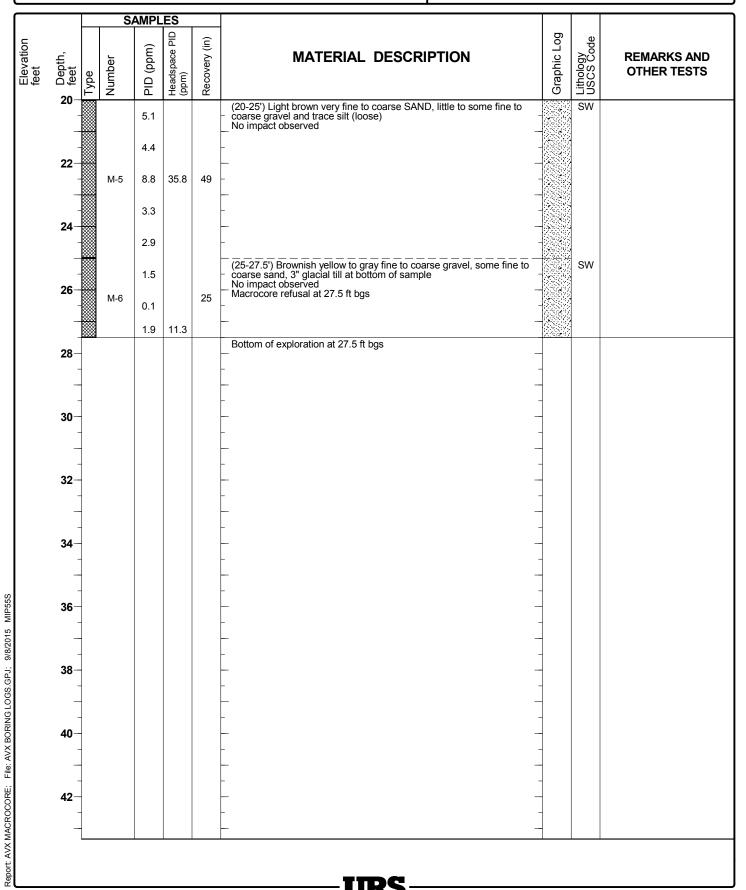
Date(s) Drilled <b>7/22/2014</b>	Logged By	J. Harshman	Checked By	J. Harshman
Drilling Method <b>Geoprobe</b>	Drill Bit Size/Type	NA	Total Depth of Borehole	27.5 feet
Drill Rig Type 6620 DT	Drilling Contractor	Geosearch	Surface Elevation	6.70 ft
Groundwater Level During Drilling 3.5 ft bgs	Sampling Method(s)	Macrocore	Hammer Data	Direct Push
Borehole Backfill Grout, cold patch asphalt at surface	Location	Aerovox property (MW-15 area)	Coordinates	N 2707003.3 E 815560.9

		5	AMPL	ES					
Elevation feet	Depth, feet Tyne	)er	PID (ppm)	Headspace PID (ppm)	Recovery (in)	MATERIAL DESCRIPTION	Graphic Log	Lithology USCS Code	REMARKS AND OTHER TESTS
	0		1.3			(0-0.25') Asphalt (0.25-5') Light brown to dark brown fine to coarse SAND, little fine to medium gravel, fragments of brick and concrete (loose) (wet at 3.5 ft		FILL	
	2		2.1			medium gravel, fragments of brick and concrete (loose) (wet at 3.5 ft bgs) [FILL]     Naphthalene odor			
	-	M-1	5.6	14.9	53				
	4		0.4			<u> </u>			
	7		0.2			- -			
	6-		0.1			(5-7') Dark brown fine to coarse SAND, some fine to coarse gravel and little fill material including plastic and metal shavings (loose) (wet) [FILL]		FILL	
	0-		3.5	23.4		Staining on liner, sheen observed on soil, DNAPL observed, strong odor			
		M-2	0.2		42	(7-10') Dark brown PEAT (loose) (moist) No impact observed	77 77 77 77 77 77 77 77 77 7 77 77 7	PT	
	8		0.7				8 47 47 47 8 47 47 47 8 48 47 4		
	40		1.3				77 77 77 77 77 77 77 77 77		
	10		2.7	9.3		(10-10.5') Dark brown fine to coarse SAND, little fine to medium gravel (loose) (wet) No impact observed		SW SW	
	12		0.3			(10.5-15') Dark brown very fine to medium SAND, little silt and fine to coarse gravel (loose) (wet) No impact observed			
	· <u>-</u>	M-3	0.1		54	- - -			
	14-		0.0			- -			
	-		1.3						
	16		0.6			(15-17.5') Dark brown very fine to very coarse SAND (loose) (wet) No impact observed		SP	
	.5		2.8						
	18	M-4	14.6		42	(17.5-20') Brownish yellow very fine to very coarse SAND, little fine to coarse gravel (loose) (wet)		sw	
	.5		23.9			No impact observed			
	20		34.6	200					

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## Log of Boring MIP55S

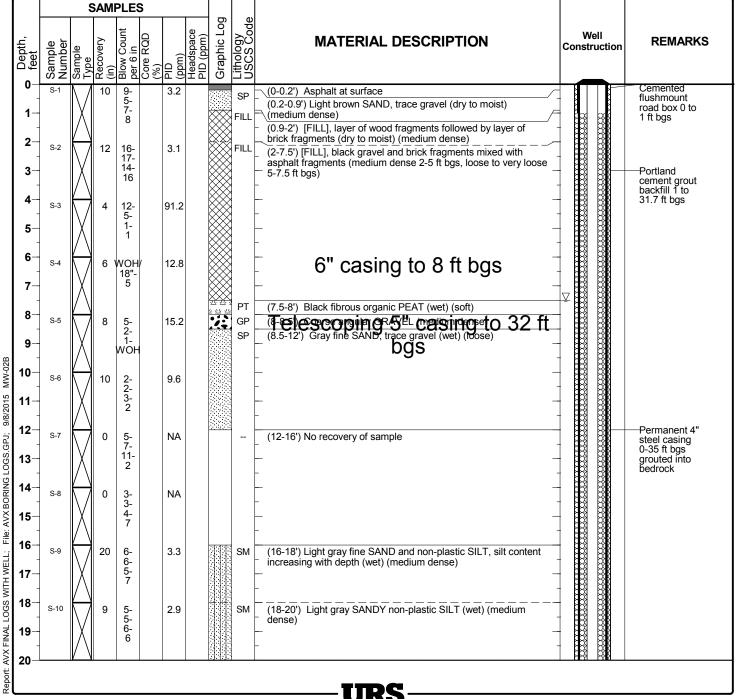


Project Location: New Bedford, Massachusetts

**Project Number:** 39744051

#### **URS** Corporation Log of Boring MW-02B

Date(s) Drilled and Installed	<sup>d</sup> 2/11/14 - 2/20/14	Water Surface -2.60 f	t msl	Well Casing or Riser  4-in steel casing 0-35 ft bgs; 2-in sched. 40 PVC riser 0-35.7 ft bgs				
Logged By (URS)	J. Currier	Surface 4.90 ft	ft msl	Screen 2-in Sched. 40 PVC screen 35.7-45.7 ft bgs				
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman				
Total Depth of Borehole	46.0 ft	Easting 815563.75776	Northing 2706819.15013	Notes: See log of boring B-02B for additional material description				
Groundwater Level	7.5 ft bgs	Annular Fill:		Location: Eastern area of Aerovox property near Acushnet River Sampler Type: 2-ft Split Spoon Hammer Data: Autohammer Well Type: Flush-mount well installed				
Diameter of Borehole	8.5 in	Grout backfill 1-31.7 ft  Bentonite chip seal 31.	•					
Drilling Drive	e & Wash/6", 5", 4" Casing	#2 Filter sand 33.7-45.	7 ft bgs					



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **URS Corporation** Log of Boring MW-02B Sheet 2 of 2

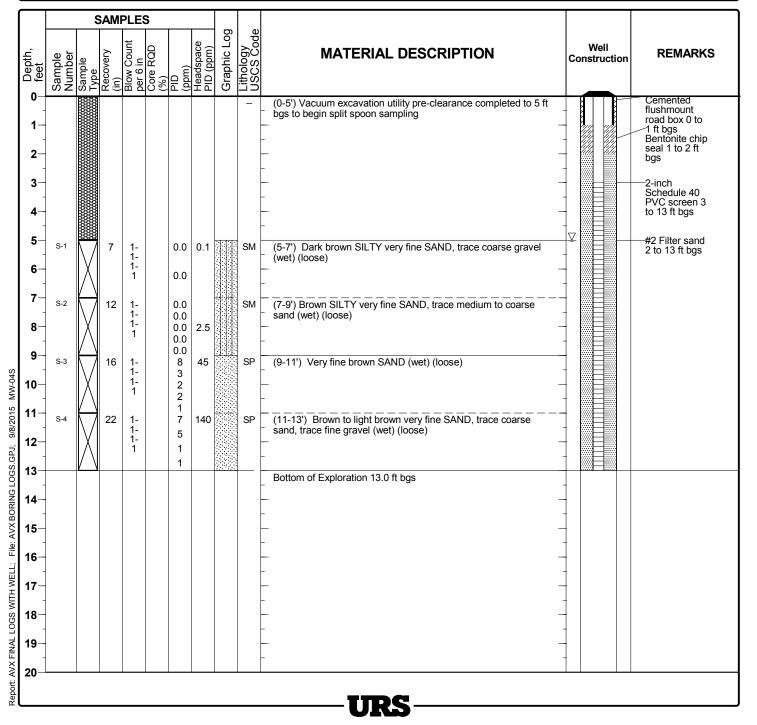
			SAMI	PLE:	s							
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20	S-11		16	9- 13-		4.8			SM	(20-21.25') Light gray SANDY non-plastic SILT (wet) (medium dense)		
21-		X		14- 15					SM	(21.25-21.6') Brown fine SAND and SILT (dense) (wet)		
22-	S-12		3	15- 18-		3.7			SP SP	(21.6-22') Gray coarse SAND and GRAVEL (wet) (medium dense to dense)		
23-		X		20- 17						(22-24') Gray medium to coarse SAND and weathered rock fragments (dense)		
24-	S-13		6	18- 20-		75.6		•	SP	(24-26') Light brown coarse SAND and rounded to angular		
25-		X		16- 20						GRAVÉL (wet) (dense)		
26-	S-14	$\mapsto$	16	28- 17-		50.1		•	SP	(26-28') Brown to light brown coarse SAND and rounded to		
27-		X		17- 15- 9						angular GRAVEL (wet) (dense)		
28-	S-15	$\mapsto$	0	10-		NA		•		(28-30') No recovery		
29-				12- 12- 10								
30-	S-16		16	6-		34			SP	(30-32') Light brown medium to coarse SAND and GRAVEL		
31 <u> </u>				6- 7- 8- 50/5"						(30-32') Light brown medium to coarse SAND and GRAVEL, oxidized lenses of reddish brown sand, large rock fragments at bottom of spoon		
32				00/0				, r, < v	BR	Split spoon refusal at 32 ft bgs on rock (32-36') Roller bit to 36 ft bgs for rock core sampling		Bentonite chip seal 31.7 to 33.7 ft bgs
- 33–								7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	ы	(32-30) Roller bit to 30 it bys for rock core sampling		55.7 K 5g5
34-								14 14 14 14 14 14 14 14 14 14 14 14 14 1				#2 Filter sand
_ 35−								77777				from 33.7 to 45.7 ft bgs
36—								77777 77777		_		
30 37–	R-1		10		54			21 21 21 21 21 21 21 21 21 21 21 21 21 21	BR	(36-41') Gray GRANITIC GNEISS [BEDROCK], with  k-feldspar, plagioclase feldspar, amphibole, and epidote;  multi-directional fractures filled with a green mineral present,		2 inch
-	R-2		23					71 71 71 71 71 71 71 7 7 7 7 7 7 7 7 7 7		near vertical fracture filled with amphiboles at 38 ft bgs		2-inch Schedule 40 PVC screen
38- -					92			17777 17777		- - -		35.7 to 45.7 ft bgs
39-	R-3		21.5					77777 77777		<del>-</del> -		
40-					69			1246				
41-	R-4		14		100			12424 177777	BR	(41-46') Gray GRANITIC GNEISS [BEDROCK], oxidized water-bearing fractures at 42 ft bgs; banding is 1 to 7 mm thick		
42-	R-5	╁╂	48					24 24 24 77 77 7 7 7 7 7 7 7		<ul> <li>and dips 50 to 60 degrees from horizontal, breaks are</li> <li>commonly along banding</li> </ul>		
43-								27 27 27 77 77 77 77 77 77 77 77 77 77 77 77 77		<u>-</u>		
44-					75			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				
45-								77777		_ _		
46-								777		Bottom of Exploration 46.0 ft bgs		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-04S**

Date(s) Drilled and Installed	<sup>0</sup> 2/6/14	Water Surface 2.49 ft	msl	Well Casing or Riser  2-in sched. 40 PVC riser 0-3 ft bgs				
Logged By (URS)	J. Harshman	Surface 7.49 ft	ft msl	Screen 2-in Sched. 40 PVC screen 3-13 ft bgs				
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman				
Total Depth of Borehole	13.0 ft	Easting 815064.48998	Northing 2707063.71524	Notes:				
Groundwater Level	5.0 ft bgs	Annular Fill:		Location: Precix property east of MW-101B Sampler Type: 2-ft Split Spoon				
Diameter of Borehole	8.5 in	Bentonite chip seal 1-2	2 ft bgs	Hammer Data: Autohammer				
Drilling HSA Method		#2 Filter sand 2-13 ft b	J .	Well Type: Flush-mount well installed				

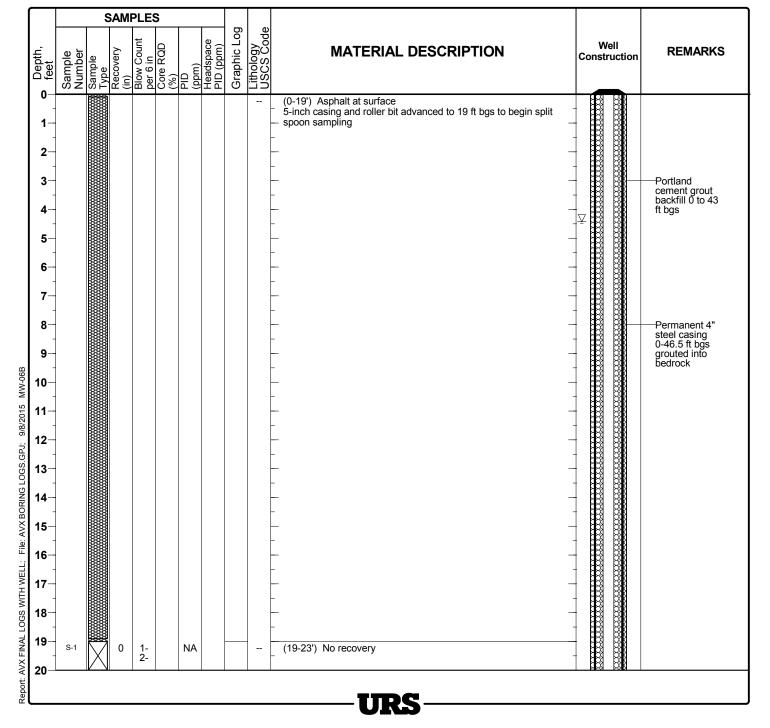


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-06B

Date(s) Drilled and Installed	<sup>0</sup> 2/4/14	Water Surface NA Elevation		Well Casing or Riser 4-in steel casing 0-46.5 ft bgs; 2-in sched. 40 PVC riser 0-46.5 ft bgs				
Logged By (URS)	J. Currier	Surface 6.38 ft	ft msl	Screen 2-in Sched. 40 PVC screen 46.5-56.5 ft bgs				
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman				
Total Depth of Borehole	56.5 ft	Easting 815321.604262	Northing 2707023.35261	Notes: See log of boring B-06B for material description from 0-23 ft bgs  Location: Northeastern area of property adjacent to GZ-102 cluster				
Groundwater Level	4.43 ft bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon				
Diameter of Borehole	8.5 in	Portland cement grout  Bentonite chip seal 43-	9	Hammer Data: Autohammer				
Drilling Drive Method Core	e & Wash/5", 4" Casing/HQ e	#2 Filter sand 45-56.5	ft bgs	Well Type: Flush-mount well installed				



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation** Log of Boring MW-06B Sheet 2 of 3

		5	AMI	PLES	S				4)			
Depth,	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	Old)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
-		X		2- 2						_		
21-	S-2	M	0	2- 3-		NA			-			
22-				4- 4					-			
23- 24-	S-3	M	12	6- 3- 2- 2		1.2			SP	(23-25') Light brown fine SAND, trace silt, trace angular gravel,  2-inch seam of reddish brown material at 25 ft bgs (wet) (loose)		
25-	S-4	$\bigvee$	12	3- 3- 3-		1.1			SP	(25-29') Fine to medium SAND, trace silt, little angular gravel (wet) (loose)		
27-				3								
28-	S-5	M		3- 2- 2- 3		3.0				- 		
29- 30-	S-6	M	14	2- 2- 2- 2		3.5			SP	(29-31') Light brown fine to medium SAND, some gravel, trace silt (wet) (loose)		
31-	S-7	$\bigvee$	10	3- 2- 3-		1.2			SP	(31-33') Light brown coarse SAND and GRAVEL (wet) (loose)		
33-			40	4		4.0		•				
34-	S-8		10	8- 10- 6- 8		1.6			SP	(33-37") Brown medium and coarse SAND and GRAVEL, trace silt (wet) (loose)		
35— 36—	S-9	M	8	5- 5- 6- 6		0.5						
37— 38—	S-10		4	13- 18- 20- 37		1.6			GP	(37-41') Coarse to medium GRAVEL, no fine material (wet)	T MICA CAMA	
39- 40-	S-11		3	10- 10- 10- 14		1.2						
41-	S-12		19	8- 38- 19- 30		7.1			SP	(41-45") Brown to light brown fine to medium poorly graded  SAND some gravel trace silt (wet) (loose)		
36 - 37 - 37 - 37 - 37 - 37 - 37 - 37 -	S-13		14	21- 46- 45- 38		2.7				-  - -		Bentonite chip seal 43 to 45 ft bgs
45	S-14			50/5"		1.0		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	BR	(45-47') Split spoon refusal, no recovery Roller bit 45 to 47 ft bgs to begin rock core sampling		
Med										URS	. many harris	

**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation Log of Boring MW-06B** Sheet 3 of 3

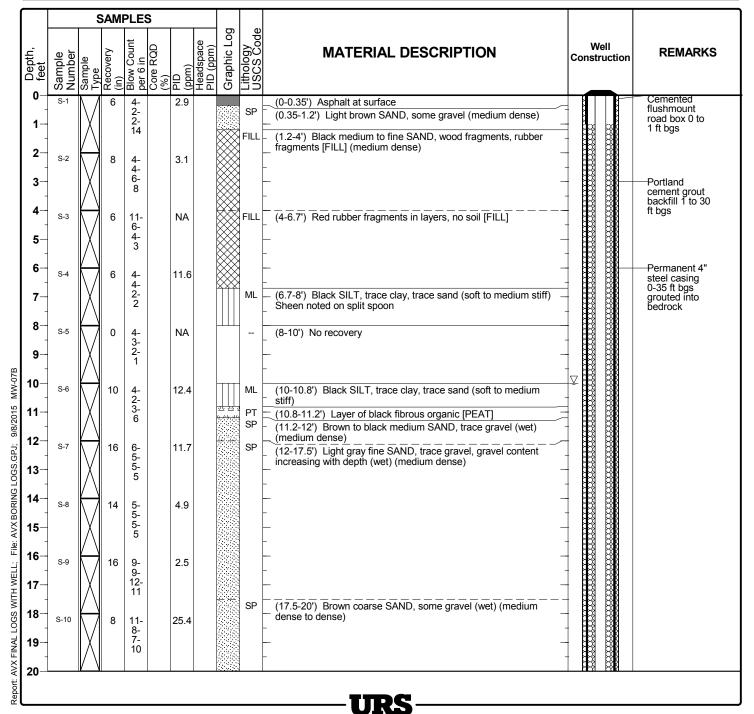
$\bigcap$		S	AMI	PLES	<u> </u>							
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
47-	R-1		36					1 2 4 EA 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				
48-								77 77 77 77 77 77 77 77 77 77 77 77 77		L(0515) ACIDIFION INVESTIGATION EXPORTS HONS  Ingrity fractured, 2 sections greater than 4, oxidized racture in the sections greater than 4, oxidized racture in the sections greater than 4, oxidized racture in the section in the se		
49-					26			77 77 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				
50-								1 77 77 X				
51-		Ш						7 77 77 Y				#2 Filter sand from 45 to
52-	R-2		30					V 1 7 1 7 1 V	BR	(51.5-54') Dark greenish gray GRANITIC GNEISS [BEDROCK], highly fractured, 2 sections greater than 4", banding 20-40mm with quartz veins, evidence of iron staining on		56.5 ft bgs
53-					30			1 77 77 X		fracture surfaces		
54-	R-3	Ħ	24					75 75 75 75 75 75 75 75 75 75 75 75 75 7	BR	(54-56.5') Gray GRANITIC GNEISS [BEDROCK], vertical to near vertical fractures in rock that appear oxidized from movement of water, vertical and horizontal fractures represent		2-inch Schedule 40 PVC screen
55— - 56—					40			27 27 27 77 77 77 7 7 7 7 7 7		dark banding up to 20 mm thick composed of mafic minerals		46.5 to 56.5 ft bgs
57								77 X X X X X X X X X X X X X X X X X X		Bottom of Exploration 56.5 ft bgs		
58-												
59-												
60-										_ 	1	
61-										<u> </u>	<u> </u>	
62												
63										- - -		
64-												
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66-												
67-										<u></u>		
68-											†	
69-											<u> </u>	
70-										<del>-</del> - -		
71- - 72-												
63- 64- 65- 66- 67- 68- 70- 71- 72- 73-												
										URS		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

# URS Corporation Log of Boring MW-07B

Date(s) Drilled <sub>2/</sub> and Installed	/18/14 - 2/19/14	Water Surface -4.00 f	t msl	Well Casing or Riser 4-in steel casing 0-35 ft bgs; 2-in sched. 40 PVC riser 0-35.5 ft bgs
Logged By J. (URS)	. Currier	Surface Elevation 6.00 ft	ft msl	Screen 2-in Sched. 40 PVC screen 35.5-45.5 ft bgs
Drilling G Contractor	eosearch	Datum		Checked By J. Harshman
Total Depth of Borehole	5.5 ft	Easting 815589.368253	Northing 2706900.52658	Notes:
Groundwater Level 10	0.0 ft bgs	Annular Fill:		Location: Eastern area of Aerovox property near Acushnet River     Sampler Type: 2-ft Split Spoon
Diameter of Borehole 8.	.5 in	Grout backfull 1-30 ft b  Bentonite chip seal 30-	•	Hammer Data: Autohammer
Drilling Roller Method	Bit/HQ Core	#2 Filter sand 32-45.5	ft bgs	Well Type: Flush-mount well installed



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation** Log of Boring MW-07B Sheet 2 of 2

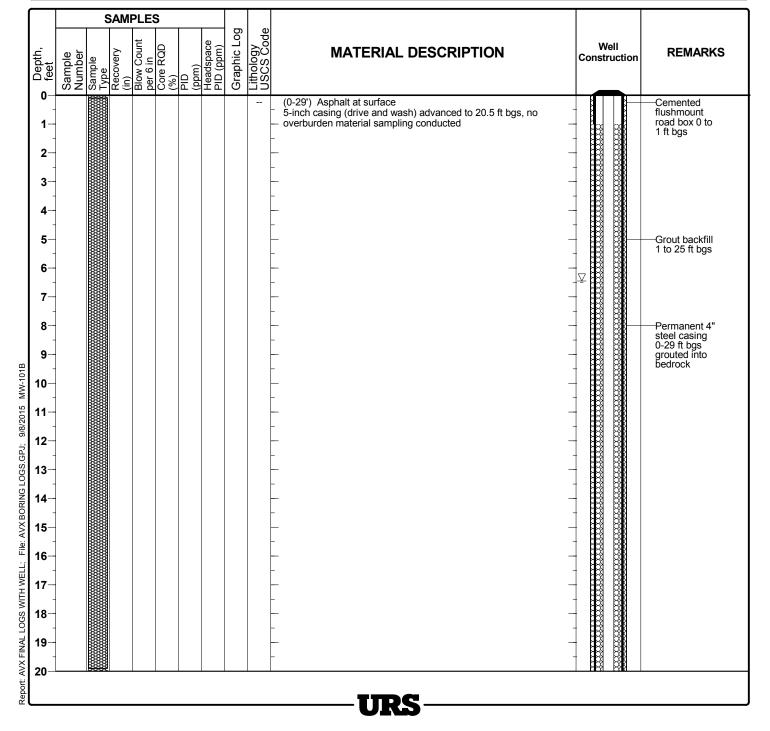
		5	AMI	PLES	S							
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PIĎ (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20-	S-11	$\setminus /$	16	9- 13-		99.9			SM	(20-22') Brown to reddish brown coarse to medium SAND and angular GRAVEL (wet) (medium dense)		
<b>21</b> -		X		7- 8								
22-	S-12	$\forall$	3	5- 5- 3-		NA			GP	(22-24') Coarse GRAVEL (medium dense)  Poor sample recovery, material likely from boring cave in		
23-		X		3- 4								
24-	S-13	$\mid \mid \mid$	4	7- 7-		8.4			GP	(24-26') Coarse angular to rounded GRAVEL, little fine material		
25-		IXI		7- 7- 6						(medium dense)  Poor sample recovery, material likely from boring cave in		
26-	S-14	(-)	16	9-		78.1			SP	(26-30') Light brown coarse SAND, little gravel, trace silt (wet)		
27-		X		17- 14- 17						<ul> <li>(dense to very dense)</li> <li>Poor recovery 28-30 ft bgs, weathered bedrock fragment in tip of spoon</li> </ul>		
28-	S-15	$\square$	3	33-		11.4						
- 29-		X		33- 23- 15- 65						- 		
30-		32223		0.5				√ <del>Γ</del> < √	DD	Calitanean refund at 20 ft has	-	
31–								1	BR	Split spoon refusal at 30 ft bgs Roller bit to 35 ft bgs to begin rock core sampling		
32-								7777				Bentonite chip seal 30 to 32 ft
33—								27 27 27 7 7 7 7 7 7 7 7 7 7 7				bgs
34-								77 77 77 77 77 77 77 77 77 77 77 77 77		-		#2 Filter sand
-								77777 77777				from 32 to 45.5 ft bgs
35-								77 77 V	BR	(35-45.5') Gray GRANITIC GNEISS [BEDROCK] R-1 (35.8-36.3 ft bgs) 1 fracture >4", banding is not easily		
<b>36</b> − -	R-1 R-2	$\mathbf{H}$	9 60		100 77			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		<ul> <li>discernible –</li> <li>R-2 (36.3-41 ft bgs) Horizontal to shallow to moderately dipping</li> </ul>		
37-								77777		fractures closed with secondary green mineral; banding of k-feldspar to 30mm transitions to 1-3mm and dips 50 degrees from horizontal		2-inch Schedule 40 PVC screen
38-								77777				35.5 to 45.5 ft bgs
39-								1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
40-								17171 17171 17171				
41-	R-3		46		68			17171		R-3 (41-45.5 ft bgs) Horizontal to shallow dipping and steep		
42-								77777		fractures, water evidenced by staining and sediment presence in fractures dipping 80 degrees from horizontal, multi-direction veins of quartz and a green mineral are at 44 ft bgs		
43-								14 14 14 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 1				
44-								17171 17171		- -		
45 <del>-</del>								1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2		_ 		
46-								715		Bottom of Exploration 45.5 ft bgs		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

# URS Corporation Log of Boring MW-101B

Date(s) Drilled and Installed	<sup>0</sup> 2/6/14	Water Surface NA Elevation			4-in steel casing 0-29 ft bgs; 2-in sched. 40 PVC riser 0-29 ft bgs		
Logged By (URS)	J. Harshman	Surface 7.85 ft	ft msl	Screen 2-in 9	Sched. 40 PVC screen 29-39 ft bgs		
Drilling Contractor	Geosearch	Datum		Checked By J	. Harshman		
Total Depth of Borehole	39.0 ft	Easting 814933.153878	Northing 2707041.14285	Notes:	property adjacent to GZ-101 cluster		
Groundwater Level	6.45 ft bgs	Annular Fill:			2-ft Split Spoon, Rock Core		
Diameter of Borehole	8.5 in	Grout backfill 1-25 ft bo Bentonite chip seal 25-	•	Hammer Data: N	NA		
Drilling Rolle Method	er Bit/HQ Core	#2 Filter sand 27-39 ft	bgs	Well Type: Flush-mount well installed			

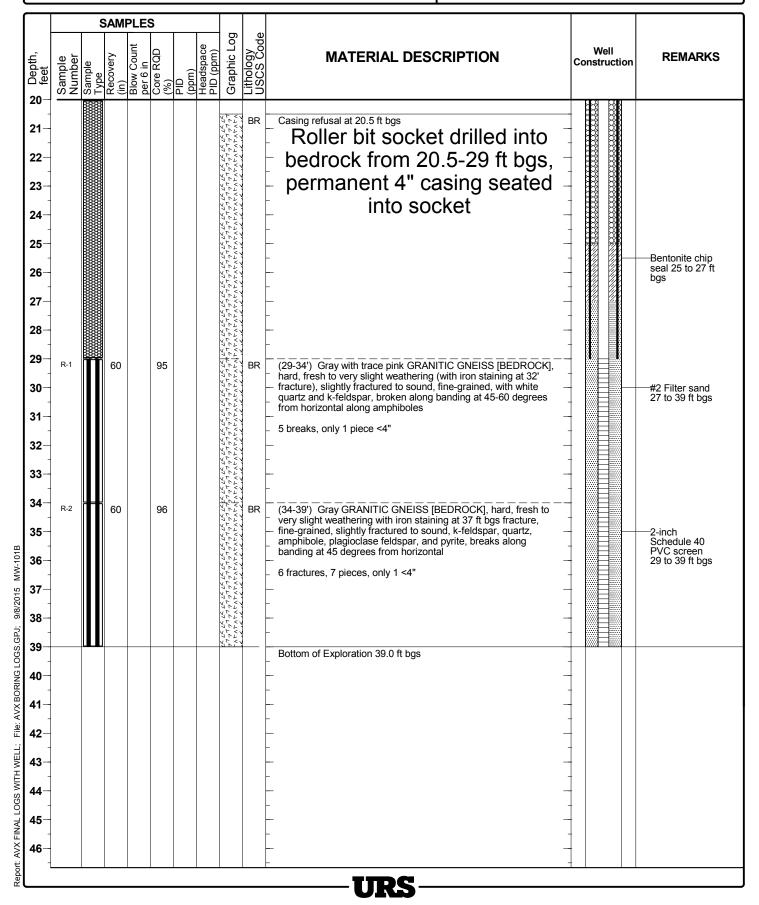


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-101B

Sheet 2 of 2

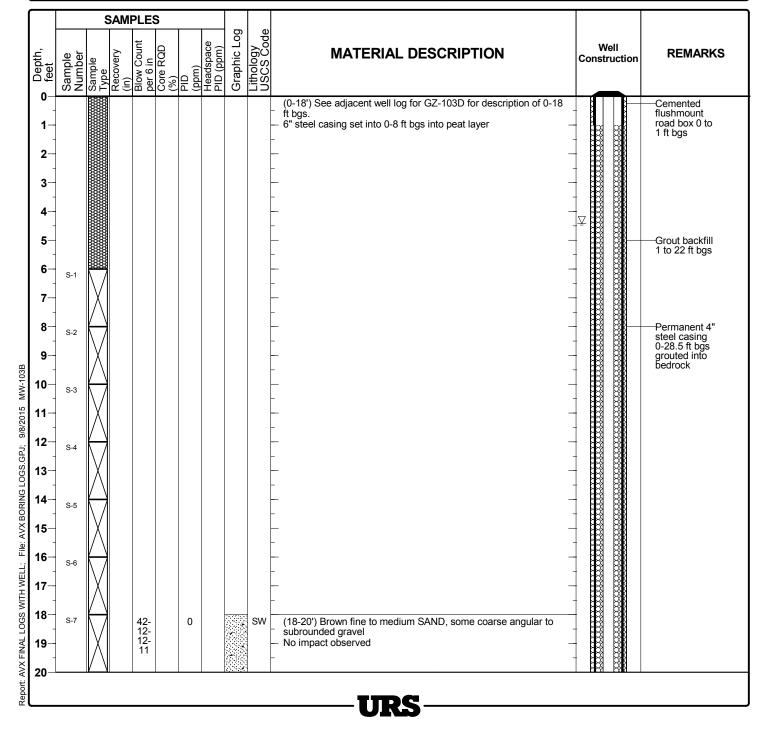


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-103B

Date(s) Drilled and Installed	<sup>d</sup> 7/31/14 - 8/1/14	Water Surface NA Elevation		Well Casing or Riser 2-in sched. 40 PVC riser 0-28.5 ft bgs			
Logged By (URS)	C. Beza/J. Currier	Surface Elevation 6.37 ft	ft msl	Screen 2-in Sched. 40 PVC screen 28.5-38.5 ft bgs			
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman			
Total Depth of Borehole	38.5 ft	Easting 815541.18219	Northing 2707081.8687	Notes:  Location: Part of GZA-103 cluster on Precix property			
Groundwater Level	4.42 ft bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon			
Diameter of Borehole	8.5 in	Grout backfill 1-22 ft bo Bentonite chip seal 22-		Hammer Data: Autohammer			
Drilling Drive	e & Wash/Casing/Roller Bi	#2 Filter sand 26.5-38.	5 ft bgs	Well Type: Flush-mount well installed			

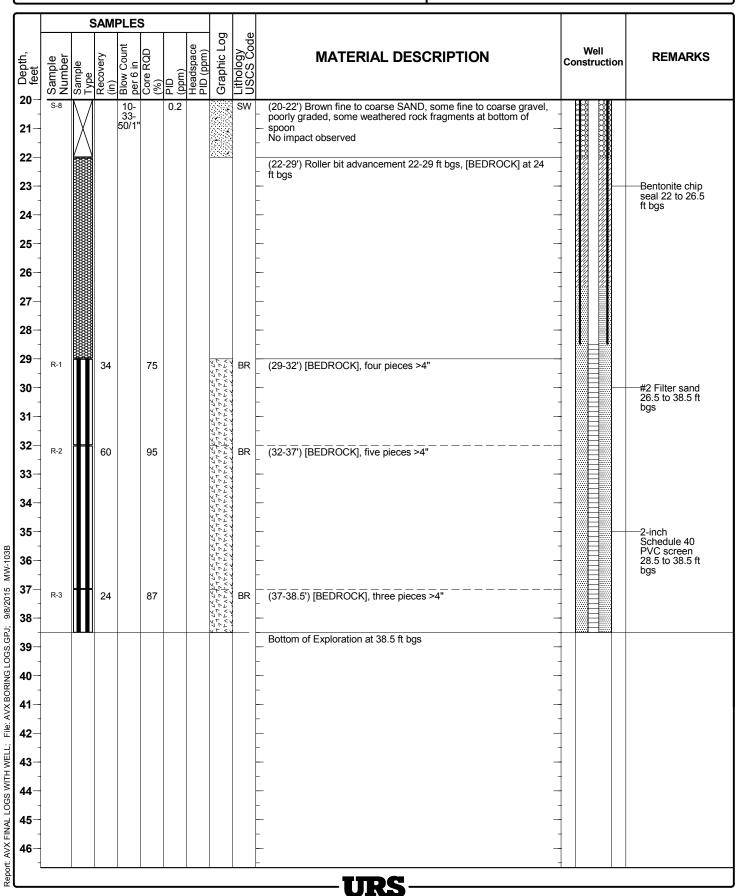


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-103B

Sheet 2 of 2

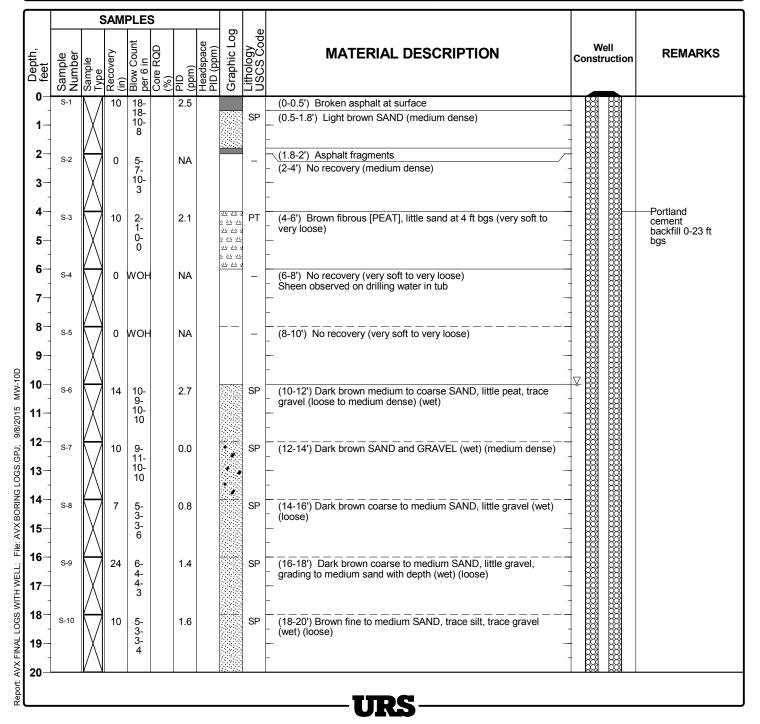


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## URS Corporation Log of Boring MW-10D

Date(s) Drilled2/10/14 and Installed	Water Surface -5.13 ft msl	Well Casing or Riser 2-in sched. 40 PVC riser 0-27 ft bgs
Logged By J. Currier	Surface Elevation 4.87 ft ft msl	Screen 2-in Sched. 40 PVC screen 27-37 ft bgs
Drilling Geosearch	Datum	Checked By J. Harshman
Total Depth of Borehole 37.0 ft	Easting 815377.842246 Northing 2706825.33358	Notes:  Location: Eastern area of site property
Groundwater Level 10 ft bgs	Annular Fill:	Sampler Type: 2-ft Split Spoon
Diameter of Borehole 8.5 in	Portland cement grout backfill 0-23 ft bgs  Bentonite chip seal 23-25 ft bgs	Hammer Data: Autohammer
Drilling Method HSA/Casing and Roller Bit	#2 Filter sand 25-37 ft bgs	Well Type: Flush-mount well installed



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation** Log of Boring MW-10D Sheet 2 of 2

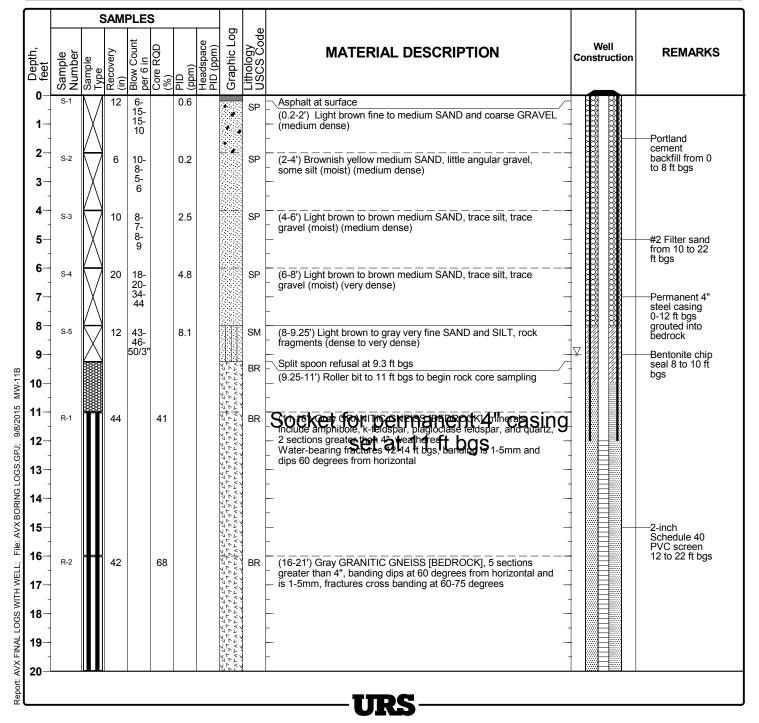
		5	SAMI	PLES	S							
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20-	S-11	$\setminus /$	22	5- 6-		2.1			SP	(20-20.7') Medium to coarse SAND lens (wet) (loose		
21-		X		6- 5					SP	(20.7-22') Brown to light brown fine SAND (wet) (loose to medium dense)		
22-	S-12	$(\cdot)$	0	6- 5-		NA			-	(22-24') No recovery		
23-		X		5- 4- 5								
24-	S-13	(-)	10	5-		77.2		·;:	GP	(24-24.4') Angular GRAVEL		Bentonite chip seal 23 to 25 ft bgs
25-				5- 4- 5- 5					SP	(24.4-27') Brown coarse to medium SAND, some gravel (medium dense) (wet)		0
26-	0.44	$\triangle$				75.0				- -		#2 Filter sand
27-	S-14	M	24	5- 6- 7-		75.9						25 to 37.15 ft bgs
28-		$\mathbb{N}$		10					GP	(27-31') Light brown coarse GRAVEL and coarse SAND (wet) (loose to medium dense)		2-inch
-	S-15	$\bigvee$	8	6- 7- 5- 5		3.6		• ,				Schedule 40 PVC screen
29-		$ \Lambda $		5				•				27 to 37 ft bgs
30-	S-16	$\bigcap$	18	8- 8- 8-		6.9		•		<del>-</del> -		
31-		X		8- 7					SP	(31-32') Light brown coarse SAND, trace gravel (wet) (loose to medium dense)		
32-	S-17	()	5	8- 8-		3.8		•	SP	(32-37') Light brown SAND and angular GRAVEL, weathered rock fragments in spoon 36.7 to 37 ft bgs (medium dense) (wet)		
33-		X		16- 10						Split spoon and casing refusal at 37 ft bgs		
34-	S-18	(-)	5	14- 14-		3.5		,		_		
35-		X		14- 11- 23				•		- -		
36-	S-19		14	30-		12.5		•		- 		
37—		X	17	47- 50/2"		12.0				Pattors of Custorstion 27.0 ft bas		
38-										Bottom of Exploration 37.0 ft bgs	1	
36 - 37 - 38 - 39 - 40 - 41 - 42 - 44 - 45 - 46 - 3 - 46 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 -											<u> </u>	
3 40												
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<b>∮ 42</b> − -										<del>-</del> -	†	
43-											<u> </u>	
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46-										- -	]	
-										URS—	+	

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-11B**

Date(s) Drilled and Installed	<sup>d</sup> 2/3/14	Water Surface NA Elevation		Well Casing or Riser 4-in steel casing 0-12 ft bgs; 2-in sched. 40 PVC riser 0-12 ft bgs			
Logged By (URS)	J. Currier	Surface 11.55	ft ft msl	Screen 2-in Sched. 40 PVC screen 12-22 ft bgs			
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman			
Total Depth of Borehole	22.0 ft	Easting 814631.712756	Northing 2706663.41575	Notes:  Location: Southwestern corner of Aerovox property			
Groundwater Level	9 ft bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon			
Diameter of Borehole	8.5 in	Portland cement grout  Bentonite chip seal 8-1	9	Hammer Data: Autohammer			
Drilling HSA Method	/Roller Bit/HQ Core	#2 Filter sand 10-22 ft	bgs	Well Type: Flush-mount well installed			



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation** Log of Boring MW-11B Sheet 2 of 2

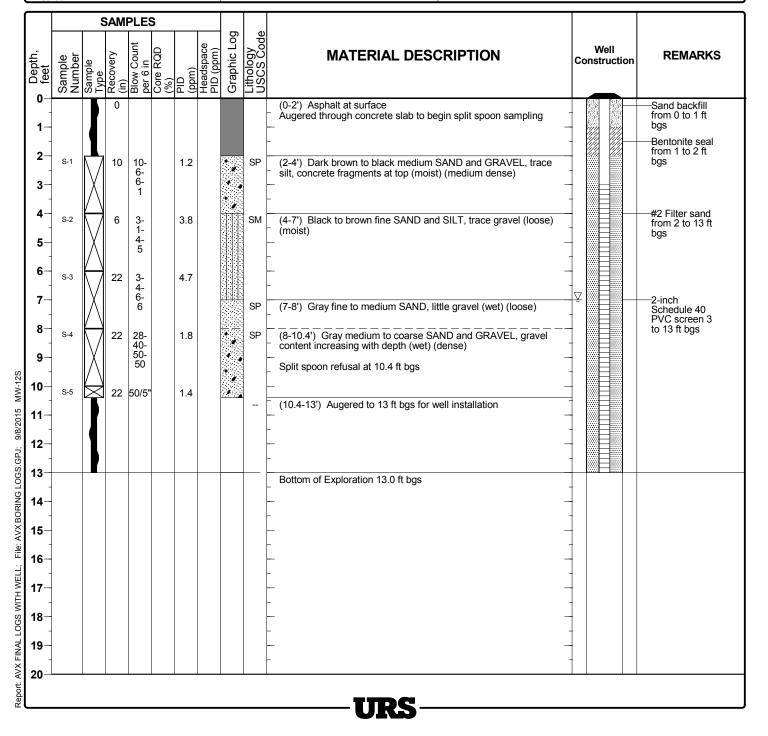
		S	AMF	PLE	s								
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Со	Well enstruction	on REMARKS
21-	R-3							12 12 12 12 12 12 12 12 12 12 12 12 12 1	BR	(21-22') Gray GRANITIC GNEISS [BEDROCK]			
22	N-3		15		58			7777	DIX.	Bottom of Exploration 22.0 ft bgs			
23-													
24-										- - -			
25										_ 			
26-													
27-													
28-													
29-													
30-													
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41- 42-										- - - -			
43-													
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45—										_ 			
36- 37- 38- 39- 40- 41- 43- 44- 46-										- - -			
						I		<u> </u>	I	URS—	† _		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-12S**

Date(s) Drilled and Installed	<sup>d</sup> 2/10/14	Water Surface 1.37 ft	t msl	Well Casing or Riser 2-in sched. 40 PVC riser 0-3 ft bgs
Logged By (URS)	J. Currier	Surface Elevation 8.37 ft	t ft msl	Screen 2-in Sched. 40 PVC screen 3-13 ft bgs
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman
Total Depth of Borehole	13.0 ft	Easting 814794.609777	Northing 2706777.17679	Notes: - Location: Southwestern area of Aerovox property
Groundwater Level	7.0 ft bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon
Diameter of Borehole	8.5 in	Sand backfill 0-1 ft bgs  Bentonite chip seal 1-2		Hammer Data: Autohammer
Drilling HSA Method		#2 Filter sand 2-13 ft b	ngs	Well Type: Flush-mount well installed

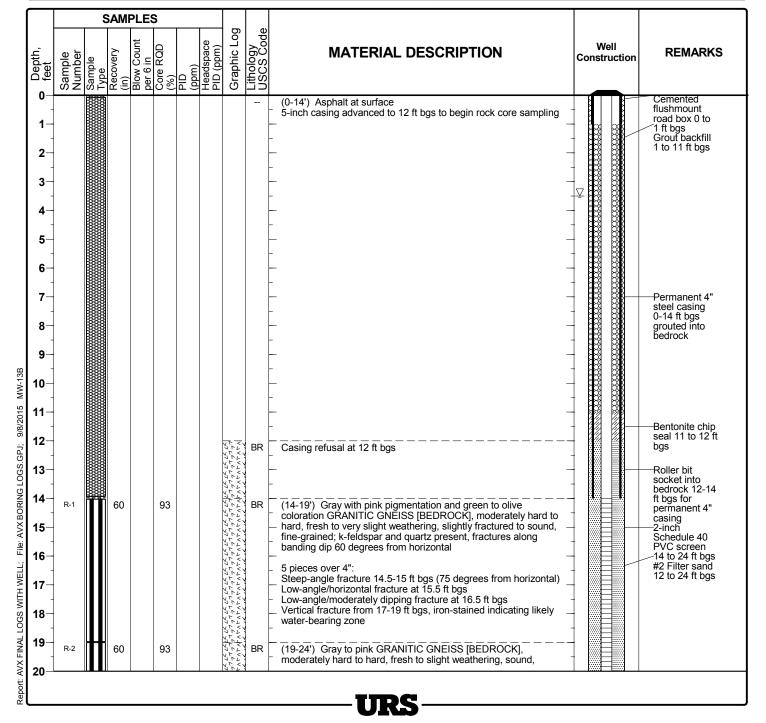


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-13B**

Date(s) Drilled and Installed	<sup>d</sup> 2/3/14	Water Surface NA Elevation		Well Casing or Riser  4-in steel casing 0-14 ft bgs; 2-in sched. 40 PVC riser 0-14 ft bgs				
Logged By (URS)	J. Harshman	Surface 5.71 ft	ft msl	Screen 2-in Sched. 40 PVC screen 14-24 ft bgs				
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman				
Total Depth of Borehole	24.0 ft	Easting 814944.751505	Northing 2706855.8957	Notes: Location: Aerovox property northeast of well MW-12S				
Groundwater Level	3.5 ft bgs	Annular Fill:		Sampler Type: Rock Core				
Diameter of Borehole 8.5 in		Grout backfill 1-11 ft bo Bentonite chip seal 11-		Hammer Data: NA				
Drilling Drive	e & Wash/5", 4" Casing	#2 Filter sand 12-24 ft	bgs	Well Type: Flush-mount well installed				



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation** Log of Boring MW-13B Sheet 2 of 2

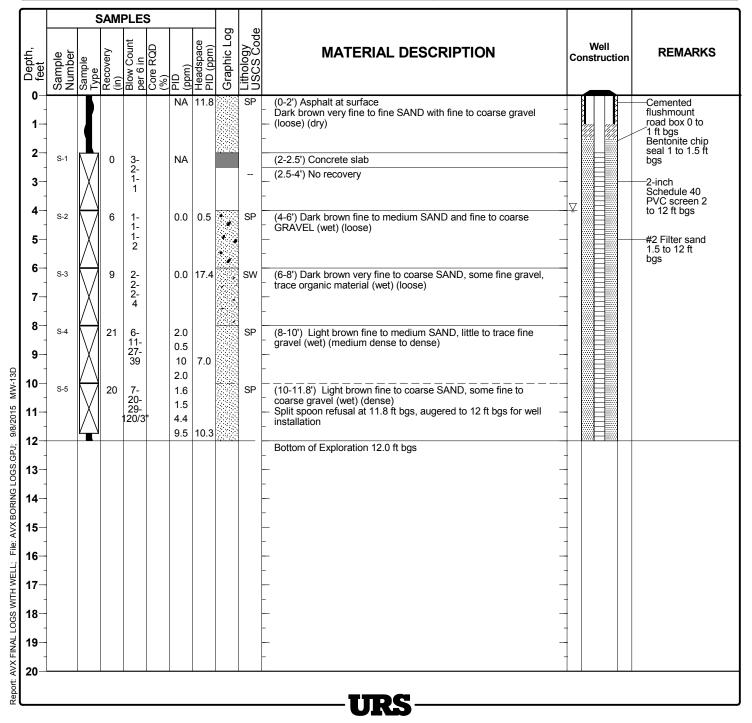
		S	AMF	PLE	s								
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD	PID .	(ppm)	neauspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20-											fine-grained, k-feldspar and quarts present		
21-									77 77 V		3 pieces over 4":     Low-angle fracture at 20 ft bgs     Steep-angle fracture 20-20.5 ft bgs (80 degrees from horizontal)     Fractures slightly iron-stained		
22-									V 1 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V 1		Steep-angle fracture 20-20.5 ft bgs (80 degrees from horizontal)  Fractures slightly iron-stained		
23-									12 27 27 27 27 27 27 27 27		- -		
24 <u>-</u>									1 V 1 V 1				
-											Bottom of Exploration 24.0 ft bgs		
25-											-		
26-											<u>-</u> -		
27-													
28-											_		
29-											-		
30-											<u>-</u> -		
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32-													
33-											<del>-</del> -		
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45-													
36- 37- 38- 39- 40- 41- 42- 43- 44- 45- 46-											<del>-</del> -		
											——URS———		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-13D**

Date(s) Drilled and Installed	<sup>0</sup> 2/4/14	Water Surface 1.63 ft	msl	Well Casing or Riser 2-in sched. 40 PVC riser 0-3 ft bgs			
Logged By (URS)	J. Harshman	Surface 5.63 ft	ft msl	Screen 2-in Sched. 40 PVC screen 2-12 ft bgs			
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman			
Total Depth of Borehole	12.0 ft	Easting 814949.169173	Northing 2706856.12126	Notes: Location: Aerovox property northeast of well MW-12S			
Groundwater Level	4.0 ft bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon			
Diameter of Borehole	8.5 in	Bentonite chip seal 1-1	.5 ft bgs	Hammer Data: Autohammer			
Drilling HSA Method		#2 Filter sand 1.5-13 ft	bgs	Well Type: Flush-mount well installed			

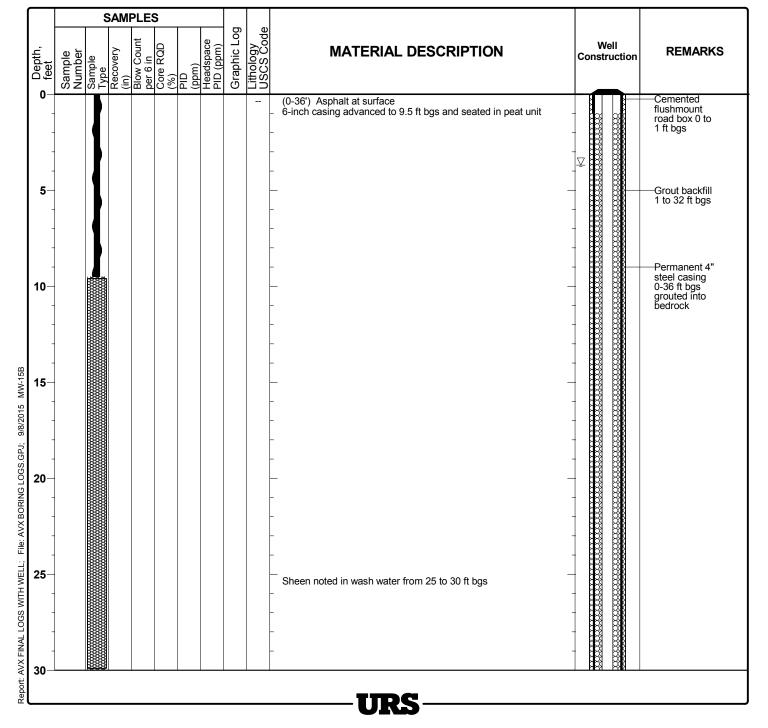


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-15B

Date(s) Drilled2/19/14 and Installed	Water Surface NA Elevation		Well Casing or Riser  4-in steel casing 0-36 ft bgs; 2-in sched. 40 PVC riser 0-36 ft bgs				
Logged By (URS) J. Harshman	Surface 6.05 ft	ft msl	Screen 2-in Sched. 40 PVC screen 36-46 ft bgs				
Drilling Geosearch	Datum		Checked By J. Harshman				
Total Depth of Borehole 46.0 ft	Easting 815595.045651 Northing 2706999.33764 Notes:						
Groundwater Level 3.69 ft bgs	Annular Fill:		Location: Northeastern area of Aerovox property near Acushnet River Sampler Type: Rock Core				
Diameter of Borehole 8.5 in	Grout backfill 1-32 ft bgs Bentonite chip seal 32-3		Hammer Data: NA				
Drilling Method Drive & Wash/Casing	#2 Filter sand 34-46 ft b	ogs	Well Type: Flush-mount well installed				

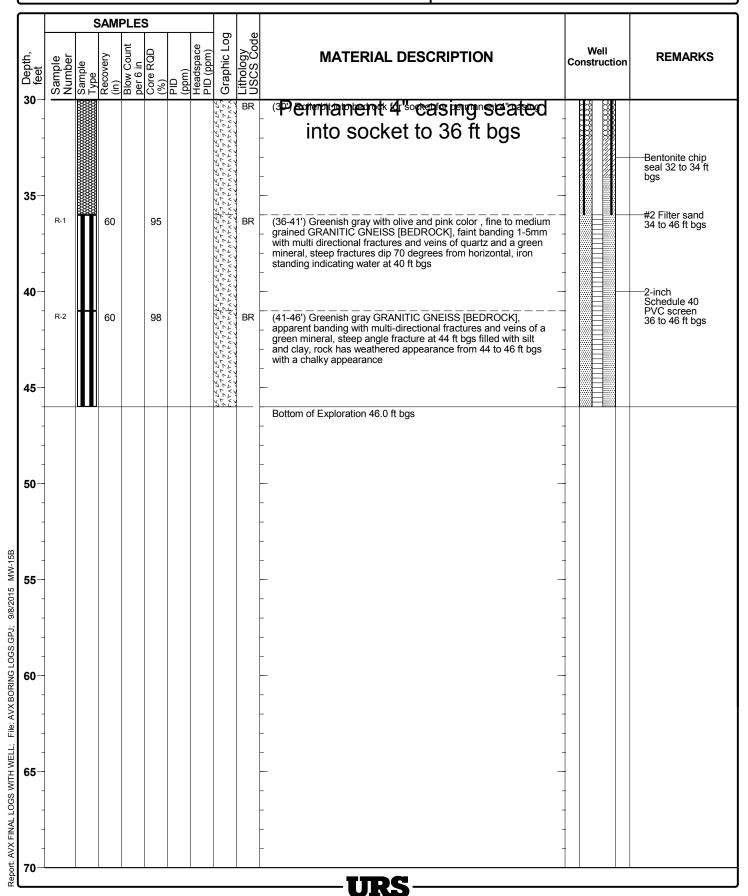


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-15B

Sheet 2 of 2

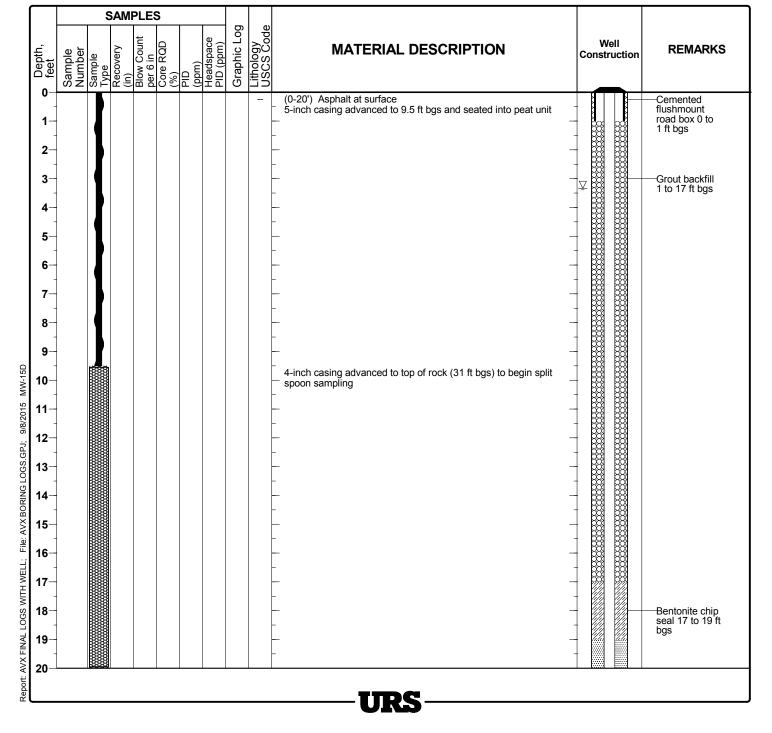


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-15D**

Date(s) Drilled2/20/1	4	Water Surface NA Elevation		Well Casing or Riser 2-in sched. 40 PVC riser 0-21 ft bgs				
Logged By J. Hars	shman	Surface 6.04 f	t ft msl	Screen 2-in Sched. 40 PVC screen 21-31 ft bgs				
Drilling Geose Contractor	earch	Datum		Checked By J. Harshman				
Total Depth of Borehole 31.0 ft		Easting 815594.586531	Northing 2707003.58502	Notes: Location: Northeastern area of Aerovox property near Acushnet River				
Groundwater 3.34 ft	bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon				
Diameter of Borehole 8.5 in		Grout backfill 1-17 ft b Bentonite chip seal 17	9	Hammer Data: Autohammer				
Drilling Method Drive & Wash/5", 4" Casing		#2 Filter sand 19-31 ft	t bgs	Well Type: Flush-mount well installed				



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation** Log of Boring MW-15D Sheet 2 of 2

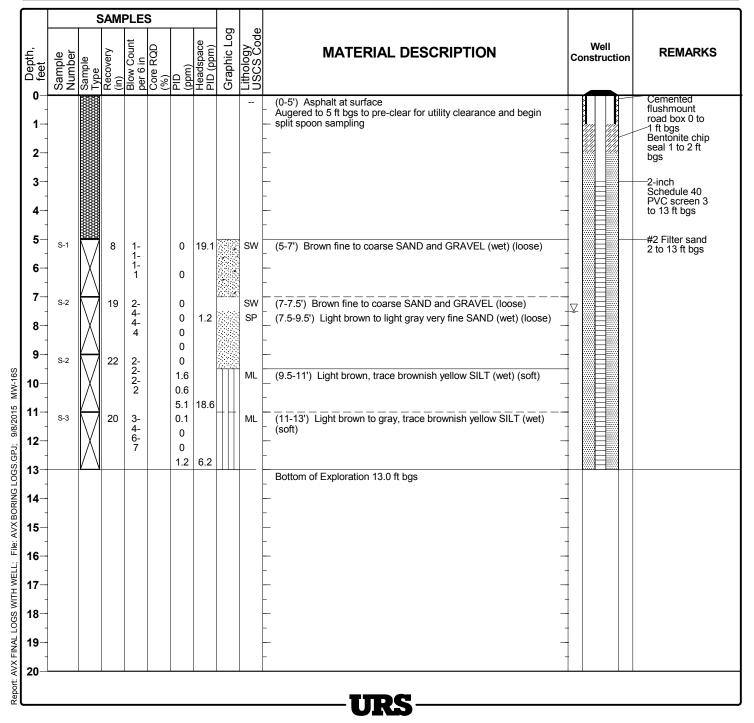
П		5	SAMI	PLE	s								
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	c	Well Construction	REMARKS
20 21	S-1	$\bigvee$	10	1- 2- 3- 2		0.1 0.1 78 5	330		SW	(20-22') Light gray medium to fine SAND, some coarse sand, little medium to fine gravel, trace brownish yellow fine sand (wet) (loose) No impact observed	-		
22-	S-2	M	21	6- 5- 4- 6		2 12 13	335		SW	(22-24') Light gray to brown coarse to medium to fine SAND and GRAVEL (loose to medium dense) (wet)  Trace oily material at 23 ft bgs	-		2-inch Schedule 40 PVC screen 21 to 31 ft bgs
24- 25-	S-3		8	3- 3- 2- 3		3.6 2 4 15			SW	(24-26') Light brown to brown coarse to fine SAND and GRAVEL (loose to medium dense) (wet)  Trace oily material, slight odor			
26- 27-	S-4		16	4- 6- 6- 9		60 300 450 600			SW	(26-28') Light gray with little DNAPL staining coarse to fine SAND and GRAVEL, lens of silty very fine sand at 27.5 ft bgs where DNAPL appears to be pooling Brown DNAPL staining, strong odor, visibly impacted sample			#2 Filter sand 19 to 31 ft bgs
28- 29-	S-5		11	4- 4- 5- 5			6800 11.6		SM	(28-30') Light gray SILTY medium to fine SAND, some coarse to fine gravel, trace coarse sand [GLACIAL TILL] (medium dense) (moist)	- - - -		
30- 31-	S-6		6	4- 2		3 0.3 2	4.7		SP- GP	(30-31') Light gray fine and coarse SAND, SILT, medium to fine GRAVEL [GLACIAL TILL], trace fractured weathered bedrock (loose) (moist to wet)	1		
32- 33-										\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	/		
34-										-  -	-		
35— 36—										- - -			
37— 38—													
39 <u> </u>											-		
41-										- - - -	†  -  -		
43- 44-											-		
36- 37- 38- 39- 40- 41- 42- 43- 45- 46-										- - -			
[ ]										URS——	1		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-16S**

Date(s) Drilled and Installed	<sup>d</sup> 2/10/14	Water Surface -1.01 f	ft msl	Well Casing or Riser 2-in sched. 40 PVC riser 0-3 ft bgs			
Logged By (URS)	J. Harshman	Surface 6.49 ft	ft msl	Screen 2-in Sched. 40 PVC screen 3-13 ft bgs			
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman			
Total Depth of Borehole	13.0 ft	Easting 815486.41545	Northing 2707060.00365	Notes:			
Groundwater Level	7.5 ft bgs	Annular Fill:		Location: Precix property Sampler Type: 2-ft Split Spoon			
Diameter of Borehole	8.5 in	Bentonite chip seal 1-2	2 ft bgs	Hammer Data: Autohammer			
Drilling HSA Method	1	#2 Filter sand 2-13 ft b	J .	Well Type: Flush-mount well installed			

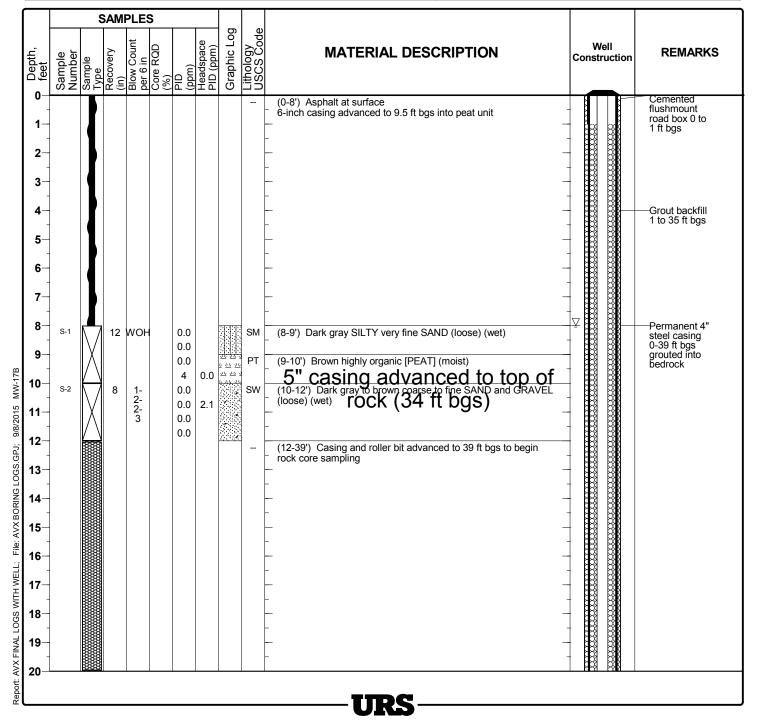


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-17B**

Date(s) Drilled and Installed	<sup>0</sup> 2/11/14	Water Surface -2.76 f	t msl	Well Casing or Riser 4-in steel casing 0-39 ft bgs; 2-in sched. 40 PVC riser 0-39 ft bgs			
Logged By (URS)	J. Harshman	Surface 5.24 ft	ft msl	Screen 2-in Sched. 40 PVC screen 39-49 ft bgs			
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman			
Total Depth of Borehole	49.0 ft	Easting 815506.406593	Northing 2706723.97771	Notes:  Location: Southeastern area of Aerovox property near Acushnet River			
Groundwater Level	8.0 ft bgs	Annular Fill:		Sampler Type: Rock Core			
Diameter of Borehole	8.5 in	Grout backfill 1-35 ft bo Bentonite chip seal 35-		Hammer Data: NA			
Drilling Method <b>Drive</b>	e & Wash/Casing/Roller Bi	#2 Filter sand 37-49 ft	bgs	Well Type: Flush-mount well installed			

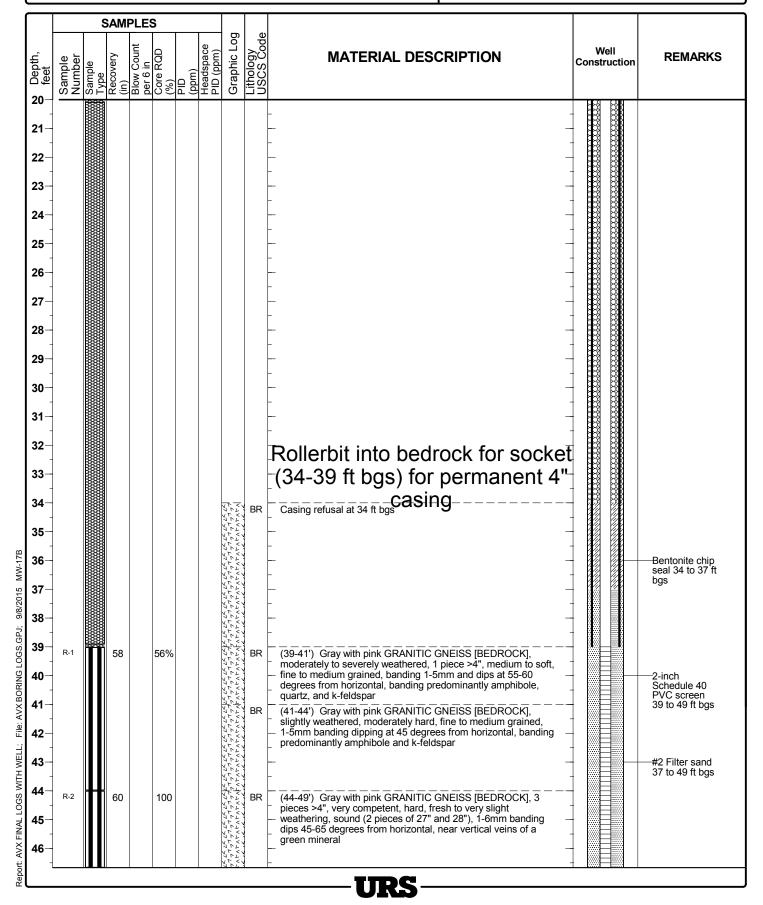


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-17B**

Sheet 2 of 3

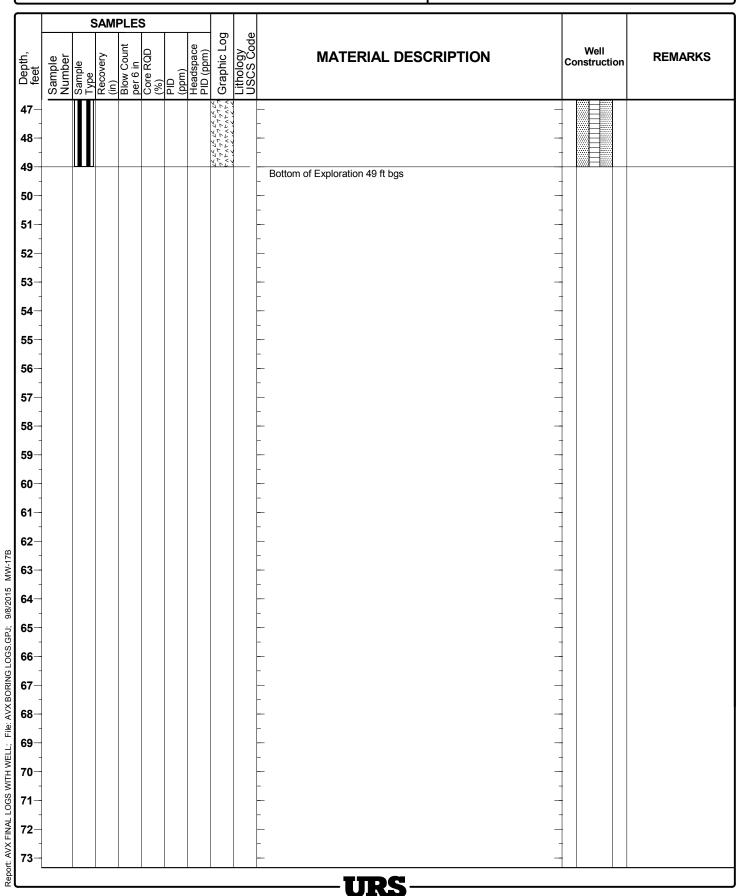


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-17B

Sheet 3 of 3

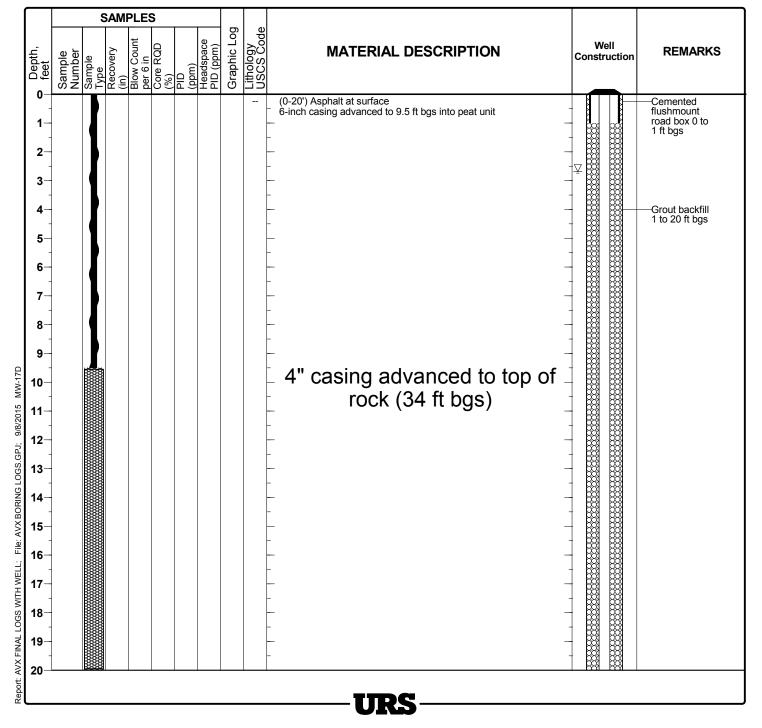


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-17D**

Date(s) Drilled and Installed	<sup>0</sup> 2/12/14	Water Surface NA Elevation		Well Casing or Riser 2-in sched. 40 PVC riser 0-24 ft bgs				
Logged By (URS)	J. Harshman	Surface 5.26 ft	ft msl	Screen 2-in Sched. 40 PVC screen 24-34 ft bgs				
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman				
Total Depth of Borehole	34.0 ft	Easting 815503.949767	Northing 2706722.10106	Notes: Location: Southeastern area of Aerovox property near Acushnet River				
Groundwater Level	2.69 ft bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon				
Diameter of Borehole 8.5 in		Grout backfill 1-20 ft bo Bentonite chip seal 20-		Hammer Data: Autohammer				
Drilling <b>Drive</b> Method	e & Wash/Casing/Roller Bi	#2 Filter sand 22-34 ft	bgs	Well Type: Flush-mount well installed				



Project Location: New Bedford, Massachusetts

Project Number: 39744051

### **URS Corporation** Log of Boring MW-17D Sheet 2 of 2

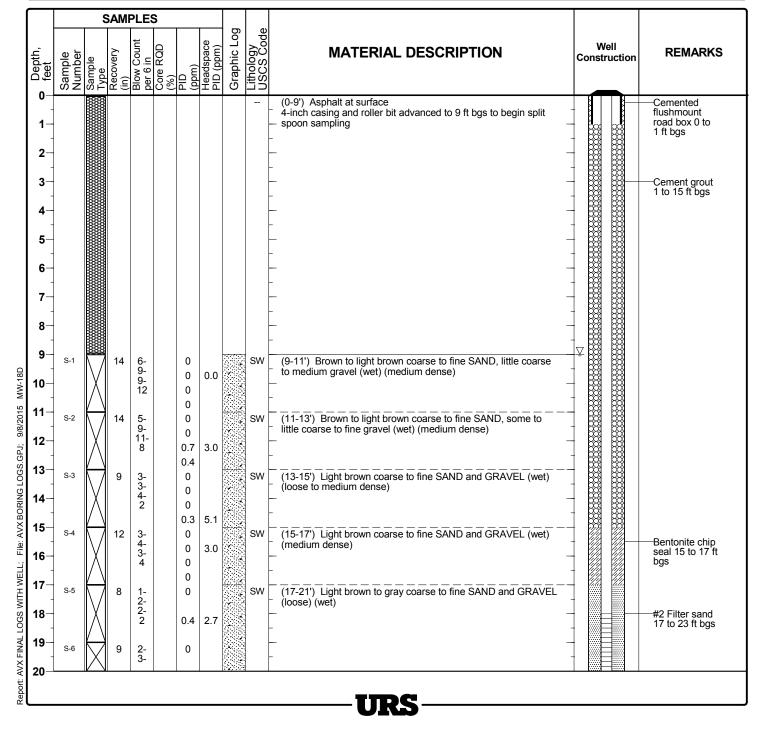
			SAME	PLE	S									
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	(		Vell tructio	n REMARKS
20-	S-1	$\setminus /$	8	2- 2- 2- 2		0.0			SW	(20-22') Gray coarse to fine SAND and GRAVEL (loose) (wet)	-			Bentonite chip
21-		X		2- 2		0.8	00			<del>-</del> -	1			seal 20 to 22 ft bgs
22-	S-2	$\mathbb{H}$	16	2-		3.5	23		SW	(22-24') Gray with some brownish yellow coarse to fine SAND and coarse to fine GRAVEL, lens of silty very fine sand 23 to	1			
23-		X		2- 2- 2- 2		5.5 3.1	16.3			23.5 ft bgs (loose) (wet)	+			
24-	S-3	(-)	0	2-		3.0				(24-26') No recovery	-	**************************************		
25		X		2- 2- 2- 2							1	**************************************		2-inch Schedule 40
26-	S-4		16			3.7			SP	(26-27') Light brown very fine SAND and GRAVEL, trace silt	_	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000		PVC screen 24 to 34 ft bgs
27-		V	10	9- 6- 6-		4.0	40			(medium dense) (wet)	_	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000		
28-		$\square$		6		8.6 5.7	40		SW	(27-32') Light brown coarse to fine SAND and GRAVEL, trace silt (medium dense) (wet)	1			#2 Filter sand
29	S-5	$\mathbb{M}$	9	6- 5- 2- 2		0.0					1			22 to 34 ft bgs
-				2		1.0	20.6			_	+			
30-	S-6	$\bigvee$	8	4- 4- 5-		0.6	7.1				7			
31-				8							7	111111 111111 1111111 1111111 1111111 1111		
32-	S-7	M	14	17- 16- 7-		0.1	7.4		SW	(32-33.75') Light brown to gray coarse to fine SAND and GRAVEL, little to trace silt, possible bedrock fragments (dense	7			
33-				7- 50/3"	•					<ul> <li>to very dense) (wet)</li> <li>Split spoon refusal at 33.75 ft bgs</li> <li>Casing refusal at 34 ft bgs</li> </ul>	1	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000		
34-										Bottom of Exploration 34 ft bgs	+			
35-										_	1			
36-										_	$\frac{1}{2}$			
37-										- 	1			
38-										- 	1			
39-										- -	1			
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42-										- -				
1										_	+			
43-										-	7			
44-										<del>-</del> -	7			
45-											+			
36— 37— 38— 39— 40— 41— 42— 43— 44— 45— 46—										<u>-</u>	_			
										URS				

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-18D

Date(s) Drilled and Installed	<sup>d</sup> 2/7/14	Water Surface -1.71 f	t msl	Well Casing or Riser 2-in sched. 40 PVC riser 0-18 ft bgs				
Logged By (URS)	J. Harshman	Surface 7.28 ft	ft msl	Screen 2-in Sched. 40 PVC screen 18-23 ft bgs				
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman				
Total Depth of Borehole	23.0 ft	Easting 815242.506177	Northing 2707059.78113	Notes: Location: Precix property west of GZ-102 cluster				
Groundwater Level	9.0 ft bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon				
Diameter of Borehole 8.5 in		Cement grout backfill 1  Bentonite chip seal 15-	J .	Hammer Data: Autohammer				
Drilling Drive	e & Wash/Casing/Roller Bi	#2 Filter sand 17-23 ft	bgs	Well Type: Flush-mount well installed				



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation** Log of Boring MW-18D Sheet 2 of 2

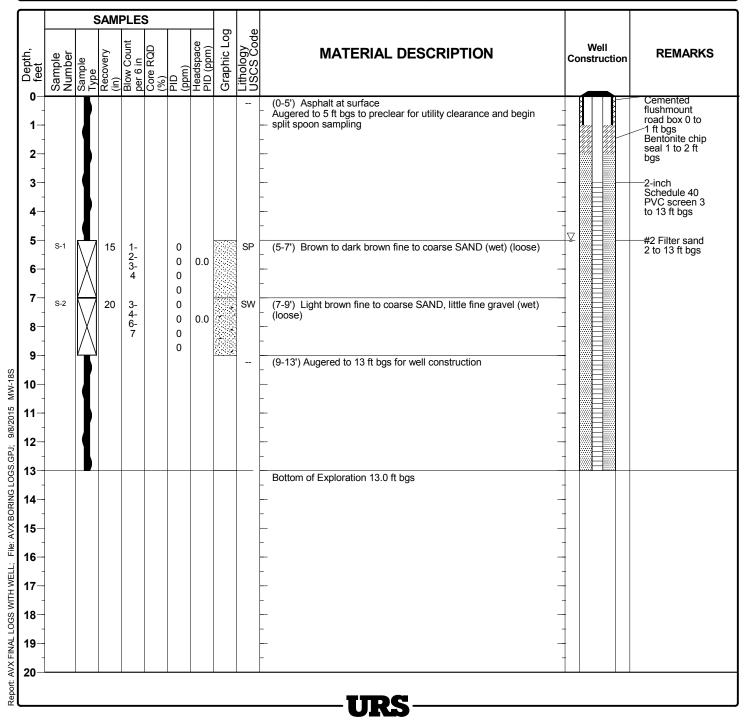
	SAMPLES											
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
21— 21— 22—	S-7		10	1- 2 3- 10- 10- 6		0 0.2	7.5		SM	(21-23') Light gray SILTY fine SAND, trace medium to fine gravel (wet) (medium dense)  — Split spoon and casing refusal at 23 ft bgs		—2-inch Schedule 40 PVC screen 18 to 23 ft bgs
23- 24- 25-		<u> </u>								Bottom of Exploration 23.0 ft bgs		
26- 27-										- - - -		
28- 29- 30-												
31-												
33- 34- 35-												
36- 37- 38-												
39- 40-										- - - -		
41- 42- 43-												
36- 37- 38- 39- 40- 41- 43- 44- 44- 46-										- - - - - -		
-										URS		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-18S**

Date(s) Drilled and Installed	<sup>d</sup> 2/7/14	Water Surface 2.28 ft	msl	Well Casing or Riser  2-in sched. 40 PVC riser 0-3 ft bgs				
Logged By (URS)	J. Harshman	Surface 7.29 ft	ft msl	Screen 2-in Sched. 40 PVC screen 3-13 ft bgs				
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman				
Total Depth of Borehole	13.0 ft	Easting 815238.426666	Northing 2707059.90119	Notes: Location: Precix property west of GZ-102 cluster				
Groundwater Level	5.0 ft bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon				
Diameter of Borehole	8.5 in	Bentonite chip seal 1-2	? ft bas	Hammer Data: Autohammer				
Drilling HSA Method	1	#2 Filter sand 2-13 ft b	· ·	Well Type: Flush-mount well installed				



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

#### **URS Corporation** Log of Boring MW-19D Sheet 1 of 2

Date(s) Drille and Installed	<sup>d</sup> 2/10/14	Water Surface 1.67 ft	msl	Well Casing or Riser  2-in sched. 40 PVC riser 0-14 ft bgs			
Logged By (URS)	J. Harshman	Surface 7.67 ft	ft msl	Screen 2-in Sched. 40 PVC screen 14-24 ft bgs			
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman			
Total Depth of Borehole	24.0 ft	Easting 815174.333933	Northing 2706665.15546	Notes:  Location: Southeastern area of Aerovox property			
Groundwater Level	6.0 ft bgs	Annular Fill:		Sampler Type: 2-ft Split Spoon			
Diameter of Borehole	8.5 in	Grout backfill 1-10 ft bo Bentonite chip seal 10-		Hammer Data: Autohammer  Well Type: Flush-mount well installed			
Drilling HSA Method	1	#2 Filter sand 12-24 ft	bgs				

Depth, feet	Sample Number		Recovery (in)		PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Con	Well struction	REMARKS
1- 2-	S-1 S-2		16	1- 2- 2- 3	0.0 0.0 0.0 0.0 0.0	0.0		FILL SW SW	(0-1') Asphalt at surface Black medium to fine SAND and GRAVEL [FILL] (loose)  (1-2') Light brown medium to fine SAND and GRAVEL (dry to moist) (loose)  (2-4') Brownish yellow medium to fine SAND, some fine gravel			Cemented flushmount road box 0 to 1 ft bgs
3- 4-	S-3	X	16	1- 1- 1 1- 1-	0.0 0.0 0.0 6.5	0.0		SP	(dry to moist) (loose)  (4-6') Light brown fine SAND (dry to moist, wet at tip of spoon) (loose)	- XXXXXX		
5— 6— 7—	S-4	$\bigvee_{i}$	20	1- 1 1- 1- 1- 3	0.8 0.0 0.0 0.0	0.0		SP	(6-8') Light brown fine SAND, trace silt (wet) (loose)	- - - - - - -		Grout 1 to 10 ft bgs
8- 9-	S-5		12	2- 1- 1- 4	0.0 0.0 0.0 0.0	0.1		SP	(8-10') Light brown to gray very fine SAND (wet) (loose)	- COCCO		
10- 11-	S-6		18	2- 1- 1- 2	0.0 0.0 0.0 0.0 0.0	0.8		SP	(10-13.5') Light brown to gray SILTY very fine SAND (wet) (loose)	- - - -		Bentonite chip seal 10 to 12 ft bgs
12— 13— 14—	S-7 S-8	$\bigvee$	14	1- 1- 1- 2	0.0 0.0 0.0 0.0	0.0		SW SW	(13.5-14') Brownish yellow coarse to fine SAND, some fine ¬ gravel (loose) (wet)			
15— 16—	S-9		10	3- 4- 6- 7	0.0 0.0 0.0 0.0	0.0		SW	(14-16') Brown coarse to fine SAND and GRAVEL (loose to medium dense) (wet)  (16-18') Brown to gray coarse to fine SAND, some medium to	- - -		2-inch Schedule 40 PVC screen 14 to 24 ft bgs
17- 18-	S-10	X	4	2- 2- 3- 2	0.0 0.0 0.0 0.0	<ul><li>5.2</li><li>2.5</li></ul>		sw	fine gravel, little fine sand, fine sand lenses 17-17.5 ft bgs (loose) (wet)  (18-20') Gray coarse to fine SAND and GRAVEL (medium dense) (wet)	- - - -		
19 <u> </u>		$\bigwedge$		4- 3				_	- -			

**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation** Log of Boring MW-19D Sheet 2 of 2

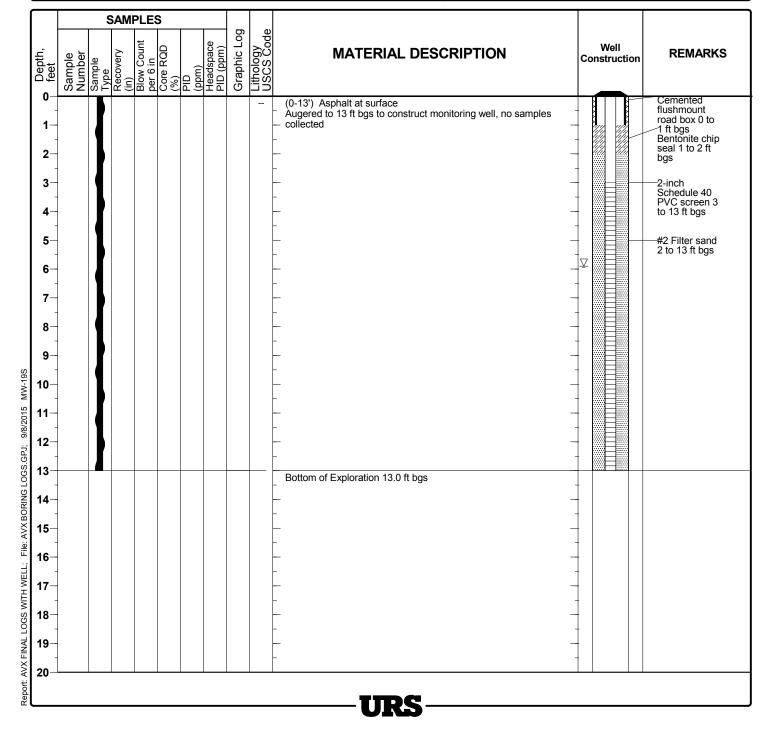
		S	AMF	PLES	3			_				
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	DID (bpm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20	S-11	M	13	4- 5- 8- 4		0.0			SW	(20-22') Light gray coarse to fine SAND and GRAVEL (medium dense) (wet)		#2 Filter sand 12 to 24 ft bgs
21-		$ \Lambda $		4		0.4	18.5					
22-	S-12		11	3- 2- 4- 7		0.0			SW	(22-24') Light brown to gray coarse to fine SAND and GRAVEL (medium dense) (wet) Split spoon and casing refusal at 24 ft bgs		
23-		X		4- 7		0.2	20.0			<ul> <li>Split spoon and casing refusal at 24 ft bgs</li> </ul>		
24-		<u>/                                    </u>				0.0		00008		Bottom of Exploration 24.0 ft bgs		
25-												
26-												
27-										_		
28-												
29-										- -		
30-										- 		
31-										- -		
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36- 37- 38- 39- 40- 41- 42- 43- 44- 45- 46-										<u>-</u> -		
-										URS	1	

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-19S

Date(s) Drilled and Installed	<sup>2</sup> 2/11/14	Water Surface NA Elevation		Well Casing or Riser  2-in sched. 40 PVC riser 0-3 ft bgs				
Logged By (URS)	J. Harshman	Surface 7.62 ft	ft msl	Screen 2-in Sched. 40 PVC screen 3-13 ft bgs				
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman				
Total Depth of Borehole	13.0 ft	Easting 815179.292493	Northing 2706665.38106	Notes:  Location: Southeastern area of Aerovox property				
Groundwater Level	5.9 ft bgs	Annular Fill:		Sampler Type: NA				
Diameter of Borehole	8.5 in	Bentonite chip seal 1-2	? ft bas	Hammer Data: NA				
Drilling HSA Method		#2 Filter sand 2-13 ft b	· ·	Well Type: Flush-mount well installed				

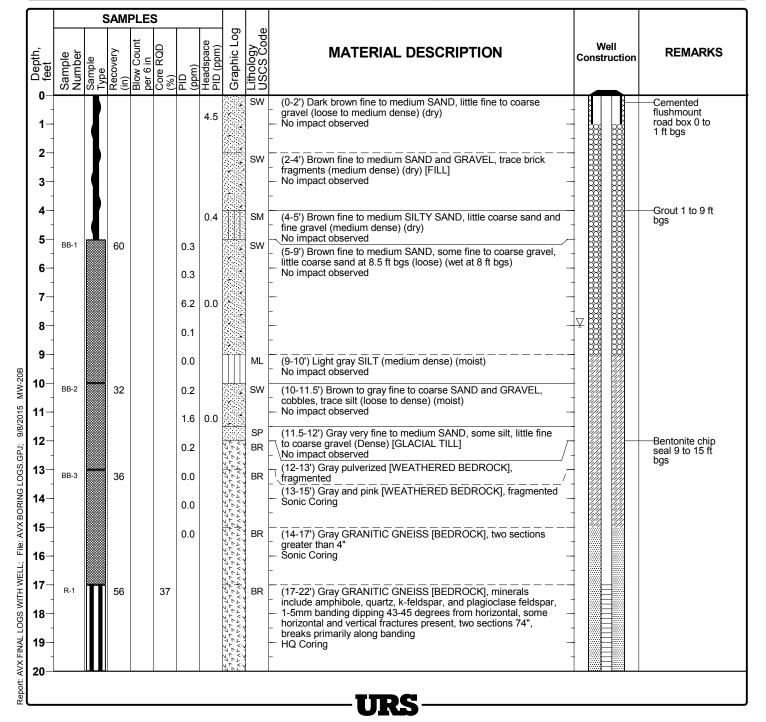


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-20B**

Date(s) Drilled7/23/14 - 7/24/14 and Installed	Water Surface NA Elevation		Well Casing or Riser  2-in sched. 40 PVC riser 0-17 ft bgs			
Logged By (URS) J. Harshman	Surface 12.8 ft	t ft msl	Screen 2-in Sched. 40 PVC screen 17-27 ft bgs			
Drilling Major Contractor	Datum		Checked By J. Harshman			
Total Depth of Borehole 27.0 ft	Easting 814536.05374	Northing 2706579.55662	Notes: Air-knife pre-clear to 5 ft bgs  Location: Westerly grassy area of Titleist property			
Groundwater Level 8 ft bgs	Annular Fill:		Sampler Type: 5-ft Sonic Coring, HQ coring of bedrock			
Diameter of Borehole 6 in	Grout backfill 1-9 ft bg:  Bentonite chip seal 9-1		Hammer Data: Sonic			
Drilling 6" Sonic/HQ Coring Method	#00 Filter sand 15-27 f	ft bgs	Well Type: Flush-mount well installed			



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

### **URS Corporation Log of Boring MW-20B** Sheet 2 of 2

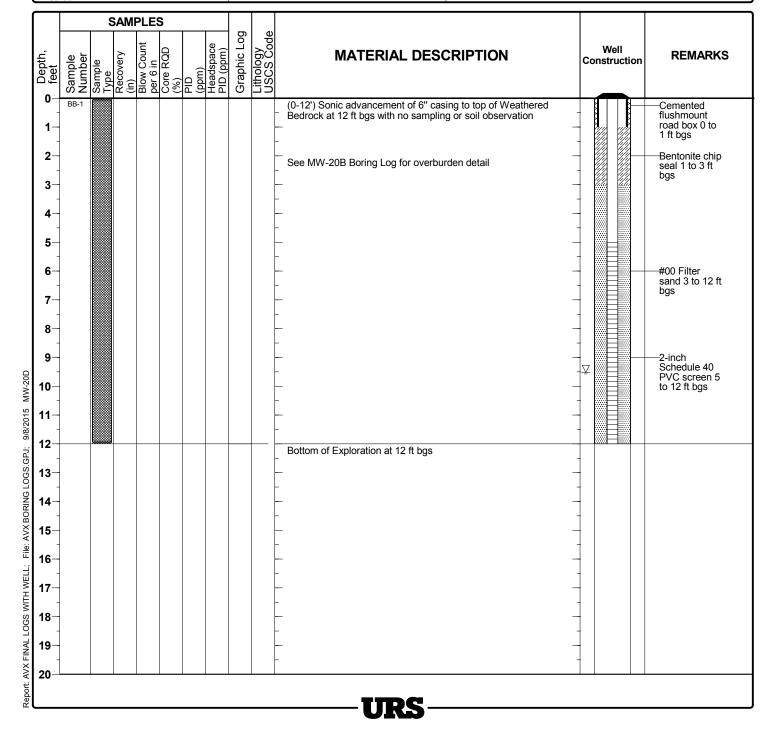
П		- 5	SAMI	PLE	s							
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20-		П						7 1 7 1 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		(22-27') Gray GRANITIC GNEISS [BEDROCK], banding dips 39-43 degrees from horizontal, near vertical fractures dip at 70 degrees from horizontal cross cutting banding show evidence of		#00 Filter
21-								14 14 12 17 17 17 17 17 17 17 17 17 17 17 17 17	,	<ul> <li>degrees from horizontal cross cutting banding show evidence of - water staining</li> <li>HQ Coring</li> </ul>		sand 15 to 27 ft bgs
22-	R-2	Ħ	83		73			\$ £ £ £ £ £ £ £ £ £ £ £ £ £ £ £ £ £ £ £	7			2-inch Schedule 40 PVC screen 17 to 27 ft bgs
23-								12 12 12 17777	ş, Ş,			17 to 27 ft bgs
24-								24 24 24 77777 777777	ş, Ş,			
25-								12 25 25 77 77 77 77 77 77	ş, Ş,	<u> </u>		
26-								12 LS LS 17 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	y, y,	 -		
27								N.L. <	<u> </u>	Bottom of Exploration at 27 ft bgs		
28-										<del>-</del> -		
29-										<u> </u>		
30-										<u> </u>		
31-										<u> </u>		
32-										 -	1	
33-											1	
34-												
35-												
36-												
37-												
38-											1	
39-												
40-												
41-											1	
42-												
43-												
44-										<u> </u>		
45-										- -	†	
36- 37- 38- 39- 40- 41- 42- 43- 44- 45- 46-										-	†	
										URS—	+	

Project Location: New Bedford, Massachusetts

Project Number: 39744051

## **URS Corporation Log of Boring MW-20D**

Date(s) Drilled and Installed	<sup>d</sup> 7/24/14	Water Surface NA Elevation		Well Casing or Riser 2-in sched. 40 PVC riser 0-5 ft bgs		
Logged By (URS)	J. Harshman	Surface 12.9 ft	ft msl	Screen 2-in Sched. 40 PVC screen 5-12 ft bgs		
Drilling Contractor	Major	Datum		Checked By J. Harshman		
Total Depth of Borehole	12.0 ft	Easting 814540.42208	Northing 2706582.54553	Notes: Air-knife pre-clear to 5 ft bgs  Location: Westerly grassy area of Titleist property		
Groundwater Level	9.52 ft bgs	Annular Fill:		Sampler Type: No Sampling of Overburden		
Diameter of Borehole	6 in	Bentonite chip seal 1-3	3 ft bgs	Hammer Data: Sonic		
Drilling 6" S	onic	#00 Filter sand 3-12 ft	bgs	Well Type: Flush-mount well installed		

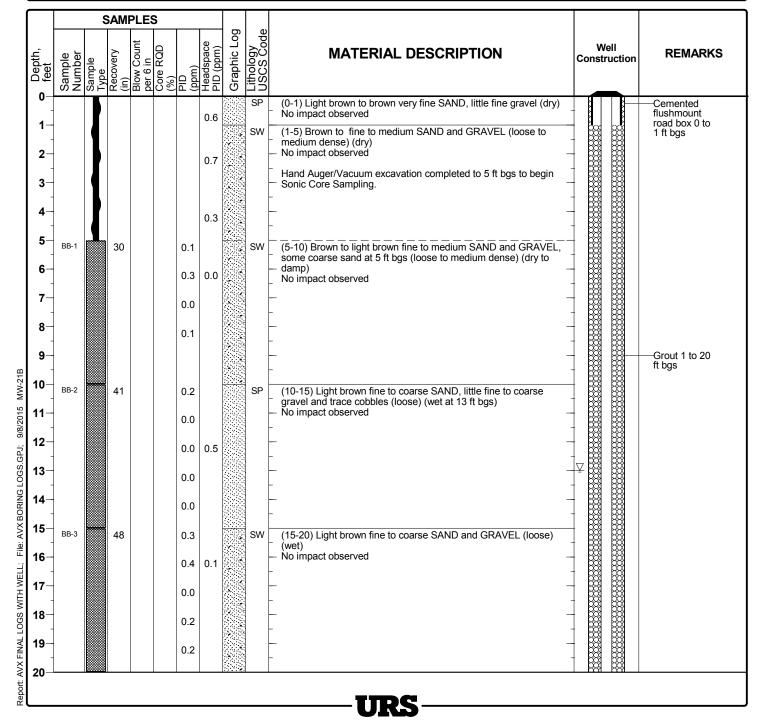


Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-21B**

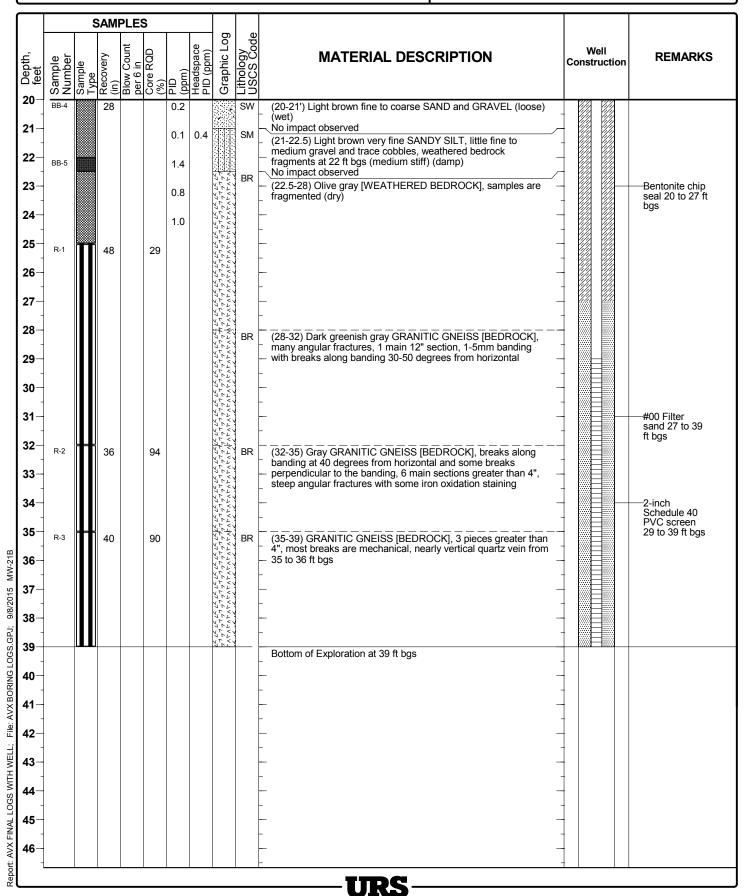
Date(s) Drilled7/10/14 - 7/11/14 and Installed	Water Surface NA Elevation	Well Casing or Riser  2-in sched. 40 PVC riser 0-29 ft bgs		
Logged By (URS) J. Harshman	Surface Elevation 11.3 ft ft msl	Screen 2-in Sched. 40 PVC screen 29-39 ft bgs		
Drilling Major Contractor	Datum	Checked By J. Harshman		
Total Depth of Borehole 39.0 ft	Easting 814864.98055 Northing 2706584.53392	Notes: Air-knife pre-clear to 5 ft bgs		
Groundwater Level 13 ft bgs	Annular Fill:	Location: North grassy area of Titleist property  Sampler Type: 5-ft Sonic Coring, HQ coring of bedrock		
Diameter of Borehole 6 in	Grout backfill 1-20 ft bgs  Bentonite chip seal 20-27 ft bgs	Hammer Data: Sonic		
Drilling Method 6" Sonic/HQ Coring	#00 Filter sand 27-39 ft bgs	Well Type: Flush-mount well installed		



Project Location: New Bedford, Massachusetts

Project Number: 39744051

# URS Corporation Log of Boring MW-21B

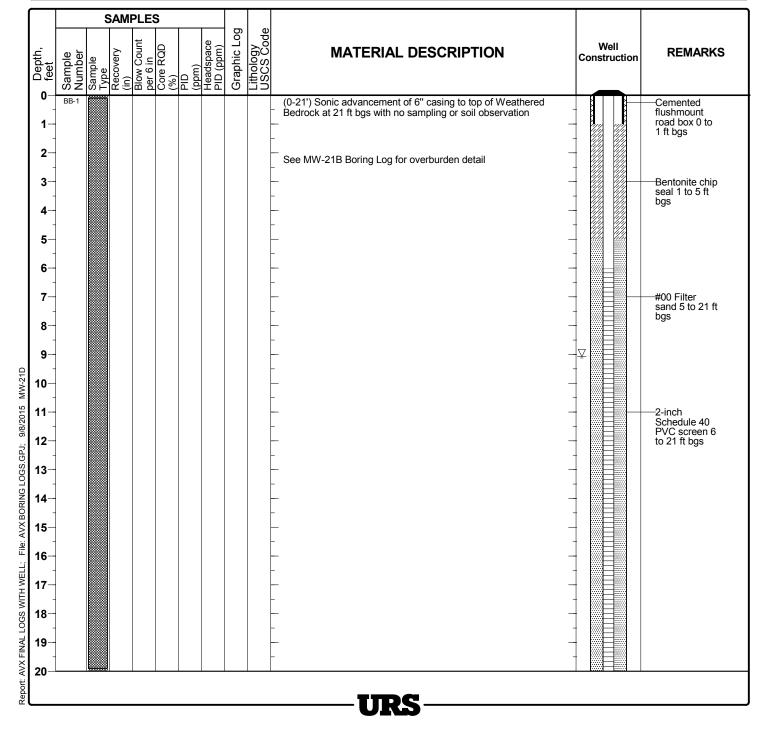


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-21D

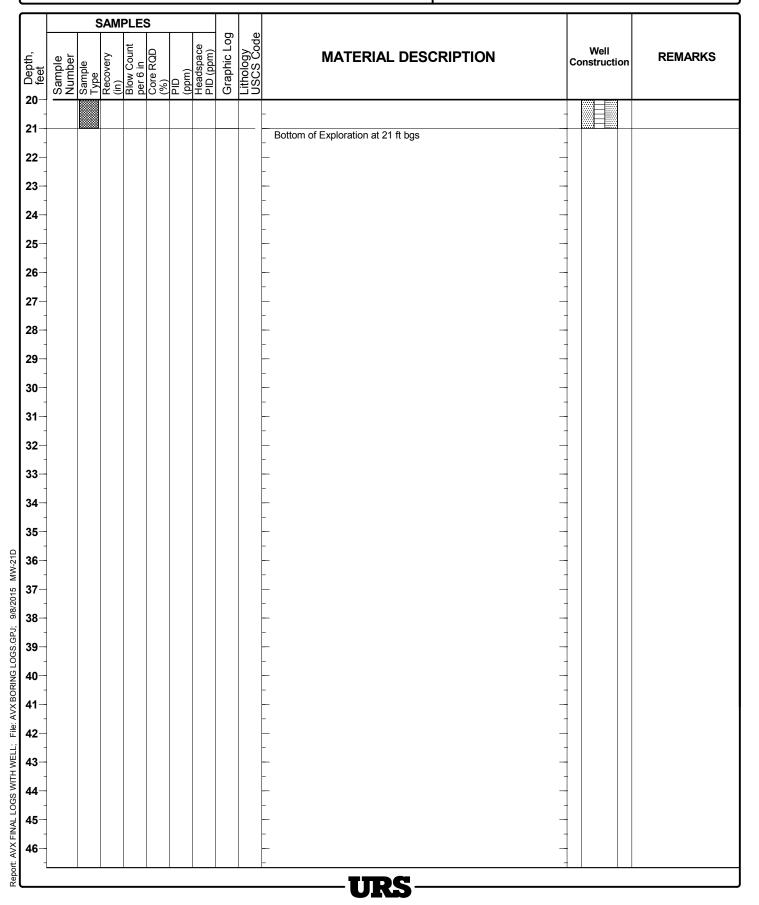
Date(s) Drilled and Installed	<sup>5</sup> 7/11/14	Water Surface NA Elevation		Well Casing or Riser  2-in sched. 40 PVC riser 0-6 ft bgs		
Logged By (URS)	J. Harshman	Surface Elevation 11.3 ft	Screen 2-in Sched. 40 PVC screen 6-21 ft bgs			
Drilling Contractor	Major	Datum		Checked By J. Harshman		
Total Depth of Borehole	21.0 ft	Easting 814860.83004	Northing 2706584.71062	Notes: Air-knife pre-clear to 5 ft bgs		
Groundwater Level	9.07 ft bgs	Annular Fill:		Location: North grassy area of Titleist property  Sampler Type: No Sampling of Overburden		
Diameter of Borehole 6 in		Bentonite chip seal 1-5	ift bas	Hammer Data: Sonic		
Drilling 6" So	onic	#00 Filter sand 5-21 ft	•	Well Type: Flush-mount well installed		



Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-21D

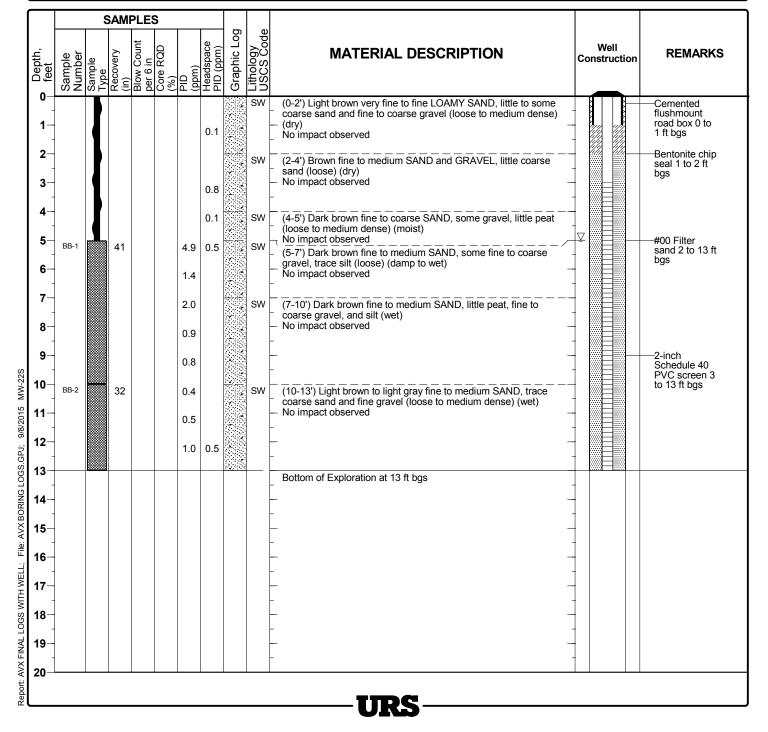


Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-22S**

Date(s) Drilled and Installed	<sup>0</sup> 7/29/14	Water Surface NA Elevation		Well Casing or Riser 2-in sched. 40 PVC riser 0-3 ft bgs		
Logged By (URS)	J. Harshman	Surface Elevation 6.9 ft f	ft msl	Screen 2-in Sched. 40 PVC screen 3-13 ft bgs		
Drilling Contractor	Major	Datum		Checked By J. Harshman		
Total Depth of Borehole	13.0 ft	Easting 815209.04837	Northing 2706582.03587	Notes: Air-knife pre-clear to 5 ft bgs		
Groundwater Level	5 ft bgs	Annular Fill:		Location: Northeast grassy area of Titleist property Sampler Type: 5-ft Sonic Coring		
Diameter of Borehole	6 in	Bentonite chip seal 1-2 ft bgs		Hammer Data: Sonic		
Drilling 6" S	onic	#00 Filter sand 2-13 ft	bgs	Well Type: Flush-mount well installed		

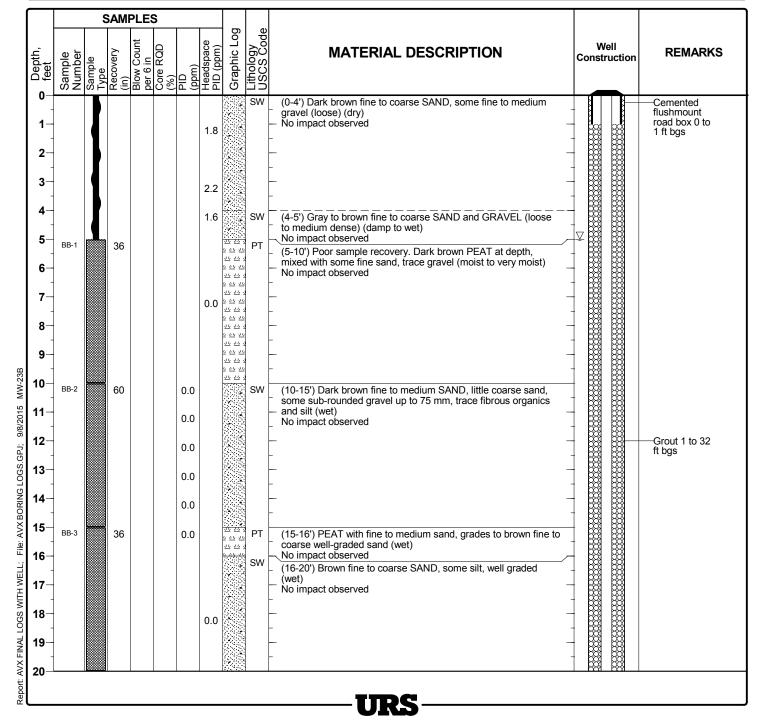


Project Location: New Bedford, Massachusetts

Project Number: 39744051

# URS Corporation Log of Boring MW-23B

Date(s) Drilled and Installed	<sup>0</sup> 7/26/14 - 7/28/14	Water Surface NA Elevation		Well Casing or Riser  2-in sched. 40 PVC riser 0-40 ft bgs		
Logged By (URS)	C. Beza/J. Harshman	Surface Elevation 6.2 ft f	t msl	Screen 2-in Sched. 40 PVC screen 40-50 ft bgs		
Drilling Contractor	Major	Datum		Checked By J. Harshman		
Total Depth of Borehole	50.0 ft	Easting 815270.22806 Northing 2706557.888		Notes: Air-knife pre-clear to 5 ft bgs  Location: Grassy area adjacent to Titleist security road		
Groundwater Level	5 ft bgs	Annular Fill:		Sampler Type: 5-ft Sonic Coring, HQ coring of bedrock		
Diameter of Borehole 6 in		Grout backfill 1-32 ft bo Bentonite chip seal 32-		Hammer Data: Sonic		
Drilling 6" S	onic/HQ Coring	#00 Filter sand 38-50 f	t bgs	Well Type: Flush-mount well installed		



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **URS Corporation Log of Boring MW-23B** Sheet 2 of 3

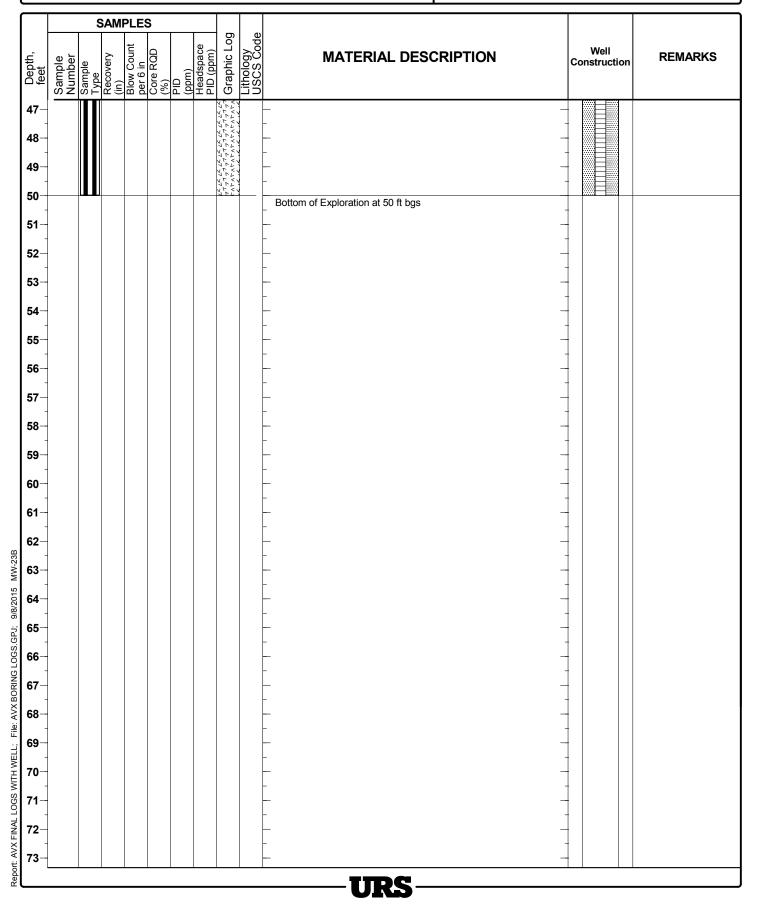
	SAMPLES											
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20-	BB-4		60			0.0			SP	(20-21.5') Brownish yellow fine to medium SAND, trace coarse sand (wet)		
21-						0.0				No impact observed		
22						0.0			SW	(21.5-25') Brownish yellow fine to coarse SAND, some fine to coarse gravel (wet)		
23-										No impact observed		
24-						7.1	0.0					
-						0.0						
25-	BB-5		27						SW	(25-30') Brown coarse GRAVEL, matrix of fine to coarse sand, well graded (wet)		
26-										- No impact observed		
27-							0.5			_		
28-										_ 		
29-										- -		
30-	55.0									- 	- 8 8	
31-	BB-6		48			0.0			GW	(30-34') Brown to gray coarse GRAVEL, with sand, well graded (wet) No impact observed		
-						2.1				- -	- 8 8	
32-						0.0	0.5					
33-						0.0						
34-	R-1		19		78	5.5		77 V V V V V V V V V V V V V V V V V V	BR	(34-35.6') Dark gray GRANITIC GNEISS [BEDROCK], banding		Bentonite chip seal 32 to38 ft
35-								17777 17777		1-5mm, includes quartz, amphibole, k-feldspar, and plagioclase feldspar, two pieces >4", fractures present		bgs
36-	R-3	П	40		68			12777 17777	BR	(35.6-40.5') Dark gray GRANITIC GNEISS [BEDROCK], banding 1-5mm, includes quartz, amphibole, k-feldspar, and		
≧ 2 37−								14 14 14 17 17 17 17 17 17		plagioclase feldspar, seven pieces >4", weathered fractures present		
38—								7777 7777				
								77777				
39								27 27 27 77 77 7 1 1 1 1 1 1		_	_	//00 FIII
40-	D ^		] 70		64			57 57 57 57 57 57 57 57 57 57 57 57 57 5	BR	(40.5-50') Dark gray GRANITIC GNEISS [BEDROCK], large		#00 Filter sand 38 to 50 ft bgs
41-	R-3		72		64			7777 77777 77777		quartz veins, eight pieces >4", weathered fractures present		
36 - 37 - 38 - 37 - 38 - 39 - 39 - 39 - 39 - 39 - 39 - 39								14 14 L				
43-								77 77 77 V				
44-								17777				
3   45−								12 15 15 77 77 7 7 1 7 1 7		<u>-</u> -		2-inch
46-								77777 17777				Schedule 40 PVC screen 40 to 50 ft bgs
								777		_		40 to 50 it bys
										URS		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-23B

Sheet 3 of 3

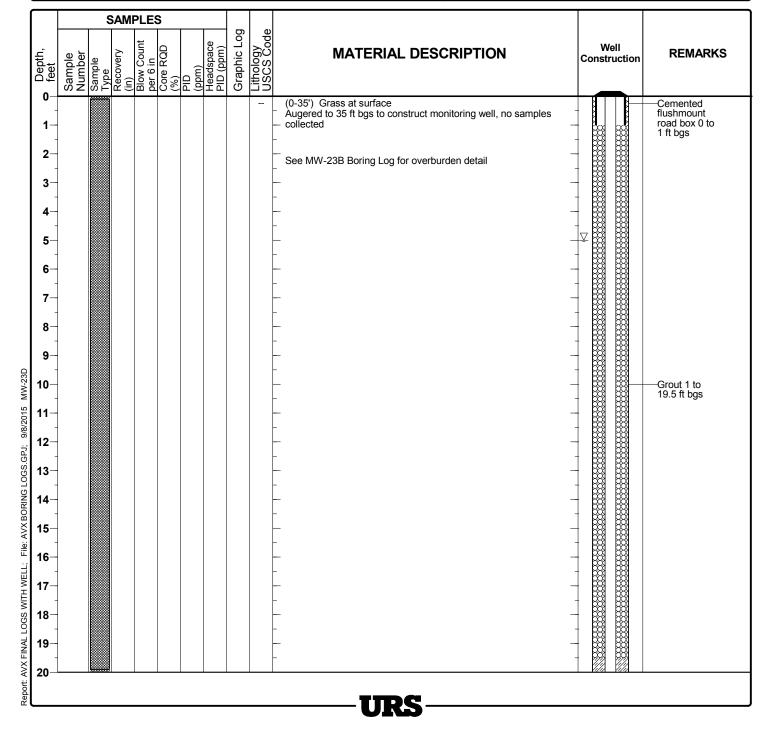


Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-23D**

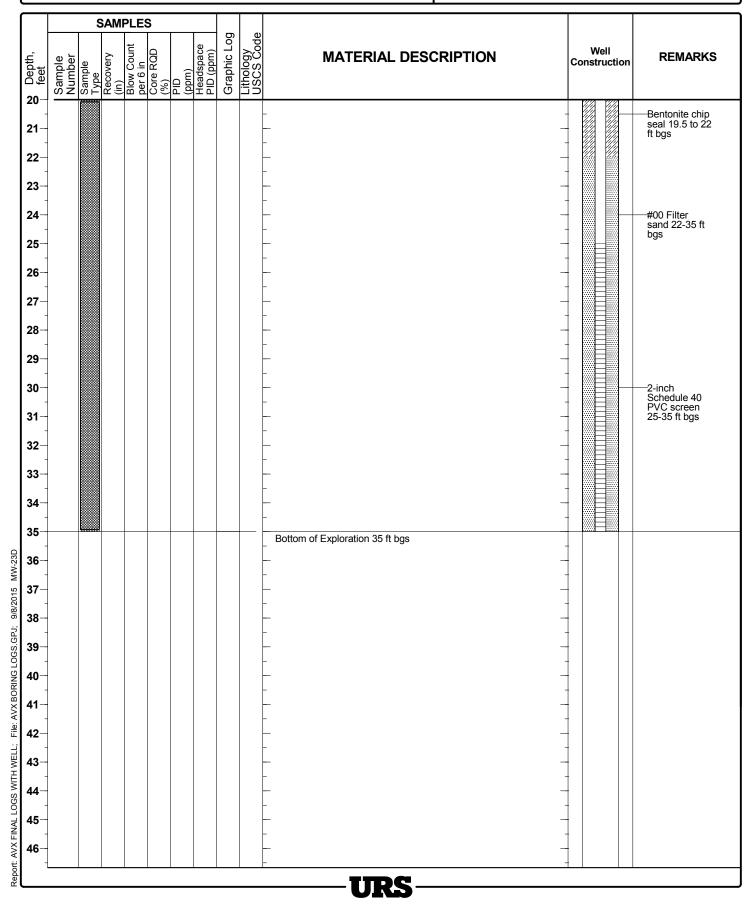
Date(s) Drilled and Installed	<sup>c</sup> 7/29/14	Water Surface NA Elevation		Well Casing or Riser 2-in sched. 40 PVC riser 0-25 ft bgs		
Logged By (URS)	C. Beza/J. Harshman	Surface Elevation 6.33 ft	ft msl	Screen 2-in Sched. 40 PVC screen 25-35 ft bgs		
Drilling Contractor	Major	Datum		Checked By J. Harshman		
Total Depth of Borehole	35.0 ft	Easting 815270.88142	Northing 2706554.8873	Notes: Air-knife pre-clear to 5 ft bgs Location: Grassy area adjacent to Titleist security road Sampler Type: No Sampling of Overburden		
Groundwater Level	5 ft bgs	Annular Fill:				
Diameter of Borehole	6 in	Grout backfill 1-19.5 ft Bentonite chip seal 19.	•	Hammer Data: Sonic		
Drilling 6" S Method	onic/HQ Coring	#00 Filter sand 22-35 f	t bgs	Well Type: Flush-mount well installed		



Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-23D

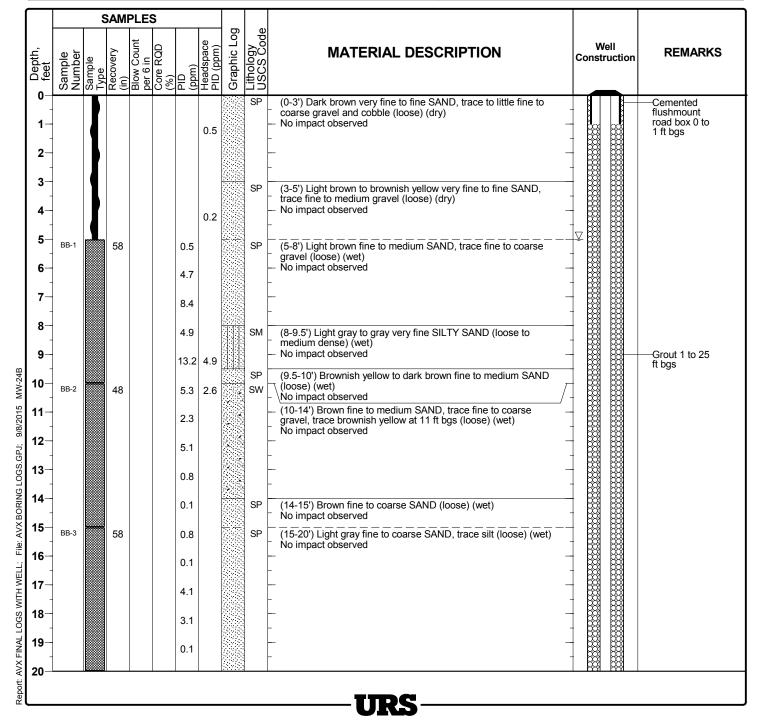


Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-24B**

Date(s) Drilled and Installed	7/24/14 - 7/25/14	Water Surface NA Elevation		Well Casing or Riser  2-in sched. 40 PVC riser 0-32 ft bgs			
Logged By (URS)	J. Harshman	Surface 7.99 ft	ft msl	Screen 2-in Sched. 40 PVC screen 32-42 ft bgs			
Drilling Contractor	Major	Datum		Checked By J. Harshman			
Total Depth of Borehole	42.0 ft	Easting 815099.09492	Northing 2707271.51705	Notes: Air-knife pre-clear to 5 ft bgs Location: Precix property			
Groundwater Level	5 ft bgs	Annular Fill:		Sampler Type: 5-ft Sonic Coring, HQ coring of bedrock			
Diameter of Borehole 6 in		Grout backfill 1-25 ft bo Bentonite chip seal 25-		Hammer Data: Sonic			
Drilling 6" So	onic/HQ Coring	#00 Filter sand 29-42 f	t bgs	Well Type: Flush-mount well installed			



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **URS Corporation** Log of Boring MW-24B Sheet 2 of 2

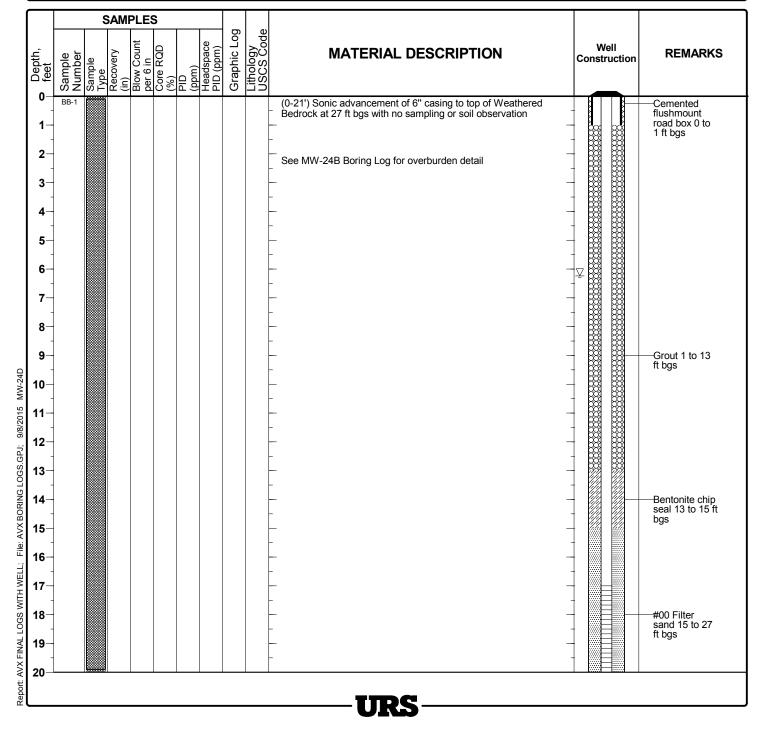
			SAM	PLE	s				0			
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20	BB-4		58			2.4			SW	(20-25') Light gray fine to coarse poorly graded SAND, trace to little fine to medium gravel, trace silt and coarse gravel at 24 ft	- 8 8	
21-						1.0				bgs (loose) (wet) No impact observed		
22-						1.0				- - -		
23-						8.2	0.0			-		
24-							0.0					
-						0.5						
<b>25</b> -	BB-5		24			4.8			SW	(25-26') Gray to light gray fine to coarse SAND and GRAVEL (loose to medium dense) (wet)		
26-						6.4	0.2		TILL	No impact observed     (26-27') Light gray GLACIAL TILL, consists of silty sand and fine to coarse gravel, weathered bedrock fragments in cutter head at		
27-	BB-6							X 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	BR	to coarse gravel, weathered bedrock fragments in cutter head at 27 ft bgs (medium dense) (wet) No impact observed		
28-						0.0		124 LK		(27-32') Fragmented [BEDROCK], several pieces over 4" Sonic Coring	-	Bentonite chip seal 25 to 29 ft
29-								777777				bgs
30-								27 77 7 V		- -		
31-								1 27 57 1 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			_	#00 Filter
32-								27 77 77 77 77 77 17 17 17 17				sand 29 to 42 ft bgs
-	R-1		0		0			7777 1777		(32-33') No Recovery of sample		
33-	R-2		20		13		15	12777 1777 1777	BR	(33-35.6') Dark gray GRANITIC GNEISS [BEDROCK], with quartz, amphibole, k-feldspar, and plagioclase feldspar,		
34-								24 24 24 77 77 77 7 7 7 7 7 7		1-10mm banding with breaks along banding dipping at 41-46 degrees from horizontal		2-inch Schedule 40
35								77777 17777		HQ Coring		PVC screen 32 to 42 ft bgs
36-	R-3		40		30		30	127277 17777	BR	(35.6-40.5') Gray GRANITIC GNEISS [BEDROCK], banding dips at 50-60 degrees from horizontal, mechanical breaks in		
37								27 27 27 77 77 7 7 7 7 7 7		quartz vein at 40 ft bgs — HQ Coring		
38-								124 LK				
-								177777 77777		_		
39 <u> </u>								1717 1717 1717				
40 <u> </u>	D 4		11		20		24	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		(40 E 42) IREDDOCKI continuetian of super-		
41-	R-4		14		28		24	17777777777777777777777777777777777777	BR	(40.5-42') [BEDROCK], continuation of quartz vein  HQ Coring		
42								777	_	Bottom of Exploration at 42 ft bgs		
43-										- - -	1	
44-										-	1	
45 <del>-</del>											<u> </u>	
-										_		
46-										-	1	
										——URS———		

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-24D

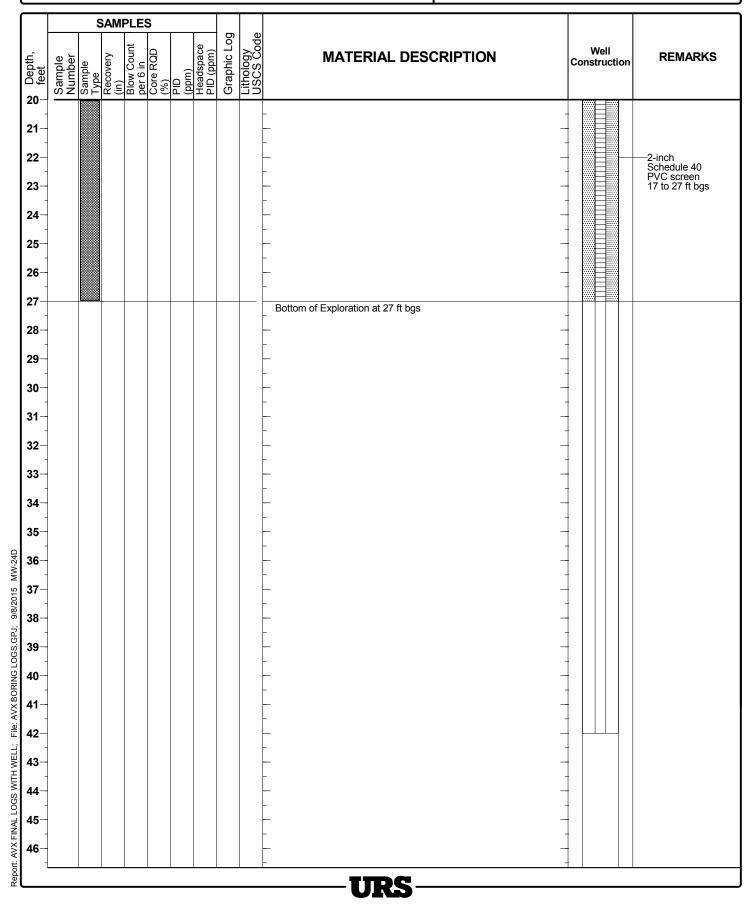
Date(s) Drilled <b>7/25/14</b> and Installed	Water Surface NA Elevation	Well Casing or Riser  2-in sched. 40 PVC riser 0-17 ft bgs		
Logged By (URS) J. Harshman	Surface 8.06 ft ft msl	Screen 2-in Sched. 40 PVC screen 17-27 ft bgs		
Drilling Major Contractor	Datum	Checked By J. Harshman		
Total Depth of Borehole 27.0 ft	Easting 815103.84318 Northing 2707271.21293	Notes: Air-knife pre-clear to 5 ft bgs Location: Precix property		
Groundwater Level 6.24 ft bgs	Annular Fill:	Sampler Type: No Sampling of Overburden		
Diameter of Borehole 6 in	Grout backfill 1-13 ft bgs  Bentonite chip seal 13-15 ft bgs	Hammer Data: Sonic		
Drilling 6" Sonic Method	#00 Filter sand 15-27 ft bgs	Well Type: Flush-mount well installed		



Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-24D

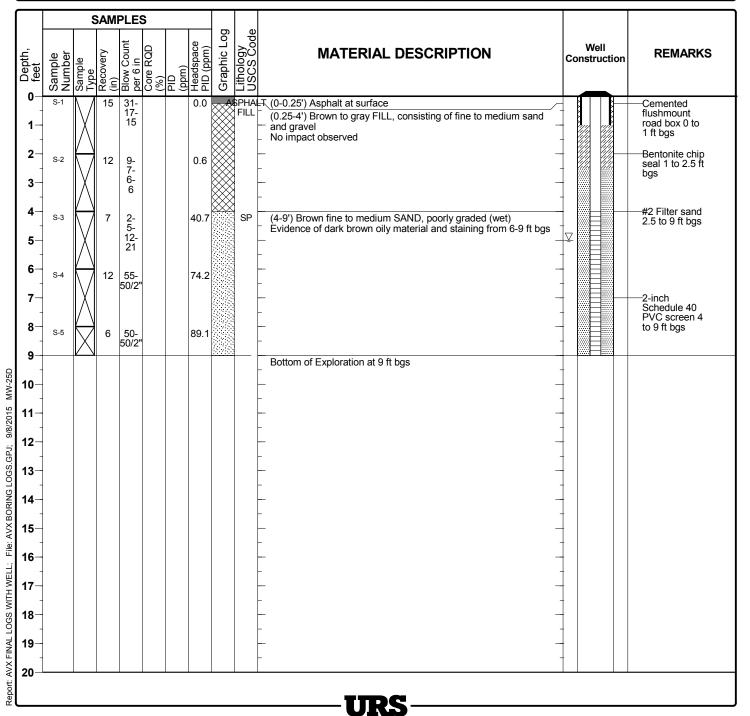


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-25D

Date(s) Drille	<sup>c</sup> 7/23/14	Water Surface NA Elevation		Well Casing or Riser 2-in sched. 40 PVC riser 0-4 ft bgs		
Logged By (URS)	C. Beza	Surface 8.00 ft	Screen 2-in Sched. 40 PVC screen 4-9 ft bgs			
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman		
Total Depth of Borehole	9.0 ft	Easting 814929.27448	Northing 2706757.75032	Notes:		
Groundwater Level	5 ft bgs	Annular Fill:		Location: Aerovox, near Geoprobe Boring B04C Sampler Type: 2-ft Split Spoon		
Diameter of Borehole	8.5 in	Bentonite chip seal 1-2	2.5 ft bgs	Hammer Data: Autohammer		
Drilling HSA Method		#2 Filter sand 2.5-9 ft b	ŭ	Well Type: Flush-mount well installed		

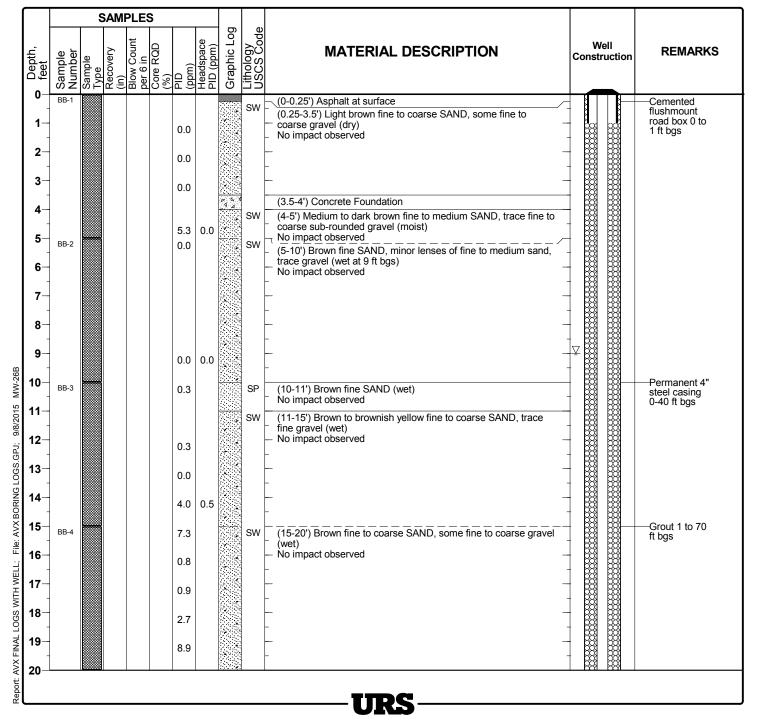


Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-26B**

Date(s) Drilled and Installed	<sup>0</sup> 7/14/14 - 9/2/14	Water Surface NA Elevation		Well Casing or Riser 2-in sched. 40 PVC riser 0-77.5 ft bgs			
Logged By (URS)	C. Beza	Surface 7.55 ft	ft msl	Screen 2-in Sched. 40 PVC screen 77.5-87.5 ft bgs			
Drilling Contractor	Major, Geosearch	Datum		Checked By J. Harshman			
Total Depth of Borehole	88.5 ft	Easting 815079.89954	Northing 2706959.40179	Notes: - Location: Aerovox property			
Groundwater Level	9 ft bgs	Annular Fill:		Sampler Type: 5-ft Sonic Coring of overburden, HQ coring of Bedrock			
Diameter of Borehole 6 in		Grout backfill 1-70 ft bo Bentonite chip seal 70-		Hammer Data: Sonic and HSA			
Drilling 6" So	onic/HQ Coring and HSA	#2 Filter sand 75-87.5	ft bgs	Well Type: Flush-mount well installed			



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **URS Corporation** Log of Boring MW-26B Sheet 2 of 4

SAMPLES												
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20-	BB-5					0.5			SM	(20-21.5') Gray SILT, some fine sand (wet)  No impact observed		
21-						0.0				_		
22-						2.6		27 77 77 7 7 7 7 7 7 7 7 7 7 7 7 7 7	BR	(21.5-25') Pulverized [WEATHERED BEDROCK], GRANITIC  GNEISS, med to coarse grained with K-feldspar, plagioclase feldspar, quartz, and biotite		
23-						3.0		21 27 2 17 77 7 7 17 7 7 7 7 7 7 7 7 7 7 7 7 7		Sonic Coring		
24-						4.0		77777		-  		
25-						4.0		15 25 25 Nr 7 7 7		- 		
26-	BB-6		36		0.0			77777	BR	(25-30') Fragmented [BEDROCK], small pieces Sonic Coring		
-								77 77 77 14 14 14 77 77 77		_		
27-								12121 17777 17777				
28-								77777 77777		<del>-</del> -		
29-								2 22 22 77777 77777		<u></u>		
30-	BB-7		48		28			1 > 1 > 1 > 1 > 1 > 1 > 1 > 1 > 1 > 1 >	BR	(30-35') Fragmented [BEDROCK], one piece 17", others between 0.5-4"		
31-								2 27 77 77777 777777		between 0.5-4" — Sonic Coring —		
32-								77 77 7 1 4 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		- 		
33-								1 >7 >7 \ 1 \ 1 \ 1 \ 1 \ 1 \ 1 \ 1 \ 1 \ 1 \				
34-								27 57 57 21 41 4 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		_		
-								7777V				
35-	BB-8		60		98			127 57 L	BR	(35-40') Dark gray GRANITIC GNEISS [BEDROCK], six pieces >4" with breaks dipping 50 to 70 degrees from horizontal, iron		
36-								27 77 77 J		staining indicates water movement     HQ Coring with Sonic Rig		
37								21 27 2 1777 1777 1010				
38-								7777				
39-								27 27 27 77 77 7 7 7 7 7 7 7 7 7 7 7 7 7		- -		
40-	R-1		Ee.		62			127512 17777 17777	1 1	(40.46) Dark grow fine to madium arriand FORANITIO ONTION		
41-	12-1		56		63			7 57 57 57 57 57 57 57 57 57 57 57 57 57	BR	(40-46') Dark gray fine to medium grained [GRANITIC GNEISS] with 1-3mm banding dipping 41 to 45 degrees from horizontal, joint dipping 68 degrees from horizontal with sedimentation		
								77 77 77 77 77 77 77 77 77 77 77 77 77		along surface at 45 ft bgs HQ Coring with HSA Rig		
42-								2 22 22 7777 17777				
43-								77777		-		
44-								77 77 77 74 74 77 74 74 76				
45-								1 27 27 1 1 7 1 7 7 7 1		_		
36- 37- 38- 39- 40- 41- 42- 43- 44- 45- 46-	R-2	H	23		46			77 77 77 7 V	BR	(46-48') Dark gray fine to medium grained GRANITIC GNEISS		
L¹								14 r £ 3		URS		

**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **URS Corporation** Log of Boring MW-26B Sheet 3 of 4

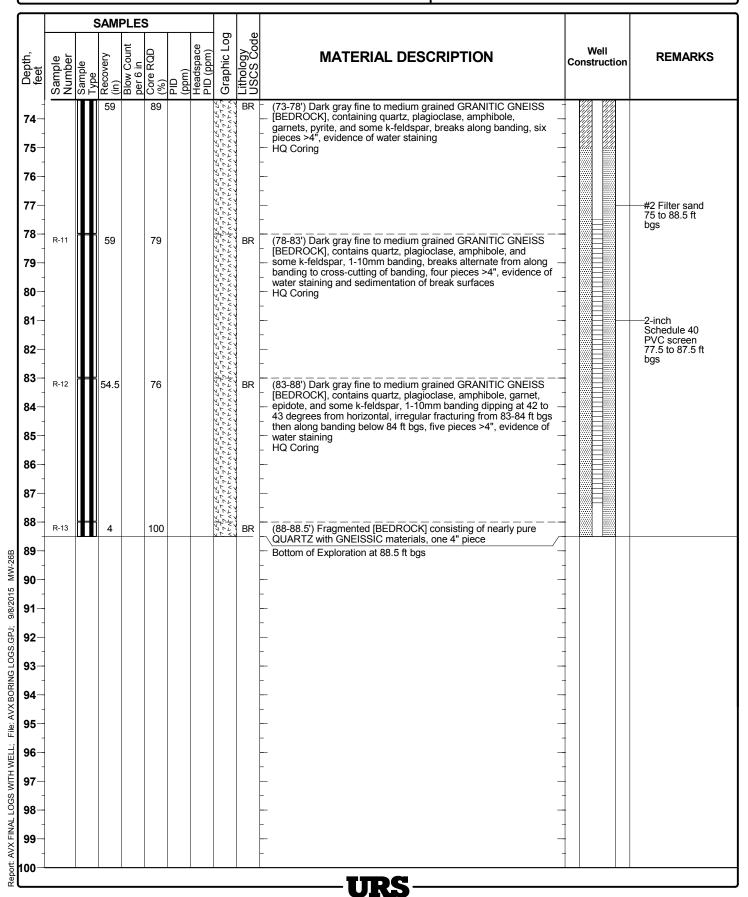
			SAN	IPLE:	S							
Deptn, feet	Sample Number	Sample	Recovery	Blow Count per 6 in	Core RQD (%)	PID (mdd)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
47								7777		_ [BEDROCK], three pieces >4", evidence of iron staining and increasing dark bands with depth		
48-	R-3		58		54			12 45 42 77777 77877	BR	HQ Coring (48-53') Gray GRANITIC GNEISS [BEDROCK] with near		
49-								12 26 26 17 77 77 77 7		vertical fractures at 48-49.5 ft bgs, banding dipping at 41 degrees from horizontal, five pieces >4", evidence of iron staining and sedimentation along fractures		
50-								7777		HQ Coring		
51-								77 77 77 77 77 77 77 77 77 77 77 77 77		- -		
52								24 24 24 77 7 7 7 7 7 7 7 7 7 7		- -		
53 <u> </u>	R-4		     48		22			17 17 17 17 17 17 17 17 17 17 17 17 17 1	BR	(53-57.5') Gray GRANITIC GNEISS [BEDROCK], four 4"		
54 <u>-</u>								22 22 22 77 77 77 77 7 7 7 7		pieces, banding is 1-5mm dipping 40 degrees from horizontal		
55 <u> </u>								177777 177777		- 		
- 56-								17777 17777		- -		
57—								144 LA 1444 17777		- 	-	
- 58-	R-5		62.5	5	73			14.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7	BR	(57.5-63') Dark gray fine to medium grained GRANITIC GNEISS [BEDROCK], containing quartz, plagioclase,		
- 59-								14 14 14 17 17 17 17 17 17		<ul> <li>amphibole, and some k-feldspar, 1-10mm banding dipping at 41 degrees from horizontal, five pieces &gt;4", breaks along dark bands common, evidence of water staining and sediment</li> </ul>		
60-								17 17 17 17 17 17 17 17 17 17 17 17 17 1		presence on breaks  HQ Coring  - Presence on breaks  - HQ Coring		
- 61–								27 27 27 77 77 77 7 7 7 7 7 7		- -		
62-								12 LS LS 77 77 77 77 7 7 7 7		= -		
63-	D.0				0.4			17 V V V V V V V V V V V V V V V V V V V				
64 <u>-</u>	R-6		23		81			1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	BR	(63-65') Dark gray fine to medium grained GRANITIC GNEISS [BEDROCK], 1-10mm banding containing quartz, plagioclase, amphibole, and some k-feldspar, three pieces >4", evidence of water staining and sediment along breaks HQ Coring	I TYYI TYYI I	
65 <u> </u>	R-7		38		100			1 27 27 57 57 57 57 57 57 57 57 57 57 57 57 57	1 -	(65-68') Dark gray fine to medium grained GRANITIC GNEISS [BEDROCK], 1-10mm banding containing quartz, plagioclase,		
66 <u> </u>								12 14 12 17777		<ul> <li>amphibole, and some k-feldspar, four pieces &gt;4", evidence of water staining</li> <li>HQ Coring</li> </ul>		
67-								17 17 17 17 17 17 17 17 17 17 17 17 17 1				
68 <u> </u>	R-8	H	35		88			12 15 15 15 15 15 15 15 15 15 15 15 15 15	BR	(68-71') Dark gray fine to medium grained GRANITIC GNEISS [BEDROCK], containing quartz, plagioclase, and some		
69- 70-								15 15 15 15 15 1777777777777777777777777		<ul> <li>k-feldspar, breaks along 1-5mm banding dipping 41 to 42 degrees from horizontal, one break at 65 ft bgs dips at 65 degrees from horizontal cross-cutting the banding, four pieces</li> <li>&gt;4", evidence of water staining</li> </ul>		
71-	R-9		24.5	5	90			12 24 24 24 14 14 14 14 14 14 14 14 14 14 14 14 14	BR	- HQ Coring  (71-73') Dark gray fine to medium grained GRANITIC GNEISS		
72 <del>-</del>								17 17 17 17 17 17 17 17 17 17 17 17 17 1		<ul> <li>[BEDROCK], containing quartz, plagioclase feldspar, k-feldspar,</li> <li>garnet, and pyrite, 1-5mm banding, four pieces &gt;4", evidence of</li> </ul>		Bentonite chip
73–	R-10		Ц					12777 1777 1777		water staining HQ Coring		seal 70 to 75 ft bgs

Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-26B

Sheet 4 of 4

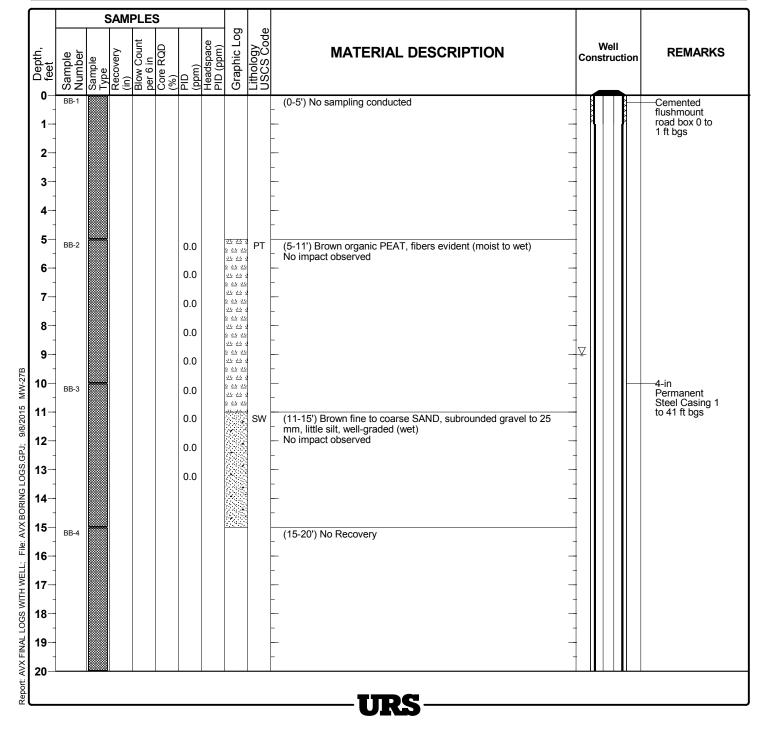


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-27B

Date(s) Drilled and Installed	<sup>0</sup> 7/17/14 - 7/25/14	Water Surface NA Elevation		Well Casing or Riser  4-in permanent steel casing 0-41 ft bgs					
Logged By (URS)	C. Beza	Surface 4.59 ft	ft msl	Screen Open bedrock hole 41-51 ft bgs					
Drilling Contractor	Major, Geosearch	Datum		Checked By J. Harshman					
Total Depth of Borehole	51.0 ft	Easting 815295.87378	Northing 2706800.14085	Notes: Location: Aerovox property					
Groundwater Level	9 ft bgs	Annular Fill:		Sampler Type: 5-ft Sonic Coring of overburden, HQ coring of Bedrock					
Diameter of Borehole	6" overburden/4" BR	Open bedrock borehole	e 41-51 ft bgs	Hammer Data: Sonic, HSA					
Drilling 6" S Method	onic/HQ Coring and HSA			Well Type: Flush-mount open bedrock well					



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **URS Corporation Log of Boring MW-27B** Sheet 2 of 3

			SAMI	PLE	S							
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PIĎ (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
20-	BB-5					0.0			SW	(20-25') Brown fine to coarse SAND, some fine to coarse subrounded gravel to 30 mm, well-graded (wet)		
21-						0.0				No impact observed		
22-						0.0					<u>-</u>	
23-						0.0				- 		
24-										- 	<u> </u>	
25-						0.0				-	<u> </u>	
26-	BB-6		36			0.0			SW	(25-27') Same as 20-25 ft bgs	+	
-						7.9						
27-						0.0		17 LY	BR	(27-29') [WEATHERED BEDROCK], Saprolite Sonic Coring	†	
28-						0.0		17 17 17 17 17 17 17 17 17 17 17 17 17 1			†   <b> </b>     <b> </b>	
29-						0.0		1747 1777 1777 1777	BR	(29-30') [WEATHERED BEDROCK]	<u> </u>	
30-	BB-7		58					1444 17777	BR	(30-35') GRANITIC GNEISS [BEDROCK], contains quartz,		
31-								12 LA		<ul> <li>àmphibole, plagioclase, and k-feldspar, breaks along 1-6mm</li> <li>banding dipping 40 to 45 degrees from horizontal, several zones of highly fragmented core, six pieces &gt;4", evidence of staining</li> </ul>	<b>           </b>	
32-								17777		on fractures  Sonic Coring  - Sonic Coring	- -	
33-								77777		_ 		
-								27 27 27 27 27 27 27 27 27 27 27 27 27 2		-	-	
34-								7777			†	
35-	R-1		12					12 12 12 12 12 12 12 12 12 12 12 12 12 1	BR	(35-36') GRANITIC GNEISS [BEDROCK], contains quartz, amphibole, plagioclase, and k-feldspar, zero pieces >4", rock	<del> </del>	
36-	R-2	H	53		0.0			12 LA LA 17 17 17 17 17 17 17 17 17 17 17 17 17	BR	appears unweathered with a highly fragmented zone Sonic Coring	<u> </u>	
37-								12 24 17 17 17 17 17 17 17 17 17 17 17 17 17		(36-41') Gray GRANITIC GNEISS [BEDROCK], contains quartz, amphibole, plagioclase, garnets, and k-feldspar, with	-	
38-								17777777777777777777777777777777777777		- 1-5mm banding dipping 50 degrees from horizontal  HQ Coring		
39-								12 12 12 12 12 12 12 12 12 12 12 12 12 1		<del>-</del> -	†   <b> </b>     <b> </b>	
40-								12 LA LA 17 17 17 17 17 17 17 17 17 17 17 17 17			†	
41-								12 12 12 17 17 17 1 1 1 1 1 1			<u> </u>	
] .	R-3		56.5		25			24 24 24 24 24 24 24 24 24 24 24 24 24 2	BR	(41-46')GRANITIC GNEISS [BEDROCK], contains quartz, amphibole, plagioclase, and k-feldspar, with 1-10mm banding		
42-								17777		<ul> <li>dipping 43 to 51 degrees from horizontal, seven pieces &gt;4", evidence of staining on fractures</li> <li>HQ Coring</li> </ul>		
43-								77777				
44-								17777 17777			<u> </u>	
45-								77777				Open Borehole 41 to
46-	R-4	H	56.5		79			124 24 124 177777 177777	BR	(46-51') GRANITIC GNEISS [BEDROCK], contains quartz,	†	51 ft bgs
Seport AXX FINAL LOGS WITH WELL: File: AVX BORING LOGS GPJ; 9/8/2015   38   39   39   39   39   39   39   39	R-4		56.5		79			71 24 24 24 24 24 24 24 24 24 24 24 24 24	BR	(46-51') GRANITIC GNEISS [BEDROCK], contains quartz,		

Project Location: New Bedford, Massachusetts

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## **URS Corporation Log of Boring MW-27B** Sheet 3 of 3

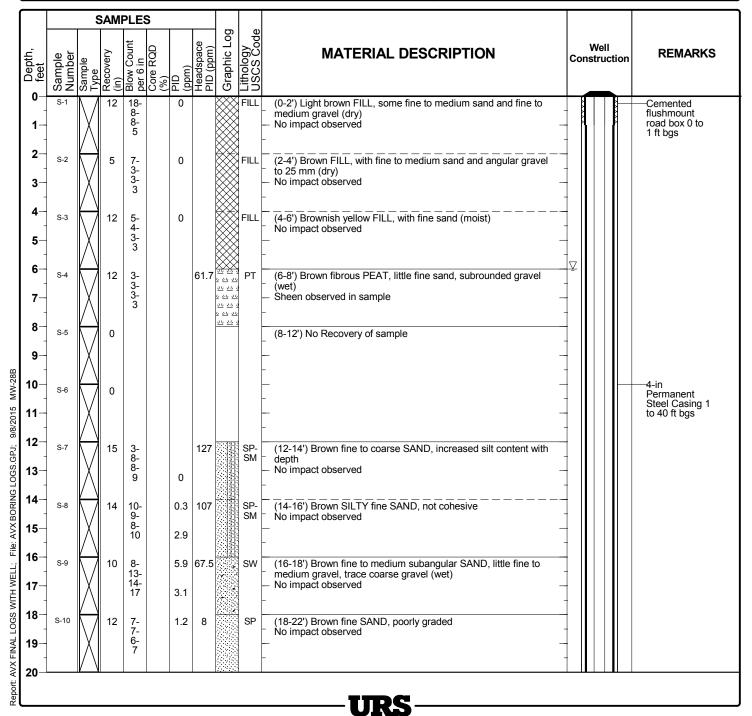
		S	AMI	PLE	s										Ì
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Co	We nstr	ell uct	ion	REMARKS
47-		П								amphibole, plagioclase, and k-feldspar, with 1-10mm banding dipping 32 to 41, breaks are along and across banding, degrees					
48-								21 21 2 17 77 77 1 7 7 7 7 7 7		amphibole, plagioclase, and k-feldspar, with 1-10mm banding dipping 32 to 41, breaks are along and across banding, degrees from horizontal four pieces >4", evidence of staining and water movement on fractures					
49-								\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		_ HQ Coring					
50-								12 12 12 77777 77777							
-								21 21 X		-					
51-								7.67		Bottom of Exploration at 51 ft bgs			-		
52-															
53-															
54-											$\mid \mid$				
55-										- 					
56-										- 					
57-															
58-										-					
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63 – 64 – 65 – 66 – 67 – 71 – 72 – 73 – 73 – 73 – 73 – 73 – 73 – 73															
/3						1				URS	Ш				

Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-28B**

Date(s) Drilled and Installed	<sup>d</sup> 7/24/14 - 7/29/14	Water Surface NA Elevation		Well Casing or Riser  4-in permanent steel casing 0-40 ft bgs					
Logged By (URS)	C. Beza	Surface 8.26 ft	ft msl	Screen Open bedrock hole 40-62 ft bgs					
Drilling Contractor	Geosearch	Datum		Checked By J. Harshman					
Total Depth of Borehole	62.0 ft	Easting 815503.84614	Northing 2707008.74929	Notes: Location: Aerovox property					
Groundwater Level	6 ft bgs	Annular Fill:	40.00 % !	Sampler Type: 2-ft Split Spoon					
Diameter of Borehole	8.5 in	Open bedrock borehole	e 40-62 ft bgs	Hammer Data: Autohammer					
Drilling Drive	e & Wash/Casing/Roller Bi	<b>t</b>		Well Type: Flush-mount open bedrock well					



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **URS Corporation Log of Boring MW-28B** Sheet 2 of 3

		5	AME	PLES	S							
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count per 6 in	Core RQD (%)	PID (ppm)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construc	REMARKS
20-	S-11	$\setminus /$	11	6- 9- 8-		0	1.5			Same as 18-20 ft bgs	- 1	
21-		X		8- 8		0					- - -	
22	S-12	()	10	5- 5- 6-		0	3.6		SW	(22-24') Gray to brown fine SAND, little silt, trace gravel, poorly graded	<u> </u>	
23-		X		6- 7		0				graded  No impact observed  -	<u> </u>	
24-	S-13	(-)	10	8-		0	0.8		SW	(24-28') Gray fine to medium SAND, some coarse sand and fine	<u> </u>	
25-		X		8- 5- 3- 5		0				gravel, little silt, poorly graded No impact observed	<u> </u>	
26-	S-14	(-)	9	5-		0	0			<u>-</u> -	<del> </del>	
27-		X		5- 5- 3- 8		0				- -	<del> </del>	
28 <del>-</del>	S-15	$\square$	4	13-		0	4.7	, T, <	BR	(28-30') Gray to light brown [WEATHERED BEDROCK]	<u> </u>	
- 29-	0.0	$ \bigvee $		50/3". 0- 0			4.7	12777 17777			<u> </u>	
30-				0				12774 17777		-	<u> </u>	
- 31 —								1244 17777 17777	BR	(30-40') Drive and wash to 40 ft bgs wit roller bit, permanent 4" steel casing installed from 1-40 ft bgs and grouted in place	<u> </u>	
32-								14 14 17 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			<u> </u>	
33—								24 24 24 77 77 77 7 7 7 7 7 7			<u> </u>	
34—								24 24 24 77 77 77 7 7 7 7 7 7			<u> </u>	
-								77777 17777			<u> </u>	
35-								77777			_ - 	
36-								12 12 12 17 17 17 17 17 17 17 17 17 17 17 17 17			<del> </del>	
37-								27 27 27 77 77 7 7 7 7 7 7		 -	<del> </del>	
38-								24 24 24 77 77 77 7 7 7 7 7 7		<del>-</del> -	<del> </del>	
39-								12 LA LA 17 7 7 7 7 7 7 1		<u></u>	- - -	
40-	R-1		18.5		81			12 24 2 1 27 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	BR	(40-43') GRANITIC GNEISS [BEDROCK], poorly defined banding 1-15mm dipping 70 degrees from horizontal,		
41-		Ш						17777777777777777777777777777777777777		<ul> <li>multi-directional fractures filled with quartz and epidote, three pieces &gt;4", fractures appear weathered and are filled with a clay</li> </ul>	1	
12	R-2		17.5		100			7 2 2 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		like material -	1	
43- 44-	R-3		59.5		89			12 15 15 15 15 15 17 17 17 17 17 17 17 17 17 17 17 17 17	BR	(43-48') GRANITIC GNEISS [BEDROCK], banding 1-5mm dipping 32 to 55 degrees from horizontal, multi-directional fractures filled with quartz and epidote, six pieces >4", presence of water evident on fractures	<u> </u>	
ļ5—								12 12 12 12 12 12 12 12 12 12 12 12 12 1		- -	- - - -	—Open Borehole 40 to
- 16-								12 24 24 17 77 77 17 7 7 7 7 7 7 7 7 7 7 7 7 7 7		- 	<del> </del>	62 ft bgs

**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

## **URS Corporation** Log of Boring MW-28B Sheet 3 of 3

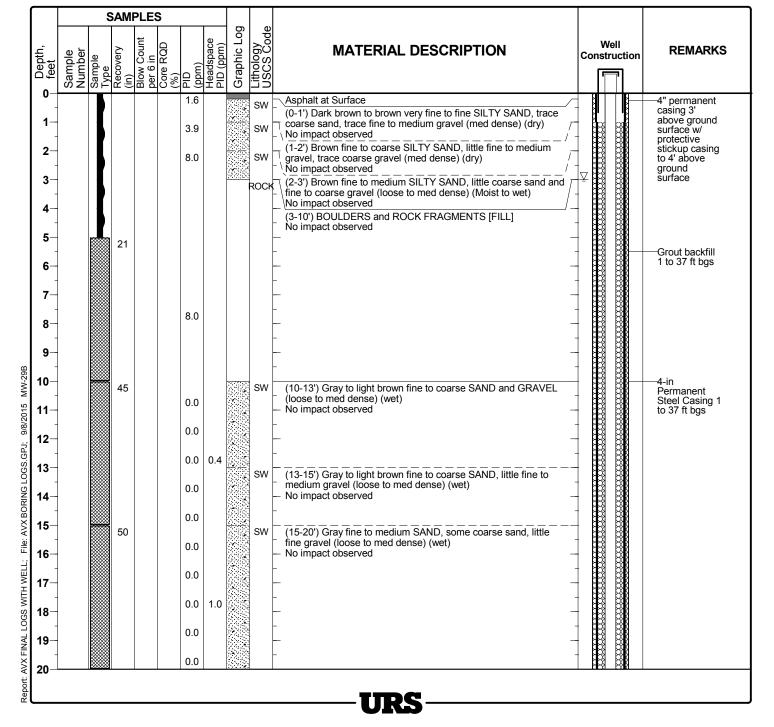
REMARKS	$\Box$	SAMPLES														
48 R4 48 60 BR (48-52) GRANITIC GNEISS [BEDROCK], contains quartz, k-feldspar, plagicclase feldspar, amphibole, pyrite, chlorite, and epidote, poorly defined banding dipping 25 to 27 degrees from horizontal, regular break cross-cuts banding piping at 70 degrees from horizontal at 48 ft bgs, evidence of weathering along banding from 51 to 52 ft bgs  52 R5 59 45 BR (52-57) Gray to dark gray GRANITIC GNEISS [BEDROCK], contains quartz, k-feldspar, plagicclase, amphibole, and plagic lase, amphibole, and periodic banding present 1-family dipresent 1-family fractured from 56 to 57 ft bgs, apparent weathering along breaks  54 BR (57-62) Light to dark gray GRANITIC GNEISS [BEDROCK], banding dips 30-55 degrees from horizontal, multi-directional fractures throughout core with a near vertical fracture stroughout core with a near vertical fracture at 55.5 th gs and highly fractured from 56 to 57 ft bgs, apparent weathering along most breaks including sedimentation of some break surfaces  60 BR BR (57-62) Light to dark gray GRANITIC GNEISS [BEDROCK], banding dips 30-55 degrees from horizontal, multi-directional fractures throughout core filled with epidote and a near vertical fracture from 57 to 57.5 ft bgs, apparent weathering along most breaks including sedimentation of some break surfaces  60 BR BR BR (57-62) Light to dark gray GRANITIC GNEISS [BEDROCK], banding dips 30-55 degrees from horizontal, multi-directional fractures throughout core filled with epidote and a near vertical fracture from 57 to 57.5 ft bgs, apparent weathering along most breaks including sedimentation of some break surfaces	Depth, feet	Sample Number	Sample	Recovery	(III)	Blow Count per 6 in	Core RQD (%)	PID	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Coi		ion	REMARKS
55   60   68   Stricts   BR   (57-62') Light to dark gray GRANITIC GNEISS [BEDROCK], banding dips 30-55 degrees from horizontal, multi-directional fractures throughout core filled with epidote and a near vertical fracture from 57 to 57.5 ft bgs, apparent weathering along most breaks including sedimentation of some break surfaces   60   61   61   62   62   62   63   64   65   65   65   65   65   65   65	1 i									115	_					
55   60   68   Strict   Strict	48-	D.4	Ш	<b> </b>			00			12 12 12 A 7 1 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		- (40 59) OBANITIO ONE 100 (PEDDOOM	1			
55   60   68   Strict   Strict	-	K-4		40			60			15 15 15 15 15 15 15 15 15 15 15 15 15 1	BR	k-feldspar, plagioclase feldspar, amphibole, pyrite, chlorite, and epidote, poorly defined banding dipping 25 to 27 degrees from - horizontal, irregular break cross-cuts banding dipping at 70 degrees from horizontal at 48 ft bgs, evidence of weathering	- - -			
55   60   68   Strict   Strict	50-									124 LK 1777		— along banding from 51 to 52 ft bgs -	]			
55   60   68   Stricts   BR   (57-62') Light to dark gray GRANITIC GNEISS [BEDROCK], banding dips 30-55 degrees from horizontal, multi-directional fractures throughout core filled with epidote and a near vertical fracture from 57 to 57.5 ft bgs, apparent weathering along most breaks including sedimentation of some break surfaces   60   61   61   62   62   62   63   64   65   65   65   65   65   65   65	51-									7777 7777 7777		-	1			
55   60   68   Strict   Strict	52-	R-5		59	9		45			12/27 17/27 17/4/7	BR	(52-57') Gray to dark gray GRANITIC GNEISS [BEDROCK],	+			
55   60   68   Street   60   68   Street   60   68   Street   60   68   Street   60   60   61   61   62   62   62   62   64   65   65   65   65   65   65   65	-									27 77 77 44 77 47 47 47 47 47 47 47 47 47		<ul> <li>contains quartz, k-feldspar, plagioclase, amphibole, and</li> <li>epidote, banding present 1-6mm dipping 45 to 50 degrees from -horizontal, multi-directional fractures throughout core with a near vertical fracture at 55.5 ft bos and highly fractured from 56</li> </ul>	- - - - -			
56	55-									17777		- 	†			
60 -	-									7777 7777 7777		-	+			
60 -	56-									17777 77777 77777		- -	1			
60	-	R-6	Ħ	60			68			12 15 15 15 15 15 15 15 15 15 15 15 15 15	BR	<ul> <li>banding dips 30-55 degrees from horizontal, multi-directional</li> <li>fractures throughout core filled with epidote and a near vertical</li> </ul>	  -  -			
60 -	_									17777 77777		fracture from 57 to 57.5 ft bgs, apparent weathering along most breaks including sedimentation of some break surfaces	+			
61 —	59-									124 LA 17777	4		]			
62  Rottom of Exploration at 62 ft has	60-									7777 7777			1			
80 Bottom of Exploration at 62 ft has	61-									17777777777777777777777777777777777777			$+ \parallel$			
Bottom of Evoloration at 60 ft has	62									17 LY						
64- 65- 66- 67- 68- 69- 70- 71- 72- 73-												Bottom of Exploration at 62 ft bgs	+			
64- 65- 66- 67- 68- 69- 70- 71- 72- 73-	63-											- -	]			
65— 66— 67— 68— 69— 70— 71— 72— 73—	64-											<u></u>	1			
66- 67- 68- 69- 70- 71- 72- 73-	65-															
67- 68- 69- 70- 71- 72- 73-	66-												1			
68- 69- 70- 71- 72- 73-	-												+			
68- 69- 70- 71- 72- 73-	67-											<del>-</del> -				
69 —	68-												1			
70-	69-											-	1			
71	70-												1			
71	'															
72	71-											- -				
73-	72-											-	+			
	73-											- 	1			
URS—												TIDC				

Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-29B**

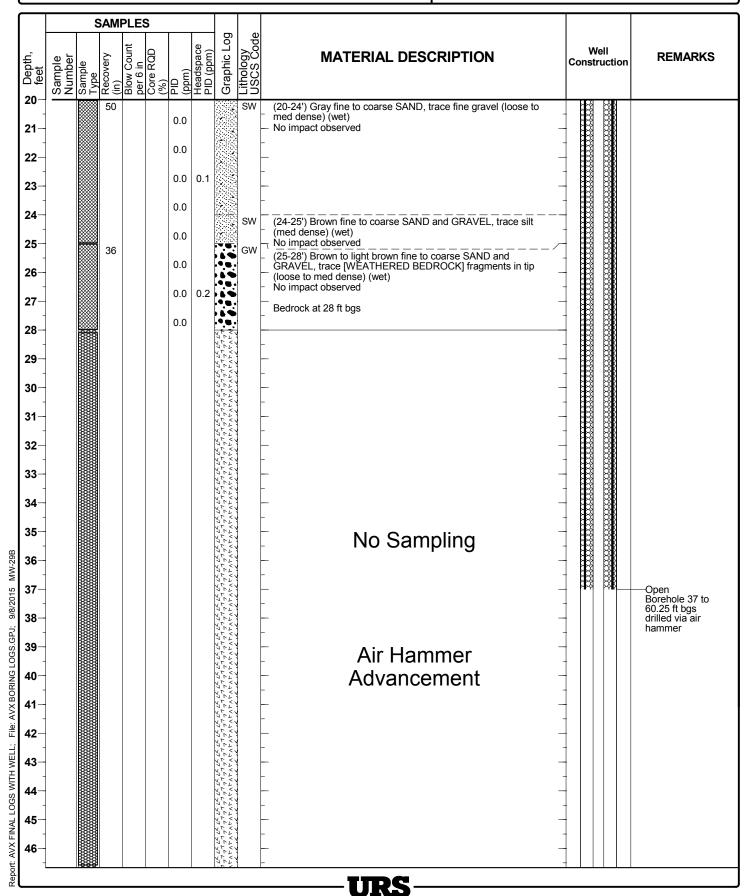
Date(s) Drilled and Installed	<sup>0</sup> 4/16/15 - 4/27/15	Water Surface NA Elevation		Well Casing or Riser  4-in permanent steel casing 0-37 ft bgs
Logged By (URS)	J. Harshman	Surface NA Elevation		Screen Open bedrock hole 40-60.25 ft bgs
Drilling Contractor	Geosearch	Datum		Checked By
Total Depth of Borehole	60.3 ft	Easting	Northing	Notes: Overburden Sampled by Geoprobe  Location: Titleist
Groundwater Level	3 ft bgs	Annular Fill: Open bedrock borehold		Sampler Type: Macrocore
Diameter of Borehole	8.5 in	Exterior of permanent of bgs	casing grouted 1-37 ft	Hammer Data: Geoprobe Direct Push
Drilling <b>Drive</b> Method <b>Bit/</b>	e & Wash/ Casing/ Roller Air Rotary w/ Air Hammer			Well Type: Protective stickup casing open bedrock well



Project Location: New Bedford, Massachusetts

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#### URS Corporation Log of Boring MW-29B



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

**URS Corporation** Log of Boring MW-29B Sheet 3 of 3

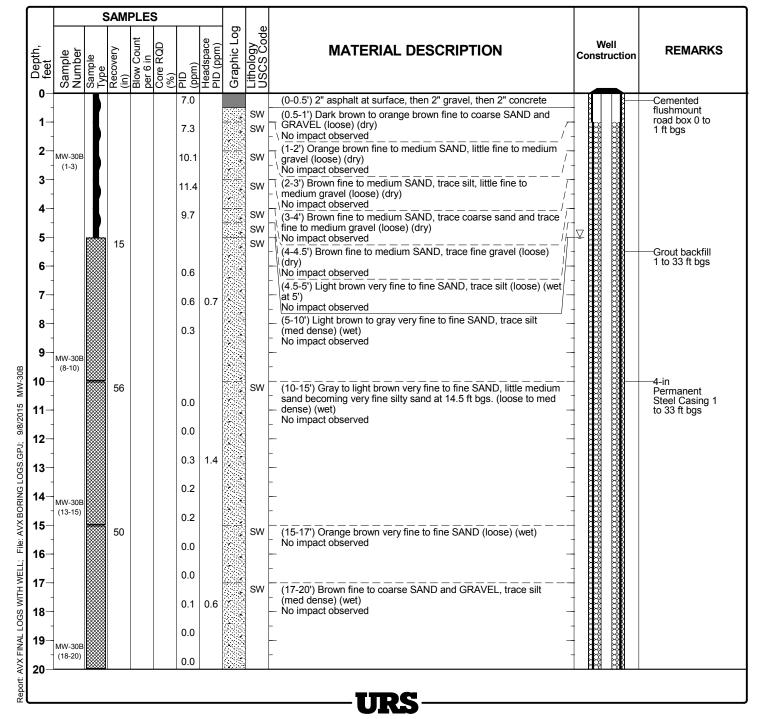
		S	AMI	PLE	S					41					
Depth, feet	Sample Number	Sample Type	Recovery (in)	3low Count per 6 in	Core RQD	Olc	Headspace	PID (ppm) Graphic Log	ithology	USCS Code	MATERIAL DESCRIPTION	Co	Vell truc	tion	REMARKS
47-	3,2		10	ш <u>о</u>			1-	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \						
48-								17777	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		- 				
49-								17777	, , ,		-				
-								77777	< \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Air Hammer				
50-								17777	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Advancement				
51-								17777	2, 2, 2,		<del>-</del> -	1			
52								7777	V V V						
53-								17777	1 2 2		-				
54-								15 15 15 7 7 7 7 7	2 2 2		No Sampling	1			
55								27 27 27	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		- Tro Camping	1			
56-								77777	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		- 	1			
57-								17777	2, 2, 2,		_ 				
58-								7777	V V V		<u>.</u>				
-								1444	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		-				
59-								17777	2 2 2		-				
60-								77.2	ζ <b>γ</b>	_	- Bottom of Exploration at 60.25	-			
61-										-					
62-															
63-											-				
64-										ļ	- - -	1			
65										}	- 	1			
66-											- 	1			
67-												1			
°											-	-			
68-										ļ		1			
63- 64- 65- 66- 67- 68- 70- 71- 72- 73-										}	<del>-</del> -	1			
70-										-		1			
71-												1			
72-										-					
73-											- - -	1			
											URS—				

Project Location: New Bedford, Massachusetts

Project Number: 39744051

# URS Corporation Log of Boring MW-30B

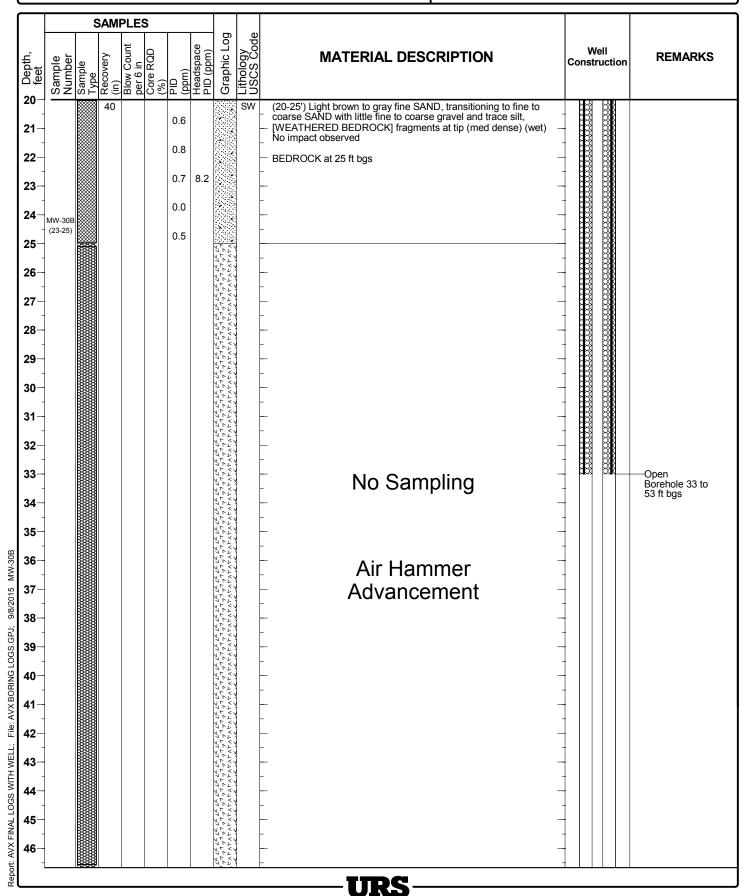
Date(s) Drilled and Installed	<sup>d</sup> 4/16/15 - 4/28/15	Water Surface NA Elevation		Well Casing or Riser  4-in permanent steel casing 0-33 ft bgs
Logged By (URS)	J. Harshman	Surface NA Elevation		Screen Open bedrock hole 33-53 ft bgs
Drilling Contractor	Geosearch	Datum		Checked By
Total Depth of Borehole	53.0 ft	Easting	Northing	Notes: Overburden Sampled by Geoprobe
Groundwater Level	5 ft bgs	Annular Fill: Open bedrock borehold	e 33-53 ft bgs, exterior of	Sampler Type: Macrocore
Diameter of Borehole	8.5 in	permanent casing grou		Hammer Data: Geoprobe Direct Push
Drilling Drive Method Bit/	e & Wash/ Casing/ Roller Air Rotary w/ Air Hammer			Well Type: Flush-mount open bedrock well



Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-30B

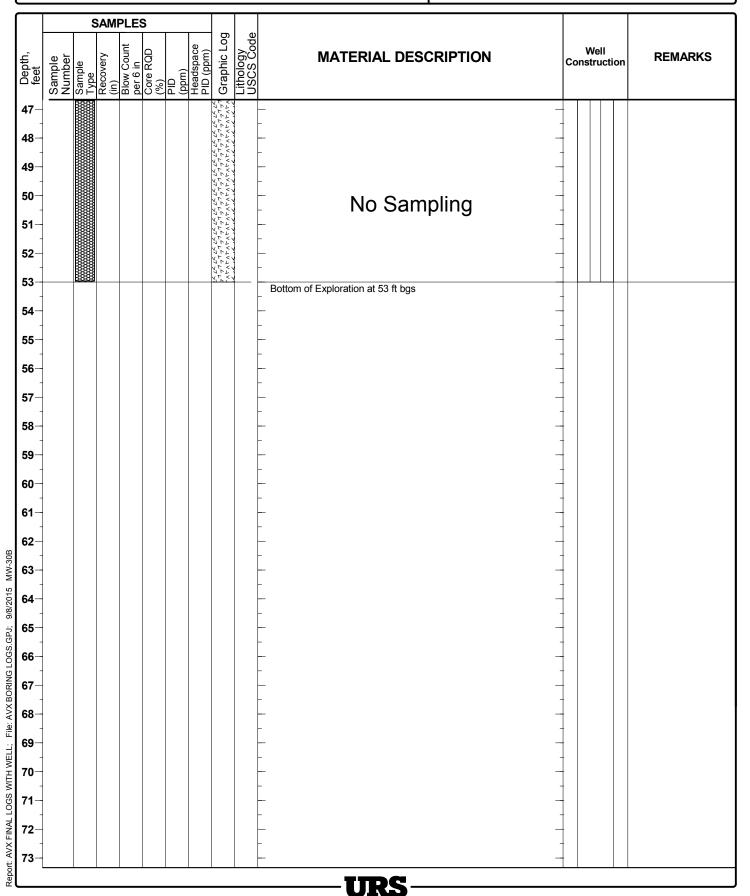


Project Location: New Bedford, Massachusetts

Project Number: 39744051

URS Corporation Log of Boring MW-30B

Sheet 3 of 3

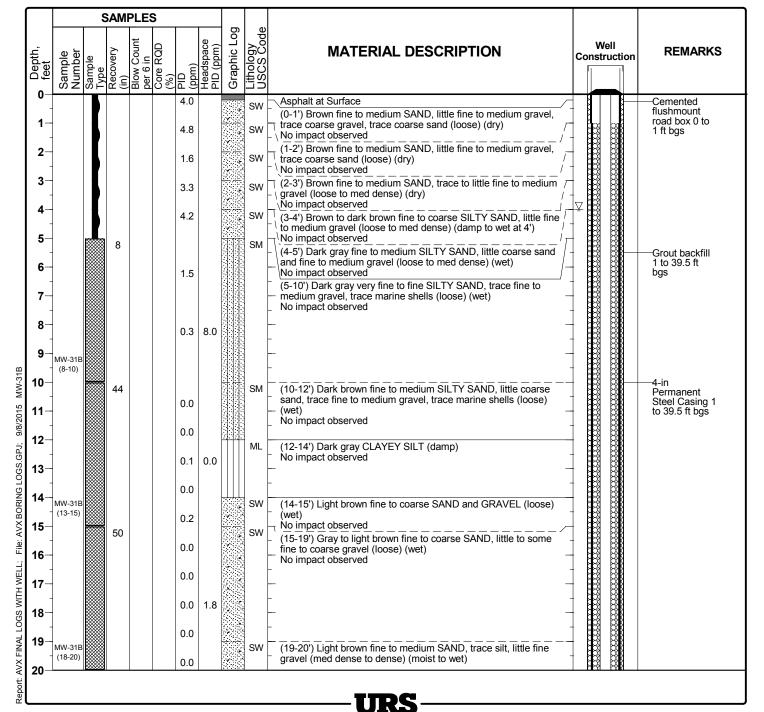


Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-31B**

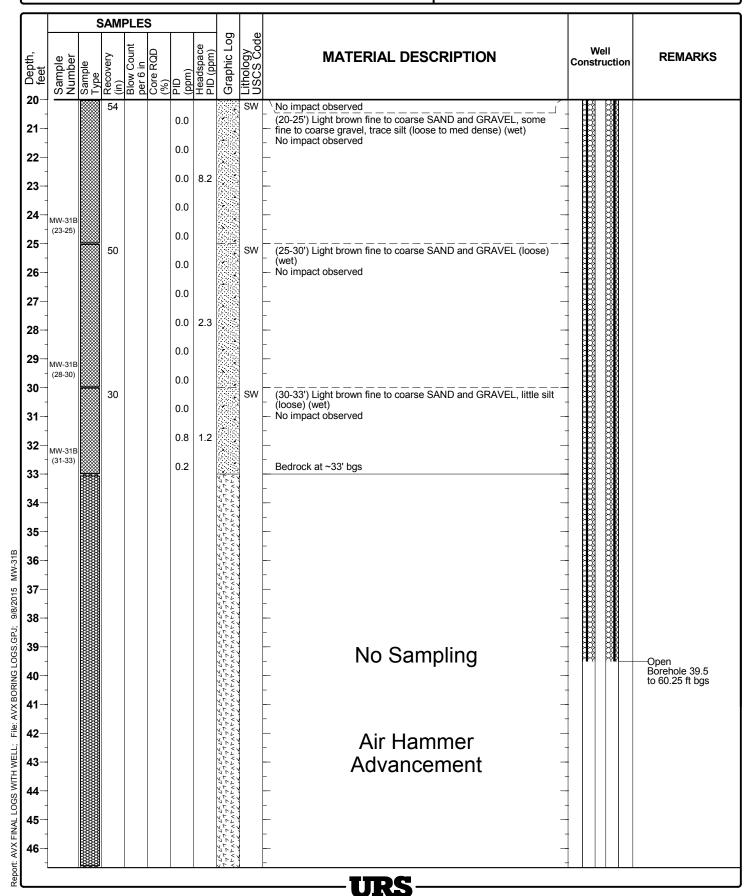
Date(s) Drilled and Installed	<sup>d</sup> 4/16/15 - 4/28/15	Water Surface NA Elevation		Well Casing or Riser  4-in permanent steel casing 0-39.5 ft bgs
Logged By (URS)	J. Harshman	Surface NA Elevation		Screen Open bedrock hole 39.5-60.25 ft bgs
Drilling Contractor	Geosearch	Datum		Checked By
Total Depth of Borehole	60.3 ft	Easting	Northing	Notes: Overburden Sampled by Geoprobe
Groundwater Level	4 ft bgs	Annular Fill: Open bedrock borehold		Sampler Type: Macrocore
Diameter of Borehole	8.5 in	exterior of permanent of bgs	casing grouted 1-39.5 ft	Hammer Data: Geoprobe Direct Push
Drilling Drive Method Bit/	e & Wash/ Casing/ Roller Air Rotary w/ Air Hammer			Well Type: Flush-mount open bedrock well



Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-31B**



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

**URS Corporation** Log of Boring MW-31B Sheet 3 of 3

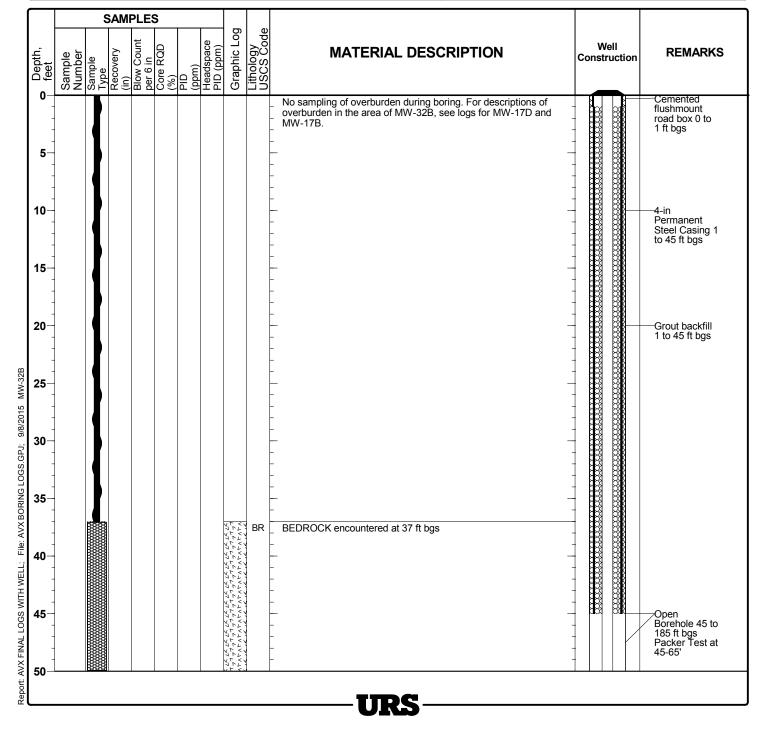
		S	AMI	PLE	S										
Depth, feet	Sample Number	Sample Type	Recovery (in)	Blow Count	Core RQD	(%)	PID (nom)	Headspace PID (ppm)	Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Co	<b>Vel</b> l	l ction	REMARKS
47-	-							1		<u> </u>					
48-									2 25 25 25 25 77777777 17777777	<b>y</b>	- -				
49-									124 L4 L4 L7 77 77 77 77 77 77 77 77 77 77 77 77	, ,					
50-									12 14 12 17 17777	ş, Ş,					
51-									14 14 14 77777 777777	ş; ş;					
52-										ş, ş,					
53-									24 24 24 7777777777777777777777777777777	ş, ş,					
-									2 22 25 77777 17777	, ,	No Sampling				
54-									7 24 24 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	7					
55-									124 L4 L 177777	<b>y</b>	-				
56-									\$ 15 15 15 15 15 15 15 15 15 15 15 15 15	ş; ş;	Air Hammer	1			
57-									2 25 25 25 77777777	ş, ş, ş,	Advancement	†			
58-									24 24 24 77 77 77 7 1 7 1 7 1 7	ş, ş, ş,	- -				
59-									\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<b>7</b>					
60-									777	<u>,                                    </u>	Bottom of Exploration at 60.25 ft bgs				
61-															
62-															
63-											_				
64-															
65											_	<u> </u>			
66-												1			
67-											- -	1			
68-											- -	†			
69-											- -	†			
70-											- -	1			
71–											- -	1			
72-											- -	1			
63 - 64 - 65 - 66 - 67 - 68 - 71 - 72 - 73 - 73 - 73 - 73 - 73 - 73 - 73											- 				
				I							URS—				

Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-32B

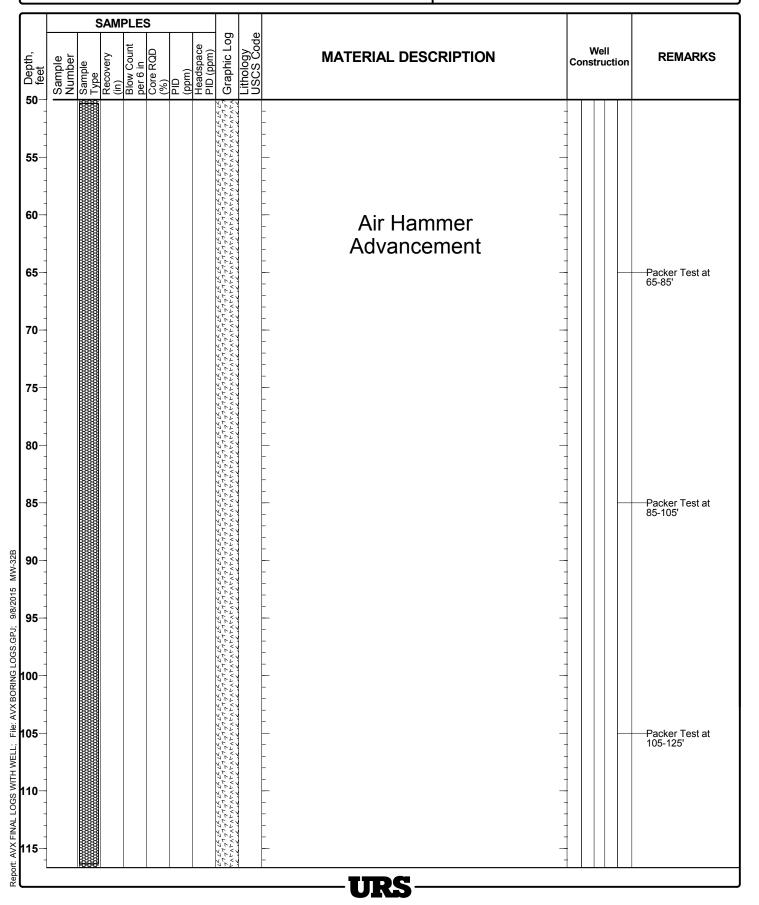
Date(s) Drilled4/22/15 - 5/1/15 and Installed		Water Surface NA Elevation		Well Casing or Riser 4-in permanent steel casing 0-45 ft bgs
Logged By (URS)	J. Harshman	Surface NA Elevation		Screen Open bedrock hole 45-185 ft bgs
Drilling Contractor	Geosearch	Datum		Checked By
Total Depth of Borehole	185.0 ft	Easting	Northing	Notes: Location: Near MW-17 cluster in the SE area of Aerovox property
Groundwater Level	NE	Annular Fill:  Open bedrock borehole 45-185 ft bgs, exterior of permanent casing grouted 1-45 ft bgs		Sampler Type: No Sampling of Overburden
Diameter of Borehole	8.5 in			Hammer Data:
Drilling Method Bit/ Air Rotary w/ Air Hammer				Well Type: Flush-mount open bedrock well



Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-32B

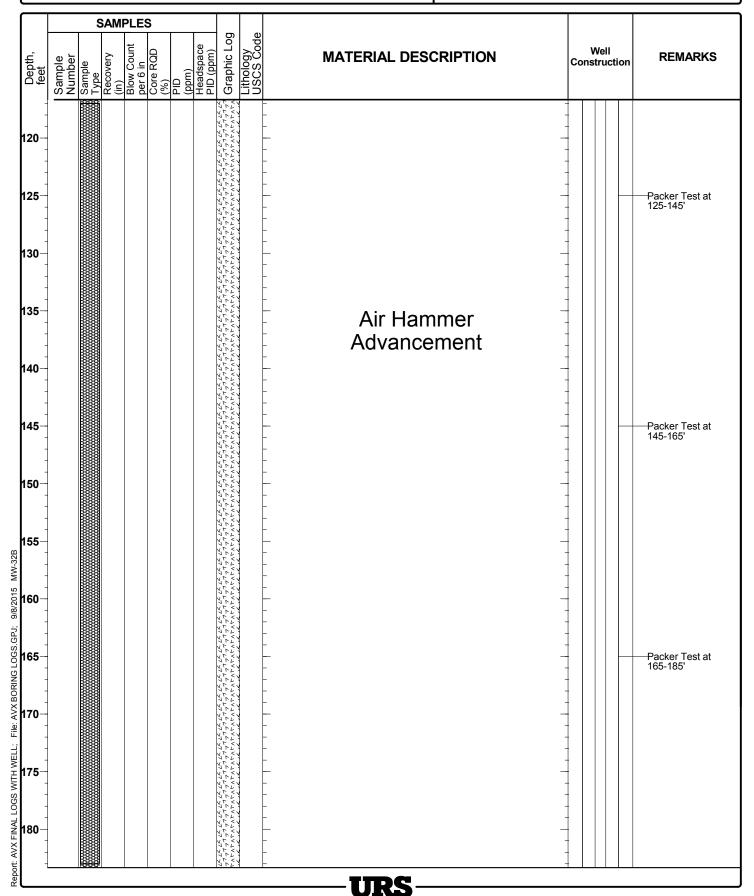


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-32B

Sheet 3 of 4

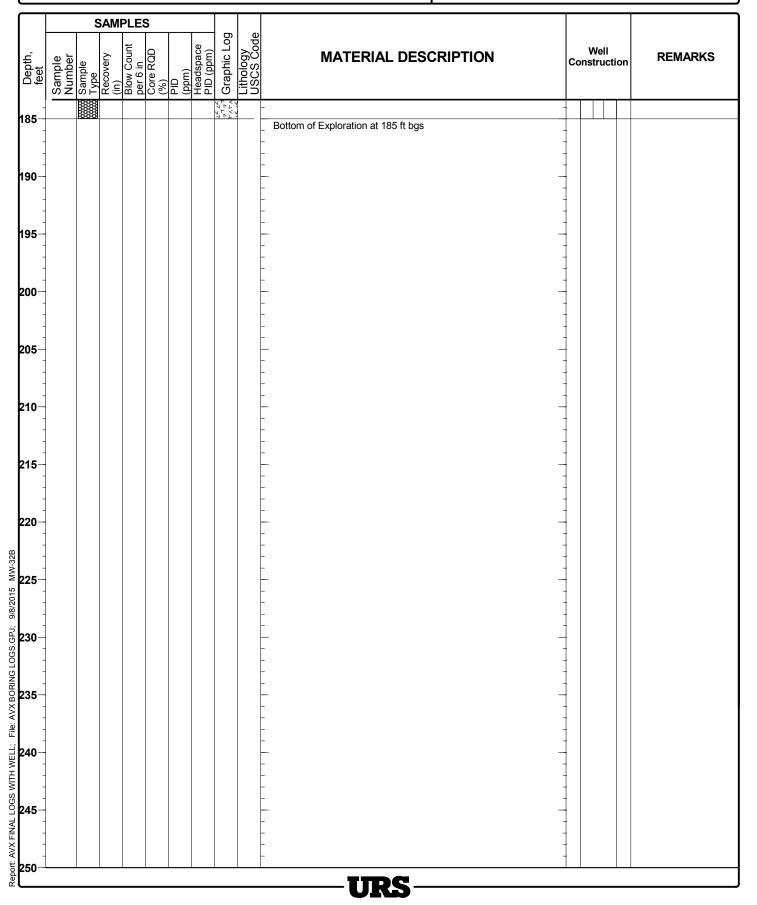


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## URS Corporation Log of Boring MW-32B

Sheet 4 of 4



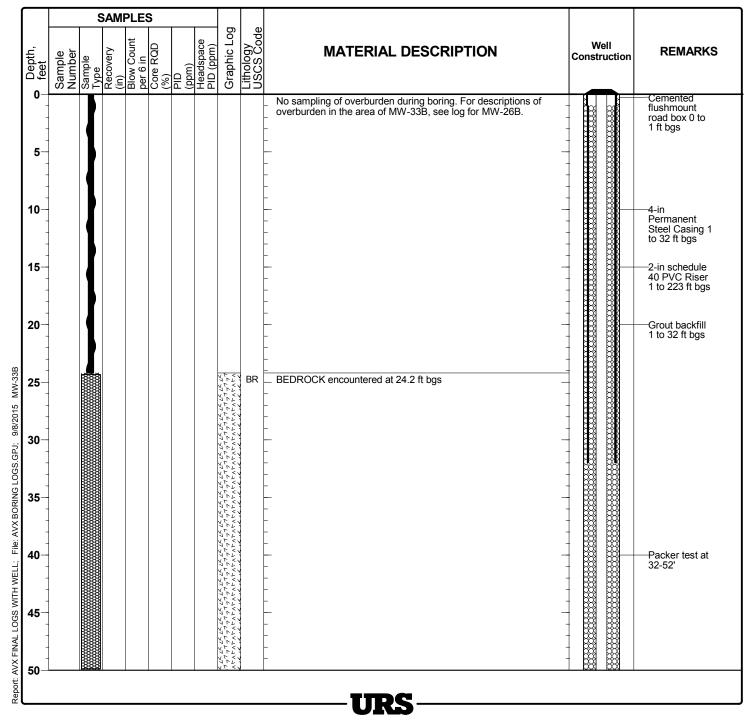
Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-33B**

Sheet 1 of 5

Date(s) Drilled and Installed	<sup>d</sup> 4/23/15 - 8/19/15	Water Surface NA Elevation		Well Casing or Riser 4-in permanent steel casing 0-32 ft bgs, 2-in sched. 40 PVC riser 0-240 ft bgs				
Logged By (URS)	J. Harshman	Surface NA Elevation		Screen 2-in Sched. 40 PVC screen 240-250 ft bgs				
Drilling Contractor	Geosearch	Datum		Checked By				
oi Borenoie	292.0 ft	Easting	Northing	Notes: Bedrock open borehole at 253-292 grouted				
Groundwater Level	NE	Annular Fill:		Sampler Type: No Sampling of Overburden				
Diameter of Borehole	8.5 in	Grout backfill 0-223 ft b Bentonite chip seal 223	•	Hammer Data:				
Drilling Drive Method Bit/	e & Wash/ Casing/ Roller Air Rotary w/ Air Hammer	#2 Filter sand 233-240	· ·	Well Type: Flush-mount well installed				

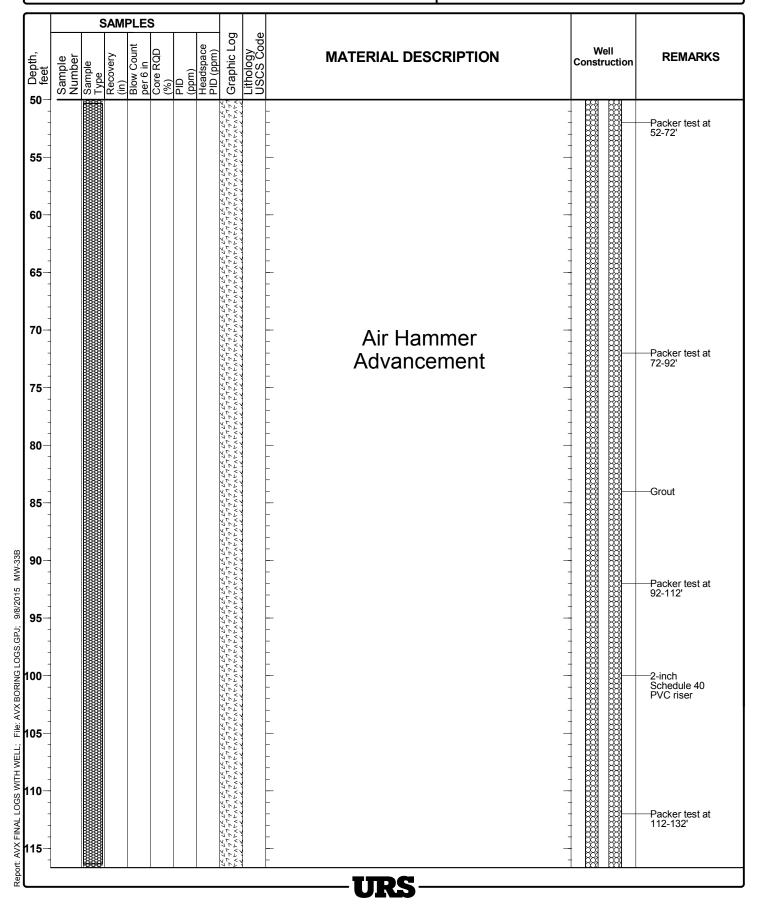


Project Location: New Bedford, Massachusetts

Project Number: 39744051

### URS Corporation Log of Boring MW-33B

Sheet 2 of 5

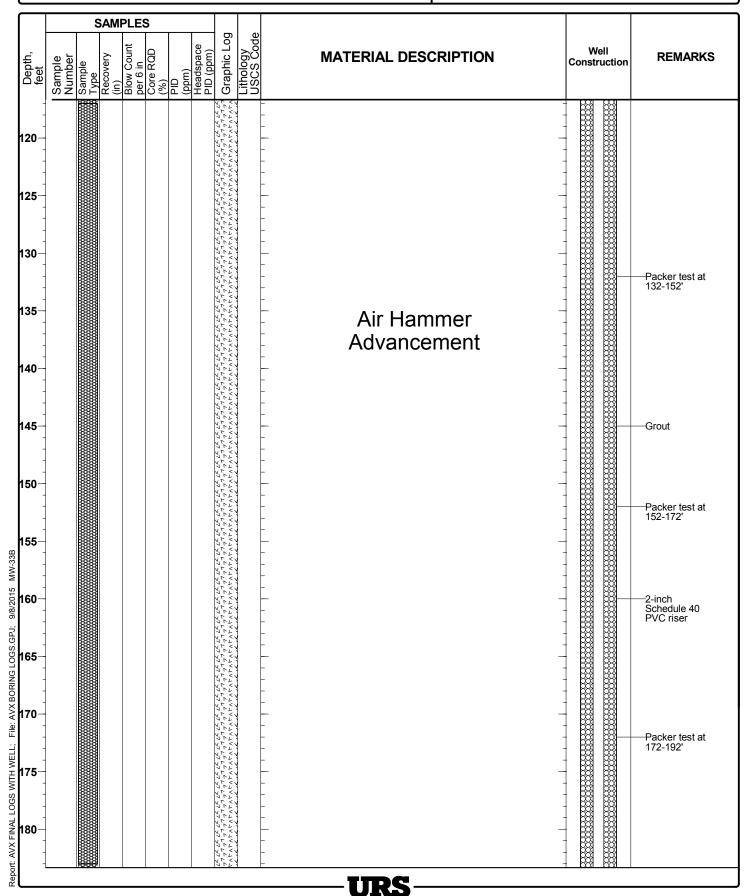


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-33B

Sheet 3 of 5

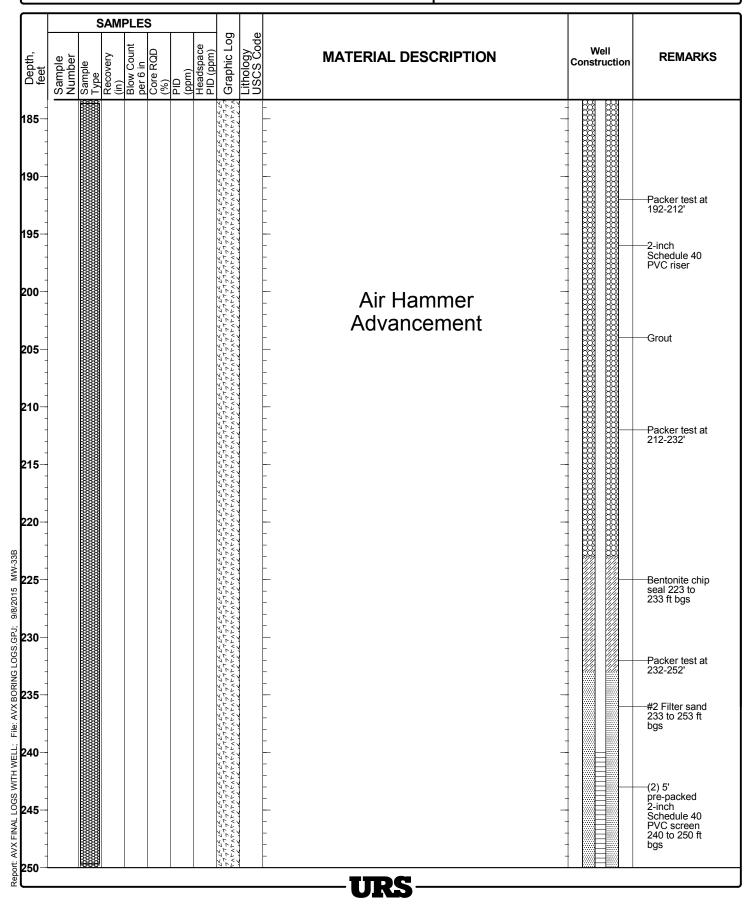


Project Location: New Bedford, Massachusetts

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## URS Corporation Log of Boring MW-33B

Sheet 4 of 5



**Project Location: New Bedford, Massachusetts** 

Project Number: 39744051

# **URS Corporation** Log of Boring MW-33B Sheet 5 of 5

		SAN	/IPL	ES	;		_		_	4)			
Depth, feet	Sample Number Sample	Type Recovery	(In) Blow Count	per 6 in	Core RQD (%)	PID	Headspace		Graphic Log	Lithology USCS Code	MATERIAL DESCRIPTION	Well Construction	REMARKS
250 255								57 57 57 57 57 57 57	7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-		- - - - -	-	#2 Filter sand 250 to 253 ft bgs
260—								51 51 51 51 51 51 51	77777777777777777777777777777777777777		Air Hammer		Packer test at 252-272'  Grout backfill 253 to 292 ft bgs
265								57 57 57 57 57 57 57	77777777777777777777777777777777777777		Advancement		393
270—								57 57 57 57 57 57 57	7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		- - - - -	-	Packer test at 272-292'
275								57 57 57 57 57 57 57	77777777777777777777777777777777777777		- - - - -	- - - - - - -	
280 - - 285								57 57 57 57 57 57 57 57 57 57	7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		- - - - -		
290—								7 77 77 77 77 77 77	777777777777777777777777777777777777777		Bottom of Exploration at 292 ft bgs		
295												†    -  -  -	
300-												- - - - - -	
295- 300- 310- 315-													
315												- - - - -	
											URS		

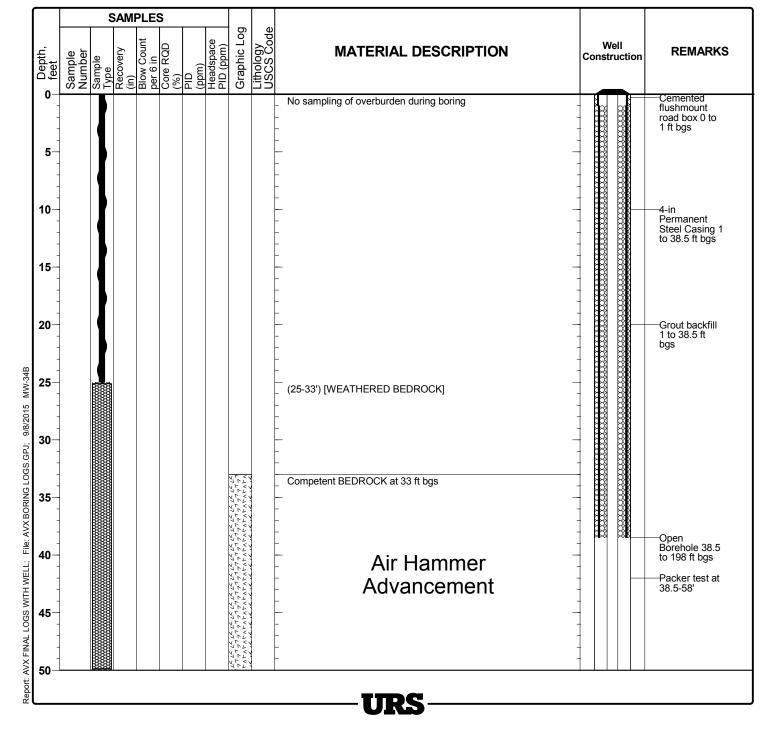
Project Location: New Bedford, Massachusetts

Project Number: 39744051

## URS Corporation Log of Boring MW-34B

Sheet 1 of 4

Date(s) Drilled and Installed	<sup>d</sup> 4/24/15 - 5/6/15	Water Surface NA Elevation		Well Casing or Riser 4-in permanent steel casing 0-38.6 ft bgs			
Logged By (URS)	J. Harshman	Surface Elevation NA		Screen Open bedrock hole 38.5-198 ft bgs			
Drilling Contractor	Geosearch	Datum		Checked By			
Total Depth of Borehole	198.0 ft	Easting	Northing	Notes: Location: NE corner of Aerovox site. near chiller vault			
Groundwater Level	NE	Annular Fill:	e 38 5-198 ft bas exterior	Sampler Type: No Sampling of Overburden			
Diameter of Borehole	8.5 in	of permanent casing grouted 1-38.5 ft bgs		Hammer Data:			
Drilling <b>Drive</b> Method <b>Bit/</b>	e & Wash/ Casing/ Roller Air Rotary w/ Air Hammer			Well Type: Flush-mount open bedrock well			

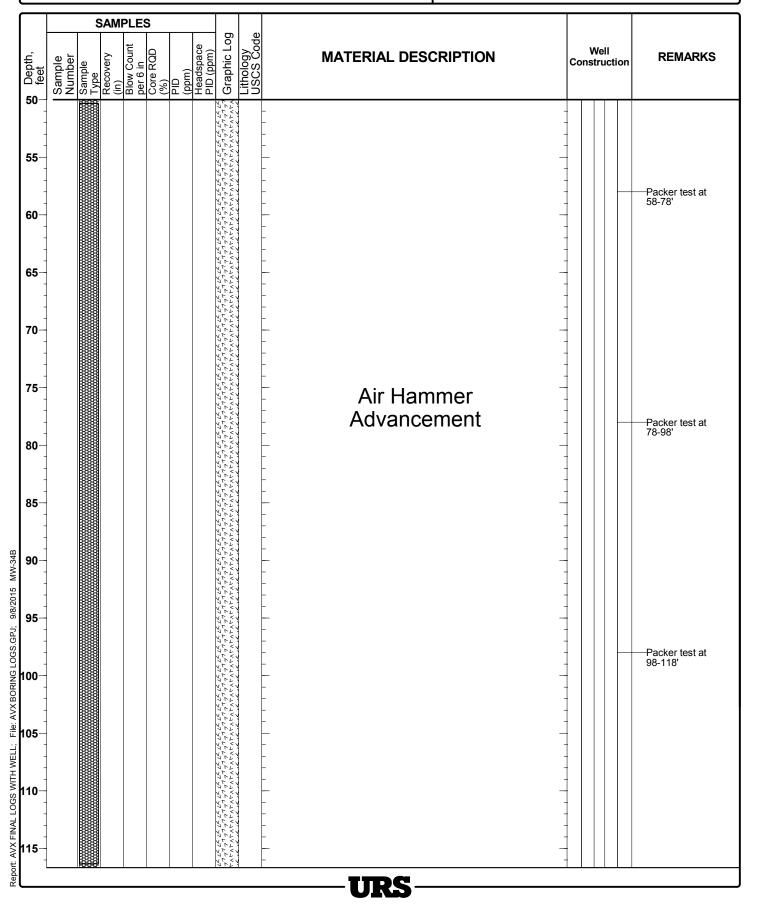


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-34B

Sheet 2 of 4

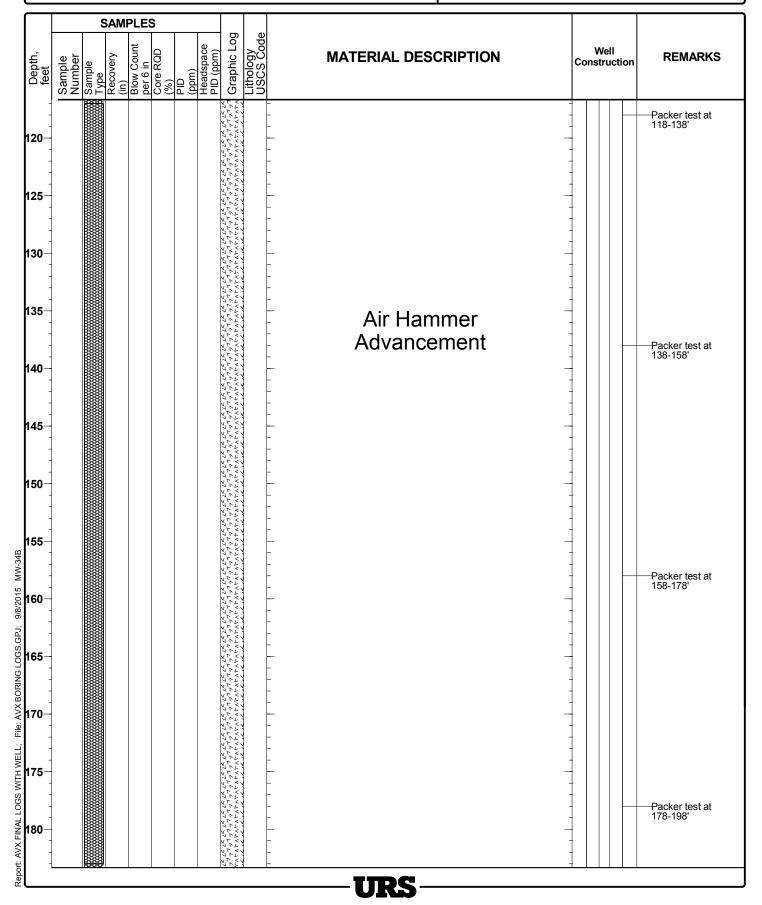


Project Location: New Bedford, Massachusetts

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## URS Corporation Log of Boring MW-34B

Sheet 3 of 4

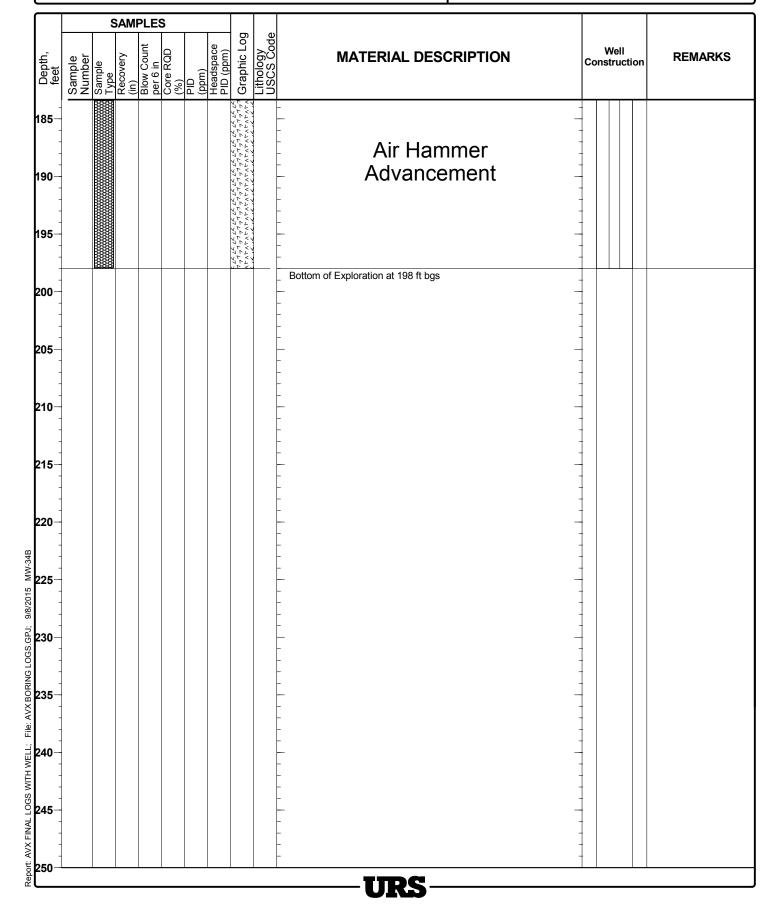


Project Location: New Bedford, Massachusetts

Project Number: 39744051

## URS Corporation Log of Boring MW-34B

Sheet 4 of 4



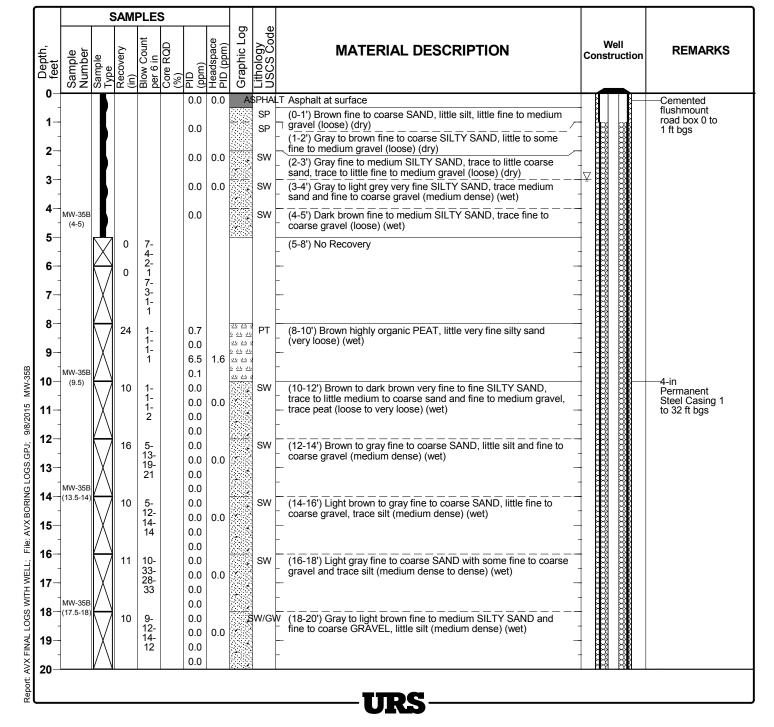
Project Location: New Bedford, Massachusetts

Project Number: 39744051

# URS Corporation Log of Boring MW-35B

Sheet 1 of 3

Date(s) Drilled and Installed	<sup>d</sup> 8/13/15 - 8/20/15	Water Surface NA Elevation		Well Casing or Riser  4-in permanent steel casing 0-32 ft bgs			
Logged By (URS)	J. Harshman	Surface NA Elevation		Screen Open bedrock hole 32-52 ft bgs			
Drilling Contractor	Geosearch	Datum		Checked By			
Total Depth of Borehole	52.0 ft	Easting	Northing	Notes: Vac/Air-knife pre-clear 0 to 5 ft bgs Location: Titleist Property			
Groundwater Level	3 ft bgs	Annular Fill:  Open bedrock borehole 32-52 ft bgs, exterior of permanent casing grouted 1-32 ft bgs		Sampler Type: 2-ft Split Spoon			
Diameter of Borehole	6" overburden/4" BR			Hammer Data:			
Drilling <b>Drive</b> Method <b>Bit/</b>	e & Wash/ Casing/ Roller Air Rotary w/ Air Hammer			Well Type: Flush-mount open bedrock well			

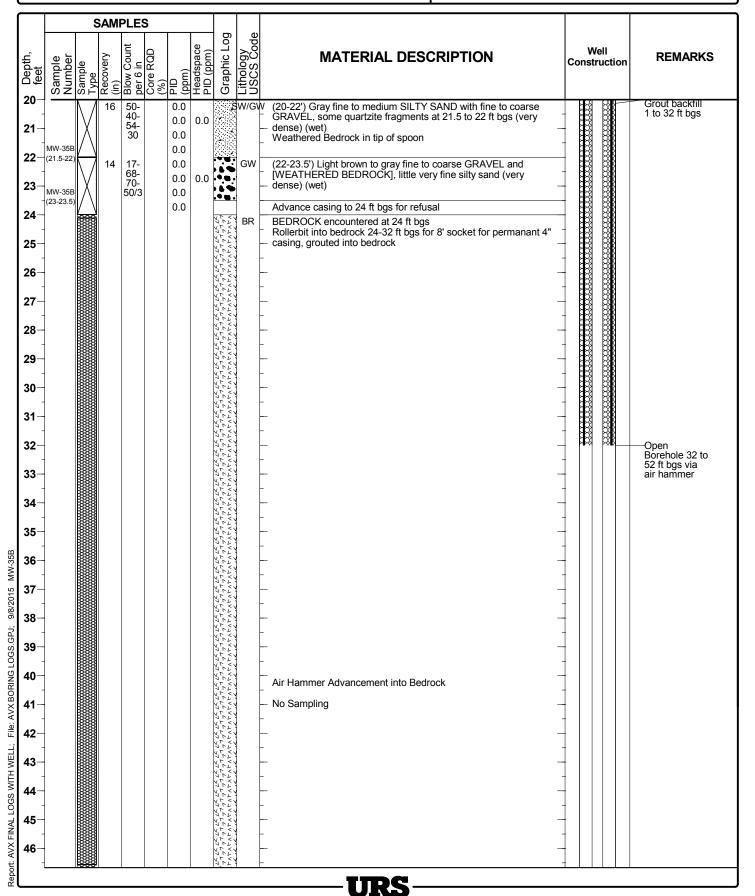


Project Location: New Bedford, Massachusetts

Project Number: 39744051

#### URS Corporation Log of Boring MW-35B

Sheet 2 of 3



Project Location: New Bedford, Massachusetts

Project Number: 39744051

# **URS Corporation Log of Boring MW-35B** Sheet 3 of 3

	SAMPLES								Ì			
Depth, feet	feet Sample Number Sample Type Recovery (in) Blow Count per 6 in Core RQD (%) PID (ppm) Headspace		Graphic Log	MATERIAL DESCRIPTION  MATERIAL DESCRIPTION		Well Construction		l ction	REMARKS			
47-												
48-						27 27 27 17 77 77 1 7 7 7 7 7		Air Hammer Advancement into Bedrock				
49-						77777 17777		No Sampling  — No Sampling				
50-						77777						
51-						\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\						
52-						×1 ×1 ×1 ×2 ×2 ×2 ×1 ×1 ×1		-				
-								Bottom of Exploration at 52 ft bgs				
53-								 - -	]			
54-								-	†			
55-												
56-												
57-												
58-												
59-								_				
60-												
61-								-  -  -				
62-								- - -				
63-								- -				
64-								- -				
65-												
66-												
-								-				
67-												
68-								-				
69-								<u> </u>				
70-								<u>-</u> -				
71-								<u> </u>				
72-								<u> </u>				
63 — 64 — 65 — 66 — 67 — 71 — 72 — 73 — 73 — 73 — 73 — 73 — 73 — 73												
								——URS———				

Appendix F.
Analytical Reports
(Included on CD
only)

Appendix G.
Borehole
Geophysics Report
(Included on CD
only)

# Appendix H. Tidal Study

#### **TIDAL STUDY**

A tidal study was conducted at the Former Aerovox Facility in New Bedford, Massachusetts between September 8 and September 12, 2014. The study was conducted to characterize the relationship between the tidal fluctuations in the Acushnet River and the potentiometric water levels in the overburden and bedrock aquifers present on the site. Data logging pressure transducers were installed into 17 overburden wells, and 8 bedrock wells, and a staff gauge in the Acushnet River. Wells were chosen to provide representative coverage across the site.

The groundwater (potentiometric) levels monitored in onsite monitoring wells exhibit wave-like (sinusoidal) patterns which in most cases closely mimic the water levels recorded in the adjacent river. Potentiometric levels from several bedrock rock wells measured during the week of September 15 through September 18, were also evaluated for tidal fluctuations as pumping activities during that time did not appear to affect water levels in those wells. A data logger was also attached to a staff gauge which was installed in the Acushnet River. A summary of data from the staff gauge is presented in Table 1.

Table 1
Summary of Staff Gauge Data
Acushnet River

					Min	Max	Average	Range
Period	Cycles	Start	End	Days	(ft, msl)	(ft, msl)	(ft, msl)	(ft)
		9/9/2014	9/12/2014					
1	6	8:15	4:45	2.9	-1.53	4.33	1.21	5.86
		9/12/2014	9/15/2014					
2	6	11:30	6:30	2.8	-1.10	4.19	1.19	5.29
		9/15/2014	9/18/2014					
3	7	14:15	22:45	3.4	-0.12	3.37	1.32	3.49

To facilitate discussion the data was divided into three approximately 3-day periods. The largest tidal range was observed during Period 1. However, the highest mean tide was recorded during Period 3. Period 1 corresponded to a supermoon (or perigee new moon) which is the moon's closest point to the earth in its orbit; this causes unusually large tidal effects. Figure 1 presents water levels recorded at the Acushnet River Staff Gauge and the three 3-day periods.

Small fluctuations in water levels from the Acushnet River were recorded during low and high tides when water levels are relatively stable over the course of several hours. These fluctuations likely continue 24 hours per day but are largely masked during rising and falling tides. It is hypothesized that a narrowing of the water way 1.25 miles to the south of the site is the possible source of these fluctuations. The closest narrowing of the Acushnet River is the opening at the Coggeshall Street/Howland Road Bridge. This restricted inlet is a focal point and source for refractory waves which travel up the river and possibly refract from one side to the other shore. This focal point is analogous to dropping a pebble in a stream and watching concentric waves emanating from this point. These smaller

water level fluctuations are transmitted in detail to both the overburden and bedrock wells on the site. Figures showing potentiometric hydrograph data from both overburden and bedrock monitoring wells versus the water levels from the Acushnet River Staff Gauge are presented in Appendix A.

The tidal efficiency was calculated for each monitoring well to obtain the tidal fluctuation and average percent response at each location relative to the water level in the river.

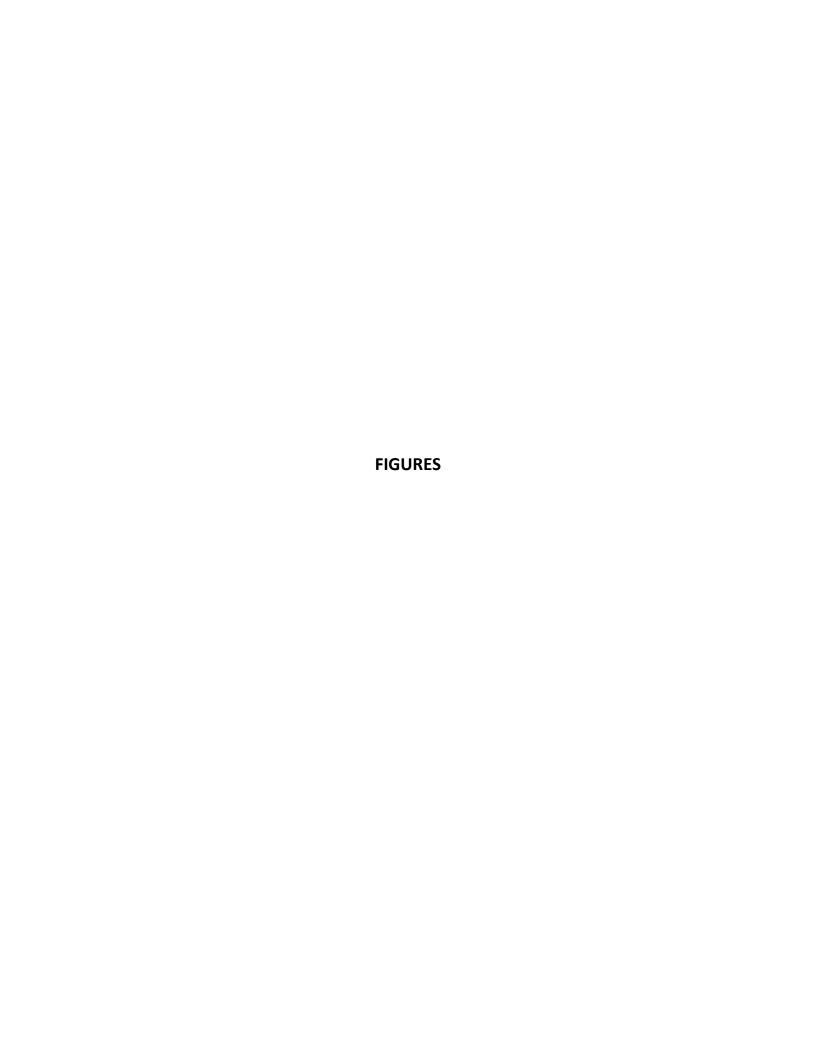
Hydrographs for each well were reviewed to determine the difference in elevation from the trough (minimum) to the crest (maximum) over multiple tidal cycles. The change in water level elevations for each well and for each cycle was divided by the change in water level measured in the river during the corresponding time period. Shallow overburden well MW03A showed only minor fluctuations which is likely due to its shallow depth and position next to the sheetpile wall. The resulting percent response values for each well were then averaged. This data is presented in Table 2.

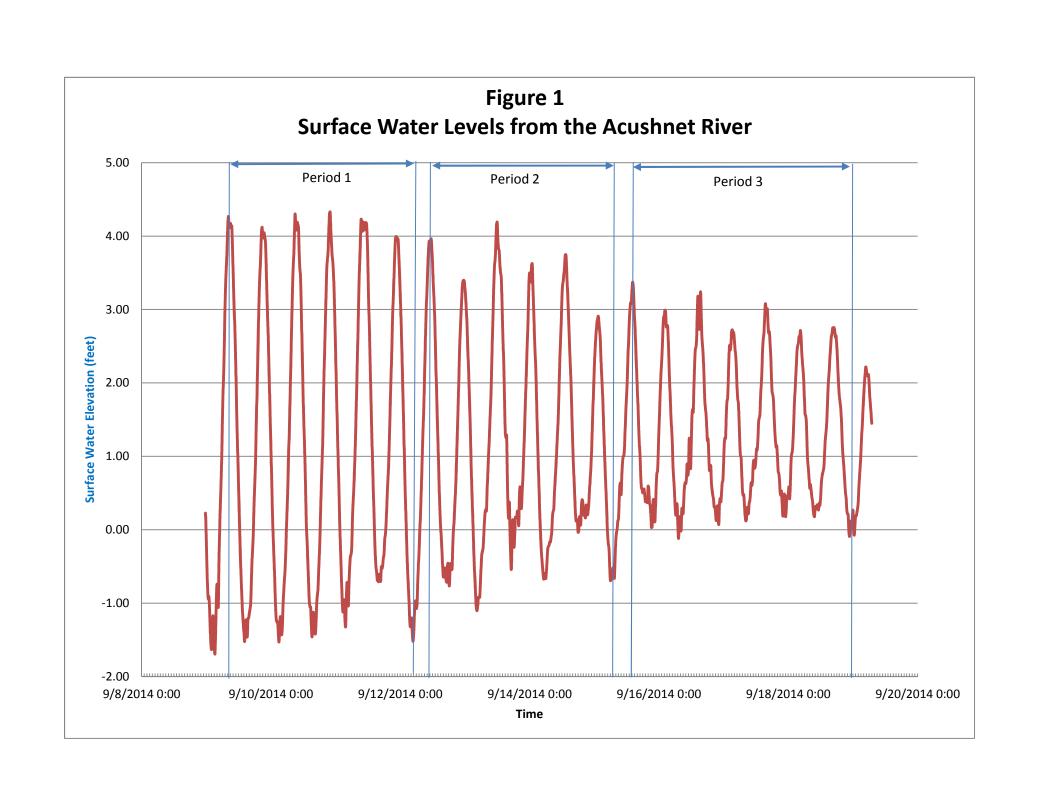
Table 1 Summary of Tidal Efficiency

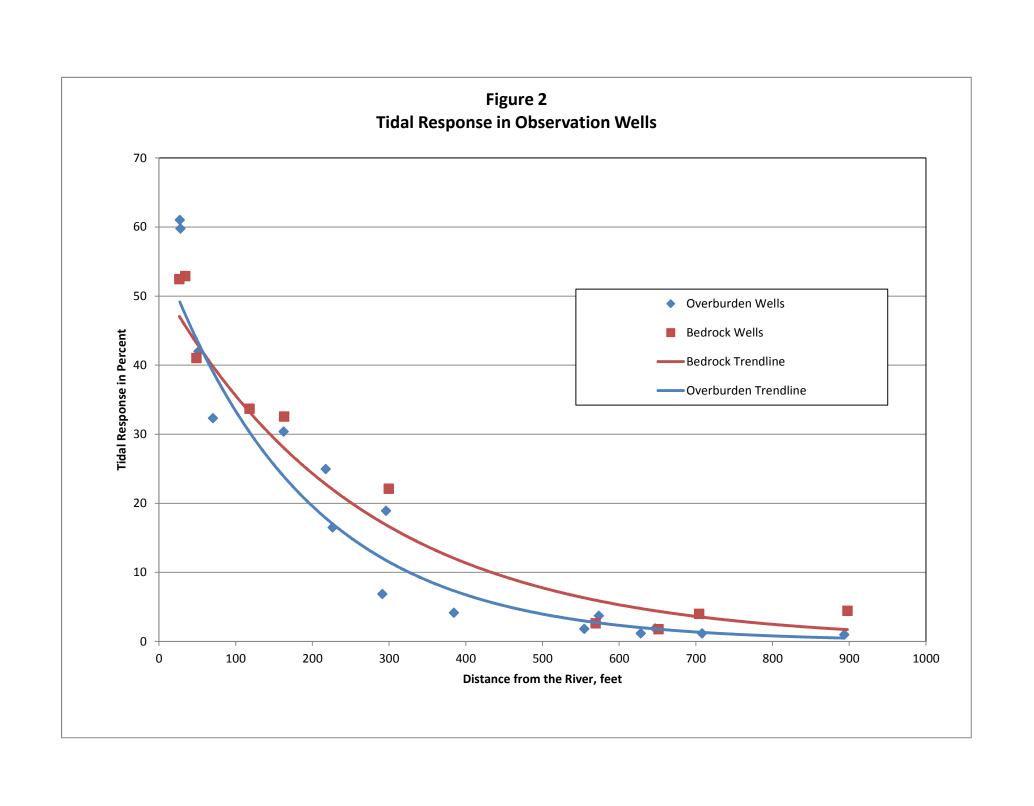
	Distance	Ave	erage		Distance	Av	erage
	from river,	Percent	Fluctuation,		from river,	Percent	Fluctuation,
Well ID	feet	Response	feet	Well ID	feet	Response	feet
	Overbu	ırden Wells			Bedro	ck Wells	
MW03A	72	1.2	0.07	MW04B	704	4.0	0.14
MW07	28	59.8	3.31	MW07B	34	52.9	2.94
MW08S	628	1.2	0.06	MW13B	652	1.8	0.10
MW10D	217	25.0	1.39	MW15B	27	52.4	2.92
MW13D	647	1.9	0.10	MW17B	49	41.0	2.29
MW15D	27	61.0	3.40	MW20B	898	4.4	0.24
MW17D	52	42.0	2.35	MW21B	569	2.6	0.15
MW18D	385	4.2	0.23	MW23B	163	32.6	1.82
MW19D	296	18.9	1.06	MW27B	300	22.1	0.63
MW19S	291	6.9	0.38	MW28B	118	33.7	0.96
MW20D	894	1.0	0.05	MW103B	60	18.3	1.01
MW21D	574	3.7	0.20				
MW22S	226	16.5	0.92				
MW23D	163	30.4	1.70				
MW24D	555	1.8	0.10				
GZ101D	708	1.2	0.07				
GZ103S	60	32.3	1.80	Staff Gauge		100.0	5.54

Additionally, the tidal efficiency/percent response was plotted in overburden and bedrock monitoring wells versus distance from the Acushnet River. A best fit trend line/response curve was applied to both aquifers and is presented in Figure 2. The percent response to water level fluctuations in the river was as

high as 60 percent for observation wells in both overburden and bedrock within 30 feet of the river but drop to 10-20 percent within the first 300 feet. Beyond 150 feet from the river the tidal efficiency of the bedrock aquifer appears to be slightly higher than that of the overburden, but this may be a function of well control. Based on the data, the response of the overburden aquifer and the bedrock aquifers is quite similar which suggests that the two units are in good hydraulic communication with the river and likely each other.

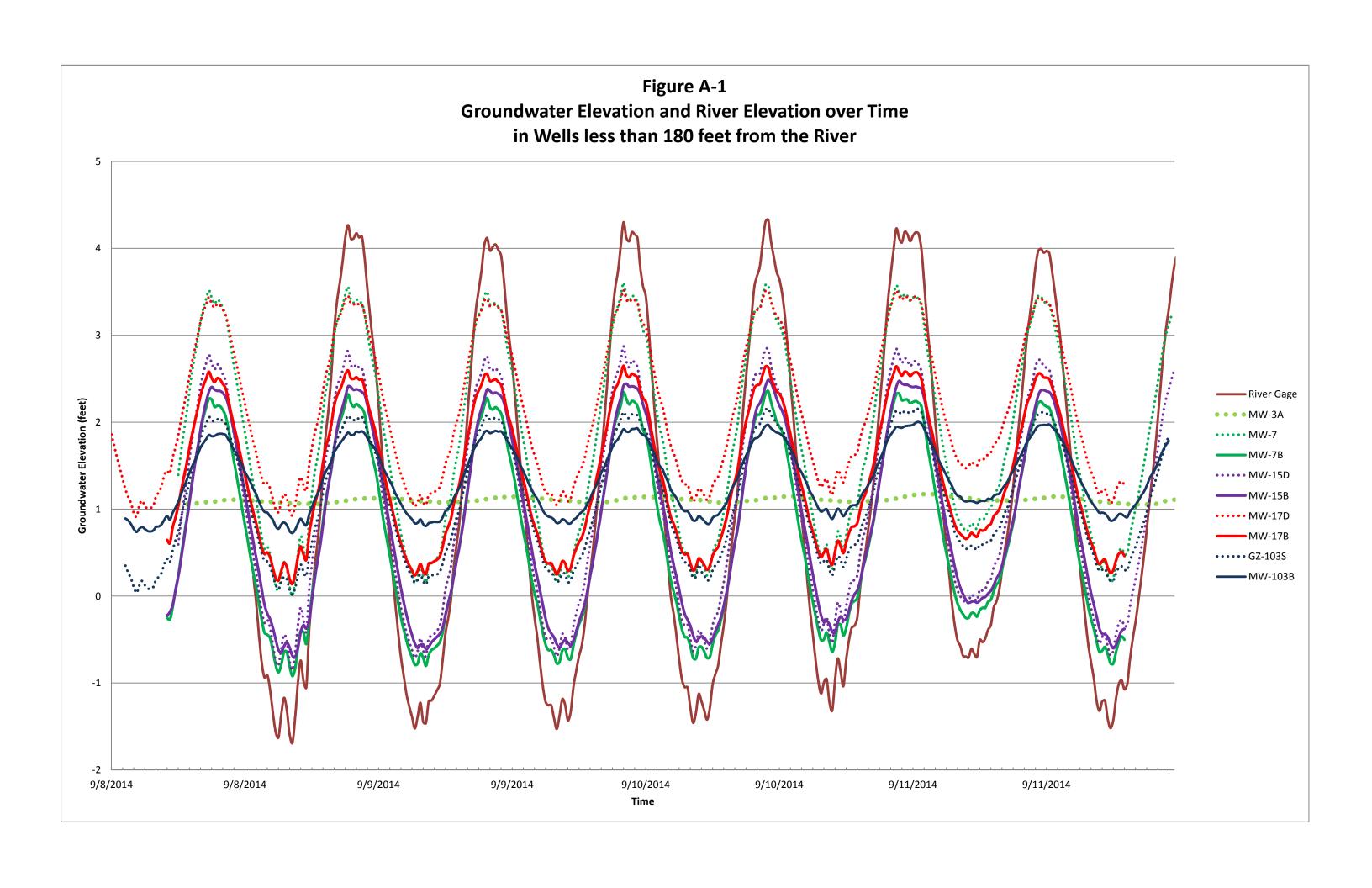


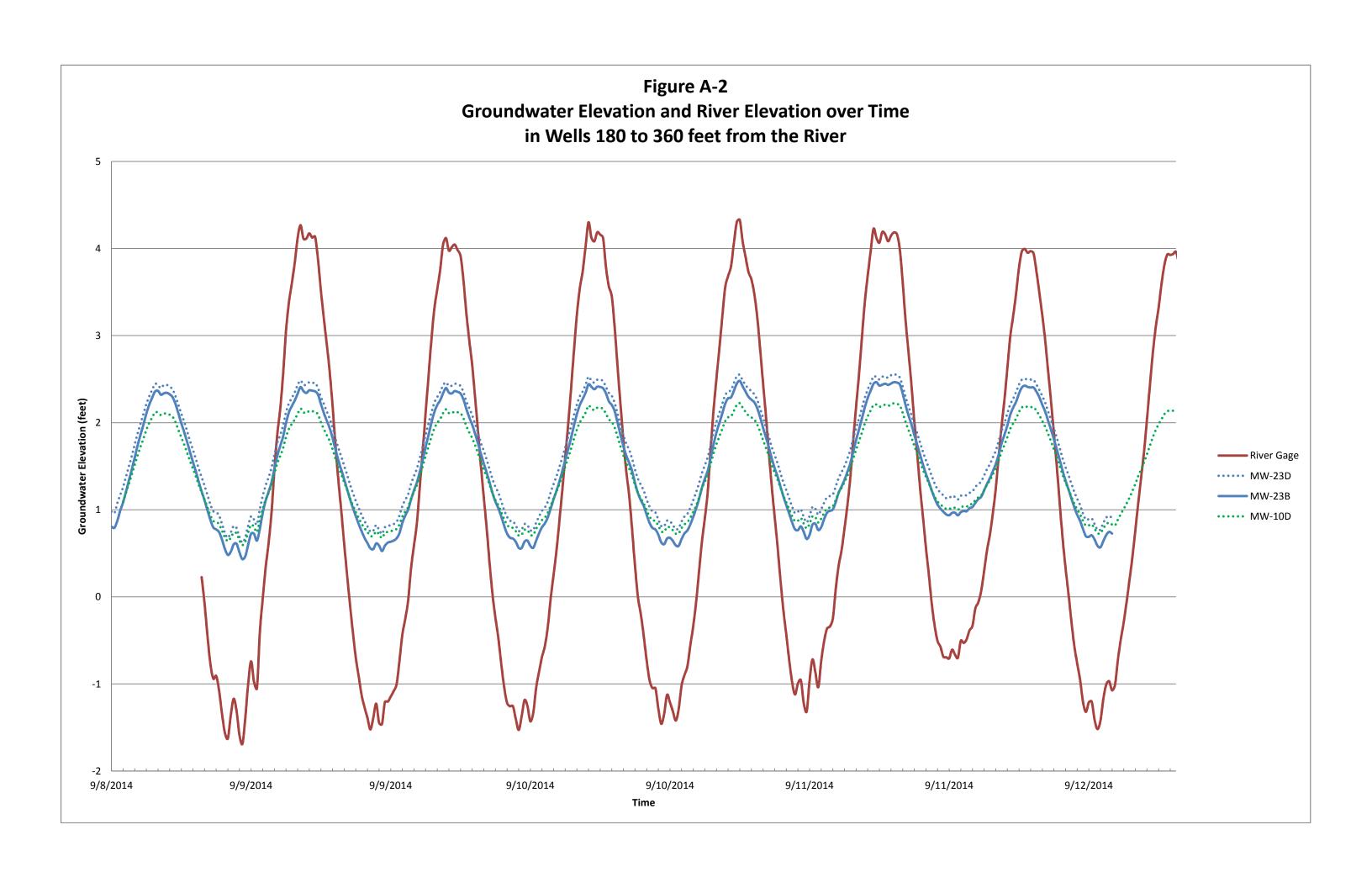




#### **APPENDIX A**

**Groundwater Elevation Hydrographs** 





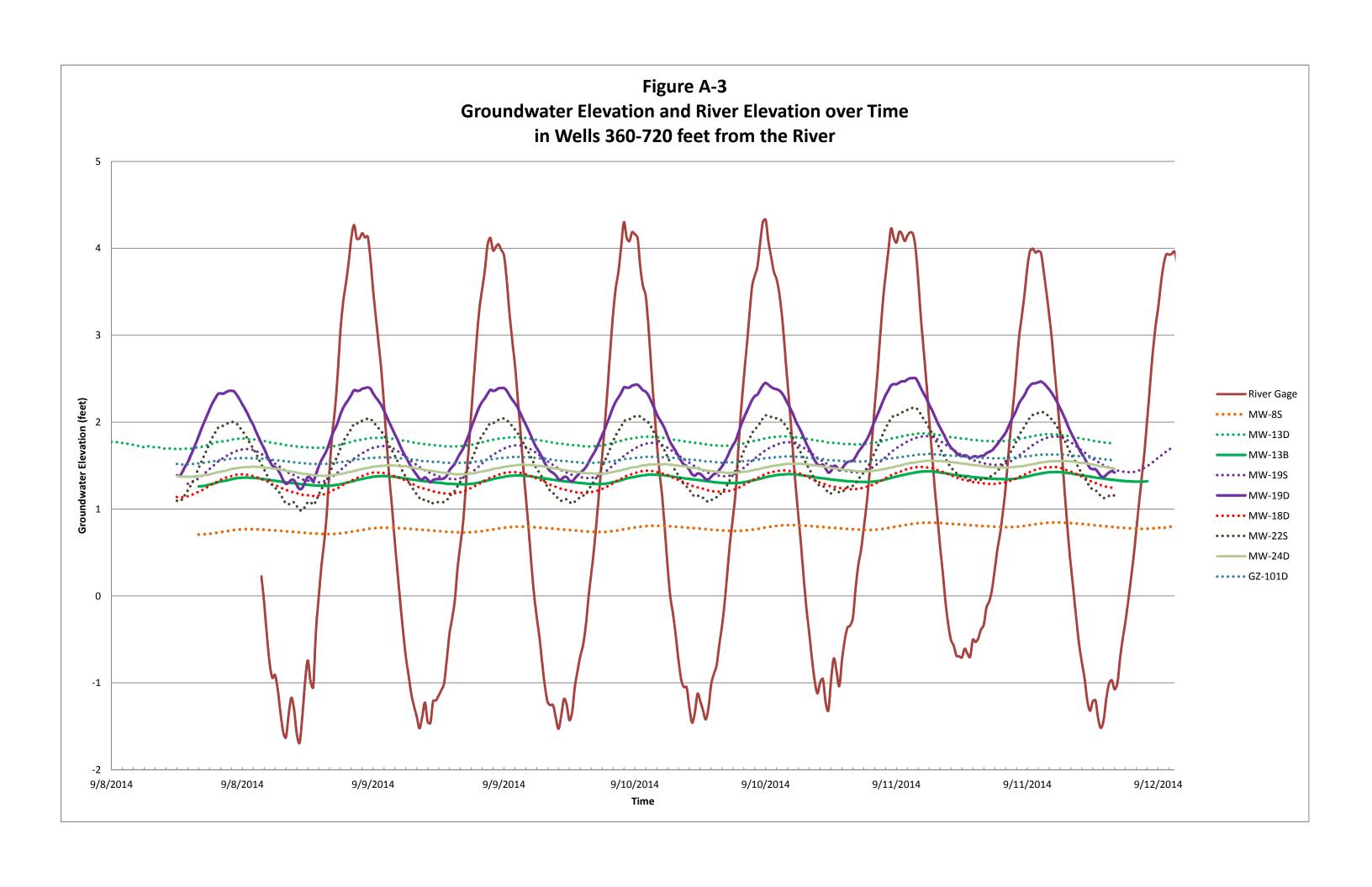


Figure A-4 **Groundwater Elevation and River Elevation over Time** in Wells over 720 feet from the River 5.00 4.00 Groundwater Elevation (feet)
00.1 River Gage •••• MW-20D ••••• MW-21D **MW-21B** 0.00 -1.00 9/8/2014 11:45 9/8/2014 23:45 9/9/2014 23:45 9/10/2014 11:45 9/10/2014 23:45 9/9/2014 11:45 9/11/2014 11:45 9/11/2014 23:45 Time

Appendix I.
Flute Profile and
Packer Groundwater
Analytical Data

Results of FLUTe pro	ofiling for hole		
no. MW-26for	URS - Chris Beza		
Water Table depth	5.45 ft BGS		
Hole depth	88 ft BGS		
liner length	90 ft BGS		
casing depth	38 ft BGS		
hole diameter	3.78 inches		
liner diameter	4 inches		
date of measurement	7/29/2014	87.5717 ft	
The profile was measured to The flow rate per unit driving			gal/min/ft
The transmissivity for the re	-	0.0329664 cm sq./sec	
The average conductivity for		0.42833 ft of the hole is	2.53E-03 cm/sec
Comments:			
Contact for question carl Keller Phone: 505-455-	ns about data or reduction		

Note: the flow rate curve is the liner velocity multiplied by the borehole cross section

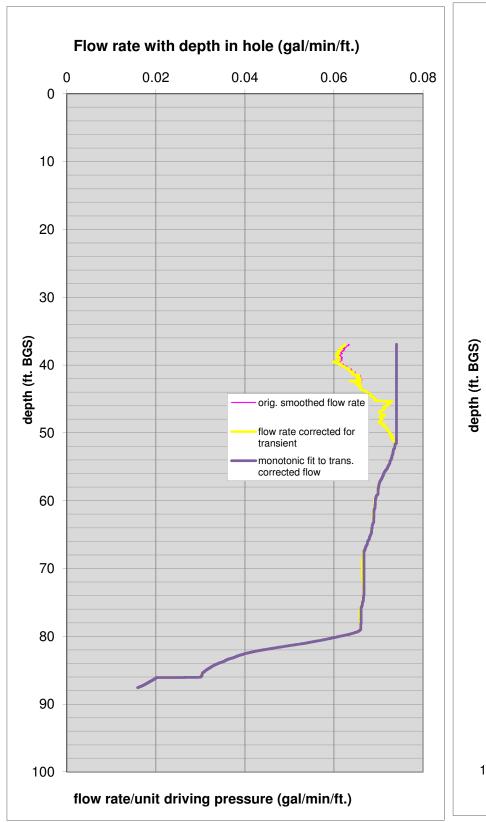
A drop in flow rate is usually associated with loss into the hole wall.

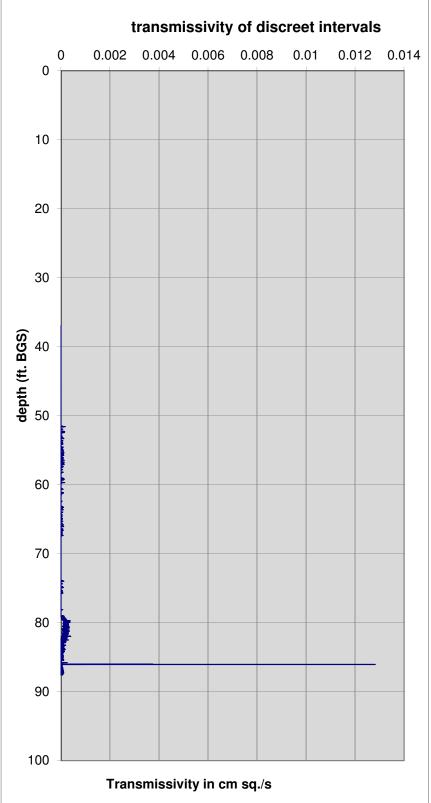
The magnitude of the drop in velocity is a direct measure of the loss into the hole wall.

The agreement between the black monotonic fit and the yellow smoothed flow/velocity curve of the first graph is an indication of the data reliability.

The transmissivity curve of the second graph is calculated from the monotonic flow rate curve.

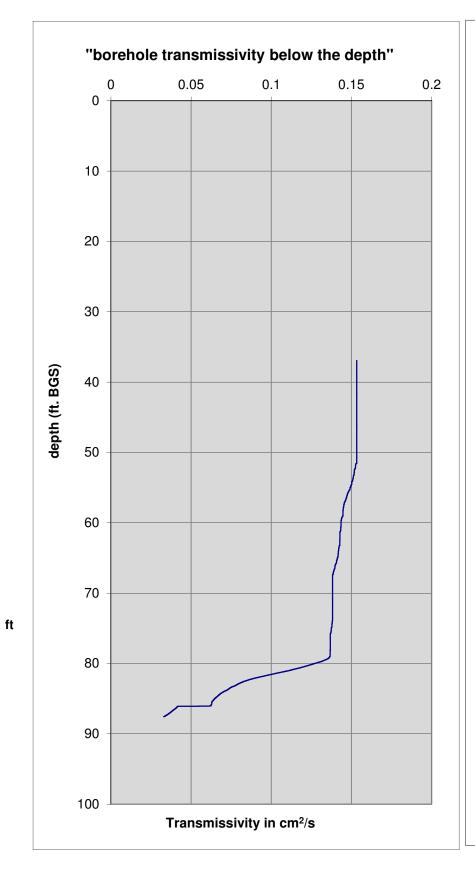
#### Monotonic curve (black over yellow) is corrected for the transient

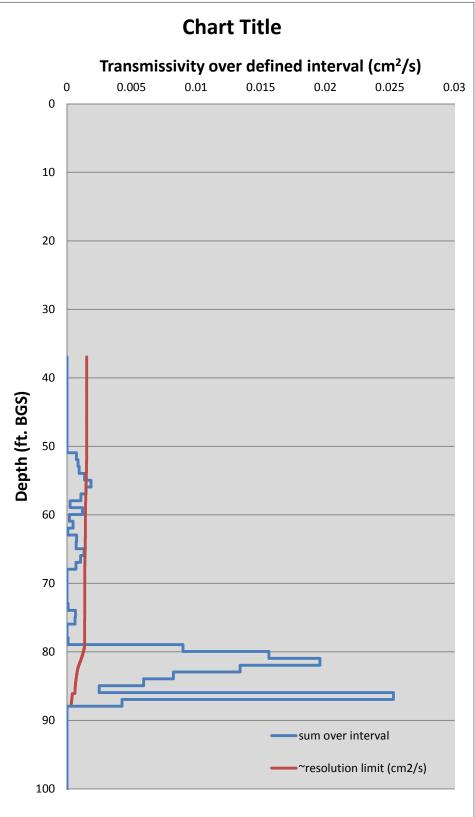


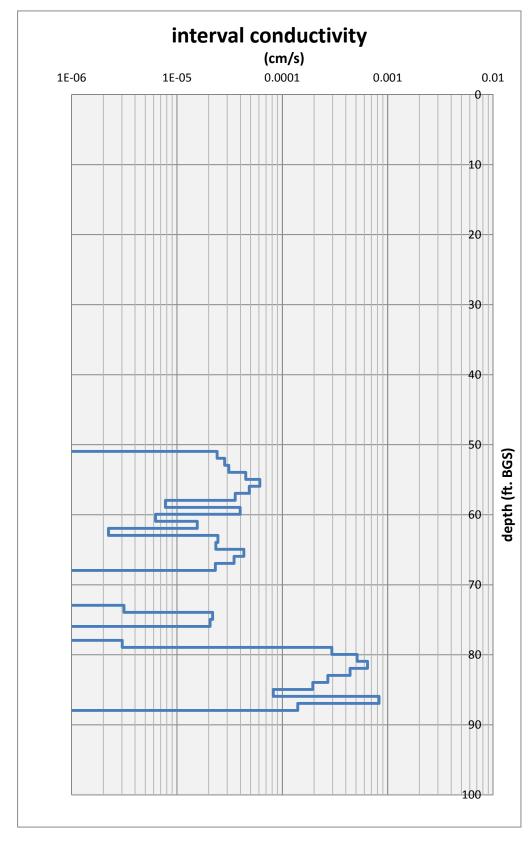


To the right of this sheet are plots of the results in different forms. The transmissivity plot shows the total transmissivity below each depth. The interval transmissivity plot integrates the above transmissivity profile with variable resolution over a constant set of intervals (much like a straddle packer result). The conductivity plot is the conductivity calculated from each interval of the constant interval plot.

The flow rate plot and constant interval plot are the easiest visualization of the conductivity distribution in the hole.







P. O. Box 340, Alcalde, NM 87511

# FLUTe Fluid Transmissivity Profile Method and Results Description

#### SUMMARY OF THE FLUTE TRANSMISSIVITY PROFILE METHOD

A simple cost effective method has been developed for rapidly mapping hydraulically transmissive features in open boreholes in bedrock\*. A flexible borehole liner made of a water-tight, nylon fabric, is filled with water to create a constant driving head to evert (reverse of invert) the liner down the hole so that the liner pushes the borehole water out into transmissive fractures or other permeable features. The descent rate is governed by the bulk transmissivity of the remaining permeable features below the liner. Initially, the liner descent-rate or velocity is a measure of transmissivity (T) of the entire hole. As the everting liner passes and seals each permeable feature, changes in the liner velocity indicate the position of each feature and an estimate of T using the Thiem equation for steady radial flow. This method has been performed in boreholes with diameters from 75 mm to 330 mm. Profiling commonly takes a few hours in holes 200-300 m long. After arrival of the liner near the bottom of the hole, the liner acts as a seal preventing borehole cross connection between transmissive features at different depths. Liner removal allows the hole to be used for other purposes. T values determined using this method in were found to be similar to values from injection tests using conventional straddle packers. The primary advantage of the method is the relatively short time required to obtain an exceptionally detailed map of the transmissive feature locations and flow characteristics regardless of depth of the borehole.

\*FLUTe has patents on this method: US Pat. no. 6910374, 7,281,422, plus foreign patents.

#### FRAMEWORK FOR CALCULATION OF TRANSMISSIVITY

The everting borehole liner is installed in the borehole as described in the FLUTe website, <a href="https://www.flut.com">www.flut.com</a>. The transmissivity measurement geometry is shown in Fig. 1. The calculational geometry is shown in Fig. 2.

The Thiem method for radial steady flow is used to obtain T values from the profiling data for the

open borehole segment remaining below the liner as the flow paths are sealed from the top downward. As the liner is driven down the hole and the velocity decreases as each permeable feature is sealed off, ideally, the flow rate into each fracture below the eversion point is nearly constant such that the flow regime in all fractures receiving water is at quasi-steady state at and near the borehole wall. The parameters used in the application of the Thiem equation for T calculation are indicated in Figure 7. The flow out of the

Water Addition Notes Liner on reel (inside out)

Liner head measurement

Surface casing

Fractures

2
3

Optional

transducer

Original water

in hole pushed

into formation

Fig. 1. Geometry of the measurement

borehole interval sealed by the liner in one time step is assumed to be steady-state Darcian radial flow represented by  $\Delta Q$ . The steady-state radial condition represented in cylindrical coordinates is assumed to begin once the liner descends below the aforementioned transient interval early in the profiling. Therefore, there has been substantial time available for a steady state flow to be achieved. This use of the Thiem equation presented here has general similarities to its use for calculating T values from constant-head packer test results in fractured rock holes. For both liner profiling and packer testing applications the Thiem equation is expressed as:

$$T = \frac{\Delta Q}{2\pi\Delta H_{H-P}} \ln\left(\frac{r_0}{r_w}\right)$$
 Equation 1

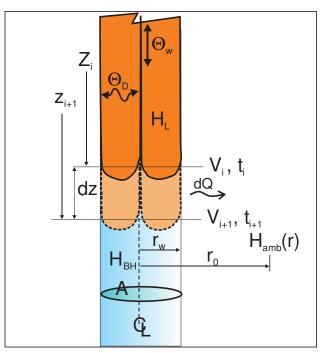
Where  $\Delta Q$  [L<sup>3</sup>t<sup>-1</sup>] is the flow rate reduction due to sealing an interval of the borehole, T [L<sup>2</sup>t<sup>-1</sup>] is the transmissivity of the portion of the borehole measured (K $\Delta$ z),  $\Delta H_{H-P}$  [L] is the applied head difference in the borehole above the open-hole blended head,  $r_0$  [L] is the radius of influence of the test, and  $r_w$  [L] is the radius of the borehole.

As with all single well tests, the  $r_0$  cannot be measured and therefore an assumed value is used. In packer testing literature for fractured rock, assumptions of  $r_0$  ranging from 10 to 60 m have been

justified (e.g. Maini, 1971; Haimson and Doe, 1983; Bliss and Rushton, 1984). However, because the T may vary over several orders of magnitude, the uncertainty caused by the  $r_0$  value selection is small since it is contained in the natural log term.

This method of using the FLUTe liner as a piston to obtain velocity profiles is referred to as a transmissivity (T) profiling method rather than a hydraulic conductivity (K) profiling method because conversion from T to K requires exact knowledge of the vertical interval across which the flow has occurred.

Fig. 2, terminology of the calculation of T



The interval of measurement depends on the measurement recording frequency. Because the velocity decreases as profiling proceeds, the interval of measurement decreases with depth. Therefore, because the velocity is measured and time intervals are known, which provide the interval for each T calculation, K can be calculated as an average for each interval.

#### **ESTIMATION OF HEAD BELOW THE LINER**

For avoidance of transducer use, borehole pressure beneath the liner is estimated using an empirical equation derived from lab tests of liner tension versus driving pressure during liner eversion and inversion:

$$H_{H-P} = \Delta H_L - H_{MIN} - \frac{2(\Theta_w + \Theta_D)}{A}$$
 Equation 2

where  $\Delta H_L$  is the driving head in the liner,  $H_{MIN}$  is the minimum head needed to evert the liner against the resistance due to the fabric stiffness,  $\Theta_w$  is the recorded tension on the liner at the well head,  $\Theta_D$  is the total drag force on the liner within the borehole (friction), and A is the borehole cross sectional area. The factor 2 is an empirical coefficient determined from many eversion tests in a laboratory apparatus using different liner materials. The tension at the wellhead  $(\Theta_w)$  and the head inside the liner (H<sub>L</sub>) are precisely measured in the field while profiling using load cells selected for the desired load range and a pressure transducer mounted in the profiler, respectively. The total drag on the liner  $(\Theta_0)$  is not measured, but is intentionally reduced to as near zero as possible. The drag term becomes important when the water table is very deep or when profiling a borehole with extremely high transmissivity. For profiling in boreholes with deep water tables, the use of a tremie hose inside the liner to introduce the water at the water table depth without wetting the inverted liner helps to minimize the drag. In extremely high permeability boreholes, the driving head in the liner ( $\Delta H_L$ ) is kept as large as possible to reduce the significance of drag on the liner. Uncertainties in  $\Theta_w$ ,  $\Theta_D$ , and the "factor 2" are only significant to  $\Delta H_{H-P}$ , and therefore T, to the extent that the uncertainties are large relative to  $\Delta H_l$ . For that reason, it is important that  $\Delta H_l$  be relatively large, but not so large as to rupture the liner. It is also important that the head in the hole beneath the descending liner,  $H_{H-P}$  in Figure 7, exceed the head everywhere in the formation so that all flows are out of the borehole and that there is no cross flow occurring in the borehole between transmissive intervals. Significant inflow is easily recognized in that it causes an increase in the velocity, violating the expectation of a monotonically decreasing liner velocity. Comparison of the calculated head from surface measured parameters with the directly measured head beneath the liner generally shows excellent agreement as indicated by the example shown in Figure 8, which is typical for the many holes where this comparison has been made.

The velocity per unit driving pressure  $(v_i/\Delta H_{H-P})$  for each time step is plotted versus depth to create a velocity profile of the borehole. Because the depth increments for each time step vary with the liner velocity, the hydraulic conductivity obtained from the transmissivity calculation has variable depth resolution. The largest intervals  $(\Delta z_i)$  are located at the top of the borehole where the velocity is highest. Changes in the velocity per unit driving pressure are then calculated throughout

the borehole and multiplied by the borehole cross-sectional area to obtain  $\Delta Q/\Delta H_{H-P}$  for use in the Thiem equation.

#### **DEPTH LIMITATION OF THE TRANSMISSIVITY PROFILE**

Since the descending liner's displacing the borehole water into the formation as an essential feature of the measurement method, this method is not useful in the vadose zone or in those boreholes with little or no transmissivity. Most borehole have some transmissivity, but as the liner descends sealing the flow zones, it is not uncommon to have the liner descent rate decrease until the liner is moving so slowly that one cannot expect, in a reasonable time, to measure any deeper flow paths. That descent rate is typically when the liner is moving at 0.001ft/sec or less. At that rate, (~0.75"/min.) the actual transmissivity beneath the liner is calculated from the last velocity measurement. The transmissivity is of the order of 0.01 cm²/s. At that time, the liner is anchored to prevent further descent. Another reason for limiting the liner descent below a certain velocity is that the liner removal time is proportional to the installation time. Therefore, if the liner is to continue at a velocity below 0.001 ft/s, the removal can be very long. If the liner is allowed to descend into the borehole without tension on the liner, the liner can pass the deepest flow zone and it may require several days to remove the liner by inversion.

#### TRANSIENT CORRECTION

When the liner is initially released, it applies a step increase to the pressure in the borehole. That abrupt change causes a relatively high initial flow into the wall of the borehole. After a brief interval, that velocity decays to the nominal steady state flow rate. After that time, the liner is sealing the flow zones which are flowing at approximately the steady state rate and the assumptions of the Thiem equation are satisfied. A first order correction of the transient flow can be done by using the lower transmissivity measured in the borehole to calculate a 1-D flow into the hole wall. That flow rate is used to estimate the difference with time between the steady state flow and the transient flow. The estimated transient increment is subtracted from the measured flow out of the borehole. The lower the transmissivity of the borehole, the longer in time that

transient effect exists. In general, that is 10-15 ft of the initial measurement. When the transient is removed as described, one may see the step changes in the velocity profile which are valid flow zones. The data plot provided shows the transient corrected liner descent rate as a pink curve. The borehole transmissivity is calculated from the corrected data set. If the transient correction is overestimated, the velocity of the liner will be seen to increase as it propagates down the borehole. This provides a realistic constraint on the correction.

The results on the spread sheet provided includes graphs of the liner velocity, the transmissivity of each interval, recognizing that the interval of measurement is decreasing with depth, and the integrated transmissivity from the bottom of the hole to the top. The digital data are in each of the spread sheet columns and easily copied into a geophysical logging plot program. The transmissivity in any interval is the difference in the integrated curve values between specific depths. For an easier comparison to packer test methods, the transmissivity measurement values over each specific interval are summed over a discrete constant interval (e.g., 1 ft). The interval in the spread sheet can be changed if desired. For such a short interval as 1 ft, the flow of a high angle fracture may be distributed over several adjacent intervals. There is also some spreading of a flow zone due to smoothing used in the data management. The result the integration over an interval is the effective transmissivity that would be measured with a straddle packer, with no leakage over that interval. Most packer tests suffer some leakage, but the liner cannot be bypassed to an open hole.

For more information, on the transmissivity profiling technique, see our website, <a href="www.flut.com">www.flut.com</a>, with journal articles and conference presentations on the comparisons and the details of the method.

For questions about transmissivity method or explicit measurements, contact FLUTe.

# Chlorinated Ethene and PCB Analytical Summary for Packer Groundwater Screening Samples Aerovox Facility

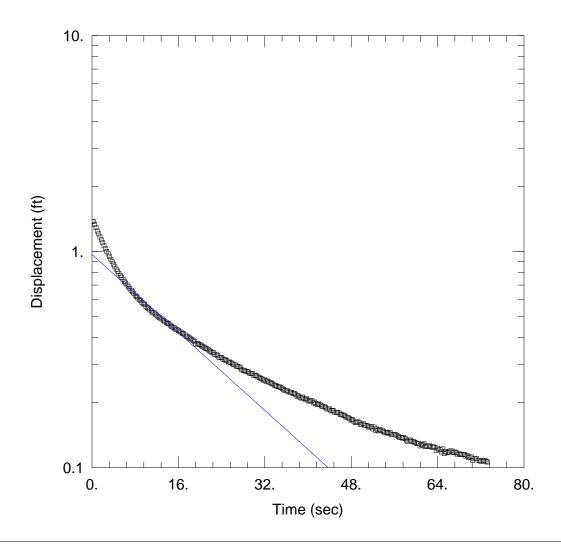
# 740 Belleville Avenue, New Bedford, MA

Davids DOO	PID Headspace	TCE	cis,1,2-DCE	VC ((l)	PCBs
Depth BGS	(ppmv)	(ug/l)	(ug/L)	(ug/l)	(ug/l)
MW-32B					
65-85	NT	19	3	<1.0	NT NT
85-105	NA	Not enou	Not enough water volume to sample		
105-125	6	24	32	<1.0	NT
125-145	1,950	110,000	1,300	<200	3
145-165	800	54,000	590	<200	NT
145-165	200	10,000	170	<100	< 0.500
165-185	825	34,000	440	<200	4
MW-33B					
32-52	99	9,800	1,800	160	NT
52-72	186	26,000	2,700	<250	NT
72-92	710	63,000	3,600	<500	10.6
92-112	658	34,000	2,500	<250	NT
112-132	668	40,000	2,700	<250	NT
132-152	1,100	41,000	28,000	<400	NT
152-172	300	7,500	610	<100	NT
172-192	400	15,000	730	<100	NT
192-212	585	28,000	1,800	<250	NT
212-232	1,050	41,000	2,400	<500	NT
232-252	400	22,000	1,600	<200	NT
252-272	400	18,000	1,200	<200	NT
272-292	880	47,000	2,400	<500	3.64
MW-34B					
38.5-58	87	3,200	200	<25	NT
58-78	1,650	60,000	2,700	<500	NT
78-98	1,450	56,000	2,400	<500	NT
98-118	3,200	110,000	5,000	<1,000	NT
118-138	3,800	140,000	7,200	<1,000	NT
138-158	3,500	140,000	5,400	<1,000	NT
158-178	4,800	470,000	7,300	<1,000	0.64
178-198	4,580	320,000	8,200	<1,000	ND (<0.250)

Appendix J.

Low Flow Sampling
Data Sheets
(included on CD
only)

Appendix K.
Slug Test Analysis



#### MW-4S TEST RH1

Data Set: C:\...\MW04S Test RH1.aqt

Date: <u>10/06/14</u> Time: <u>19:45:23</u>

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-4S Test Date: 8/19/2014

**AQUIFER DATA** 

Saturated Thickness: 7.34 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-4S)

Initial Displacement: 1.379 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

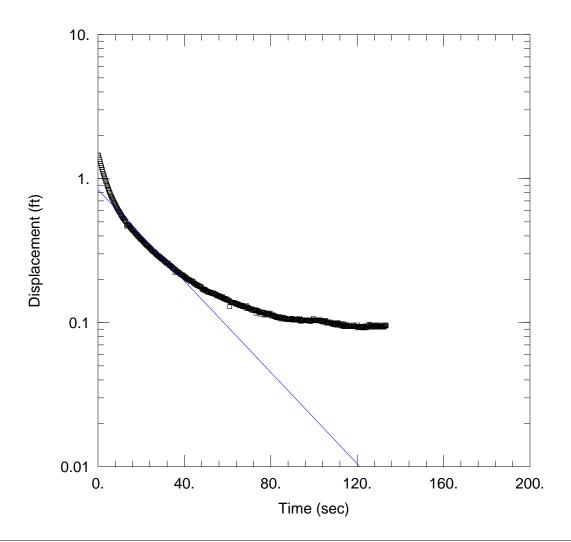
Static Water Column Height: 7.34 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.002966 cm/sec y0 = 0.9691 ft



#### MW-4S TEST RH2

Data Set: C:\...\MW04S Test RH2.aqt

Date: <u>10/06/14</u> Time: <u>19:45:43</u>

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-4S Test Date: 8/19/2014

#### **AQUIFER DATA**

Saturated Thickness: 7.34 ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-4S)

Initial Displacement: 1.455 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

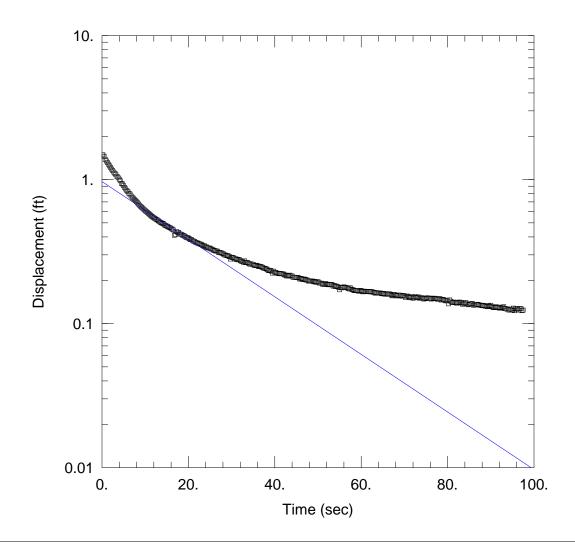
Static Water Column Height: 7.34 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.002412 cm/sec y0 = 0.8382 ft



#### MW-4S TEST RH3

Data Set: C:\...\MW04S Test RH3.aqt

Date: <u>10/06/14</u> Time: <u>19:45:58</u>

# PROJECT INFORMATION

Company: AVX
Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-4S Test Date: 8/19/2014

#### **AQUIFER DATA**

Saturated Thickness: 7.34 ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-4S)

Initial Displacement: 1.484 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

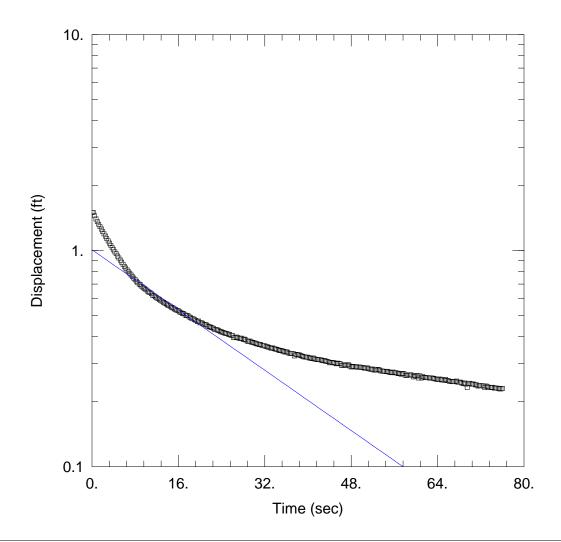
Static Water Column Height: 7.34 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.002632 cm/sec y0 = 0.9685 ft



#### MW-13D TEST RH1

Data Set: C:\...\MW13D Test RH1.aqt

Date: 10/06/14 Time: 19:50:32

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-13D Test Date: 8/18/2014

**AQUIFER DATA** 

Saturated Thickness: 7.34 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-13D)

Initial Displacement: 1.501 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

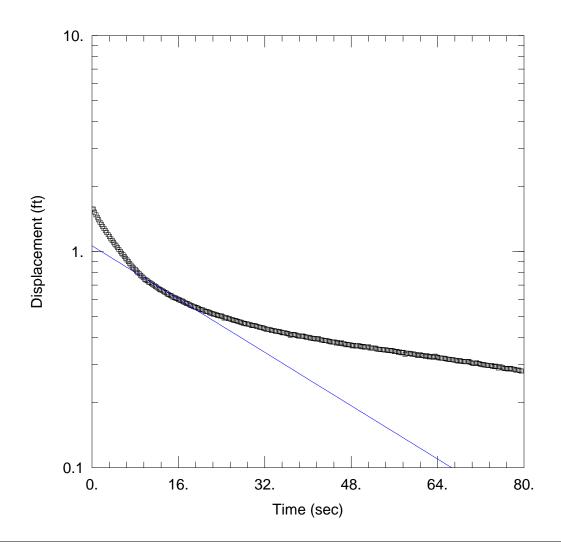
Static Water Column Height: 7.73 ft

Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.002202 cm/sec y0 = 1.008 ft



#### MW-13D TEST RH2

Data Set: C:\...\MW13D Test RH2.aqt

Date: <u>10/06/14</u> Time: <u>19:53:30</u>

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-13D Test Date: 8/18/2014

#### **AQUIFER DATA**

Saturated Thickness: 7.34 ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-13D)

Initial Displacement: 1.573 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

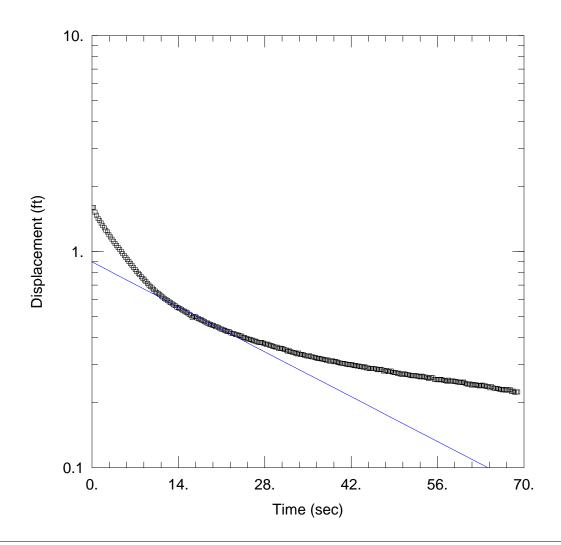
Static Water Column Height: 7.73 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001847 cm/sec y0 = 1.063 ft



#### MW-13D TEST RH3

Data Set: C:\...\MW13D Test RH3.aqt

Date: 10/06/14 Time: 19:54:14

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-13D Test Date: 8/18/2014

#### **AQUIFER DATA**

Saturated Thickness: 7.34 ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-13D)

Initial Displacement: 1.602 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

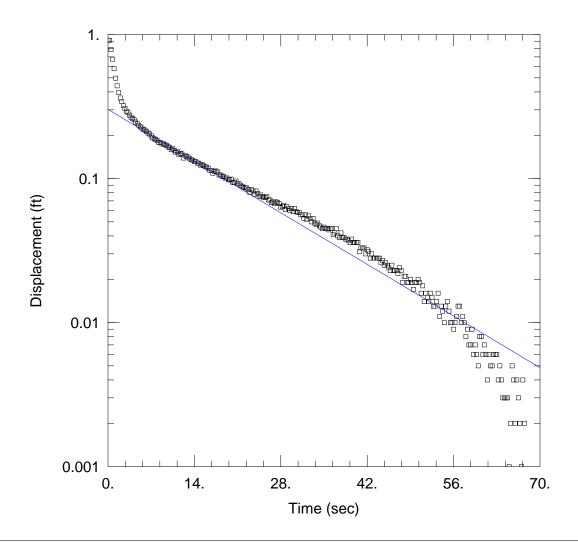
Static Water Column Height: 7.73 ft

Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.002114 cm/sec y0 = 0.8953 ft



#### MW-16S TEST RH1

Data Set: C:\...\MW16S Test RH1.aqt

Date: 10/06/14 Time: 19:55:42

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-16S
Test Date: 8/20/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-16S)

Initial Displacement: 0.913 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

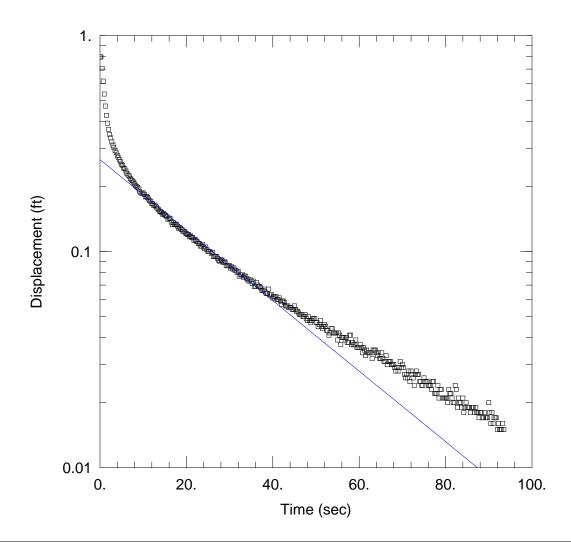
Static Water Column Height: 7.98 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.008128 cm/sec y0 = 0.3023 ft



#### MW-16S TEST RH2

Data Set: C:\...\MW16S Test RH2.aqt

Date: <u>10/06/14</u> Time: <u>19:56:01</u>

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-16S
Test Date: 8/20/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-16S)

Initial Displacement: 0.797 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

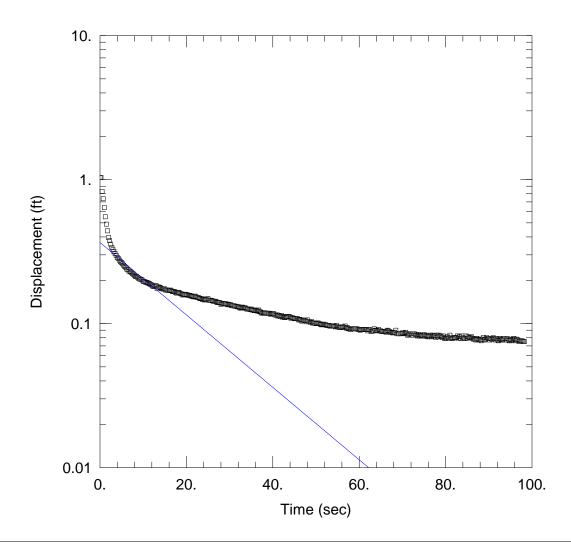
Static Water Column Height: 7.98 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.005875 cm/sec y0 = 0.2664 ft



#### MW-16S TEST RH3

Data Set: C:\...\MW16S Test RH3.aqt

Date: <u>10/06/14</u> Time: <u>19:57:06</u>

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-16S
Test Date: 8/20/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-16S)

Initial Displacement: 1.032 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

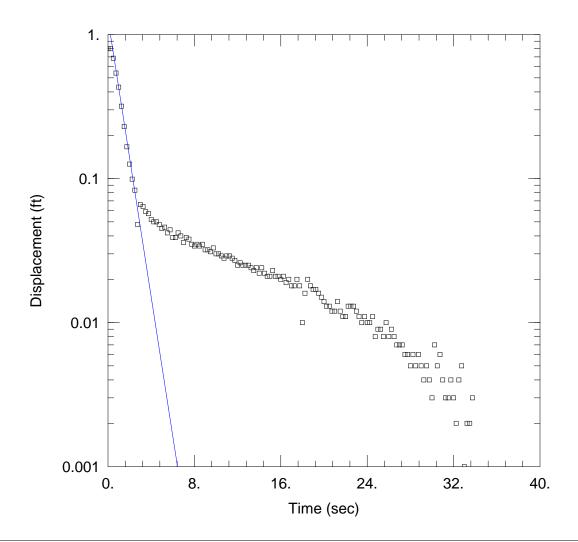
Static Water Column Height: 7.98 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.006597 cm/sec y0 = 0.3656 ft



#### MW-19S TEST RH1

Data Set: C:\...\MW19S Test RH1.aqt

Date: 10/06/14 Time: 19:58:45

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-19S Test Date: 8/20/2014

#### **AQUIFER DATA**

Saturated Thickness: 6.69 ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-19S)

Initial Displacement: 0.798 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

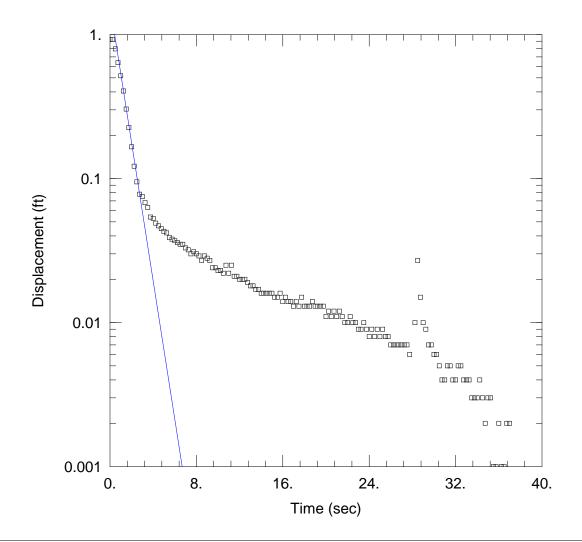
Static Water Column Height: 6.69 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.05185 cm/sec y0 = 1.292 ft



#### MW-19S TEST RH2

Data Set: C:\...\MW19S Test RH2.aqt

Date: 10/06/14 Time: 19:59:08

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-19S Test Date: 8/20/2014

**AQUIFER DATA** 

Saturated Thickness: 6.69 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-19S)

Initial Displacement: 0.928 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

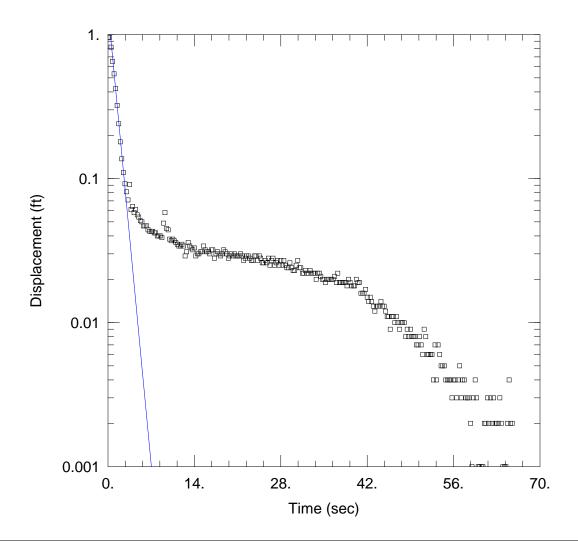
Static Water Column Height: 6.69 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.04116 cm/sec y0 = 1.616 ft



#### MW-19S TEST RH3

Data Set: C:\...\MW19S Test RH3.aqt

Date: 10/06/14 Time: 19:59:28

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-19S Test Date: 8/20/2014

#### **AQUIFER DATA**

Saturated Thickness: 6.69 ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-19S)

Initial Displacement: 0.955 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

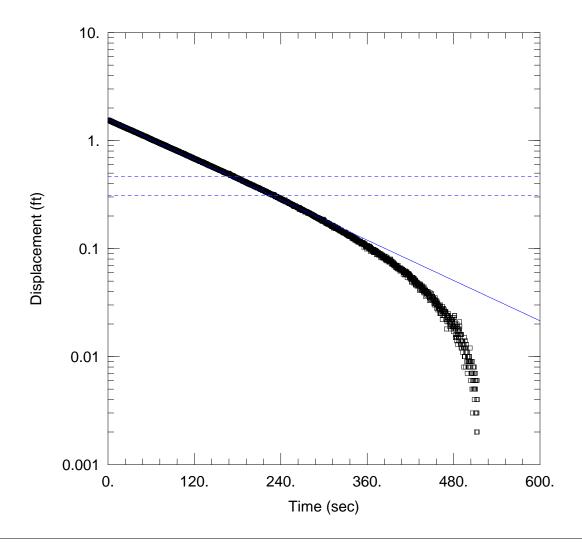
Static Water Column Height: 6.69 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.04136 cm/sec y0 = 1.516 ft



#### WELL TEST ANALYSIS

Data Set: C:\...\GZ-103D Test FH1.aqt

Date: 10/06/14 Time: 19:46:22

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: GZ103D Test Date: 8/21/2014

#### AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (GZ-103D)

Initial Displacement: 1.556 ft

Total Well Penetration Depth: 19.81 ft

Casing Radius: 0.083 ft

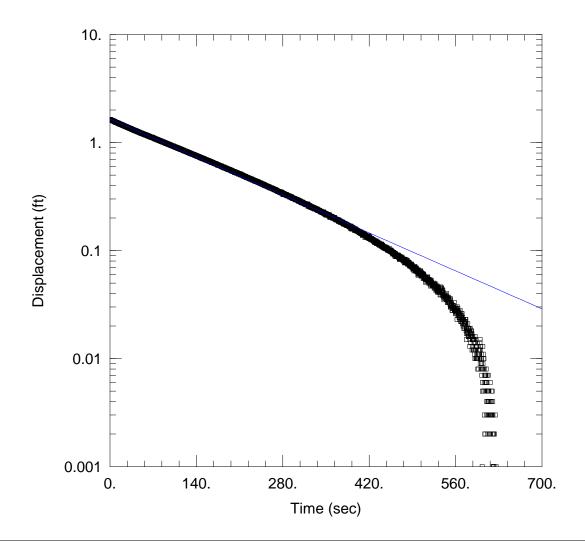
Static Water Column Height: 19.81 ft

Screen Length: 5. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.000452 cm/secy0 = 1.578 ft



#### GZ-103D TEST FH2

Data Set: C:\...\GZ-103D Test FH2.aqt

Date: 10/06/14 Time: 19:46:38

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: GZ103D Test Date: 8/21/2014

#### AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (GZ-103D)

Initial Displacement: 1.635 ft

Static Water Column Height: 19.81 ft

Total Well Penetration Depth: 19.81 ft Casing Radius: 0.083 ft

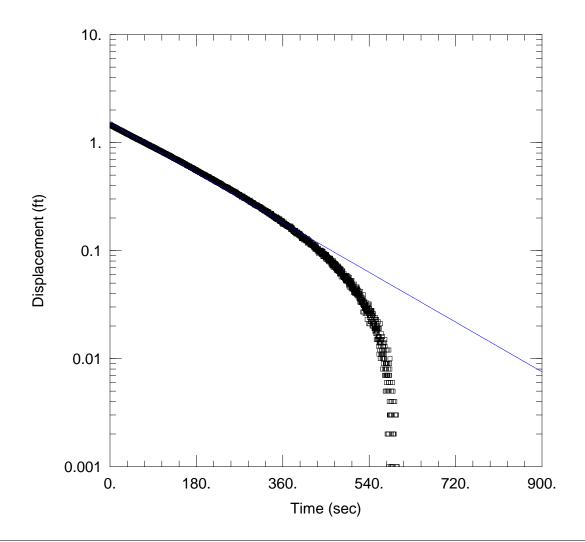
Screen Length: 5. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.0003132 cm/secy0 = 1.655 ft



#### GZ-103D TEST FH3

Data Set: C:\...\GZ-103D Test FH3.aqt

Date: 10/06/14 Time: 19:46:53

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: GZ103D Test Date: 8/21/2014

#### AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (GZ-103D)

Initial Displacement: 1.485 ft

Total Well Penetration Depth: 19.81 ft

Casing Radius: 0.083 ft

Static Water Column Height: 19.81 ft

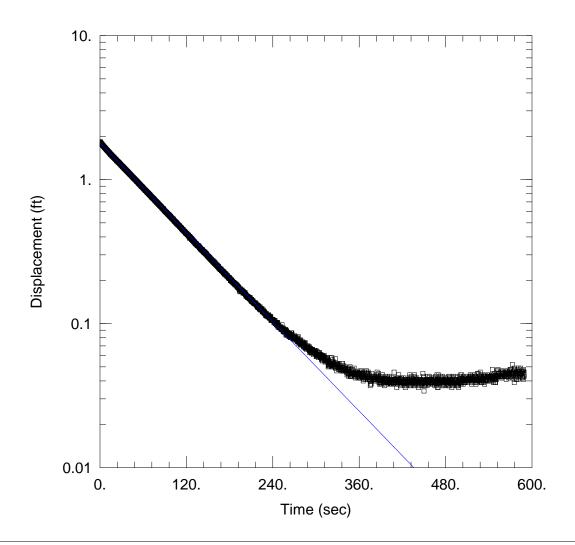
Screen Length: 5. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined

K = 0.0003514 cm/secy0 = 1.517 ft

Solution Method: Bouwer-Rice



#### GZ-103D TEST RH1

Data Set: C:\...\GZ-103D Test RH1.aqt

Date: 10/06/14 Time: 19:47:14

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: <u>GZ103D</u> Test Date: <u>8/21/2014</u>

#### **AQUIFER DATA**

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (GZ-103D)

Initial Displacement: 1.832 ft

Total Well Penetration Depth: 19.81 ft

Casing Radius: 0.083 ft

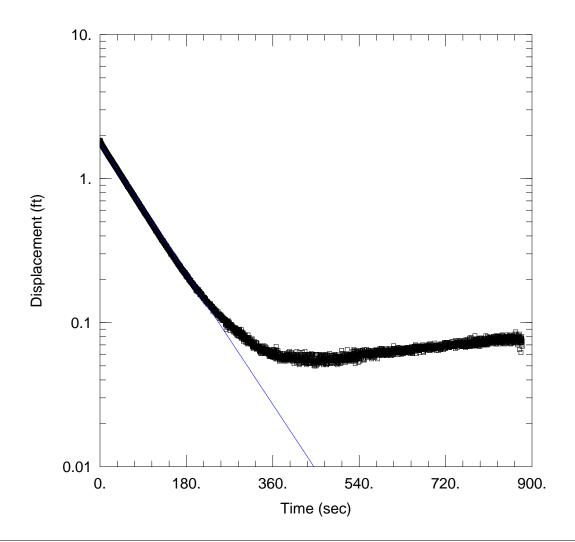
Static Water Column Height: 19.81 ft

Screen Length: <u>5.</u> ft Well Radius: <u>0.25</u> ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.0005753 cm/sec y0 = 1.793 ft



#### GZ-103D TEST RH2

Data Set: C:\...\GZ-103D Test RH2.aqt

Date: <u>10/06/14</u> Time: 19:47:30

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: <u>GZ103D</u> Test Date: <u>8/21/2014</u>

#### **AQUIFER DATA**

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (GZ-103D)

Initial Displacement: 1.844 ft

Total Well Penetration Depth: 19.81 ft

Casing Radius: 0.083 ft

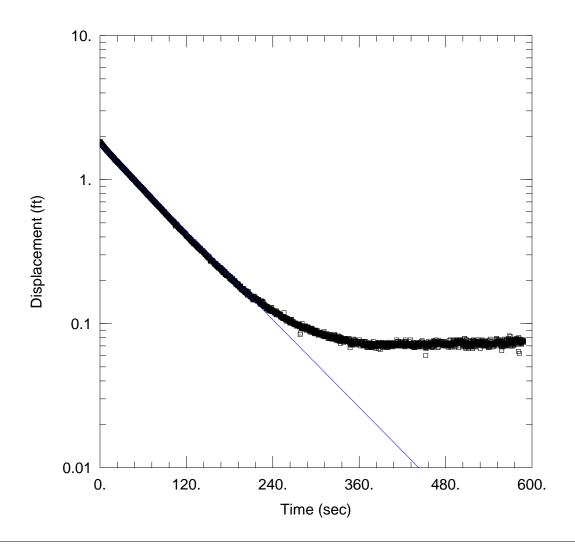
Static Water Column Height: 19.81 ft

Screen Length: <u>5.</u> ft Well Radius: <u>0.25</u> ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.0005572 cm/sec y0 = 1.762 ft



#### GZ-103D TEST RH3

Data Set: C:\...\GZ-103D Test RH3.aqt

Date: <u>10/06/14</u> Time: 19:47:46

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: <u>GZ103D</u> Test Date: <u>8/21/2014</u>

#### **AQUIFER DATA**

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (GZ-103D)

Initial Displacement: 1.834 ft

Total Well Penetration Depth: 19.81 ft

Casing Radius: 0.083 ft

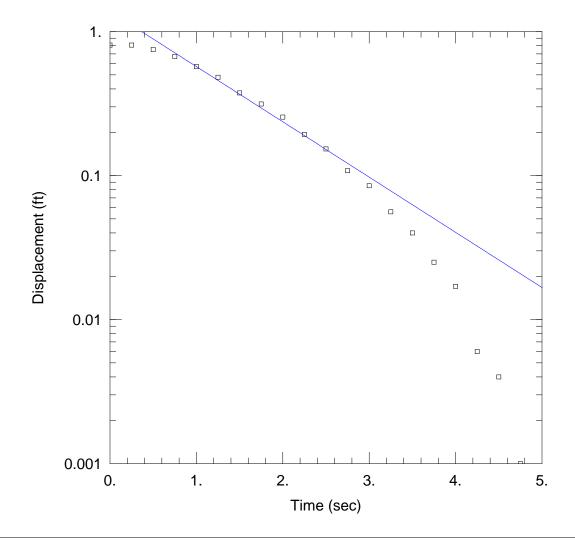
Static Water Column Height: 19.81 ft

Screen Length: <u>5.</u> ft Well Radius: <u>0.25</u> ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.0005636 cm/sec y0 = 1.754 ft



#### MW-6 TEST RH1

Data Set: C:\...\MW06 Test RH1.aqt

Date: 10/06/14 Time: 20:00:11

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-6
Test Date: 8/19/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-6)

Initial Displacement: 0.806 ft

Total Well Penetration Depth: 39. ft

Casing Radius: 0.083 ft

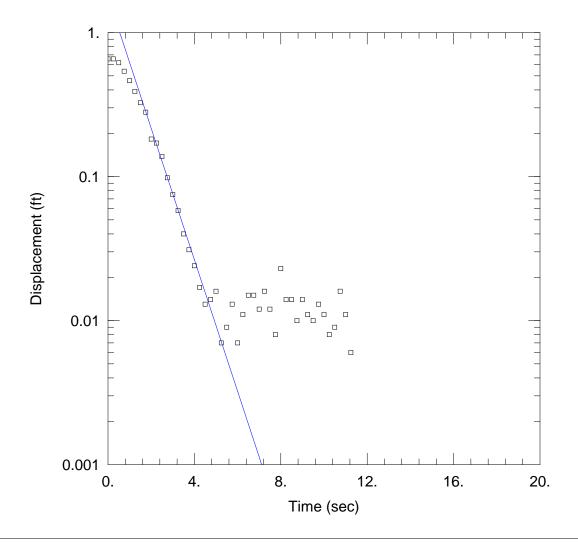
Static Water Column Height: 39. ft

Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.05893 cm/sec y0 = 1.381 ft



#### MW-6 TEST RH2

Data Set: C:\...\MW06 Test RH2.aqt

Date: 10/06/14 Time: 20:00:34

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-6 Test Date: 8/19/2014

#### AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-6)

Initial Displacement: 0.657 ft

Total Well Penetration Depth: 39. ft

Casing Radius: 0.083 ft

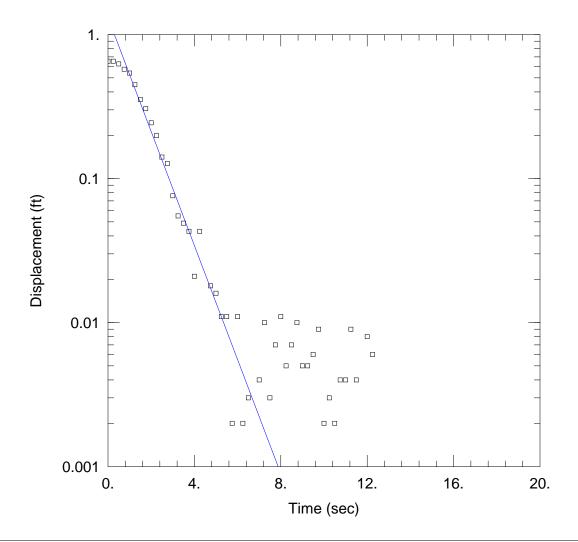
Static Water Column Height: 39. ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.08611 cm/secy0 = 1.773 ft



#### MW-6 TEST RH3

Data Set: C:\...\MW06 Test RH3.aqt

Date: 10/06/14 Time: 20:00:47

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-6 Test Date: 8/19/2014

#### AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-6)

Initial Displacement: 0.653 ft

Total Well Penetration Depth: 39. ft

Casing Radius: 0.083 ft

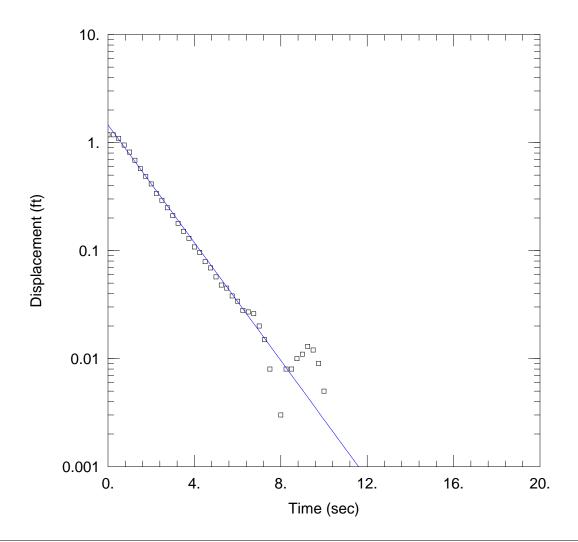
Static Water Column Height: 39. ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.07512 cm/secy0 = 1.312 ft



#### MW-17D TEST RH1

Data Set: C:\...\MW17D Test RH1.aqt

Date: 10/06/14 Time: 22:09:23

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-17D Test Date: 8/20/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-17D)

Initial Displacement: 1.18 ft

Total Well Penetration Depth: 29.26 ft

Casing Radius: 0.083 ft

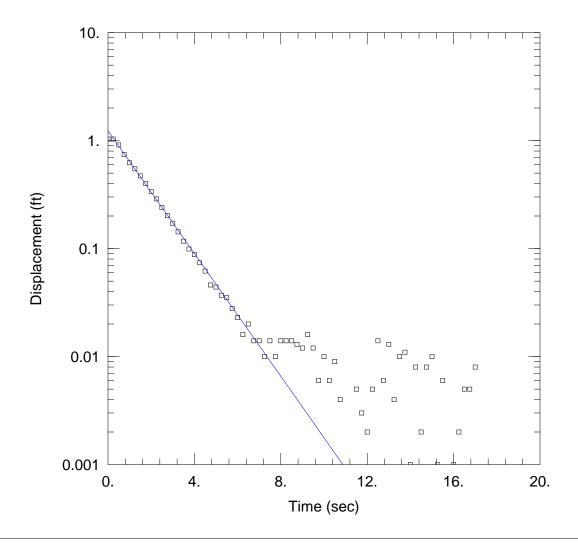
Static Water Column Height: 29.96 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.02733 cm/sec y0 = 1.459 ft



#### MW-17D TEST RH2

Data Set: C:\...\MW17D Test RH2.aqt

Date: 10/06/14 Time: 22:09:37

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-17D Test Date: 8/20/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-17D)

Initial Displacement: 1.034 ft

Total Well Penetration Depth: 29.26 ft

Casing Radius: 0.083 ft

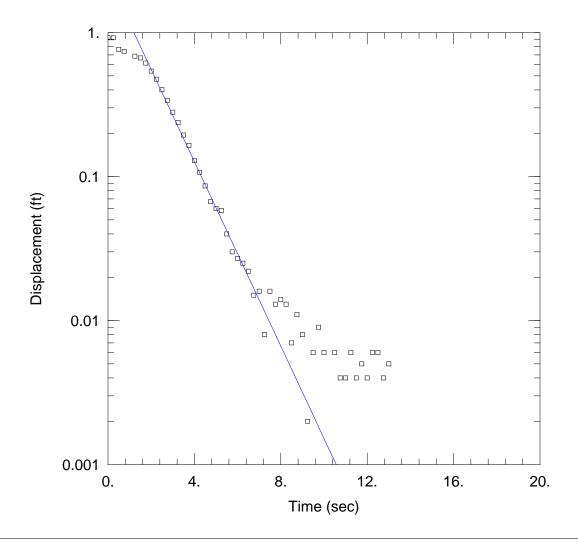
Static Water Column Height: 29.96 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.02728 cm/sec y0 = 1.232 ft



#### MW-17D TEST RH3

Data Set: C:\...\MW17D Test RH3.aqt

Date: 10/06/14 Time: 22:11:24

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-17D Test Date: 8/20/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-17D)

Initial Displacement: 0.921 ft

Total Well Penetration Depth: 29.26 ft

Casing Radius: 0.083 ft

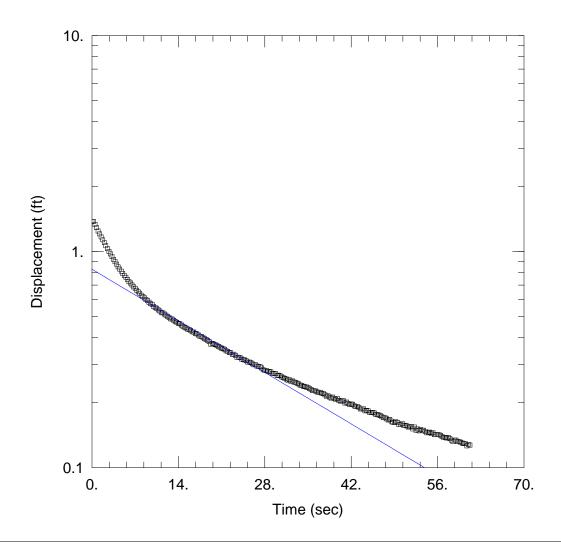
Static Water Column Height: 29.96 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.01562 cm/sec y0 = 2.424 ft



#### MW-19D TEST RH1

Data Set: C:\...\MW19D Test RH1.aqt

Date: 10/06/14 Time: 22:14:50

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-19D Test Date: 8/20/2014

**AQUIFER DATA** 

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-19D)

Initial Displacement: 1.379 ft

Total Well Penetration Depth: 18.52 ft

Casing Radius: 0.083 ft

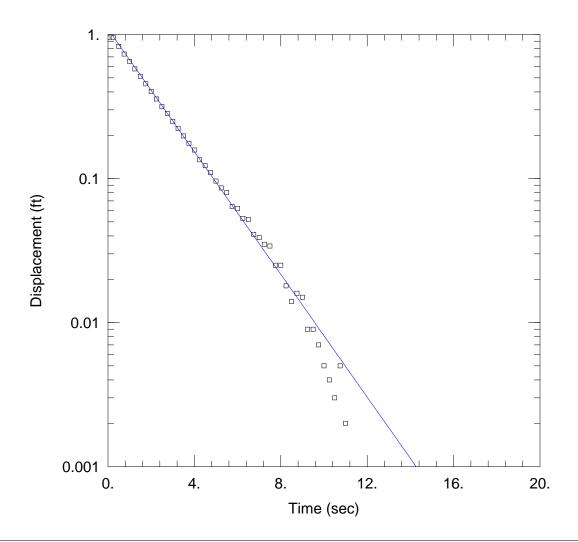
Static Water Column Height: 18.52 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001347 cm/sec y0 = 0.8281 ft



#### MW-21D TEST RH1

Data Set: C:\...\MW21D Test RH1.aqt

Date: 10/06/14 Time: 22:16:51

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-21D
Test Date: 8/19/2014

#### **AQUIFER DATA**

Saturated Thickness: 10.45 ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-21D)

Initial Displacement: 0.951 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

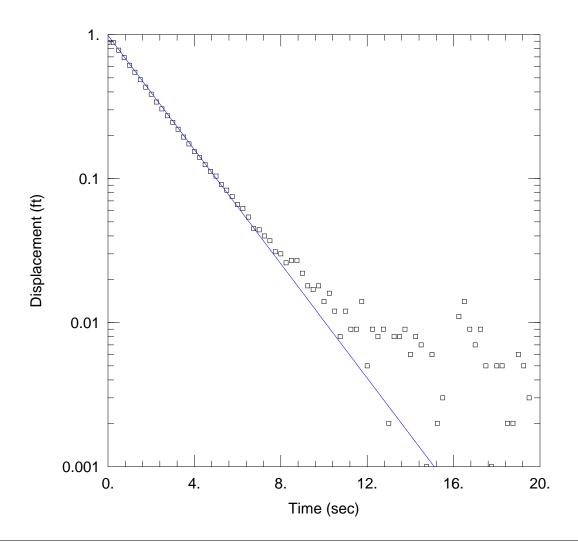
Static Water Column Height: 10.45 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.02042 cm/sec y0 = 1.09 ft



#### MW-21D TEST RH2

Data Set: C:\...\MW21D Test RH2.aqt

Date: 10/06/14 Time: 22:17:37

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-21D Test Date: 8/19/2014

#### **AQUIFER DATA**

Saturated Thickness: 10.45 ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-21D)

Initial Displacement: 0.883 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

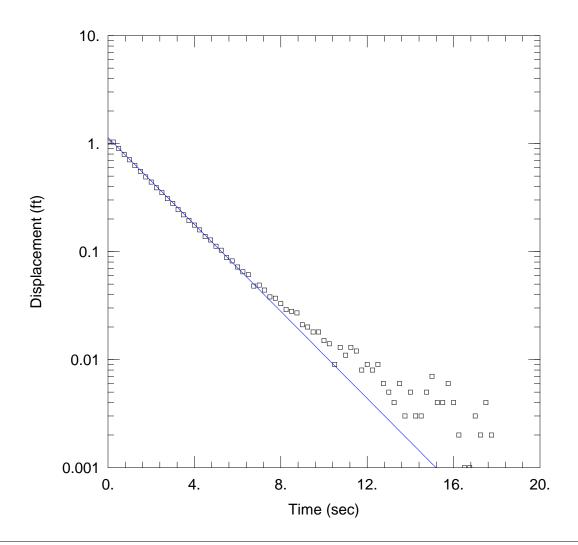
Static Water Column Height: 10.45 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.02048 cm/sec y0 = 0.9852 ft



#### MW-21D TEST RH3

Data Set: C:\...\MW21D Test RH3.aqt

Date: 10/06/14 Time: 22:18:04

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-21D Test Date: 8/19/2014

#### **AQUIFER DATA**

Saturated Thickness: 10.45 ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-21D)

Initial Displacement: 1.033 ft

Total Well Penetration Depth: 10. ft

Casing Radius: 0.083 ft

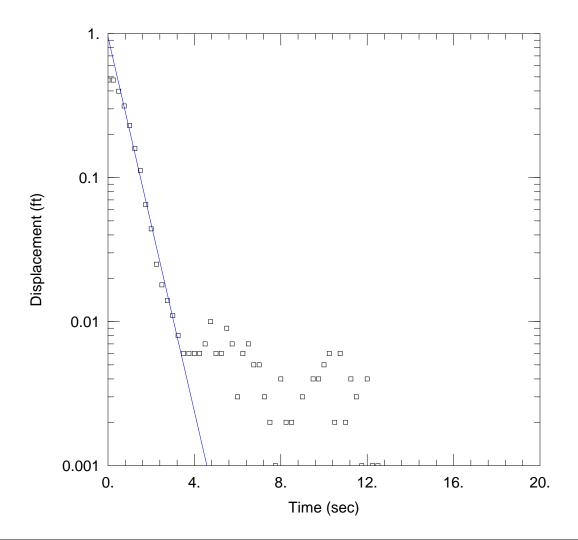
Static Water Column Height: 10.45 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.01777 cm/sec y0 = 1.137 ft



#### MW-24D TEST RH1

Data Set: C:\...\MW24D Test RH1.aqt

Date: 10/06/14 Time: 22:19:16

# PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-24D
Test Date: 8/21/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-21D)

Initial Displacement: 0.476 ft

Total Well Penetration Depth: 19.7 ft

Casing Radius: 0.083 ft

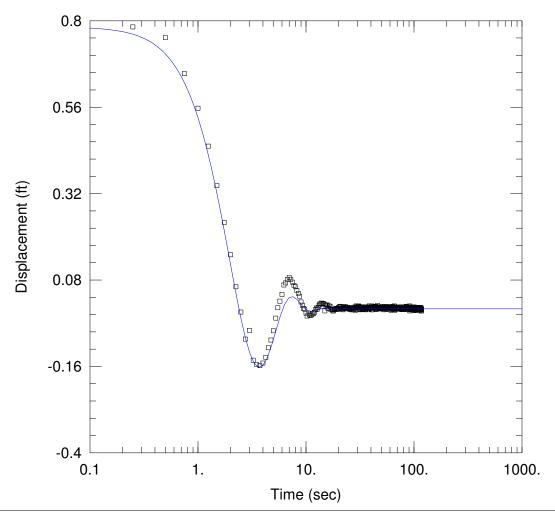
Static Water Column Height: 19.7 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

# SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.1506 cm/sec y0 = 0.9481 ft



#### MW-6B TEST RH1

Data Set: C:\...\MW06B Test RH1.aqt

Date: 11/11/14 Time: 13:02:05

#### PROJECT INFORMATION

Company: AVX Client: AVX Project: 39744051

Location: New Bedford, MA

Test Well: MW-6B Test Date: 8/19/2014

#### AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-6B)

Initial Displacement: 0.783 ft

Static Water Column Height: 50.76 ft

Total Well Penetration Depth: 50.76 ft

Screen Length: 10. ft Well Radius: 0.25 ft

Casing Radius: 0.083 ft

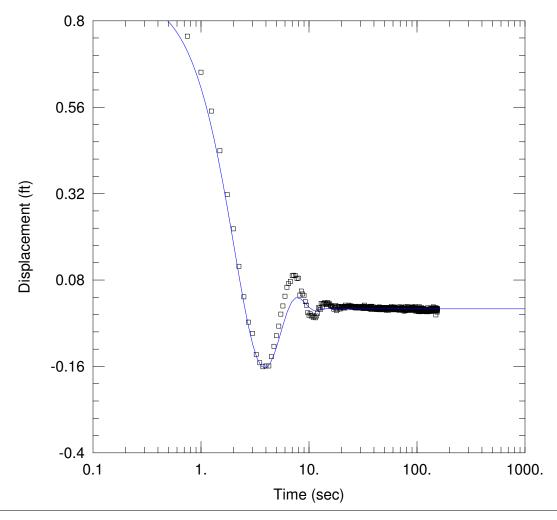
Gravel Pack Porosity: 0.

#### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Springer-Gelhar

K = 0.03893 cm/secLe = 35.75 ft



#### MW-6B TEST RH2

Data Set: C:\...\MW06B Test RH2.aqt

Date: 11/11/14 Time: 13:02:39

#### PROJECT INFORMATION

Company: AVX
Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-6B Test Date: 8/19/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-6B)

Initial Displacement: 0.876 ft

Static Water Column Height: 50.76 ft

Total Well Penetration Depth: 50.76 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

Casing Radius: 0.083 ft

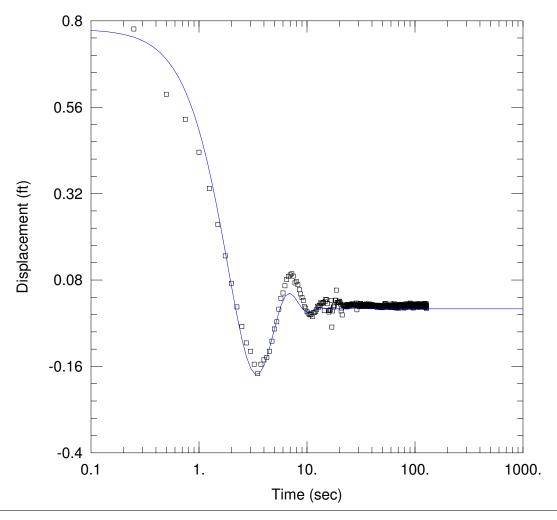
#### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Springer-Gelhar

K = 0.03562 cm/sec

Le = 38.55 ft



#### MW-6B TEST RH3

Data Set: C:\...\MW06B Test RH3.aqt

Date: 11/11/14 Time: 13:02:50

#### PROJECT INFORMATION

Company: AVX Client: AVX Project: 39744051

Location: New Bedford, MA

Test Well: MW-6B Test Date: 8/19/2014

#### AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-6B)

Initial Displacement: 0.777 ft

Static Water Column Height: 50.76 ft

Total Well Penetration Depth: 50.76 ft

Screen Length: 10. ft Well Radius: 0.25 ft

Casing Radius: 0.083 ft

Gravel Pack Porosity: 0.

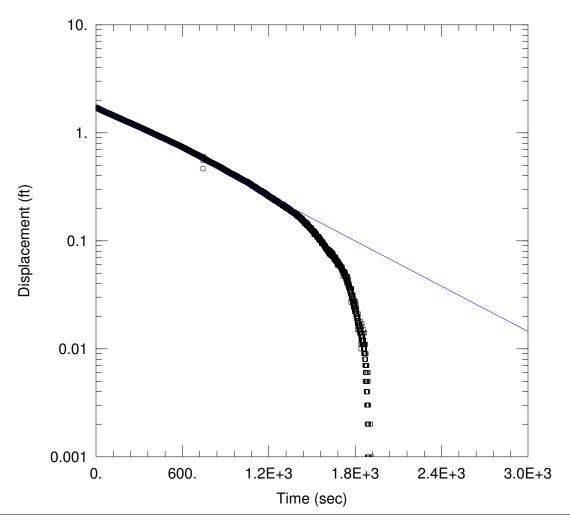
#### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Springer-Gelhar

K = 0.04433 cm/sec

Le = 31.63 ft



#### MW-13B TEST FH2

Data Set: C:\...\MW13B Test FH2.aqt

Date: 11/11/14 Time: 13:05:52

#### PROJECT INFORMATION

Company: AVX
Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: <u>MW-13B</u> Test Date: <u>8/18/2014</u>

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-13B)

Initial Displacement: 1.712 ft

Static Water Column Height: 19.67 ft

Total Well Penetration Depth: 19.67 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

Casing Radius: 0.083 ft

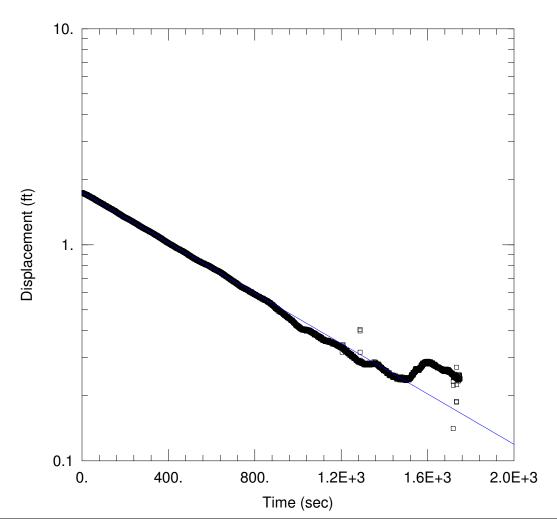
# SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 4.496E-5 cm/sec

y0 = 1.798 ft



#### MW-13B TEST FH3

Data Set: C:\...\MW13B Test FH3.aqt

Date: 11/11/14 Time: 13:06:32

#### PROJECT INFORMATION

Company: AVX
Client: AVX
Project: 2074406

Project: 39744051

Location: New Bedford, MA

Test Well:  $\underline{MW-13B}$ Test Date:  $\underline{8/18/2014}$ 

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-13B)

Initial Displacement: 1.734 ft

Static Water Column Height: 19.67 ft

Total Well Penetration Depth: 19.67 ft

Screen Length: 10. ft Well Radius: 0.25 ft

Casing Radius: 0.083 ft

Gravel Pack Porosity: 0.

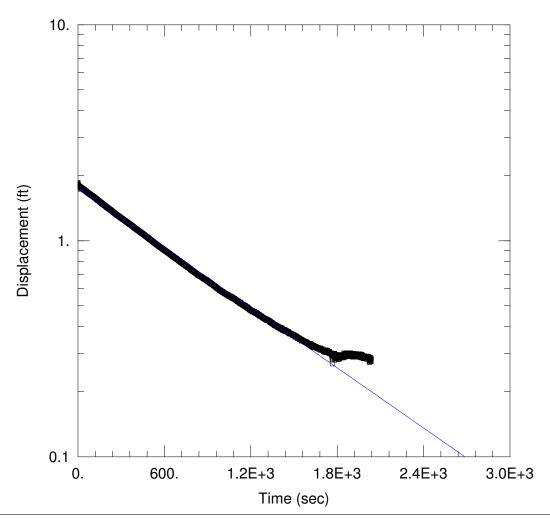
#### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 3.708E-5 cm/sec

y0 = 1.749 ft



#### MW-13B TEST RH2

Data Set: C:\...\MW13B Test RH2.aqt

Date: 11/11/14 Time: 13:10:54

#### PROJECT INFORMATION

Company: AVX Client: AVX Project: 39744051

Location: New Bedford, MA

Test Well: MW-13B Test Date: 8/18/2014

#### AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-13B)

Initial Displacement: 1.861 ft

Static Water Column Height: 19.67 ft

Total Well Penetration Depth: 19.67 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Well Radius: 0.25 ft Gravel Pack Porosity: 0.

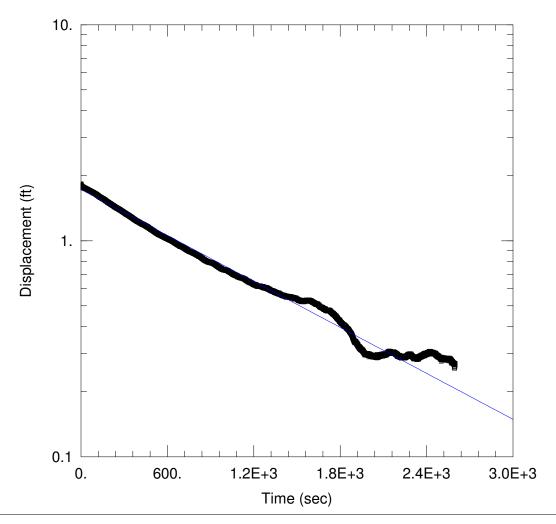
#### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 2.747E-5 cm/sec

y0 = 1.764 ft



#### MW-13B TEST RH3

Data Set: C:\...\MW13B Test RH3.aqt

Date: 11/11/14 Time: 13:07:00

#### PROJECT INFORMATION

Company: AVX Client: AVX Project: 39744051

Location: New Bedford, MA

Test Well: MW-13B Test Date: 8/18/2014

#### AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-13B)

Initial Displacement: 1.833 ft

Static Water Column Height: 19.67 ft

Total Well Penetration Depth: 19.67 ft

Screen Length: 10. ft Well Radius: 0.25 ft

Casing Radius: 0.083 ft

Gravel Pack Porosity: 0.

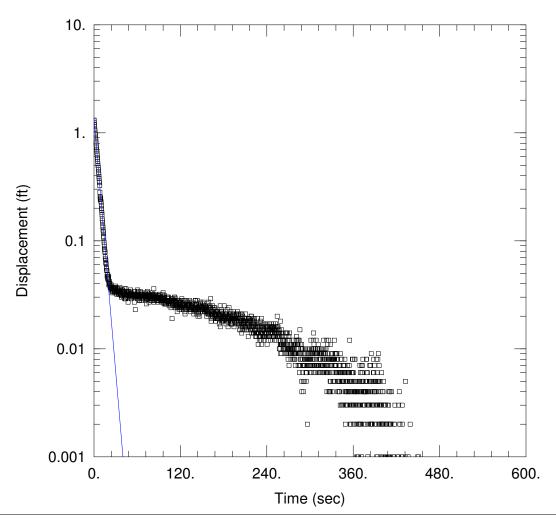
#### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 2.134E-5 cm/sec

y0 = 1.729 ft



#### MW-17B TEST RH1

Data Set: C:\...\MW17B Test RH1.aqt

Date: 11/11/14 Time: 13:36:41

#### PROJECT INFORMATION

Company: AVX Client: AVX Project: 39744051

Location: New Bedford, MA

Test Well: MW-17B Test Date: 8/18/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-17B)

Initial Displacement: 1.306 ft

Static Water Column Height: 44.55 ft

Total Well Penetration Depth: 10. ft

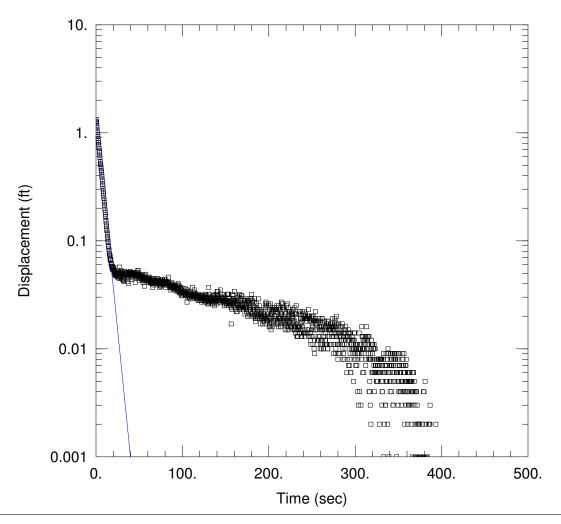
Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

Casing Radius: 0.083 ft

#### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.005721 cm/secy0 = 1.366 ft



#### MW-17B TEST RH2

Data Set: C:\...\MW17B Test RH2.aqt

Date: 11/11/14 Time: 13:36:52

#### PROJECT INFORMATION

Company: AVX Client: AVX Project: 39744051

Location: New Bedford, MA

Test Well: MW-17B Test Date: 8/18/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-17B)

Initial Displacement: 1.33 ft

Static Water Column Height: 44.55 ft

Total Well Penetration Depth: 10. ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Well Radius: 0.25 ft Gravel Pack Porosity: 0.

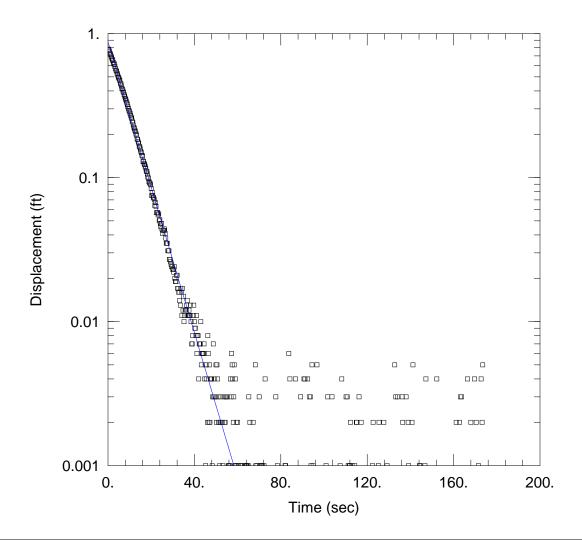
#### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.005673 cm/sec

y0 = 1.39 ft



#### MW-103B TEST FH1

Data Set: C:\...\MW103B Test FH1.aqt

Date: 10/06/14 Time: 22:25:02

#### PROJECT INFORMATION

Company: AVX
Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-103B Test Date: 8/21/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

# WELL DATA (MW-103B)

Initial Displacement: 0.779 ft Static Water Column Height: 33.23 ft

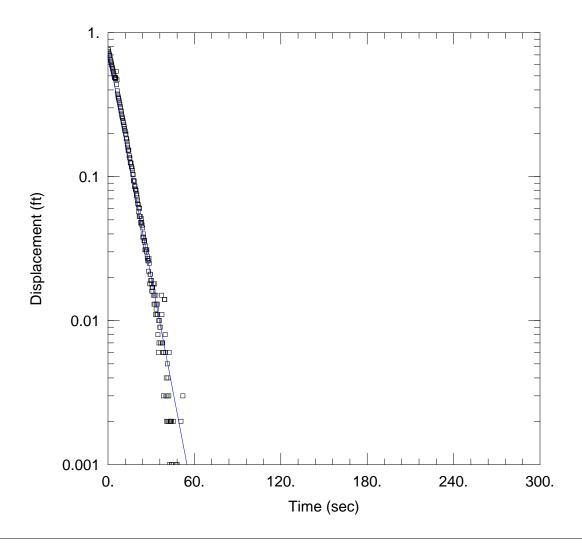
Total Well Penetration Depth: 33.23 ft Screen Length: 10. ft Casing Radius: 0.083 ft Well Radius: 0.25 ft

Gravel Pack Porosity: 0.

#### SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.007827 cm/sec y0 = 0.8749 ft



#### MW-103B TEST FH2

Data Set: C:\...\MW103B Test FH2.aqt

Date: 10/06/14 Time: 22:25:20

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-103B Test Date: 8/21/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-103B)

Initial Displacement: 0.766 ft Static Water Column Height: 33.23 ft

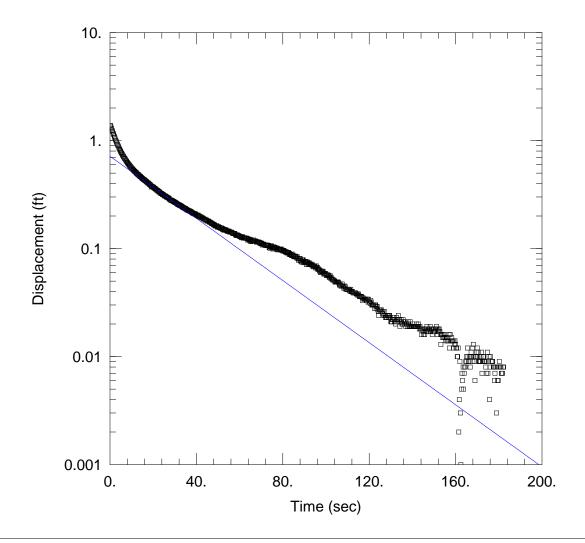
Total Well Penetration Depth: 33.23 ft Screen Length: 10. ft Casing Radius: 0.083 ft Well Radius: 0.25 ft

Gravel Pack Porosity: 0.

#### SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.008255 cm/sec y0 = 0.7438 ft



#### MW-103B TEST RH1

Data Set: C:\...\MW103B Test RH1.aqt

Date: <u>10/06/14</u> Time: <u>22</u>:26:06

#### PROJECT INFORMATION

Company: <u>AVX</u> Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-103B Test Date: 8/21/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-103B)

Initial Displacement: 1.379 ft

Total Well Penetration Depth: 33.23 ft

Casing Radius: 0.083 ft

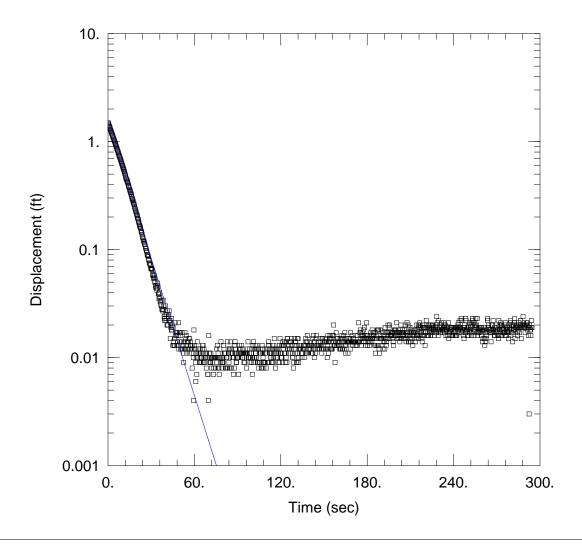
Static Water Column Height: 33.23 ft

Screen Length: 10. ft Well Radius: 0.25 ft Gravel Pack Porosity: 0.

#### SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.00126 cm/sec y0 = 0.7157 ft



#### MW-103B TEST RH2

Data Set: C:\...\MW103B Test RH2.aqt

Date: 10/06/14 Time: 22:26:27

#### PROJECT INFORMATION

Company: AVX Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-103B Test Date: 8/21/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-103B)

Initial Displacement: 1.49 ft

Static Water Column Height: 33.23 ft h: 33.23 ft Screen Length: 10. ft

Total Well Penetration Depth: 33.23 ft

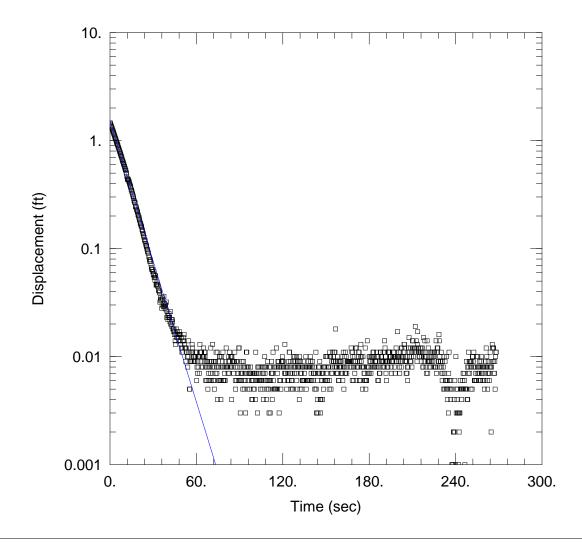
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.

Casing Radius: 0.083 ft

### **SOLUTION**

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.003435 cm/sec y0 = 1.555 ft



#### MW-103B TEST RH3

Data Set: C:\...\MW103B Test RH3.aqt

Date: 10/06/14 Time: 22:26:47

#### PROJECT INFORMATION

Company: AVX
Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: MW-103B
Test Date: 8/21/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-103B)

Initial Displacement: 1.452 ft Static Water Column Height: 33.23 ft

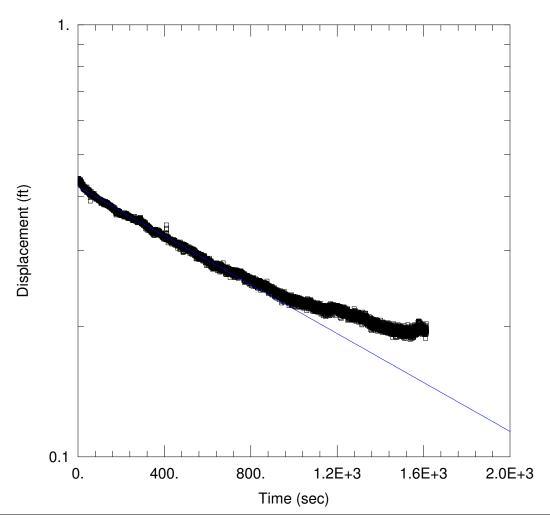
Total Well Penetration Depth: 33.23 ft Screen Length: 10. ft Casing Radius: 0.083 ft Well Radius: 0.25 ft

Gravel Pack Porosity: 0.

#### SOLUTION

Aquifer Model: <u>Unconfined</u> Solution Method: Bouwer-Rice

K = 0.003609 cm/sec y0 = 1.525 ft



#### MW-27B TEST FH1

Data Set: C:\...\MW27B Test FH1.aqt

Date: 11/11/14 Time: 13:51:12

#### PROJECT INFORMATION

Company: AVX
Client: AVX

Project: 39744051

Location: New Bedford, MA

Test Well: <u>MW-27B</u> Test Date: <u>8/20/2014</u>

#### AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-27B)

**SOLUTION** 

Initial Displacement: 0.435 ft

Static Water Column Height: 48.06 ft

Total Well Penetration Depth: 48.06 ft

Screen Length: 10. ft Well Radius: 0.25 ft

Casing Radius: 0.083 ft

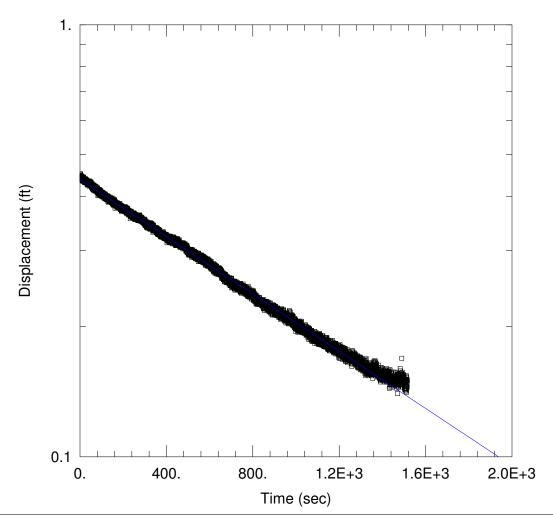
# Gravel Pack Porosity: 0.

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 8.325E-5 cm/sec

y0 = 0.4215 ft



#### MW-27B TEST FH2

Data Set: C:\...\MW27B Test FH2.aqt

Date: 11/11/14 Time: 13:46:10

#### PROJECT INFORMATION

Company: AVX
Client: AVX

Project: 39744051

Location: New Bedford, MA Test Well: MW-27B

Test Date: 8/20/2014

#### **AQUIFER DATA**

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-27B)

Initial Displacement: 0.448 ft

Static Water Column Height: 48.06 ft

Total Well Penetration Depth: 48.06 ft

Screen Length: 10. ft Well Radius: 0.25 ft

Casing Radius: 0.083 ft

Gravel Pack Porosity: 0.

#### SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 9.459E-5 cm/sec

y0 = 0.4384 ft

Appendix L.
Sewer Line
Inspection Logs



Advanced Pipe P.O. Box 4234 East Dedham Tel: 617 333-9627, Fax: 617 361-6190

### **INSPECTION REPORT**

DATE: 05/20/2014	WORK #:	WEATHER:	OPERATOR: Marc	SECTION NR:	SECTION NAME:
PRESENT:	VEHICLE:	CAMERA:	PRESET:	CLEANED:	RATE: 1950

STREET: 740 Belleville Ave Hadley MAP #1: MH: MH 04 CITY: New Bedford Ma MAP #2: MH: MH 03 LOCALE: TAPE #: TV'D LGTH: 276.4 ft

INSPECT REASON: SECTION TYPE:

1:675

**POSITION** 

STORM DRAIN

PIPE SIZE: 36"

MATERIAL: **CONCRETE** JT LGTH:

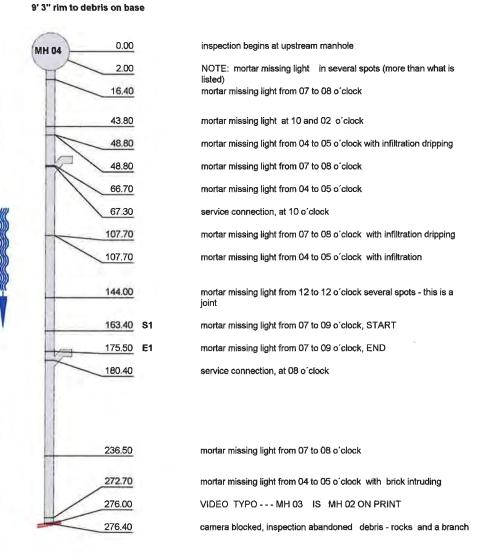
LINING:

RSRVD:

AREA: REMARK:

VIDEO TYPO - - - MH 03 IS MH 02 ON PRINT

**OBSERVATION** 





Advanced Pipe
P.O. Box 4234
East Dedham
Tel: 617 333-9627, Fax: 617 361-6190

# **INSPECTION REPORT**

DATE: 05/20/2014	WORK #:	WEATHER:	OPERATOR: Marc	SECTION NR:	SECTION NAME
PRESENT:	VEHICLE:	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:

740 Belleville Ave Hadley

MAP #1:

MH: MH 04

\_\_\_\_\_

CITY:

New Bedford Ma

MAP #2:

мн:

Belleville

LOCALE:

TAPE #:

TV'D LGTH:

132.3 ft

INSPECT REASON:

PIPE SIZE: MATERIAL: 36"

CONCRETE JT LGTH:

SECTION TYPE:

AREA:

STORM DRAIN

LINING: RSRVD: \_\_\_\_\_

REMARK:

1:325

POSITION

**OBSERVATION** 

MH 04 0.00 5.00 inspection begins at downstream manhole

NOTE: mortar missing light in several spots

132.30

camera blocked, inspection abandoned debris - cannot pass



P.O. Box 4234

East Dedham Tel: 617 333-9627, Fax: 617 361-6190

# **INSPECTION REPORT**

DATE: 05/20/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR: 5	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:

740 Belleville Ave

MAP #1:

MH:

CB 09

CITY:

**New Bedford Ma** 

MAP #2:

MH:

**CB 01** 

LOCALE:

TAPE #:

TV'D LGTH:

54 ft

INSPECT REASON:

SECTION TYPE:

PIPE SIZE:

MATERIAL: LINING:

R\$RVD:

PVC JT LGTH:

AREA:

REMARK:

1:150

**POSITION** 

STORM DRAIN

**OBSERVATION** 

0.00 CB 09

inspection begins at downstream CB

inspection ends at upstream CB 01



P.O. Box 4234 East Dedham

Tel: 617 333-9627, Fax: 617 361-6190

# **INSPECTION REPORT**

DATE: 05/20/2014	WORK #:	WEATHER:	OPERATOR: Marc	SECTION NR: 6	SECTION NAME:
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:

740 Belleville Ave

MAP #1:

MH: **CB 09** 

CITY:

New Bedford Ma

MAP #2:

MH:

MH 04

LOCALE:

**POSITION** 

TAPE #:

TV'D LGTH:

69 ft

INSPECT REASON:

SECTION TYPE:

STORM DRAIN

PIPE SIZE: MATERIAL:

VCP JT LGTH:

AREA:

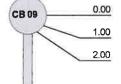
LINING:

RSRVD:

REMARK:

1:175

**OBSERVATION** 



inspection begins at upstream CB

clay pipe is broken at the CB

Longitudinal Cracks up to first joint

plpe material changes at this point to PVC

pipe material changes at this point to VCP

69.00 MH 04

inspection ends at downstream manhole 04



P.O. Box 4234

East Dedham Tel: 617 333-9627, Fax: 617 361-6190

# **INSPECTION REPORT**

	met de met de met						
DATE: 05/20/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR:	SECTION NAME:		
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE: 0		

STREET:

740 Belleville Ave

MAP #1:

CB 09

CITY:

New Bedford Ma

MAP #2:

MH:

MH:

3 Inch

TAPE #:

TV'D LGTH:

9 ft

LOCALE:

INSPECT REASON:

STORM DRAIN

PIPE SIZE: MATERIAL:

VCP JT LGTH:

SECTION TYPE: AREA:

LINING: RSRVD:

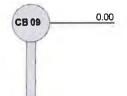
REMARK:

1:25

**POSITION** 

2.00

**OBSERVATION** 



inspection begins at downstream CB

6" clay pipe - with 3" rubber hose from inside it --filled with dirt around rubber pipe



camera blocked, inspection abandoned erosion heavy collapsed



P.O. Box 4234

East Dedham Tel: 617 333-9627, Fax: 617 361-6190

# **INSPECTION REPORT**

DATE: 05/20/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR:	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:

740 Belleville Ave LEFT

MAP #1:

MH:

TV'D LGTH:

CB 06

CITY: LOCALE: New Bedford Ma

MAP #2: TAPE #: MH:

CB 02 L

INSPECT REASON:

PIPE SIZE:

48 ft

SECTION TYPE:

STORM DRAIN

MATERIAL: LINING: RSRVD: CASTIRON JT LGTH:

AREA: REMARK:

1:125

**POSITION** 

48.00

CB 02 L

**OBSERVATION** 

CB 06 0.00

inspection begins at upstream CB

inspection ends at downstream CB



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# **INSPECTION REPORT**

DATE: <b>05/20/2014</b>	WORK #:	WEATHER:	OPERATOR: Marc	SECTION NR:	SECTION NAME:	
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE: 0	

STREET:

740 Belleville Ave RIGHT

MAP #1:

MH:

**CB 06** 

CITY:

New Bedford Ma

MAP #2:

MH:

**CB 02 R** 

LOCALE:

TAPE #:

TV'D LGTH:

48 ft

INSPECT REASON:

STORM DRAIN

PIPE SIZE: MATERIAL:

CASTIRON JT LGTH:

AREA:

SECTION TYPE:

LINING: RSRVD:

REMARK:

1:125

**POSITION** 

**OBSERVATION** 

0.00 CB 06

inspection begins at upstream CB

inspection ends at downstream CB

48.00

CB 02 R



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# **INSPECTION REPORT**

DATE: <b>05/22/2014</b>	WORK #:	WEATHER:	OPERATOR: Marc	SECTION NR: 10	SECTION NAME:
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE: 150

STREET: 740 Belleville Ave Hadley MAP #1: MH: MH 02 CITY: **New Bedford Ma** MAP #2: MH 04 MH: TAPE #: LOCALE: TV'D LGTH: 35 ft INSPECT REASON: PIPE SIZE: 36" **CONCRETE** JT LGTH: MATERIAL: SECTION TYPE: STORM DRAIN

LINING:

RSRVD:

AREA:

REMARK:

1:100 POSITION OBSERVATION

35.00

7.10 mortar missing light from 07 to 08 o'clock

20.00 debris \_\_ rocks start ( to 26')

camera blocked, inspection abandoned SAME AS SEEN FROM REVERSE (pipe has been seen MH to MH)



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# **INSPECTION REPORT**

DATE: 05/22/2014	WORK #:	WEATHER:	OPERATOR: Marc	SECTION NR:	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:

740 Belleville Ave Hadley

MAP #1:

MH:

MH 02

CITY:

**New Bedford Ma** 

MAP #2: TAPE #: MH:

MH 01 183.7 ft

LOCALE:
INSPECT REASON:

\_\_\_\_\_

PIPE SIZE: MATERIAL: TV'D LGTH:

SECTION TYPE:

STORM DRAIN

LINING: RSRVD: CONCRETE JT LGTH:

AREA: REMARK:

1:450

**OBSERVATION** 



inspection begins at upstream manhole



**POSITION** 

Debris/ rocks start

41.10

Debris/ rocks END

103.20

Hole in pipe at 08 o'clock dripping infiltration

183.60

top of pipe slopes down -- bottom at same level

183.70

camera blocked, inspection abandoned



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East Dedham

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# **INSPECTION REPORT**

DATE: 05/22/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR: 12	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET: 740 Belleville Ave Hadley MAP #1: MH: MH 01 CITY: **New Bedford Ma** MAP #2: MH: MH 02 LOCALE: TAPE #: TV'D LGTH: 5 ft INSPECT REASON: PIPE SIZE:

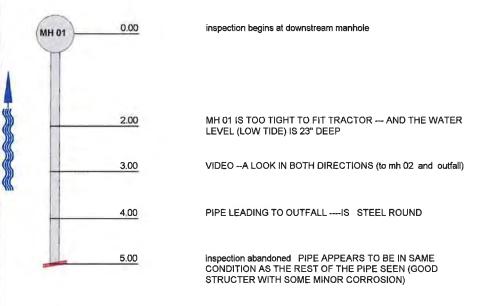
....

SECTION TYPE: STORM DRAIN

MATERIAL: LINING: RSRVD: CONCRETE JT LGTH:

AREA: REMARK:

1:25 POSITION OBSERVATION





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**INSPECTION REPORT** 

DATE: 05/22/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR: 13	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE: 0

STREET: 740 Belleville Ave Hadley MAP #1: MH: **OUTFALL** CITY: MAP #2: MH 01 **New Bedford Ma** MH: LOCALE: TAPE #: TV'D LGTH: 5 ft 36"

INSPECT REASON: PIPE SIZE:

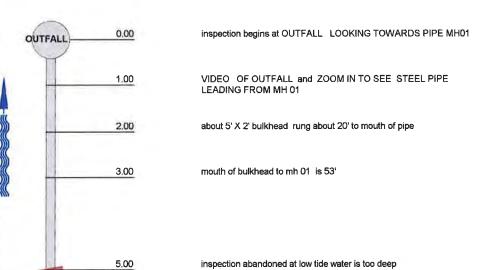
MATERIAL: CONCRETE JT LGTH: STORM DRAIN LINING:

AREA: RSRVD:

REMARK:

SECTION TYPE:

1:25 **POSITION OBSERVATION** 





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# **INSPECTION REPORT**

DATE: 05/22/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR:	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:

740 Belleville Ave

MAP #1:

MH:

CB 03 left

CITY:

**New Bedford Ma** 

MAP #2:

MH:

outfall

LOCALE:

TAPE #:

TV'D LGTH:

110 ft

INSPECT REASON:

SECTION TYPE:

STORM DRAIN

PIPE SIZE: MATERIAL:

VCP JT LGTH:

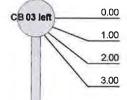
LINING: RSRVD:

AREA: REMARK:

1:275

**POSITION** 

**OBSERVATION** 



inspection begins at upstream manhole pipe on left

NOTE; from CB 02 to 05 - 04 - 03 - burried MH = the pipes are not strait, pitch up down left & right sag starts at cb - pipe 1/4 fill with water

NOTE several joints show signs of infiltration seeping through (mineral deposits)

57.10

sag end

manhole not shown on print, buried

110.00 inspection abandoned



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#### **INSPECTION REPORT**

DATE: 05/22/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR: 15	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:

740 Belleville Ave

MAP #1:

MH:

CB 03 right

CITY:

**New Bedford Ma** 

MAP #2:

MH:

outfall

LOCALE:

TAPE #:

TV'D LGTH:

75 ft

INSPECT REASON:

SECTION TYPE:

PIPE SIZE: MATERIAL:

VCP JT LGTH:

AREA:

LINING: RSRVD:

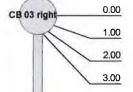
REMARK:

1:200

**POSITION** 

STORM DRAIN

**OBSERVATION** 

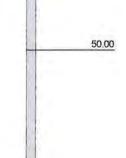


inspection begins at upstream cb pipe on right

NOTE; from CB 02 to 05 - 04 - 03 - burried MH = the pipes are not strait, pitch up down left & right

sag starts at cb - pipe 1/4 fill with water

NOTE several joints show signs of infiltration seeping through (mineral deposits)



outfall

74.20

75.00

sag ends

Hole in pipe at 10 o'clock

camera blocked, inspection debrs



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# **INSPECTION REPORT**

DATE: 05/22/2014	WORK #:	WEATHER:	OPERATOR: Marc	SECTION NR: 16	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:

740 Belleville Ave

MAP #1:

**CB 03** 

CITY:

**New Bedford Ma** 

MH: MH:

**CB 04** 

MAP #2: TAPE #:

22.9 ft

LOCALE:

PIPE SIZE:

INSPECT REASON: SECTION TYPE:

STORM DRAIN

MATERIAL: LINING: RSRVD:

VCP JT LGTH:

TV'D LGTH:

AREA:

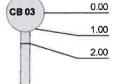
REMARK:

119' MH to MH

1:75

**POSITION** 

**OBSERVATION** 

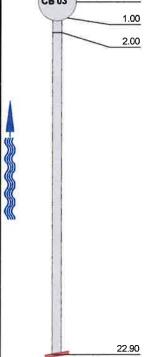


inspection begins at upstream CB

NOTE; from CB 02 to 05 - 04 - 03 - burried MH = the pipes are not

strait, pitch up down left & right
NOTE several joints show signs of infiltration seeping through

(mineral deposits)



camera blocked, inspection abandoned debris at joint



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# **INSPECTION REPORT**

DATÉ: 05/22/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR: 17	SECTION NAME:
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET:

740 Belleville Ave

MAP #1:

MH:

**CB 04** 

CITY:

**New Bedford Ma** 

MAP #2:

MH:

**CB 03** 

LOCALE:

TAPE #:

TV'D LGTH: 12"

98.5 ft

INSPECT REASON: SECTION TYPE:

STORM DRAIN

PIPE SIZE: MATERIAL:

VCP JT LGTH:

AREA:

LINING:

RSRVD:

REMARK:

119' MH to MH

1:250

**POSITION** 

**OBSERVATION** 

0.00 CB 04 1.00 inspection begins at upstream CB ---- reversal

NOTE; from CB 02 to 05 - 04 - 03 - burried MH = the pipes are not strait, pitch up down left & right

98.50

camera blocked, inspection abandoned  $\,\,$  SAME AS SEEN FROM REVERSE



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# **INSPECTION REPORT**

DATE: 05/22/2014	WORK #:	WEATHER:	OPERATOR: Marc	SECTION NR: 18	SECTION NAME:
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE: 0

STREET:

740 Belleville Ave

MAP #1:

MH:

**CB 04** 

CITY:

MAP #2:

MH:

**CB 05** 

LOCALE:

New Bedford Ma

TAPE #:

TV'D LGTH:

12"

36 ft

INSPECT REASON:

PIPE SIZE: MATERIAL:

SECTION TYPE:

STORM DRAIN

LINING: RSRVD: VCP JT LGTH:

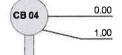
AREA: REMARK:

151' CB to CB

1:100

POSITION

**OBSERVATION** 



inspection begins at downstream CB

NOTE; from CB 02 to 05 - 04 - 03 - burried MH = the pipes are not

strait, pitch up down left & right

36.00

camera blocked, inspection abandoned DEBRIS - SILT/ ROCKS



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**INSPECTION REPORT** 

DATE: 05/22/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR: 19	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET: 740 Belleville Ave MAP #1: MH: **CB 05** CITY: **New Bedford Ma** MAP #2: MH: **CB 04** LOCALE: TAPE #: TV'D LGTH: 7.3 ft INSPECT REASON: PIPE SIZE: 12"

SECTION TYPE:

STORM DRAIN

MATERIAL:

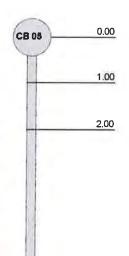
VCP JT LGTH:

LINING: RSRVD:

AREA: REMARK:

151' CB to CB

1:25 **POSITION OBSERVATION** 



inspection begins at upstream CB — reversal

NOTE; from CB 02 to 05 - 04 - 03 - burried MH = the pipes are not strait, pitch up down left & right

mouth of pipe 1/2 full of water

7.00

7.30

can see ahead --pipe is higher - can see bottom of pipe (end of sag)

camera blocked, inspection abandoned debris / rocks



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#### **INSPECTION REPORT**

DATE: 05/22/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR: 20	SECTION NAME
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET: 740 Belleville Ave MAP #1: MH: **CB 05** CITY: New Bedford Ma MAP #2: MH: **CB 02** LOCALE: TAPE #: TV'D LGTH: 9.6 ft

INSPECT REASON:

CB 05

PIPE SIZE: MATERIAL: VCP JT LGTH:

SECTION TYPE:

**STORM DRAIN** 

LINING: RSRVD:

AREA: REMARK:

160' CB to CB

1:25 **POSITION** 

0.00

1.00

2.00

3,00

9.60

inspection begins at downstream CB

NOTE; from CB 02 to 05 - 04 - 03 - burried MH  $\Rightarrow$  the pipes are not

strait, pitch up down left & right

**OBSERVATION** 

mouth of pipe 1/2 full of water

video under water -not clear-

camera blocked, inspection abandoned - debris



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# **INSPECTION REPORT**

DATE: 05/22/2014	WORK #:	WEATHER:	OPERATOR: Marc	SECTION NR: 21	SECTION NAME:
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET: 740 Belleville Ave MAP #1: MH: **CB 02** CITY: New Bedford Ma MAP #2: MH: **CB 05** LOCALE: TAPE #: TV'D LGTH: 133.1 ft

INSPECT REASON:

VCP JT LGTH:

SECTION TYPE:

AREA:

REMARK:

STORM DRAIN

MATERIAL: LINING:

PIPE SIZE:

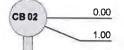
RSRVD:

160' CB to CB

1:325

POSITION

**OBSERVATION** 



inspection begins at upstream CB reversal

NOTE; from CB 02 to 05 - 04 - 03 - burried MH = the pipes are not strait, pitch up down left & right

camera blocked, inspection abandoned --under water -- debris



Advanced Pipe

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### **INSPECTION REPORT**

DATE: 05/22/2014	WORK#:	WEATHER:	OPERATOR: Marc	SECTION NR:	SECTION NAME:
PRESENT:	VEHICLE: TV-3	CAMERA:	PRESET:	CLEANED:	RATE:

STREET: CITY:

LOCALE:

740 Belleville Ave

Mauri

New Bedford Ma

MAP #1: MAP #2: TAPE #: MH:

**CB 13** 

MH:

MH 03

INSPECT REASON:

SECTION TYPE:

STORM DRAIN

PIPE SIZE: MATERIAL:

VCP JT LGTH:

TV'D LGTH:

LINING:

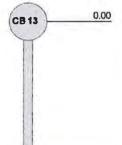
RSRVD:

AREA:

1:450

**POSITION** 

**OBSERVATION** 



inspection begins at upstream CB

52.50

pipe material changes at this point to CMP

72.70

slight oval shape - ( crush pipe )

77.30

pipe material changes at this point to VCP

81.90

pipe material changes at this point to CMP

162.20 174.00

MH 03

pipe material changes at this point to VCP

can see flap (from backflow preventer)

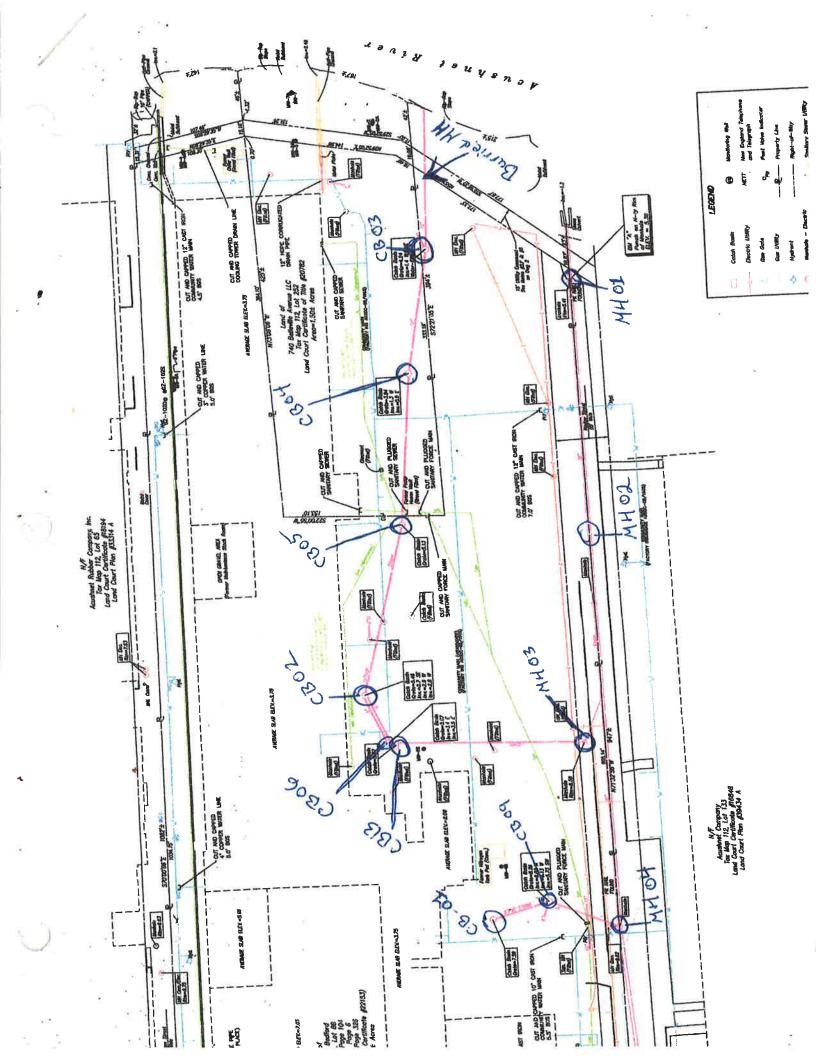
174.00

175.00

ALSO --Video from above MH 03 looking down -- looks like a back

flow preventer

inspection ends at downstream manhole



Appendix M.
Titleist IH Evaluation and Access Controls

# IMMINENT HAZARD EVALUATION HADLEY STREET/EAST END ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

### **Prepared for:**

URS Corporation 1155 Elm Street, Suite 401 Manchester, New Hampshire 03101

### Prepared by:

Susan A. Sundstrom, Ph.D., D.A.B.T. 9 St. James Place Nashua, New Hampshire 03062

January 15, 2014

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### IMMINENT HAZARD EVALUATION ACUSHNET PROPERTY HADLEY STREET/EAST END NEW BEDFORD, MASSACHUSETTS

### 1.0 INTRODUCTION

On behalf of URS Corporation (URS), an Imminent Hazard Evaluation was conducted for the Acushnet property located at Hadley Street/East End in New Bedford, Massachusetts. During the course of site investigations, polychlorinated biphenyl compounds (PCBs) were detected in surface soil samples collected around the east end of the facility building. Due to the concentrations detected, an Imminent Hazard Evaluation was considered warranted. As defined in the Massachusetts Contingency Plan (MCP), an Imminent Hazard means a hazard which would pose a significant risk of harm to health, safety, public welfare or the environment if it were present for even a short period of time (310 CMR 40.0006).

This evaluation was performed to evaluate whether current conditions could pose a risk to employees, landscapers and older children and adults trespassing on the property. This evaluation was performed in accordance with 310 CMR 40.0950 of the Massachusetts Contingency Plan (MCP) and in general accordance with the MADEP *Guidance for Disposal Site Risk Characterization* — *In Support of the Massachusetts Contingency Plan* (MADEP, 1995), information provided in proposed MADEP 2013 MCP Method 1 Standard Workbooks, and relevant guidance documents from the U.S. Environmental Protection Agency (USEPA).

Risk was characterized using the general procedures for a MassDEP Method 3 risk assessment incorporating realistic and health protective exposure assumptions. This report includes a description of the chemicals of concern detected at the property, the dose-response relationships for the chemicals of concern, an exposure assessment, and an evaluation of the potential human health risks associated with the presence of these chemicals at the property.

SASundstrom, Ph.D., D.A.B.T. January 15, 2014

The report is organized as follows:

- identification of chemicals of concern;
- dose-response assessment;
- exposure assessment; and
- risk characterization.

All tables appear at the end of the text. Concentrations in soil are reported in milligrams per kilogram (mg/kg).

### 2.0 IDENTIFICATION OF CHEMICALS OF CONCERN

It is believed that historic runoff from the adjacent Aerovox facility and periodic flooding of the storm sewer along Hadley Street may have provided a pathway for PCB impacted sediments to be deposited on the eastern, unpaved end of the Acushnet property. Therefore, in December 2013, as part of initial MCP Phase II activities, surface soil samples (0-2 feet below ground surface [bgs]) were collected from ten locations on the eastern, unpaved end of the property to identify whether soil impacts exist and if so, to define the lateral extent of contamination. PCBs were detected above detection limits in all 10 samples; the concentrations ranged from 0.51 mg/kg to 533 mg/kg. Since it appears that the presence of PCBs is due to an overland/storm water migration pathway, discrete areas of contamination do not appear to exist. Table 1 presents the results. The locations of the samples are shown on Figure 1 (URS, 2014).

### 3.0 DOSE-RESPONSE ASSESSMENT

The dose-response assessment presents data relating potential doses received from exposure to chemicals to potential health effects (response). Information is provided in this section relative to the dose-response relationships for the chemicals of concern, based on available laboratory animal studies and human epidemiology as reported in the USEPA's Integrated Risk Information System and information provided in MADEP 2013 proposed MCP Method 1 Standard Workbooks.

### 3.1 ASSESSMENT OF NONCARCINOGENIC HEALTH EFFECTS

In accordance with MADEP guidance, chronic oral Reference Doses (RfDs) or chronic Reference Concentrations (RfCs) are the primary criteria used to evaluate noncarcinogenic effects. The RfD is a health-based criterion used to evaluate noncarcinogenic effects from exposures involving ingestion or dermal contact. The RfC is a health-based criterion used to evaluate noncarcinogenic effects from inhalation exposures. Chronic RfDs and RfCs are estimates of daily exposure concentrations for the human population (including children and sensitive sub-populations) that are likely to be without an appreciable risk of deleterious effects during a lifetime of exposure (USEPA, 1989a). RfDs are available for two PCB mixtures: Aroclor 1016 and Aroclor 1254. Aroclor 1254 was the primary PCB mixture detected; Aroclor 1016 was not detected. The RfD for Aroclor 1254 is presented in Table 2.

### 3.2 ASSESSMENT OF CARCINOGENIC HEALTH EFFECTS

Carcinogens are considered by MADEP policy to lack a threshold of no adverse effects; this policy implies that any exposure carries some risk. Oral cancer potency factors, known as slope factors (SFs), have been derived to estimate risks based upon this assumption. A SF is equal to the slope of the dose-response curve and, when multiplied by the dose, provides an estimate of the upper 95 percent confidence interval of the incremental lifetime cancer risk, or probability of cancer occurring above normal background rates. Similarly, inhalation Unit Risks have been developed based on cancer slope factors or derived from inhalation studies to evaluate cancer risks resulting from inhalation exposures. The SF and Unit Risk for PCBs are presented in Table 2.

### 4.0 EXPOSURE ASSESSMENT

An exposure assessment was performed to identify current exposure scenarios by which chemicals could reach potential human receptors. An Imminent Hazard Evaluation focuses on exposures that are or are likely to occur under current conditions.

### 4.1 EXPOSURE SCENARIOS

Under current conditions, the Acushnet property is a commercial property. The property is primarily used for manufacturing and packaging golf balls. The area of soil impacts is partially surrounded by a chain link fence and is under camera surveillance. Employees working at the property have been observed using the area to eat lunch (primarily in the spring) and landscapers work in the area one to two days per week during warmer months mowing the lawn. It is also possible that older children and adults could trespass in the area. Exposure pathways of concern include incidental ingestion of soil and skin contact with soil.

### 4.2 EXPOSURE ASSUMPTIONS

For all calculations, the averaging period was equal to the exposure period for exposures to noncarcinogenic chemicals and equal to 70 years for exposures to carcinogenic chemicals (MADEP, 1995).

### 4.2.1 Employees

Employees working at the Acushnet facility could potentially be exposed to chemicals detected in soil. Exposure pathways include ingestion of soil and skin contact with soil. The frequency of exposure was assumed to be 120 days per year (4 days per week for 30 weeks per year). An Imminent Hazard evaluation assesses current health risks associated with exposure over a 5-year time period; thus, the period of exposure was assumed to be for 5 years (MCP). It was assumed that adult facility workers weigh 61.1 kg and ingest 50 mg of soil per day (MADEP, 2013). It was also assumed that they have their face, forearms, hands, and feet exposed (3,473 cm<sup>2</sup>) (MADEP, 2013). In addition, it was assumed that the soil adherence is equal to 0.03 mg/cm<sup>2</sup> (for an industrial/commercial worker) (MADEP, 2013).

### 4.2.2 Landscapers

Landscapers working at the Acushnet facility could potentially be exposed to chemicals detected in soil. Exposure pathways include ingestion of soil and skin contact with soil. The frequency of exposure was assumed to be 2 days per week for six months of the year (52 days per year). An Imminent Hazard evaluation assesses current health risks associated with exposure over a 5-year time period; thus, the period of exposure was assumed to be for 5 years (MCP). It was assumed that landscape workers weigh 58 kg and ingest 100 mg of soil per day similar to adult construction workers (MADEP, 2002a; 2013). It was also assumed that they have their face, forearms, hands, and feet exposed (3,477 cm²) (MADEP, 2002b). In addition, it was assumed that the soil adherence is equal to 0.19 mg/cm² (for a landscaper/groundskeeper) (MADEP, 2002b).

### 4.2.3 Trespassers

It was assumed that older children (greater than 7 years of age) and adults could contact impacted soil if they trespass. Exposure pathways include ingestion of soil and dermal contact with soil. The frequency of exposure was assumed to be 5 days per week during the warmer months of the year (June, July and August) and 2 days per week in April, May, September, and October (*i.e.*, a total of 84 days per year) and the duration of exposure was assumed to be 24 hours per day. The period of exposure was assumed to be 5 years for older children and adults consistent with an Imminent Hazard evaluation. It was assumed that older children (ages eight through 18 years) weigh 42 kg (Table B-1, MADEP, 1995) and adults weigh 61.1 (MADEP, 2013). It was assumed that older children and adults ingest 50 mg of soil per day (MADEP, 2013). It was also assumed that they have their forearms, hands and feet exposed (2,928 cm² for an older child) and (3,107 cm² for an adult) (MADEP, 2002b). In addition, it was assumed that the soil adherence is equal to 0.14 mg/cm² (MADEP, 2002b).

### **4.2.4** Relative Absorption Factors

For risk assessment purposes, the MADEP has established relative absorption factors (RAFs) for absorption of various chemicals from ingestion of water, ingestion of soil and dermal contact with soil (MADEP, 2013). RAFs account for both the absorption efficiency of the chemical via

the route (*e.g.*, ingestion, dermal contact) and medium (*e.g.*, water, soil) of exposure at the Acushnet facility and the absorption efficiency for the route and medium of exposure in the experimental study on which the toxicity information (*e.g.*, RfD, SF) is based. The chemical-specific RAFs used for ingestion and skin contact with soil are presented in the Average Daily Dose calculation tables.

### 4.3 EXPOSURE POINT CONCENTRATIONS

Exposure point concentrations are the estimated concentrations in a particular medium at the point of contact. Typically, average concentrations within an exposure point represent the exposure point concentrations (MADEP, 1995). Since it is unlikely that discrete areas of contamination are present, the average concentration of PCBs was used as the exposure point concentration.

### 4.4 ESTIMATION OF AVERAGE DAILY EXPOSURES

Equations adapted from MADEP guidance were used to estimate average daily exposure doses (MADEP, 1995).

Estimated average daily exposure doses for incidental ingestion of soil were calculated using the following equation:

$$ADD = \frac{C_x x IR x RAF x EF x ED x EP x C_1}{BW x AP x C_2}$$

where:

ADD = Average daily dose (mg/kg/day)

 $C_x$  = Exposure point concentration (mg/kg)

IR = Ingestion rate (mg/day)

RAF = Relative absorption factor (dimensionless)

EF = Exposure frequency (events/year) ED = Exposure duration (days/event)

EP = Exposure period (years)

 $C_1$  = Conversion factor ( $10^{-6}$  kg/mg)

BW = Body weight (kg)

AP = Averaging period (years)

 $C_2$  = Conversion factor (365 days/year)

Estimated average daily exposure doses for skin contact with soil were calculated using the following equation:

$$ADD = \frac{C_x \times SA \times AF \times RAF \times EF \times ED \times EP \times C_1}{BW \times AP \times C_2}$$

where:

ADD Average daily dose (mg/kg/day) Exposure point concentration (mg/kg)  $C_{x}$ = Skin surface area in contact with soil (cm<sup>2</sup>/day) SA = AF Soil adherence factor (mg/cm<sup>2</sup>) = RAF Relative absorption factor (unitless) EF = Exposure frequency (events/year) ED Exposure duration (day/event) = EP Exposure period (years) = Conversion factor (10<sup>-6</sup> kg/mg)  $C_1$ = BW= Body weight (kg) AP Averaging period (years) Conversion factor (365 days/year)  $\mathbf{C}_2$ =

It was assumed that employees could be exposed to PCBs detected in soil. Estimated average daily exposure doses for ingestion and skin contact with soil are presented in Tables 3 and 4. It was assumed that landscapers could be exposed to PCBs detected in soil. Estimated average daily exposure doses for ingestion and skin contact with soil are presented in Tables 5 and 6. It was assumed that trespassers could be exposed to PCBs detected in soil. Estimated average daily exposure doses for ingestion and skin contact with soil are presented in Tables 7 and 8.

### 5.0 RISK EVALUATION

### 5.1 METHODS TO EVALUATE RISKS

An Imminent Hazard evaluation assesses current health risks associated with exposures likely to occur over a 5-year time period (*i.e.*, a subchronic exposure period). These risks are compared to risk management criteria specified in the MCP. The risk management criteria represent a level of risk above which the MADEP has determined that a remedial action is needed in the short term. Risks are characterized for the chemicals of concern by integrating data developed in the Dose-Response Assessment and Exposure Assessment. Methodologies for evaluating noncarcinogenic health hazards and carcinogenic risks are presented below.

### **5.1.1** Estimation of Noncarcinogenic Risk

Noncarcinogenic effects are characterized in terms of a Hazard Index. This method assumes that there is an exposure below which adverse effects are not expected to occur (USEPA, 1989). The Hazard Index is calculated for each noncarcinogenic constituent of concern by dividing the average daily exposure dose (ADD) in mg/kg/day by the chemical-specific Reference Dose (RfD), also in mg/kg/day, as shown in the equation below.

$$Hazard Index = \frac{ADD}{RfD}$$

The Hazard Indices for each chemical are summed to yield a hazard index for that particular exposure route and the risks for each exposure route are summed to yield a total risk for that particular medium. Then for each receptor, hazard indices for each medium are summed to yield a total hazard index for the receptor. Due to the uncertainties in the risk assessment process (*e.g.*, primarily in the derivation of the toxicity factors), the final total hazard index is expressed with one significant figure (USEPA, 1989; MCP, MADEP, 2010). If the hazard index is equal to or less than 10, risks associated with exposure to the chemicals are not considered to pose an Imminent Hazard and immediate remedial measures are not warranted.

### 5.1.2 Estimation of Carcinogenic Risk

The potential for carcinogenic health effects is characterized in terms of an incremental lifetime cancer risk, an estimate of the incremental lifetime probability of an individual developing cancer above background cancer incidence. For an Imminent Hazard evaluation, the exposure period is assumed to be five years. An incremental lifetime carcinogenic risk is calculated for each chemical by multiplying the lifetime average daily exposure dose (LADD) in mg/kg/day by the chemical-specific cancer Slope Factor (SF) as shown in the equation below.

$$Risk = ADD \times SF$$

For each exposure route, the chemical-specific risks are summed together, then the risks for each exposure route are summed to yield a total risk for that particular medium. Finally, risks for all media of concern are summed to yield a total site risk for each receptor. A total incremental lifetime carcinogenic risk that does not exceed the acceptable total lifetime carcinogenic risk limit indicates that the exposure is unlikely to produce a significant risk of cancer above normal background rates. In accordance with the MCP, the acceptable lifetime carcinogenic risk limit is equal to  $1 \times 10^{-5}$  (*i.e.*, one in 100,000). Due to the uncertainties in the risk assessment process (*e.g.*, primarily in the derivation of the toxicity factors), the final incremental lifetime carcinogenic risk is expressed with one significant figure (USEPA, 1989; MCP, MADEP, 2010).

### 5.2 RISKS TO HUMAN HEALTH

The potential risks to human health were evaluated for exposure to PCBs detected in soil. The intent was to provide a conservative assessment of the degree of risk associated with exposure to estimated concentrations of detected soil under current conditions.

Noncarcinogenic health risks were estimated for employees who could work at the property and be exposed to PCBs detected in soil. The hazard index is estimated to be equal to 3, which is less than the acceptable risk limit equal to 10 (Table 9) for an Imminent Hazard. The lifetime incremental lifetime carcinogenic risk is also within acceptable limits  $(8 \times 10^{-6})$  (Table 10). Thus, exposure to PCBs detected in soil does not pose an imminent hazard to employees.

Noncarcinogenic health risks were estimated for landscapers who could work at the property and be exposed to PCBs detected in soil. The hazard index is estimated to be equal to 4, which is less than the acceptable risk limit equal to 10 (Table 11) for an Imminent Hazard. The lifetime incremental lifetime carcinogenic risk is also within acceptable limits  $(1 \times 10^{-5})$  (Table 12). Thus, exposure to PCBs detected in soil does not pose an imminent hazard to landscapers.

Noncarcinogenic health risks were estimated for older children and adults who could trespass on the property and be exposed to PCBs detected in soil. The hazard indices are estimated to be equal to 4 for older children and 3 for adults, which are less than the acceptable risk limit equal to 10 (Table 13). The lifetime incremental lifetime carcinogenic risks are also within acceptable limits  $(1 \times 10^{-5} \text{ for older children and } 9 \times 10^{-6} \text{ for adults})$  (Table 14). Thus, exposure to PCBs detected in soil does not pose an imminent hazard to trespassers.

### 6.0 SUMMARY

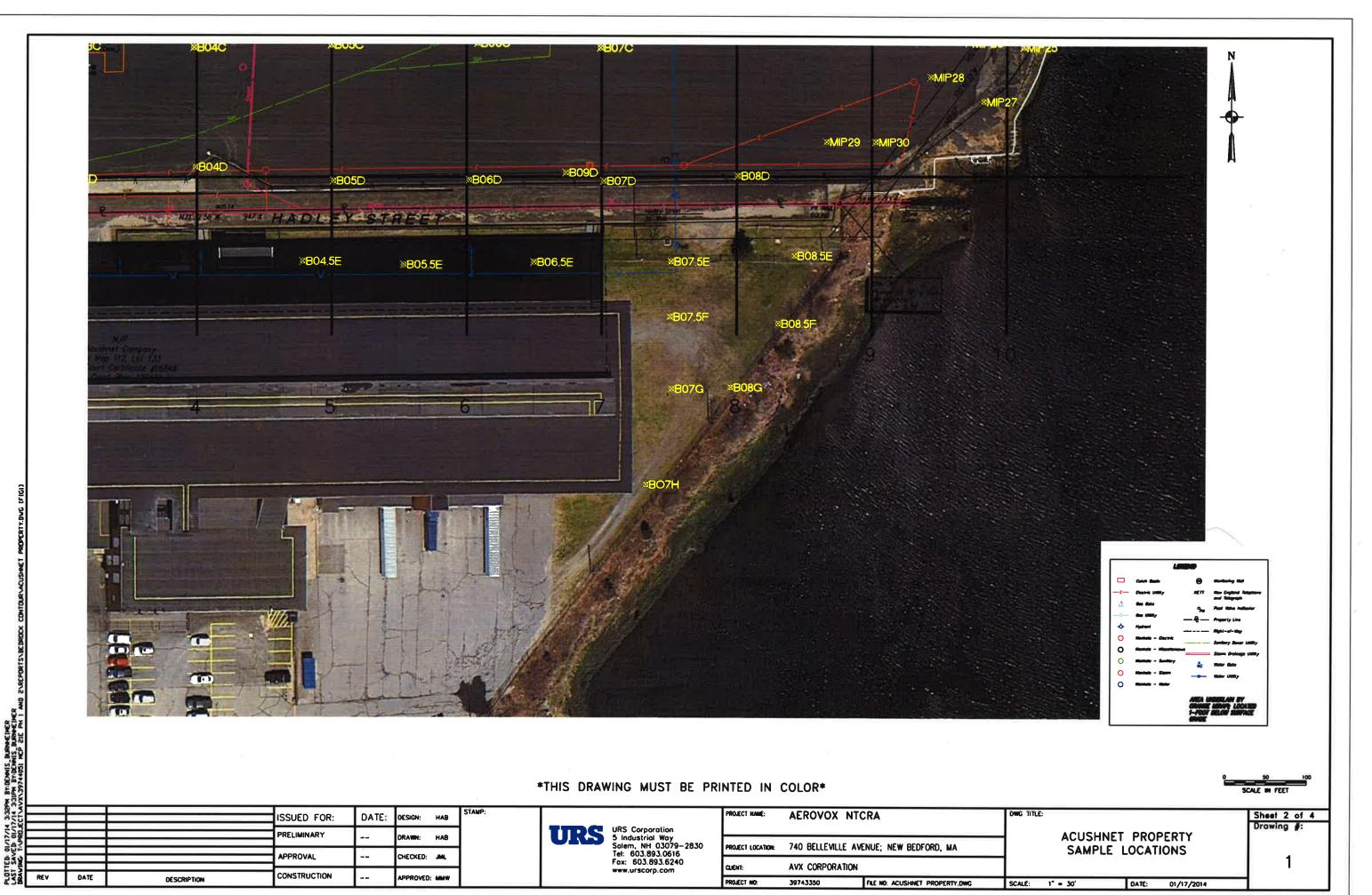
An Imminent Hazard Evaluation was performed to evaluate potential risks to human health that may require immediate remedial measures. It was performed in accordance with the MCP using the MADEP guidance document, *Guidance for Disposal Site Risk Characterization — In Support of the Massachusetts Contingency Plan* (MADEP, 1995), information provided in the proposed MADEP 2013 Method 1 spreadsheets and relevant USEPA guidance where applicable. The evaluation was divided into four sections: identification of chemicals of concern, doseresponse assessment, exposure assessment, and risk characterization. Risks were evaluated with respect to exposure to PCBs that were detected in surface soil.

The average concentrations of PCBs detected in the surface soil in December 2013 were assumed to be the exposure point concentrations in soil. An imminent hazard evaluation evaluates risks for a short-term five-year exposure scenario. The results demonstrate that the concentrations of PCBs detected in surface soil do not pose a significant risk to employees, landscape workers or trespassers. Thus, an Imminent Hazard does not exist at this property and immediate remedial measures are not warranted.

### 7.0 REFERENCES

- Integrated Risk Information System (IRIS). United States Environmental Protection Agency.
- Massachusetts Contingency Plan, 310 CMR 40.0000.
- Massachusetts Department of Environmental Protection 1994. *Background Documentation for the Development of the MCP Numerical Standards*.
- Massachusetts Department of Environmental Protection 1995. Guidance for Disposal Site Risk Characterization -- In Support of the Massachusetts Contingency Plan.
- Massachusetts Department of Environmental Protection 2002a. Technical Update: Calculation of an Enhanced Soil Ingestion Rate. Updates: Appendix B, Guidance for Disposal Site Risk Characterization -- In Support of the Massachusetts Contingency Plan.
- Massachusetts Department of Environmental Protection 2002b. Technical Update: Weighted Skin-soil Adherence Factors. Updates: Appendix B, Guidance for Disposal Site Risk Characterization -- In Support of the Massachusetts Contingency Plan.
- Massachusetts Department of Environmental Protection 2010. Technical Update: Expressing the Precision of Exposure Point Concentrations and Risk Estimates in MCP Risk Characterization. Updates: Appendix B, Guidance for Disposal Site Risk Characterization In Support of the Massachusetts Contingency Plan.
- Massachusetts Department of Environmental Protection 2013. 2013 Public Hearing Draft MCP Method 1 Numerical Standards Spreadsheets.
- United States Environmental Protection Agency 1989a. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A), Interim Final. Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-89/002.

### 8.0 FIGURE & TABLES



### TABLE 1 SOIL ANALYTICAL DATA SUMMARY ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

	FREQUENCY OF DETECTION	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)
PCBs	10 / 10	533	179.49

Note that Aroclor 1254 was the only PCB mixture detected in nine of the samples. In one sample, Arolcor 1248 and 1260 were also detected. The total concentration of the different Aroclor mixtures was used to represent the PCB concentration in that sample.

### TABLE 2 HUMAN HEALTH-BASED TOXICITY VALUES ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

CHEMICALS	Subchronic RfD (mg/kg/day)	Chronic RfD (mg/kg/day)	Slope Factor (mg/kg/day) <sup>-1</sup>	Inhalation Unit Risk (ug/m³) <sup>-1</sup>	CLASS
PCBs		2.00E-05	2.00E+00	1.00E-04	B2

All data cited from IRIS unless indicated otherwise

### TABLE 3 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SOIL EMPLOYEE SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
COMPOUNDS	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs	179.49	50	1.00	120	5	1.00E-06	61.1	365	5	4.83E-05	70	3.45E-06

### TABLE 4 AVERAGE DAILY DOSES -- SKIN CONTACT WITH SOIL EMPLOYEE SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C1 (kg/mg)	SA (cm²/d)	AF (mg/cm <sup>2</sup> )	RAF	EF (d/yr)	EP (yr)	BW (kg)	C2 (d/yr)	AP (yr)	ADD (mg/kg/d)	AP (vr)	LADD (mg/kg/d)
PCBs	179.49	1.00E-06	3473	0.03	0.1	120	5	61.1	365	5	1.01E-05	70	7.19E-07

### TABLE 5 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SOIL LANDSCAPER SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
COMPOUNDS	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs	179.49	100	1.00	52	5	1.00E-06	58.0	365	5	4.41E-05	70	3.15E-06

### TABLE 6 AVERAGE DAILY DOSES -- SKIN CONTACT WITH SOIL LANDSCAPER SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

	<b>Exposure Point</b>												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
COMPOUNDS	(mg/kg)	(kg/mg)	$(cm^2/d)$	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs	179.49	1.00E-06	3477	0.19	0.1	52	5	58.0	365	5	2.91E-05	70	2.08E-06

### TABLE 7 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SOIL TRESPASSER SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

OLDER CHILD	Exposure Point Concentration	IR	RAF	EF	EP	$C_1$	BW	$C_2$	AP	ADD	AP	LADD
CHEMICALS	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs	179.49	50	1.00	84	5	1.00E-06	42	365	5	4.92E-05	70	3.51E-06
ADULT	Exposure Point Concentration	IR (1)	RAF	EF	EP	C <sub>1</sub>	BW	C <sub>2</sub>	AP	ADD	AP	LADD
CHEMICALS	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs	179.49	50	1.00	84	5	1.00E-06	61.1	365	5	3.38E-05	70	2.41E-06

### TABLE 8 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL TRESPASSER SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

OLDER CHILD CHEMICALS	Exposure Point Concentration (mg/kg)	C1 (kg/mg)	SA (cm²/d)	AF (mg/cm <sup>2</sup> )	RAF	EF (d/yr)	EP (yr)	BW (kg)	C2 (d/yr)	AP (yr)	ADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	179.49	1.00E-06	2928	0.14	0.1	84	5	42	365	5	4.03E-05	70	2.88E-06
ADULT	Exposure Point Concentration (mg/kg)	C1 (kg/mg)	SA (cm²/d)	AF (mg/cm <sup>2</sup> )	RAF	EF (d/yr)	EP (yr)	BW (kg)	C2 (d/yr)	AP (yr)	ADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	179.49	1.00E-06	3107	0.14	0.1	84	5	61.1	365	5	2.94E-05	70	2.10E-06

### TABLE 9 HAZARD INDICES FOR IMMINENT HAZARD EVALUATION EMPLOYEE SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

		INGESTION		DEI	RMAL CONT.	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs	4.83E-05	2.00E-05	2.41E+00	1.01E-05	2.00E-05	5.03E-01	2.92E+00
			2.41E+00			5.03E-01	3.E+00

### TABLE 10 INCREMENTAL LIFETIME CARCINOGENIC RISKS FOR IMMINENT HAZARD EVALUATION EMPLOYEE SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

		INGESTION		DEF	RMAL CONTA	ACT	
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs	3.45E-06	2.00E+00	6.90E-06	7.19E-07	2.00E+00	1.44E-06	8.34E-06
			6.90E-06			1.44E-06	8.E-06

### TABLE 11 HAZARD INDICES FOR IMMINENT HAZARD EVALUATION LANDSCAPER SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

		INGESTION		DEI	Total		
CHEMICALS	ADD RfD H (mg/kg/d) (mg/kg/d)		Hazard Index	ADD (mg/kg/d)	RfD (mg/kg/d)	Hazard Index	Hazard Index
PCBs	4.41E-05	2.00E-05	2.20E+00 <b>2.20E+00</b>	2.91E-05	2.00E-05	1.46E+00 <b>1.46E+00</b>	3.66E+00 <b>4.E+00</b>

## TABLE 12 INCREMENTAL LIFETIME CARCINOGENIC RISKS FOR IMMINENT HAZARD EVALUATION LANDSCAPER SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

		INGESTION		DEF			
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	$(mg/kg/d)^{-1}$		ILCR
PCBs	3.15E-06	2.00E+00	6.30E-06	2.08E-06	2.00E+00	4.16E-06	1.05E-05
			6.30E-06			4.16E-06	1.E-05

### TABLE 13 HAZARD INDICES FOR IMMINENT HAZARD EVALUATION TRESPASSER SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

OLDER CHILD	INGESTION			DE	Total		
	ADD	RfD Hazard		ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs	4.92E-05	2.00E-05	2.46E+00	4.03E-05	2.00E-05	2.02E+00	4.47E+00
			2.46E+00			2.02E+00	4.E+00

ADULT	ADD	RfD	Hazard	ADD	RfD	Hazard	Total Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs	3.38E-05	2.00E-05	1.69E+00 <b>1.69E+00</b>	2.94E-05	2.00E-05	1.47E+00 <b>1.47E+00</b>	3.16E+00 <b>3.E+00</b>

### TABLE 14 INCREMENTAL LIFETIME CARCINOGENIC RISKS FOR IMMINENT HAZARD EVALUATION TRESPASSER SCENARIO ACUSHNET PROPERTY NEW BEDFORD, MASSACHUSETTS

OLDER CHILD		INGESTION		DEF			
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	$(mg/kg/d)^{-1}$		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
ncn.	2.515.06	2.005.00	7.025.07	2.000.00	2.005.00	5 7 CE 04	1.000.05
PCBs	3.51E-06	2.00E+00	7.02E-06 <b>7.02E-06</b>	2.88E-06	2.00E+00	5.76E-06 <b>5.76E-06</b>	1.28E-05 <b>1.E-05</b>

ADULT CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d) <sup>-1</sup>	ILCR	LADD (mg/kg/d)	SF (mg/kg/d) <sup>-1</sup>	ILCR	Total ILCR
PCBs	2.41E-06	2.00E+00	4.83E-06 <b>4.83E-06</b>	2.10E-06	2.00E+00	4.20E-06 <b>4.20E-06</b>	9.03E-06 <b>9.E-06</b>

Appendix N.
DNAPL Recovery
Information

### DNAPL Recovery Summary Aerovox, 740 Belleville Avenue, New Bedford, MA RTN 4-04601

### MW-15D

			Approximate	Recovery	Recovery	Cumulative	Recovery	Cumulative	
		Depth to	DNAPL	Event	Event	Volume	Event	Volume	Tide Cycle At
	Date	Groundwater							-
		(ft)	Thickness	Volume	Volume	Removed	Volume	Removed	Measurement
$\overline{}$	5/19/2014	NM	(inches)	(ounces)	(ml) 350	(ml) 350	<b>(gal)</b> 0.09	(gal)	NR
	5/19/2014	INIVI	/	8 to 16	350	350	0.09	0.09	INK
	6/2/2014	5.03	4.5	8 to 16	350	700	0.09	0.18	NR
t #1	0/2/2014	3.03	4.5	8 10 10	330	700	0.09	0.16	INIX
por									
Re	6/16/2014	NM	4.5	5.5	160	860	0.04	0.23	NR
Status Report #1	6/30/2014	NM	6	5.5	150	1010	0.04	0.27	NR
Sta	0,00,201		•		100	1010	0.01	0.27	
	7/27/2014	4.49	3.5	3.4	100	1110	0.03	0.29	low tide
<b>‡</b> 5									
Į,	8/18/2014	3.85	3	3.4	100	1210	0.03	0.32	3/4 of high
ebo									3/4 of high;
SR	9/22/2014	5.46	5	6.8	200	1410	0.05	0.37	ebbing
Status Report #2		]							
Sŧ	10/6/2014	5.48	3	1.4	40	1450	0.01	0.38	low tide
	10/22/2014	4.93	4	6.8	200	1650	0.05	0.44	low tide
Status Report #3	11/3/2014	5.74	4	0.0	1.25	1651	0.00	0.44	low tide
od	44/47/2044	4.42		2.4	400	4754	0.00	0.46	National Inc
s Re	11/17/2014	4.43	4	3.4	100	1751	0.03	0.46	Mid-tide; ebbing
atus	12/8/2014	2.76	4	5.1	150	1901	0.04	0.50	high tide
Sta	12/23/2014	2.94	3.5	2.7	80	1981	0.02	0.52	high tide
	1/6/2015	6.35	3.5	2.5	75	2056	0.02	0.54	low tide
	1/19/2015	5.07	3	3.4	100	2156	0.03	0.57	low tide
	2/6/2015	NM	3	0.7	20	2176	0.01	0.57	not noted
	2/23/2015								
L	3/9/2015	3.78	6	4.2	125	2301	0.03	0.61	high tide
Status Report #4	3/23/2015	3.13	5.5	5.1	150	2451	0.03	0.65	high tide
por	3/23/2013	3.13	3.3	3.1	130	2-51	0.04	0.03	3/4 of high tide;
Re	4/13/2015	5.46	1	1.0	30	2481	0.01	0.66	ebbing tide
tus	1/15/2015	3.40	-	1.0	30	2.01	0.01	0.00	cooning trac
Sta									3/4 of high tide;
	4/27/2015	3.05	2.5	1.7	50	2531	0.01	0.67	ebbing tide
									3/4 of high tide;
	5/11/2015	4.65	2.5	1.0	30	2561	0.01	0.68	ebbing tide
	5/26/2015	4.91	4	1.7	50	2611	0.01	0.69	mid flow tide
	6/3/2015	4.99	2.5	1.7	50	2661	0.01	0.70	low tide
									3/4 high tide,
	6/16/2015	3.89	4.5	1.7	50	2711	0.01	0.72	ebbing tide
t #	s /o.o./								
por	6/29/2015	4.28	trace	0.1	2	2713	0.00	0.72	Mid-tide; ebbing
Status Report #5	7/16/2015	4.87	2.5	0.7	20	2733	0.01	0.72	low tide
ıtus									1/4 of low, flood
Sta	7/27/2015	4.78	2.5	0.8	25	2758	0.01	0.73	tide
	8/14/2015	5.29	2.5	0.5	15	2773	0.004	0.73	low tide
	, ,		-					-	3/4 of high tide;
	8/28/2015	2.28	2	0.3	10	2783	0.003	0.74	ebbing tide
		Total Volum	e from MW-15D:	94	2783				

### Notes:

 $\label{lem:covered} \mbox{Volume is estimated; includes DNAPL only - recovered water is not included in estimate}$ 

For the total volume recovered calculation, a value of 12 ounces was used for the first two recovery events.

The site could not be acessed on 2/23/2015 due to accumulation of ice and snow near the access gates.

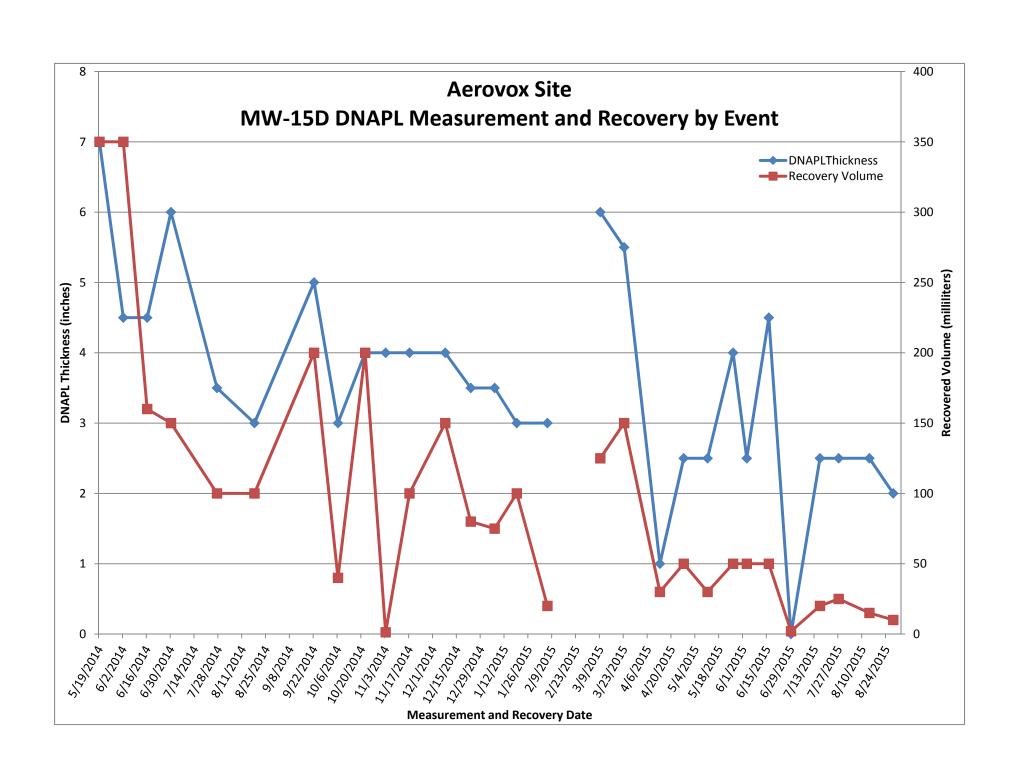
#### Table 1 DNAPL Recovery Summary (Continued) Aerovox, 740 Belleville Avenue, New Bedford, MA RTN 4-04601

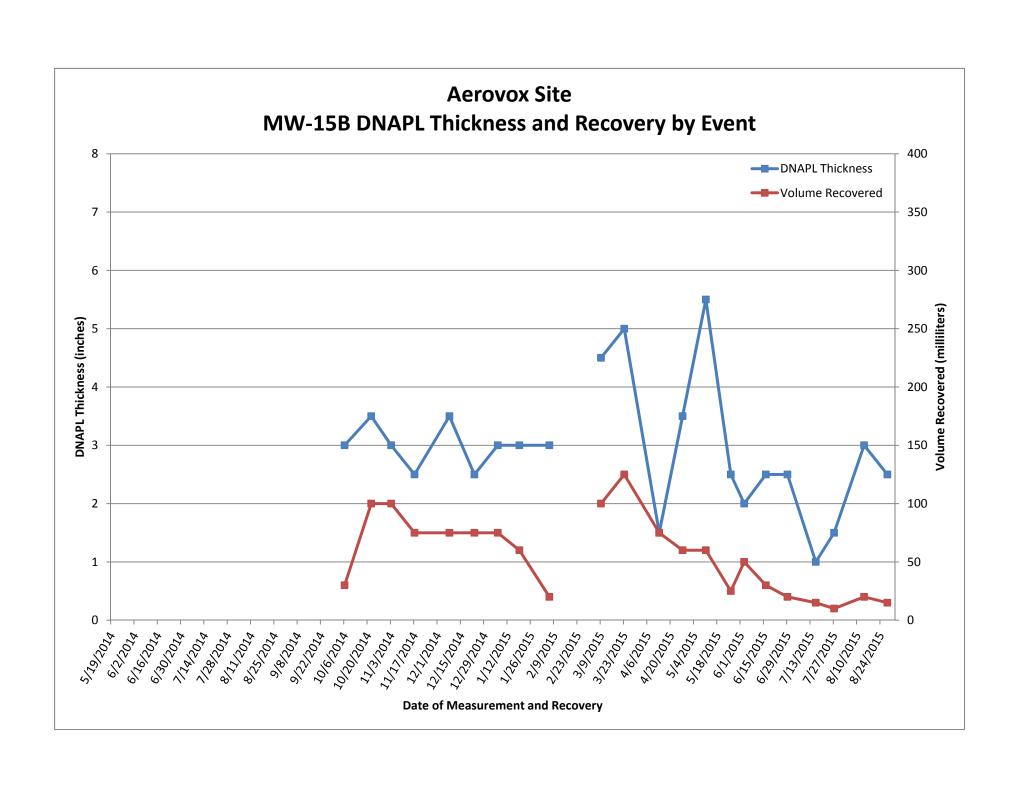
#### MW-15B

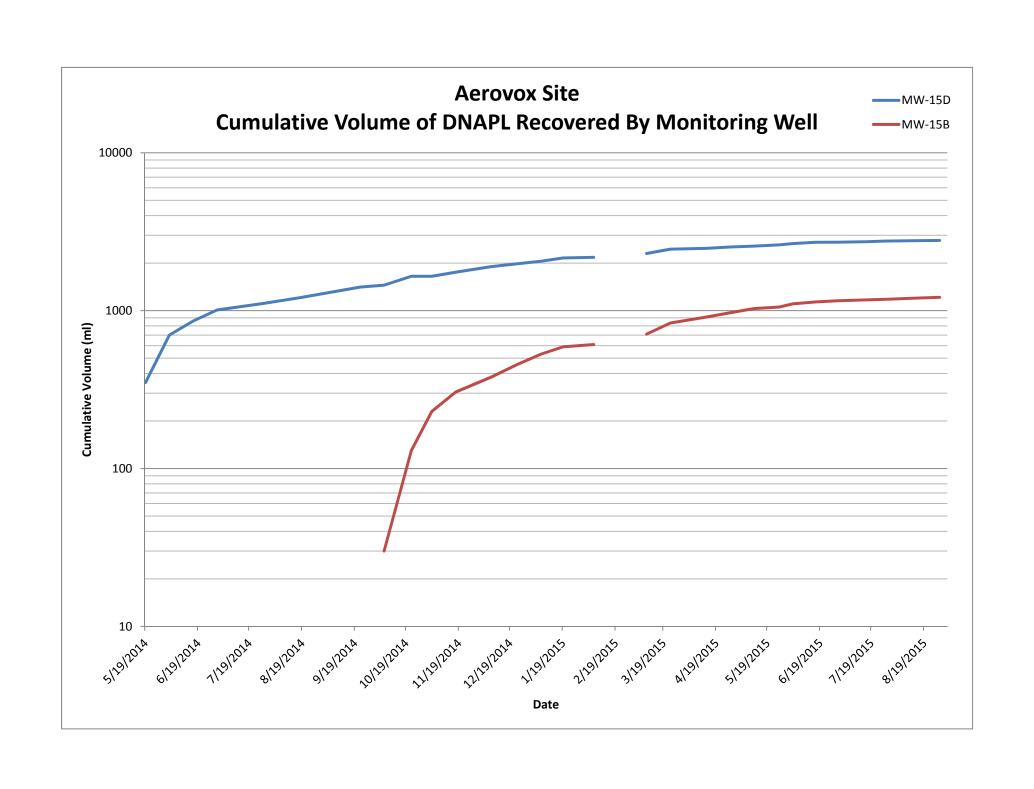
ĺ			Approximate	Recovery			Recovery	Cumulative	
		Depth to	DNAPL	Event	Recovery	Cumulative	Event	Recovery	
		Groundwater	Thickness	Volume	Event	Recovery	Volume	Volume	
	Date	(ft)	(inches)	(ounces)	Volume (ml)	Volume (ml)	(gal)	(Gal)	Tide Cycle
	5/19/2014								
	6/2/2014								
	6/16/2014								
	6/30/2014								
	7/27/2014								
	8/18/2014								
	9/22/2014	4.63	2	40.4	20	20	0.00	0.00	la tida
	10/6/2014	4.63	3	10.1	30	30	0.00	0.00	low tide
Status Report # 3	10/22/2014	4.82	3.5	33.8	100	130	0.03	0.03	low tide
s Re	11/3/2014	5.46	3	33.8	100	230	0.03	0.05	low tide
atu	11/17/2014	4.00	2.5	25.4		205	0.03	0.07	mid-tide;
st	11/17/2014 12/8/2014	4.98 4.98	2.5 3.5	25.4 25.4	75 75	305 380	0.02 0.02	0.07	ebbing
	12/8/2014	3.43	2.5	25.4	75	455	0.02	0.09 0.11	high tide high tide
	1/6/2015	4.62	3	25.4	75	530	0.02	0.11	low tide
	1/19/2015	6.04	3	20.3	60	590	0.02	0.15	low tide
	2/6/2015	NM	3	6.8	20	610	0.01		not noted
	2/23/2015								
	3/9/2015	4.11	4.5	33.8	100	710	0.03	0.17	high tide
	3/23/2015	4.78	5	42.3	125	835	0.03	0.21	high tide
Status Report #4	4/13/2015	5.07	1.5	25.4	75	910	0.02	0.23	3/4 of high tide, ebbing tide
. Re									Flow tide,
atus	4/27/2015	4.70	3.5	20.3	60	970	0.02	0.24	nearly high
St									3/4 of high
									tide, ebbing
	5/11/2015	4.99	5.5	20.3	60	1030	0.02	0.26	tide
	5/26/2015	5.13	2.5	8.5	25	1055	0.01	0.27	mid flow tide
	6/3/2015	5.33	2	16.9	50	1105	0.01	0.28	low tide
.									3/4 of high tide, ebbing
t #5	6/16/2015	4.38	2.5	10.1	30	1135	0.00793	0.29	tide, ebbling
por	0, 10, 2013	1.50	2.3	10.1	30	1133	3.00733	0.23	mid-tide;
s Re	6/29/2015	4.42	2.5	6.8	20	1155	0.00528	0.29	ebbing
Status Report #	7/16/2015	4.49	1	5.1	15	1170	0.00396	0.30	low tide
St									1/4 of low,
	7/27/2015	4.46	1.5	3.4	10	1180	0.00264	0.30	flood tide
	8/14/2015	4.46	3	6.8	20	1200	0.00528	0.30	low tide
									3/4 of high tide; ebbing
	8/28/2015	3.96	2.5	5.1	15	1215	0.00396	0.31	tide; ebbling
		I Volume to Date		410.8	13	1215	3.00330	0.31	

#### Notes:

Volume is estimated; includes DNAPL only - recovered water is not included in estimate DNAPL was not observed at a measureable thickness in MW-15B until September 29, 2014 The site could not be accessed on 2/23/2015 due to accumulation of ice and snow near the access gates.







Appendix O.
DNAPL Physical and
Chemical Properties



## Torkelson Geochemistry, Inc.

### **CHAIN-OF-CUSTODY RECORD**

2528 S. Columbia Place Tulsa, OK 74114-3233

Fax: 918-749-6005

Phone: 918-749-8441 e-mail: BTorkelson@torkelsongeochemistry.com

	1		
Page	1	of	l

Project:	Former Aerovox Facility, MC	CP/21E		_	Rep	ort/B	ill To:										_		Additional Instructions
Location:	740 Believille Avenue, New	Bedford, MA		_		Iress		PO E									_	_	This is a hazardous material containing PCBs and chlorinated volatile
Proj. No.:	39744051			- -	with Suit	theF e 40	Add Projec 1, Mai 603	t/ PO nche	nun ster,	nber NH	r; re	port						7	organic compounds. Please review chemical analytical data (sent via for exact constituent concentrations and use all appropriate safety measures and personal protective equipment for working with this
P.O.:	39744051.40003	-		-			03-60										_	-	
	B. Hoch/J. Harshman			-	e-m			dith.		lair	@ı	urs.	.cor	n		 -m	_		Requested Turn-Around Time: Normal
ITEM NO.	SAMPLE DESCRIPTION	OATE	MATRIX	LAB NO.	Total # OF Vials		SERVA	ATIVE	GC Characterization	Density	Γ	$\overline{}$		Water Interfac. Tens.	Lead	JEST	ED		REMARKS
11	MW-15B/MW-15D	3/9/15 3/13/2015	DNAPL/ GW		6					х	1		х	х				Ì	2 vials of DNAPL (MW-15D, MW-15B), 4 vials of GW (2 from MW- 15B, 2 from MW-15D); Please use sample from MW-15D as primary;; MW-15B as backup
2												<u> </u>							
3																			
4					П				Τ										
5									T		Γ								
6					П						Γ								
7																			
8																			
9																			
10																			
				RELI میگار	NQI	JISI	HED پ ر	ń.	مار:	-		_	DA /I's		(-	IMIT			ACCEPTED BY DATE TIME
			FC	J E	×	(_	X Z \					-				 		B	Ted Ex Grand

	Torkelson Geochemistry, Inc.										
	Physical Properties Measurements										
Sample	TGI Job Number	Density of NAPL (gm/ml)	Viscosity of NAPL (centipoise)	Surface Tension Air/Water (dynes/cm)	Interfacial Tension Water/NAPL (dynes/cm)	Surface Tension Air/NAPL (dynes/cm)	Temperature of Measurements				
MW-15B/MW-15D	15030	1.2083	NA	70.4	15.0*	26.3	60F				

NA = Not Analyzed

\* = Water over DNAPL



#### ANALYTICAL REPORT

Lab Number: L1406115

Client: URS Corporation

1155 Elm Street

Manchester, NH 03101

ATTN: Judith LeClair Phone: (603) 893-0616

Project Name: AEROVOX

Project Number: 39744051.20003

Report Date: 03/31/14

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019 508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: Lab Number: AEROVOX L1406115

Project Number: Report Date: 03/31/14 39744051.20003

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1406115-01	TB-05	NEW BEDFORD, MA	03/24/14 00:00
L1406115-02	AX-GW-MW3-032414	NEW BEDFORD, MA	03/24/14 09:05
L1406115-03	AX-GW-MW15B-032414	NEW BEDFORD, MA	03/24/14 10:50
L1406115-04	AX-GW-MW7A-032414	NEW BEDFORD, MA	03/24/14 10:00
L1406115-05	AX-GW-MW7-032414	NEW BEDFORD, MA	03/24/14 11:25
L1406115-06	AX-GW-MW15D-032414	NEW BEDFORD, MA	03/24/14 11:50
L1406115-07	AX-GW-DUP4-032414	NEW BEDFORD, MA	03/24/14 11:55
L1406115-08	AX-DNAPL-MW15D-032414	NEW BEDFORD, MA	03/24/14 12:45
L1406115-09	AX-GW-MW7B-032414	NEW BEDFORD, MA	03/24/14 14:00

Project Name: AEROVOX Lab Number: L1406115

Project Number: 39744051.20003 Report Date: 03/31/14

#### **MADEP MCP Response Action Analytical Report Certification**

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

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

A res	A response to questions G, H and I is required for "Presumptive Certainty" status									
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	NO								
Н	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO								
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO								

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: AEROVOX Lab Number: L1406115
Project Number: 39744051.20003 Report Date: 03/31/14

#### **Case Narrative**

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

#### HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.
--



Project Name:AEROVOXLab Number:L1406115Project Number:39744051.20003Report Date:03/31/14

#### Case Narrative (continued)

MCP Related Narratives

Volatile Organics

In reference to question G:

L1406115-02, -03 and -05 through -09: One or more of the target analytes did not achieve the requested CAM reporting limits.

In reference to question H:

The continuing calibration standards, associated with L1406115-01 through -07 and -09, are outside the acceptance criteria for several compounds; however, they are within overall method allowances. A copy of the continuing calibration standards is included as an addendum to this report.

In reference to question I:

All samples were analyzed for a subset of MCP compounds per the Chain of Custody.

#### **PCBs**

L1406115-03 through -07 and -09 contain peaks which match the retention times for Aroclor 1242, but do not match the area ratios typical for this aroclor. The results for Aroclor 1242 are reported as "weathered".

L1406115-03, -05, -06 and -07: One or more of the target analytes did not achieve the requested CAM

In reference to question H:

reporting limits.

In reference to question G:

The surrogate recoveries for L1406115-03, -05 through -08 and the WG678281-4 Laboratory Duplicate are below the acceptance criteria for 2,4,5,6-tetrachloro-m-xylene (0%) and decachlorobiphenyl (0%) due to the dilutions required to quantitate the samples. Re-extraction was not required; therefore, the results of the original analyses are reported.

The WG678281-1 Method Blank, associated with L1406115-08, has a concentration above the reporting limit for Aroclor 1260. Since the sample was non-detect for this target analyte, no further actions were taken. The results of the original analysis are reported.



 Project Name:
 AEROVOX
 Lab Number:
 L1406115

 Project Number:
 39744051.20003
 Report Date:
 03/31/14

#### **Case Narrative (continued)**

Non-MCP Related Narratives

Solids, Total Suspended

WG678197: A laboratory duplicate could not be performed due to insufficient sample volume available for analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Wichelle M. Morris

Authorized Signature:

Title: Technical Director/Representative

ΔLPHA

Date: 03/31/14

# **ORGANICS**



## **VOLATILES**



**Project Name: AEROVOX** 

**Project Number:** 39744051.20003

**SAMPLE RESULTS** 

Lab Number: L1406115

Report Date: 03/31/14

Lab ID: L1406115-01

Client ID: TB-05

Sample Location: NEW BEDFORD, MA

Matrix: Water Analytical Method: 97,8260C Analytical Date: 03/28/14 14:09

Analyst: MM Date Collected:

03/24/14 00:00

Date Received:

03/24/14

Field Prep:

Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborou	ıgh Lab					
Methylene chloride	ND		ug/l	2.0		1
1,1-Dichloroethane	ND		ug/l	1.0		1
Chloroform	ND		ug/l	1.0		1
Carbon tetrachloride	ND		ug/l	1.0		1
1,2-Dichloropropane	ND		ug/l	1.0		1
Dibromochloromethane	ND		ug/l	1.0		1
1,1,2-Trichloroethane	ND		ug/l	1.0		1
Tetrachloroethene	ND		ug/l	1.0		1
Chlorobenzene	ND		ug/l	1.0		1
1,2-Dichloroethane	ND		ug/l	1.0		1
1,1,1-Trichloroethane	ND		ug/l	1.0		1
Bromodichloromethane	ND		ug/l	1.0		1
trans-1,3-Dichloropropene	ND		ug/l	0.50		1
cis-1,3-Dichloropropene	ND		ug/l	0.50		1
Bromoform	ND		ug/l	2.0		1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0		1
Chloromethane	ND		ug/l	2.0		1
Vinyl chloride	ND		ug/l	1.0		1
Chloroethane	ND		ug/l	2.0		1
1,1-Dichloroethene	ND		ug/l	1.0		1
trans-1,2-Dichloroethene	ND		ug/l	1.0		1
Trichloroethene	ND		ug/l	1.0		1
1,2-Dichlorobenzene	ND		ug/l	1.0		1
1,3-Dichlorobenzene	ND		ug/l	1.0		1
1,4-Dichlorobenzene	ND		ug/l	1.0		1
cis-1,2-Dichloroethene	ND		ug/l	1.0		1
Dichlorodifluoromethane	ND		ug/l	2.0		1
1,2-Dibromoethane	ND		ug/l	2.0		1
1,3-Dichloropropane	ND		ug/l	2.0		1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0		1
o-Chlorotoluene	ND		ug/l	2.0		1



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-01

Client ID: TB-05

Sample Location: NEW BEDFORD, MA

Date Collected:

03/24/14 00:00

Date Received: 03/24/14
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
p-Chlorotoluene	ND		ug/l	2.0		1
Hexachlorobutadiene	ND		ug/l	0.60		1
1,2,4-Trichlorobenzene	ND		ug/l	2.0		1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	
1,2-Dichloroethane-d4	102		70-130	
Toluene-d8	99		70-130	
4-Bromofluorobenzene	101		70-130	
Dibromofluoromethane	99		70-130	

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-02 D Date Collected: 03/24/14 09:05

Client ID: AX-GW-MW3-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 03/28/14 15:12

MCP Volatile Organics - Westborough Lab         ND         ug/l         4.0         -         2           1,1-Dichloroethane         ND         ug/l         2.0         -         2           Chloroform         ND         ug/l         2.0         -         2           Chloroform         ND         ug/l         2.0         -         2           1.2-Dichloroprogene         ND         ug/l         2.0         -         2           1.2-Dichloroprogene         ND         ug/l         2.0         -         2           Dibromochloromethane         ND         ug/l         2.0         -         2           1.1-2-Trichloroethane         ND         ug/l         2.0         -         2           1-1-2-Trichloroethane         ND         ug/l         2.0         -         2           1-2-Dichloroethane         ND         ug/l         2.0         -         2           1-2-Dichloroethane         ND         ug/l         2.0         -         2           1-2-Dichloroethane         ND         ug/l         1.0         -         2           Bromodichioromethane         ND         ug/l         1.0         -         2	Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1.1-Dichloroethane         ND         ug/l         2.0          2           Chloroform         ND         ug/l         2.0          2           Carbon tetrachloride         ND         ug/l         2.0          2           1,2-Dichloropropane         ND         ug/l         2.0          2           Dibromochloromethane         ND         ug/l         2.0          2           1,1,2-Trichloroethane         ND         ug/l         2.0          2           Chloroberane         170         ug/l         2.0          2           Chlorobethane         ND         ug/l         2.0          2           1,2-Dichloroethane         ND         ug/l         2.0          2           1,2-Dichloroethane         ND         ug/l         2.0          2           Bromodichloromethane         ND         ug/l         2.0          2           Bromodichromethane         ND         ug/l         4.0          2           Bromoform         ND         ug/l         4.0          2 <td< td=""><td>MCP Volatile Organics - Westborough La</td><td>b</td><td></td><td></td><td></td><td></td><td></td></td<>	MCP Volatile Organics - Westborough La	b					
Chloroform         ND         ug/l         2.0          2           Carbon tetrachloride         ND         ug/l         2.0          2           1.2-Dichloropropane         ND         ug/l         2.0          2           Dibromochloromethane         ND         ug/l         2.0          2           Tetrachloroethane         ND         ug/l         2.0          2           Tetrachloroethane         ND         ug/l         2.0          2           Chlorobenzene         170         ug/l         2.0          2           1,2-Dichloroethane         ND         ug/l         2.0          2           1,1-1-Trichloroethane         ND         ug/l         2.0          2           Bromodichloromethane         ND         ug/l         2.0          2           Bromoform         ND         ug/l         1.0          2           Bromoform         ND         ug/l         4.0          2           Bromoform         ND         ug/l         4.0          2           Bromoform <td>Methylene chloride</td> <td>ND</td> <td></td> <td>ug/l</td> <td>4.0</td> <td></td> <td>2</td>	Methylene chloride	ND		ug/l	4.0		2
Carbon tetrachloride         ND         ugfl         2.0          2           1,2-Dichloropropane         ND         ugfl         2.0          2           Dibromochloromethane         ND         ugfl         2.0          2           1,1,2-Trichloroethane         ND         ugfl         2.0          2           Chlorobenzene         170         ugfl         2.0          2           1,2-Dichloroethane         ND         ugfl         2.0          2           1,2-Dichloroethane         ND         ugfl         2.0          2           1,1-Trichloroethane         ND         ugfl         2.0          2           Bromochromethane         ND         ugfl         1.0          2           Bromoform         ND         ugfl         1.0          2           Eromothoropropene         ND         ugfl         4.0          2           Chloroethane         ND         ugfl         4.0          2           Vinyl chloride         2.0         ugfl         4.0          2 <t< td=""><td>1,1-Dichloroethane</td><td>ND</td><td></td><td>ug/l</td><td>2.0</td><td></td><td>2</td></t<>	1,1-Dichloroethane	ND		ug/l	2.0		2
1.2-Dichloropropane   ND   ug/l   2.0     2   2   2   2   1.1,1.7-Tichloroethane   ND   ug/l   2.0     2   2   2   2   2   2   2   2	Chloroform	ND		ug/l	2.0		2
Dibromochloromethane   ND   ug/l   2.0   -   2	Carbon tetrachloride	ND		ug/l	2.0		2
1,1,2-Trichloroethane   ND   ug/l   2,0   -   2	1,2-Dichloropropane	ND		ug/l	2.0		2
Tetrachloroethene         ND         ug/l         2.0          2           Chlorobenzene         170         ug/l         2.0          2           1,2-Dichloroethane         ND         ug/l         2.0          2           1,1,1-Trichloroethane         ND         ug/l         2.0          2           Bromodichloromethane         ND         ug/l         1.0          2           strans-1,3-Dichloropropene         ND         ug/l         1.0          2           strans-1,3-Dichloropropene         ND         ug/l         4.0          2           Bromotorm         ND         ug/l         4.0          2           Bromotorm         ND         ug/l         4.0          2           Chloromethane         ND         ug/l         4.0          2           Chloromethane         ND         ug/l         4.0          2           Chloroethane         ND         ug/l         2.0          2           Chloroethane         ND         ug/l         2.0          2           Trichl	Dibromochloromethane	ND		ug/l	2.0		2
Chlorobenzene         170         ug/l         2.0          2           1,2-Dichloroethane         ND         ug/l         2.0          2           1,1-1-Trichloroethane         ND         ug/l         2.0          2           Bromodichloromethane         ND         ug/l         2.0          2           Bromodichloropropene         ND         ug/l         1.0          2           trans-1,3-Dichloropropene         ND         ug/l         1.0          2           Bromoform         ND         ug/l         4.0          2           Bromoform         ND         ug/l         2.0          2           1,1,2,2-Tetrachloroethane         ND         ug/l         2.0          2           Chloromethane         ND         ug/l         2.0          2           Vinyl chloride         2.0         ug/l         2.0          2           Chloroethane         ND         ug/l         2.0          2           T,1-Dichloroethane         ND         ug/l         2.0          2           <	1,1,2-Trichloroethane	ND		ug/l	2.0		2
1,2-Dichloroethane         ND         ug/l         2.0          2           1,1,1-Trichloroethane         ND         ug/l         2.0          2           Bromodichloromethane         ND         ug/l         2.0          2           trans-1,3-Dichloropropene         ND         ug/l         1.0          2           cis-1,3-Dichloropropene         ND         ug/l         4.0          2           Bromoform         ND         ug/l         4.0          2           1,1,2,2-Tetrachloroethane         ND         ug/l         4.0          2           Chloromethane         ND         ug/l         4.0          2           Vinyl chloride         2.0         ug/l         4.0          2           Chloroethane         ND         ug/l         4.0          2           Chloroethane         ND         ug/l         2.0          2           Chloroethane         ND         ug/l         2.0          2           Thichloroethene         ND         ug/l         2.0          2	Tetrachloroethene	ND		ug/l	2.0		2
1,1,1-Trichloroethane	Chlorobenzene	170		ug/l	2.0		2
Bromodichloromethane         ND         ug/l         2.0          2           trans-1,3-Dichloropropene         ND         ug/l         1.0          2           cis-1,3-Dichloropropene         ND         ug/l         1.0          2           Bromoform         ND         ug/l         4.0          2           1,1,2,2-Tetrachloroethane         ND         ug/l         4.0          2           Chloromethane         ND         ug/l         4.0          2           Chloroethane         ND         ug/l         4.0          2           Chloroethane         ND         ug/l         4.0          2           Chloroethane         ND         ug/l         2.0          2           Chloroethane         ND         ug/l         2.0          2           Trichloroethene         ND         ug/l         2.0          2           Trichloroethene         ND         ug/l         2.0          2           1,2-Dichloroethene         ND         ug/l         2.0          2           1,3-D	1,2-Dichloroethane	ND		ug/l	2.0		2
trans-1,3-Dichloropropene         ND         ug/l         1.0          2           cis-1,3-Dichloropropene         ND         ug/l         1.0          2           Bromoform         ND         ug/l         4.0          2           1,1,2,2-Tetrachloroethane         ND         ug/l         2.0          2           Chloromethane         ND         ug/l         4.0          2           Chloroethane         ND         ug/l         2.0          2           Chloroethane         ND         ug/l         2.0          2           Chloroethane         ND         ug/l         2.0          2           Trichloroethene         ND         ug/l         2.0          2           Trichloroethene         ND         ug/l         2.0          2           1,2-Dichloroethene         ND         ug/l         2.0          2           1,4-Dichloroethene         ND         ug/l         2.0          2           1,4-Dichloroethene         ND         ug/l         2.0          2           1	1,1,1-Trichloroethane	ND		ug/l	2.0		2
cis-1,3-Dichloropropene         ND         ug/l         1.0          2           Bromoform         ND         ug/l         4.0          2           1,1,2,2-Tetrachloroethane         ND         ug/l         2.0          2           Chloromethane         ND         ug/l         4.0          2           Chloroethane         ND         ug/l         2.0          2           Chloroethane         ND         ug/l         2.0          2           1,1-Dichloroethene         ND         ug/l         2.0          2           1,1-Dichloroethene         ND         ug/l         2.0          2           1,1-Dichloroethene         ND         ug/l         2.0          2           1,2-Dichloroethene         ND         ug/l         2.0          2           1,3-Dichlorobenzene         7.1         ug/l         2.0          2           1,2-Dichloroethene         ND         ug/l         4.0          2           Dichlorodifluoromethane         ND         ug/l         4.0          2	Bromodichloromethane	ND		ug/l	2.0		2
Bromoform   ND   Ug/l   4.0     2	trans-1,3-Dichloropropene	ND		ug/l	1.0		2
1,1,2,2-Tetrachloroethane       ND       ug/l       2.0        2         Chloromethane       ND       ug/l       4.0        2         Vinyl chloride       2.0       ug/l       2.0        2         Chloroethane       ND       ug/l       4.0        2         1,1-Dichloroethene       ND       ug/l       2.0        2         1,1-Dichloroethene       ND       ug/l       2.0        2         Trichloroethene       ND       ug/l       2.0        2         1,2-Dichlorobenzene       ND       ug/l       2.0        2         1,3-Dichlorobenzene       3.9       ug/l       2.0        2         1,4-Dichlorobenzene       7.1       ug/l       2.0        2         cis-1,2-Dichloroethene       ND       ug/l       2.0        2         Dichlorodifluoromethane       ND       ug/l       4.0        2         1,2-Dibromoethane       ND       ug/l       4.0        2         1,3-Dichloropropane       ND       ug/l       4.0        2	cis-1,3-Dichloropropene	ND		ug/l	1.0		2
Chloromethane         ND         ug/l         4.0          2           Vinyl chloride         2.0         ug/l         2.0          2           Chloroethane         ND         ug/l         4.0          2           1,1-Dichloroethene         ND         ug/l         2.0          2           trans-1,2-Dichloroethene         ND         ug/l         2.0          2           Trichloroethene         ND         ug/l         2.0          2           1,2-Dichlorobenzene         ND         ug/l         2.0          2           1,3-Dichlorobenzene         3.9         ug/l         2.0          2           1,4-Dichlorobenzene         7.1         ug/l         2.0          2           cis-1,2-Dichloroethene         ND         ug/l         2.0          2           Dichlorodifluoromethane         ND         ug/l         4.0          2           1,2-Dibromoethane         ND         ug/l         4.0          2           1,3-Dichloropropane         ND         ug/l         4.0          2	Bromoform	ND		ug/l	4.0		2
Vinyl chloride         2.0         ug/l         2.0          2           Chloroethane         ND         ug/l         4.0          2           1,1-Dichloroethene         ND         ug/l         2.0          2           trans-1,2-Dichloroethene         ND         ug/l         2.0          2           Trichloroethene         ND         ug/l         2.0          2           1,2-Dichlorobenzene         ND         ug/l         2.0          2           1,3-Dichlorobenzene         3.9         ug/l         2.0          2           1,4-Dichlorobenzene         7.1         ug/l         2.0          2           cis-1,2-Dichloroethene         ND         ug/l         2.0          2           Dichlorodifluoromethane         ND         ug/l         4.0          2           1,2-Dibromoethane         ND         ug/l         4.0          2           1,3-Dichloropropane         ND         ug/l         4.0          2           1,1,1,2-Tetrachloroethane         ND         ug/l         2.0          2 <td>1,1,2,2-Tetrachloroethane</td> <td>ND</td> <td></td> <td>ug/l</td> <td>2.0</td> <td></td> <td>2</td>	1,1,2,2-Tetrachloroethane	ND		ug/l	2.0		2
Chloroethane         ND         ug/l         4.0          2           1,1-Dichloroethene         ND         ug/l         2.0          2           trans-1,2-Dichloroethene         ND         ug/l         2.0          2           Trichloroethene         ND         ug/l         2.0          2           1,2-Dichlorobenzene         ND         ug/l         2.0          2           1,3-Dichlorobenzene         3.9         ug/l         2.0          2           1,4-Dichlorobenzene         7.1         ug/l         2.0          2           cis-1,2-Dichloroethene         ND         ug/l         2.0          2           Dichlorodifluoromethane         ND         ug/l         4.0          2           1,2-Dibromoethane         ND         ug/l         4.0          2           1,3-Dichloropropane         ND         ug/l         4.0          2           1,1,1,2-Tetrachloroethane         ND         ug/l         2.0          2	Chloromethane	ND		ug/l	4.0		2
1,1-Dichloroethene       ND       ug/l       2.0        2         trans-1,2-Dichloroethene       ND       ug/l       2.0        2         Trichloroethene       ND       ug/l       2.0        2         1,2-Dichlorobenzene       ND       ug/l       2.0        2         1,3-Dichlorobenzene       3.9       ug/l       2.0        2         1,4-Dichlorobenzene       7.1       ug/l       2.0        2         cis-1,2-Dichloroethene       ND       ug/l       2.0        2         Dichlorodifluoromethane       ND       ug/l       4.0        2         1,2-Dibromoethane       ND       ug/l       4.0        2         1,3-Dichloropropane       ND       ug/l       4.0        2         1,1,1,2-Tetrachloroethane       ND       ug/l       4.0        2	Vinyl chloride	2.0		ug/l	2.0		2
trans-1,2-Dichloroethene         ND         ug/l         2.0          2           Trichloroethene         ND         ug/l         2.0          2           1,2-Dichlorobenzene         ND         ug/l         2.0          2           1,3-Dichlorobenzene         3.9         ug/l         2.0          2           1,4-Dichlorobenzene         7.1         ug/l         2.0          2           cis-1,2-Dichloroethene         ND         ug/l         2.0          2           Dichlorodifluoromethane         ND         ug/l         4.0          2           1,2-Dibromoethane         ND         ug/l         4.0          2           1,3-Dichloropropane         ND         ug/l         4.0          2           1,1,1,2-Tetrachloroethane         ND         ug/l         2.0          2	Chloroethane	ND		ug/l	4.0		2
Trichloroethene         ND         ug/l         2.0          2           1,2-Dichlorobenzene         ND         ug/l         2.0          2           1,3-Dichlorobenzene         3.9         ug/l         2.0          2           1,4-Dichlorobenzene         7.1         ug/l         2.0          2           cis-1,2-Dichloroethene         ND         ug/l         2.0          2           Dichlorodifluoromethane         ND         ug/l         4.0          2           1,2-Dibromoethane         ND         ug/l         4.0          2           1,3-Dichloropropane         ND         ug/l         4.0          2           1,1,1,2-Tetrachloroethane         ND         ug/l         2.0          2	1,1-Dichloroethene	ND		ug/l	2.0		2
1,2-Dichlorobenzene       ND       ug/l       2.0        2         1,3-Dichlorobenzene       3.9       ug/l       2.0        2         1,4-Dichlorobenzene       7.1       ug/l       2.0        2         cis-1,2-Dichloroethene       ND       ug/l       2.0        2         Dichlorodifluoromethane       ND       ug/l       4.0        2         1,2-Dibromoethane       ND       ug/l       4.0        2         1,3-Dichloropropane       ND       ug/l       4.0        2         1,1,1,2-Tetrachloroethane       ND       ug/l       2.0        2	trans-1,2-Dichloroethene	ND		ug/l	2.0		2
1,3-Dichlorobenzene       3.9       ug/l       2.0        2         1,4-Dichlorobenzene       7.1       ug/l       2.0        2         cis-1,2-Dichloroethene       ND       ug/l       2.0        2         Dichlorodifluoromethane       ND       ug/l       4.0        2         1,2-Dibromoethane       ND       ug/l       4.0        2         1,3-Dichloropropane       ND       ug/l       4.0        2         1,1,1,2-Tetrachloroethane       ND       ug/l       2.0        2	Trichloroethene	ND		ug/l	2.0		2
1,4-Dichlorobenzene       7.1       ug/l       2.0        2         cis-1,2-Dichloroethene       ND       ug/l       2.0        2         Dichlorodifluoromethane       ND       ug/l       4.0        2         1,2-Dibromoethane       ND       ug/l       4.0        2         1,3-Dichloropropane       ND       ug/l       4.0        2         1,1,1,2-Tetrachloroethane       ND       ug/l       2.0        2	1,2-Dichlorobenzene	ND		ug/l	2.0		2
cis-1,2-Dichloroethene         ND         ug/l         2.0          2           Dichlorodifluoromethane         ND         ug/l         4.0          2           1,2-Dibromoethane         ND         ug/l         4.0          2           1,3-Dichloropropane         ND         ug/l         4.0          2           1,1,1,2-Tetrachloroethane         ND         ug/l         2.0          2	1,3-Dichlorobenzene	3.9		ug/l	2.0		2
Dichlorodifluoromethane         ND         ug/l         4.0          2           1,2-Dibromoethane         ND         ug/l         4.0          2           1,3-Dichloropropane         ND         ug/l         4.0          2           1,1,1,2-Tetrachloroethane         ND         ug/l         2.0          2	1,4-Dichlorobenzene	7.1		ug/l	2.0		2
1,2-Dibromoethane       ND       ug/l       4.0        2         1,3-Dichloropropane       ND       ug/l       4.0        2         1,1,1,2-Tetrachloroethane       ND       ug/l       2.0        2	cis-1,2-Dichloroethene	ND		ug/l	2.0		2
1,3-Dichloropropane         ND         ug/l         4.0          2           1,1,1,2-Tetrachloroethane         ND         ug/l         2.0          2	Dichlorodifluoromethane	ND		ug/l	4.0		2
1,1,1,2-Tetrachloroethane ND ug/l 2.0 2	1,2-Dibromoethane	ND		ug/l	4.0		2
	1,3-Dichloropropane	ND		ug/l	4.0		2
o-Chlorotoluene ND ug/l 4.0 2	1,1,1,2-Tetrachloroethane	ND		ug/l	2.0		2
	o-Chlorotoluene	ND		ug/l	4.0		2



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-02 D Date Collected: 03/24/14 09:05

Client ID: AX-GW-MW3-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
MCP Volatile Organics - Westboroug	h Lab						
p-Chlorotoluene	ND		ug/l	4.0		2	
Hexachlorobutadiene	ND		ug/l	1.2		2	
1,2,4-Trichlorobenzene	ND		ug/l	4.0		2	

Surrogate	% Recovery	Qualifier	Acceptance Criteria	
1,2-Dichloroethane-d4	102		70-130	
Toluene-d8	99		70-130	
4-Bromofluorobenzene	95		70-130	
Dibromofluoromethane	99		70-130	



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-03 D2 Date Collected: 03/24/14 10:50

Client ID: AX-GW-MW15B-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 03/29/14 20:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	90000		ug/l	1000		1000

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	
1,2-Dichloroethane-d4	104		70-130	
Toluene-d8	100		70-130	
4-Bromofluorobenzene	99		70-130	
Dibromofluoromethane	101		70-130	



03/24/14 10:50

Not Specified

03/24/14

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-03 D Date Collected:

Client ID: AX-GW-MW15B-032414 Date Received: Sample Location: NEW BEDFORD, MA Field Prep:

Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 03/28/14 15:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
MCP Volatile Organics - Westborough	Lab						
Methylene chloride	ND		ug/l	800		400	
1,1-Dichloroethane	ND		ug/l	400		400	
Chloroform	ND		ug/l	400		400	
Carbon tetrachloride	ND		ug/l	400		400	
1,2-Dichloropropane	ND		ug/l	400		400	
Dibromochloromethane	ND		ug/l	400		400	
1,1,2-Trichloroethane	ND		ug/l	400		400	
Tetrachloroethene	ND		ug/l	400		400	
Chlorobenzene	ND		ug/l	400		400	
1,2-Dichloroethane	ND		ug/l	400		400	
1,1,1-Trichloroethane	ND		ug/l	400		400	
Bromodichloromethane	ND		ug/l	400		400	
trans-1,3-Dichloropropene	ND		ug/l	200		400	
cis-1,3-Dichloropropene	ND		ug/l	200		400	
Bromoform	ND		ug/l	800		400	
1,1,2,2-Tetrachloroethane	ND		ug/l	400		400	
Chloromethane	ND		ug/l	800		400	
Vinyl chloride	ND		ug/l	400		400	
Chloroethane	ND		ug/l	800		400	
1,1-Dichloroethene	ND		ug/l	400		400	
trans-1,2-Dichloroethene	ND		ug/l	400		400	
Trichloroethene	84000	Е	ug/l	400		400	
1,2-Dichlorobenzene	ND		ug/l	400		400	
1,3-Dichlorobenzene	ND		ug/l	400		400	
1,4-Dichlorobenzene	ND		ug/l	400		400	
cis-1,2-Dichloroethene	22000		ug/l	400		400	
Dichlorodifluoromethane	ND		ug/l	800		400	
1,2-Dibromoethane	ND		ug/l	800		400	
1,3-Dichloropropane	ND		ug/l	800		400	
1,1,1,2-Tetrachloroethane	ND		ug/l	400		400	
o-Chlorotoluene	ND		ug/l	800		400	



03/24/14 10:50

Date Collected:

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-03 D
Client ID: AX-GW-MW15B-032414

Sample Location:

AX-GW-MW15B-032414 Date Received: 03/24/14
NEW BEDFORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
MCP Volatile Organics - Westborough I	_ab						
p-Chlorotoluene	ND		ug/l	800		400	
Hexachlorobutadiene	ND		ug/l	240		400	
1,2,4-Trichlorobenzene	ND		ug/l	800		400	

Surrogate	% Recovery	Qualifier	Acceptance Criteria	
1,2-Dichloroethane-d4	103		70-130	
Toluene-d8	100		70-130	
4-Bromofluorobenzene	99		70-130	
Dibromofluoromethane	99		70-130	



Date Received:

Field Prep:

L1406115

03/24/14

Not Specified

Project Name: AEROVOX Lab Number:

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-04 Date Collected: 03/24/14 10:00

Client ID: AX-GW-MW7A-032414
Sample Location: NEW BEDFORD, MA

Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 03/28/14 14:41

Analyst: MM

Methylene chloride ND Ug/l 1.0 1 1.1-Dichloroethane ND Ug/l 1.0 1 1.2-Dichloroform ND Ug/l 1.0 1 1.2-Dichloropropane ND Ug/l 1.0 1 1 1.1-2-Trichloroethane ND Ug/l 1.0 1 1 1-2-Trichloroethane ND Ug/l 1.0 1 1 1-1-1-Trichloroethane ND Ug/l 1.0 1 1.1-1-Trichloroethane ND Ug/l 1.0 1 1.1-1-Trichloroethane ND Ug/l 1.0 1 1 1.1-1-Trichloropthane ND Ug/l 1.0 1 1 1.1-1-Trichloropthane ND Ug/l 1.0 1 1 1-1-1-Trichloropthane ND Ug/l 1.0 1 1-1-1-Trichloropthane ND Ug/l 1.0 1 1 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1						
Methylene chloride	Parameter	Result	Qualifier Un	its RL	MDL	Dilution Factor
1,1-Dichloroethane	MCP Volatile Organics - Westbor	ough Lab				
ND	Methylene chloride	ND	ug	/l 2.0		1
Carbon tetrachloride         ND         ug/l         1.0          1           1,2-Dichloropropane         ND         ug/l         1.0          1           Dibromochloromethane         ND         ug/l         1.0          1           1,1,2-Trichloroethane         ND         ug/l         1.0          1           Tetrachloroethane         ND         ug/l         1.0          1           Chlorobenzene         ND         ug/l         1.0          1           1,2-Dichloroethane         ND         ug/l         1.0          1           1,1,1-Trichloroethane         ND         ug/l         1.0          1           Bromodichloromethane         ND         ug/l         1.0          1           Bromodichloropropene         ND         ug/l         0.50          1           Bromodorm         ND         ug/l         0.50          1           1,1,2,2-Tetrachloroethane         ND         ug/l         2.0          1           Chloroethane         ND         ug/l         1.0          1	1,1-Dichloroethane	ND	ug	/l 1.0		1
1,2-Dichloropropane   ND   Ug/l   1.0     1	Chloroform	ND	ug	/l 1.0		1
Dibromochloromethane   ND   ug/l   1.0     1   1   1.2   1.2   1.2   1.2   1.2   1.2   1.3	Carbon tetrachloride	ND	ug	/I 1.0		1
1,1,2-Trichloroethane         ND         ug/l         1.0          1           Tetrachloroethane         ND         ug/l         1.0          1           Chlorobenzene         ND         ug/l         1.0          1           1,2-Dichloroethane         ND         ug/l         1.0          1           1,1,1-Trichloroethane         ND         ug/l         1.0          1           Bromodichloromethane         ND         ug/l         1.0          1           Bromodichloropropene         ND         ug/l         0.50          1           Bromoform         ND         ug/l         0.50          1           Bromoform         ND         ug/l         2.0          1           1,1,2,2-Tetrachloroethane         ND         ug/l         1.0          1           Chloromethane         ND         ug/l         1.0          1           Chloroethane         ND         ug/l         1.0          1           Chloroethane         ND         ug/l         1.0          1           1,1-	1,2-Dichloropropane	ND	ug	/l 1.0		1
ND	Dibromochloromethane	ND	ug	/I 1.0		1
ND	1,1,2-Trichloroethane	ND	ug	/I 1.0		1
1,2-Dichloroethane   ND	Tetrachloroethene	ND	ug	/I 1.0		1
1,1,1-Trichloroethane	Chlorobenzene	ND	ug	/I 1.0		1
ND	1,2-Dichloroethane	ND	ug	/l 1.0		1
ND	1,1,1-Trichloroethane	ND	ug	/l 1.0		1
cis-1,3-Dichloropropene         ND         ug/l         0.50          1           Bromoform         ND         ug/l         2.0          1           1,1,2,2-Tetrachloroethane         ND         ug/l         1.0          1           Chloromethane         ND         ug/l         2.0          1           Vinyl chloride         ND         ug/l         1.0          1           Chloroethane         ND         ug/l         1.0          1           1,1-Dichloroethene         ND         ug/l         1.0          1           1,2-Dichloroethene         ND         ug/l         1.0          1           1,2-Dichloroethene         ND         ug/l         1.0          1           1,2-Dichlorobenzene         ND         ug/l         1.0          1           1,3-Dichlorobenzene         ND         ug/l         1.0          1           1,4-Dichlorobenzene         ND         ug/l         1.0          1           1,4-Dichloroethene         ND         ug/l         1.0          1	Bromodichloromethane	ND	ug	/I 1.0		1
ND   ND   ND   ND   ND   ND   ND   ND	trans-1,3-Dichloropropene	ND	ug	/I 0.50		1
1,1,2,2-Tetrachloroethane	cis-1,3-Dichloropropene	ND	ug	/I 0.50		1
Chloromethane         ND         ug/l         2.0          1           Vinyl chloride         ND         ug/l         1.0          1           Chloroethane         ND         ug/l         2.0          1           1,1-Dichloroethene         ND         ug/l         1.0          1           trans-1,2-Dichloroethene         ND         ug/l         1.0          1           1,2-Dichlorobenzene         ND         ug/l         1.0          1           1,3-Dichlorobenzene         ND         ug/l         1.0          1           1,4-Dichlorobenzene         ND         ug/l         1.0          1           1,4-Dichloroethene         ND         ug/l         1.0          1           1,4-Dichlorobenzene         ND         ug/l         1.0          1           cis-1,2-Dichloroethene         ND         ug/l         1.0          1	Bromoform	ND	ug	/l 2.0		1
Vinyl chloride         ND         ug/l         1.0          1           Chloroethane         ND         ug/l         2.0          1           1,1-Dichloroethene         ND         ug/l         1.0          1           trans-1,2-Dichloroethene         ND         ug/l         1.0          1           Trichloroethene         ND         ug/l         1.0          1           1,2-Dichlorobenzene         ND         ug/l         1.0          1           1,3-Dichlorobenzene         ND         ug/l         1.0          1           1,4-Dichloroethene         ND         ug/l         1.0          1           cis-1,2-Dichloroethene         ND         ug/l         1.0          1	1,1,2,2-Tetrachloroethane	ND	ug	/I 1.0		1
Chloroethane         ND         ug/l         2.0          1           1,1-Dichloroethene         ND         ug/l         1.0          1           trans-1,2-Dichloroethene         ND         ug/l         1.0          1           Trichloroethene         ND         ug/l         1.0          1           1,2-Dichlorobenzene         ND         ug/l         1.0          1           1,3-Dichlorobenzene         ND         ug/l         1.0          1           1,4-Dichlorobenzene         ND         ug/l         1.0          1           cis-1,2-Dichloroethene         ND         ug/l         1.0          1	Chloromethane	ND	ug	/l 2.0		1
1,1-Dichloroethene       ND       ug/l       1.0        1         trans-1,2-Dichloroethene       ND       ug/l       1.0        1         Trichloroethene       ND       ug/l       1.0        1         1,2-Dichlorobenzene       ND       ug/l       1.0        1         1,3-Dichlorobenzene       ND       ug/l       1.0        1         1,4-Dichlorobenzene       ND       ug/l       1.0        1         cis-1,2-Dichloroethene       ND       ug/l       1.0        1	Vinyl chloride	ND	ug	/l 1.0		1
ND	Chloroethane	ND	ug	/l 2.0		1
Trichloroethene         ND         ug/l         1.0          1           1,2-Dichlorobenzene         ND         ug/l         1.0          1           1,3-Dichlorobenzene         ND         ug/l         1.0          1           1,4-Dichlorobenzene         ND         ug/l         1.0          1           cis-1,2-Dichloroethene         ND         ug/l         1.0          1	1,1-Dichloroethene	ND	ug	/I 1.0		1
1,2-Dichlorobenzene       ND       ug/l       1.0        1         1,3-Dichlorobenzene       ND       ug/l       1.0        1         1,4-Dichlorobenzene       ND       ug/l       1.0        1         cis-1,2-Dichloroethene       ND       ug/l       1.0        1	trans-1,2-Dichloroethene	ND	ug	/I 1.0		1
1,3-Dichlorobenzene         ND         ug/l         1.0          1           1,4-Dichlorobenzene         ND         ug/l         1.0          1           cis-1,2-Dichloroethene         ND         ug/l         1.0          1	Trichloroethene	ND	ug	/I 1.0		1
1,4-Dichlorobenzene         ND         ug/l         1.0          1           cis-1,2-Dichloroethene         ND         ug/l         1.0          1	1,2-Dichlorobenzene	ND	ug	/I 1.0		1
cis-1,2-Dichloroethene ND ug/l 1.0 1	1,3-Dichlorobenzene	ND	ug	/I 1.0		1
· ·	1,4-Dichlorobenzene	ND	ug	/I 1.0		1
Dichlorodifluoromethane ND ug/l 2.0 1	cis-1,2-Dichloroethene	ND	ug	/I 1.0		1
	Dichlorodifluoromethane	ND	ug	/l 2.0		1

ND

ND

ND

ND



1

1

1

1

2.0

2.0

1.0

2.0

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ug/l

ug/l

ug/l

ug/l

1,2-Dibromoethane

1,3-Dichloropropane

o-Chlorotoluene

1,1,1,2-Tetrachloroethane

03/24/14 10:00

Date Collected:

**Project Name:** Lab Number: AEROVOX L1406115

**Project Number:** Report Date: 39744051.20003 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-04

Client ID: AX-GW-MW7A-032414 Sample Location:

Date Received: 03/24/14 Field Prep: NEW BEDFORD, MA Not Specified Dilution Factor Unite Qualifier

Parameter	Result	Qualifier	Units	KL	MDL	Dilution Factor	
MCP Volatile Organics - Westborough Lab							
p-Chlorotoluene	ND		ug/l	2.0		1	
Hexachlorobutadiene	ND		ug/l	0.60		1	
1,2,4-Trichlorobenzene	ND		ug/l	2.0		1	

Surrogate	% Recovery	Qualifier	Acceptance Criteria	
1,2-Dichloroethane-d4	104		70-130	
Toluene-d8	99		70-130	
4-Bromofluorobenzene	97		70-130	
Dibromofluoromethane	99		70-130	



03/24/14

Not Specified

Date Received:

Field Prep:

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-05 D Date Collected: 03/24/14 11:25

Client ID: AX-GW-MW7-032414 Sample Location: NEW BEDFORD, MA

Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 03/28/14 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westbor	ough Lab					
Methylene chloride	ND		ug/l	400		200
1,1-Dichloroethane	ND		ug/l	200		200
Chloroform	ND		ug/l	200		200
Carbon tetrachloride	ND		ug/l	200		200
1,2-Dichloropropane	ND		ug/l	200		200
Dibromochloromethane	ND		ug/l	200		200
1,1,2-Trichloroethane	ND		ug/l	200		200
Tetrachloroethene	ND		ug/l	200		200
Chlorobenzene	ND		ug/l	200		200
1,2-Dichloroethane	ND		ug/l	200		200
1,1,1-Trichloroethane	ND		ug/l	200		200
Bromodichloromethane	ND		ug/l	200		200
trans-1,3-Dichloropropene	ND		ug/l	100		200
cis-1,3-Dichloropropene	ND		ug/l	100		200
Bromoform	ND		ug/l	400		200
1,1,2,2-Tetrachloroethane	ND		ug/l	200		200
Chloromethane	ND		ug/l	400		200
Vinyl chloride	ND		ug/l	200		200
Chloroethane	ND		ug/l	400		200
1,1-Dichloroethene	ND		ug/l	200		200
trans-1,2-Dichloroethene	ND		ug/l	200		200
Trichloroethene	27000		ug/l	200		200
1,2-Dichlorobenzene	ND		ug/l	200		200
1,3-Dichlorobenzene	ND		ug/l	200		200
1,4-Dichlorobenzene	ND		ug/l	200		200
cis-1,2-Dichloroethene	1600		ug/l	200		200
Dichlorodifluoromethane	ND		ug/l	400		200
1,2-Dibromoethane	ND		ug/l	400		200
1,3-Dichloropropane	ND		ug/l	400		200
1,1,1,2-Tetrachloroethane	ND		ug/l	200		200
o-Chlorotoluene	ND		ug/l	400		200



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-05 D Date Collected: 03/24/14 11:25

Client ID: AX-GW-MW7-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
p-Chlorotoluene	ND		ug/l	400		200
Hexachlorobutadiene	ND		ug/l	120		200
1,2,4-Trichlorobenzene	ND		ug/l	400		200

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130



03/24/14

Not Specified

Date Received:

Field Prep:

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-06 D Date Collected: 03/24/14 11:50

Client ID: AX-GW-MW15D-032414
Sample Location: NEW BEDFORD, MA

Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 03/28/14 15:17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough La	nb					
Methylene chloride	ND		ug/l	80		40
1,1-Dichloroethane	ND		ug/l	40		40
Chloroform	ND		ug/l	40		40
Carbon tetrachloride	ND		ug/l	40		40
1,2-Dichloropropane	ND		ug/l	40		40
Dibromochloromethane	ND		ug/l	40		40
1,1,2-Trichloroethane	ND		ug/l	40		40
Tetrachloroethene	47		ug/l	40		40
Chlorobenzene	ND		ug/l	40		40
1,2-Dichloroethane	ND		ug/l	40		40
1,1,1-Trichloroethane	ND		ug/l	40		40
Bromodichloromethane	ND		ug/l	40		40
trans-1,3-Dichloropropene	ND		ug/l	20		40
cis-1,3-Dichloropropene	ND		ug/l	20		40
Bromoform	ND		ug/l	80		40
1,1,2,2-Tetrachloroethane	ND		ug/l	40		40
Chloromethane	ND		ug/l	80		40
Vinyl chloride	74		ug/l	40		40
Chloroethane	ND		ug/l	80		40
1,1-Dichloroethene	ND		ug/l	40		40
trans-1,2-Dichloroethene	ND		ug/l	40		40
Trichloroethene	3800		ug/l	40		40
1,2-Dichlorobenzene	ND		ug/l	40		40
1,3-Dichlorobenzene	ND		ug/l	40		40
1,4-Dichlorobenzene	ND		ug/l	40		40
cis-1,2-Dichloroethene	990		ug/l	40		40
Dichlorodifluoromethane	ND		ug/l	80		40
1,2-Dibromoethane	ND		ug/l	80		40
1,3-Dichloropropane	ND		ug/l	80		40
1,1,1,2-Tetrachloroethane	ND		ug/l	40		40
o-Chlorotoluene	ND		ug/l	80		40



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-06 D Date Collected: 03/24/14 11:50

Client ID: AX-GW-MW15D-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
MCP Volatile Organics - Westborough Lab							
p-Chlorotoluene	ND		ug/l	80		40	
Hexachlorobutadiene	ND		ug/l	24		40	
1,2,4-Trichlorobenzene	ND		ug/l	80		40	

Surrogate	% Recovery	Qualifier	Acceptance Criteria	
1,2-Dichloroethane-d4	111		70-130	
Toluene-d8	93		70-130	
4-Bromofluorobenzene	93		70-130	
Dibromofluoromethane	119		70-130	



03/24/14

Not Specified

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-07 D Date Collected: 03/24/14 11:55

Client ID: AX-GW-DUP4-032414 Date Received: Sample Location: NEW BEDFORD, MA Field Prep:

Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 03/28/14 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	80		40
1,1-Dichloroethane	ND		ug/l	40		40
Chloroform	ND		ug/l	40		40
Carbon tetrachloride	ND		ug/l	40		40
1,2-Dichloropropane	ND		ug/l	40		40
Dibromochloromethane	ND		ug/l	40		40
1,1,2-Trichloroethane	ND		ug/l	40		40
Tetrachloroethene	61		ug/l	40		40
Chlorobenzene	ND		ug/l	40		40
1,2-Dichloroethane	ND		ug/l	40		40
1,1,1-Trichloroethane	ND		ug/l	40		40
Bromodichloromethane	ND		ug/l	40		40
trans-1,3-Dichloropropene	ND		ug/l	20		40
cis-1,3-Dichloropropene	ND		ug/l	20		40
Bromoform	ND		ug/l	80		40
1,1,2,2-Tetrachloroethane	ND		ug/l	40		40
Chloromethane	ND		ug/l	80		40
Vinyl chloride	66		ug/l	40		40
Chloroethane	ND		ug/l	80		40
1,1-Dichloroethene	ND		ug/l	40		40
trans-1,2-Dichloroethene	ND		ug/l	40		40
Trichloroethene	3900		ug/l	40		40
1,2-Dichlorobenzene	ND		ug/l	40		40
1,3-Dichlorobenzene	ND		ug/l	40		40
1,4-Dichlorobenzene	ND		ug/l	40		40
cis-1,2-Dichloroethene	980		ug/l	40		40
Dichlorodifluoromethane	ND		ug/l	80		40
1,2-Dibromoethane	ND		ug/l	80		40
1,3-Dichloropropane	ND		ug/l	80		40
1,1,1,2-Tetrachloroethane	ND		ug/l	40		40
o-Chlorotoluene	ND		ug/l	80		40



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-07 D Date Collected: 03/24/14 11:55

Client ID: AX-GW-DUP4-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
MCP Volatile Organics - Westborough Lab							
p-Chlorotoluene	ND		ug/l	80		40	
Hexachlorobutadiene	ND		ug/l	24		40	
1,2,4-Trichlorobenzene	ND		ug/l	80		40	

Surrogate	% Recovery	Qualifier	Acceptance Criteria	
1,2-Dichloroethane-d4	107		70-130	
Toluene-d8	93		70-130	
4-Bromofluorobenzene	100		70-130	
Dibromofluoromethane	113		70-130	



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-08 D2 Date Collected: 03/24/14 12:45

Client ID: AX-DNAPL-MW15D-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Matrix: Oil

Analytical Method: 97,8260C Analytical Date: 03/29/14 23:34

Analyst: MV

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	24000000		ug/kg	500000		1000

Surrogate	% Recovery	Qualifier	Acceptance Criteria	
	<u> </u>		70.400	
1,2-Dichloroethane-d4	96		70-130	
Toluene-d8	99		70-130	
4-Bromofluorobenzene	99		70-130	
Dibromofluoromethane	102		70-130	



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-08 D Date Collected: 03/24/14 12:45

Client ID: AX-DNAPL-MW15D-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Matrix: Oil

Analytical Method: 97,8260C Analytical Date: 03/28/14 23:27

Analyst: MV

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough	Lab					
Methylene chloride	ND		ug/kg	1000000		200
1,1-Dichloroethane	ND		ug/kg	150000		200
Chloroform	ND		ug/kg	150000		200
Carbon tetrachloride	ND		ug/kg	100000		200
1,2-Dichloropropane	ND		ug/kg	350000		200
Dibromochloromethane	ND		ug/kg	100000		200
1,1,2-Trichloroethane	ND		ug/kg	150000		200
Tetrachloroethene	13000000		ug/kg	100000		200
Chlorobenzene	ND		ug/kg	100000		200
1,2-Dichloroethane	ND		ug/kg	100000		200
1,1,1-Trichloroethane	ND		ug/kg	100000		200
Bromodichloromethane	ND		ug/kg	100000		200
trans-1,3-Dichloropropene	ND		ug/kg	100000		200
cis-1,3-Dichloropropene	ND		ug/kg	100000		200
Bromoform	ND		ug/kg	400000		200
1,1,2,2-Tetrachloroethane	ND		ug/kg	100000		200
Chloromethane	ND		ug/kg	400000		200
Vinyl chloride	ND		ug/kg	200000		200
Chloroethane	ND		ug/kg	200000		200
1,1-Dichloroethene	ND		ug/kg	100000		200
trans-1,2-Dichloroethene	ND		ug/kg	150000		200
Trichloroethene	36000000	E	ug/kg	100000		200
1,2-Dichlorobenzene	ND		ug/kg	400000		200
1,3-Dichlorobenzene	ND		ug/kg	400000		200
1,4-Dichlorobenzene	400000		ug/kg	400000		200
cis-1,2-Dichloroethene	1500000		ug/kg	100000		200
Dichlorodifluoromethane	ND		ug/kg	1000000		200
1,2-Dibromoethane	ND		ug/kg	400000		200
1,3-Dichloropropane	ND		ug/kg	400000		200
1,1,1,2-Tetrachloroethane	ND		ug/kg	100000		200
o-Chlorotoluene	ND		ug/kg	400000		200



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-08 D Date Collected: 03/24/14 12:45

Client ID: AX-DNAPL-MW15D-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specific

Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Parameter Result Qualifier Units RL MDL Dilution Factor

raiailielei	Kesuit	Qualifiei	Ullita	NL	WIDL	Dilution ractor	
MCP Volatile Organics - Westborough	Lab						
p-Chlorotoluene	ND		ug/kg	400000		200	
Hexachlorobutadiene	ND		ug/kg	400000		200	
1,2,4-Trichlorobenzene	12000000		ug/kg	400000		200	

Surrogate	% Recovery	Qualifier	Acceptance Criteria	
1,2-Dichloroethane-d4	91		70-130	
Toluene-d8	98		70-130	
4-Bromofluorobenzene	104		70-130	
Dibromofluoromethane	90		70-130	



L1406115

Project Name: AEROVOX Lab Number:

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

SAMPLE RESULTS

Lab ID: L1406115-09 D Date Collected: 03/24/14 14:00

Client ID: AX-GW-MW7B-032414 Sample Location: NEW BEDFORD, MA

Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 03/28/14 16:23

Analyst: MM

Date Collected: 03/24/14 14:00

Date Received: 03/24/14

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westbord	ough Lab					
Methylene chloride	ND		ug/l	200		100
1,1-Dichloroethane	ND		ug/l	100		100
Chloroform	ND		ug/l	100		100
Carbon tetrachloride	ND		ug/l	100		100
1,2-Dichloropropane	ND		ug/l	100		100
Dibromochloromethane	ND		ug/l	100		100
1,1,2-Trichloroethane	ND		ug/l	100		100
Tetrachloroethene	ND		ug/l	100		100
Chlorobenzene	ND		ug/l	100		100
1,2-Dichloroethane	ND		ug/l	100		100
1,1,1-Trichloroethane	ND		ug/l	100		100
Bromodichloromethane	ND		ug/l	100		100
trans-1,3-Dichloropropene	ND		ug/l	50		100
cis-1,3-Dichloropropene	ND		ug/l	50		100
Bromoform	ND		ug/l	200		100
1,1,2,2-Tetrachloroethane	ND		ug/l	100		100
Chloromethane	ND		ug/l	200		100
Vinyl chloride	ND		ug/l	100		100
Chloroethane	ND		ug/l	200		100
1,1-Dichloroethene	ND		ug/l	100		100
trans-1,2-Dichloroethene	ND		ug/l	100		100
Trichloroethene	16000		ug/l	100		100
1,2-Dichlorobenzene	ND		ug/l	100		100
1,3-Dichlorobenzene	ND		ug/l	100		100
1,4-Dichlorobenzene	ND		ug/l	100		100
cis-1,2-Dichloroethene	710		ug/l	100		100
Dichlorodifluoromethane	ND		ug/l	200		100
1,2-Dibromoethane	ND		ug/l	200		100
1,3-Dichloropropane	ND		ug/l	200		100
1,1,1,2-Tetrachloroethane	ND		ug/l	100		100
o-Chlorotoluene	ND		ug/l	200		100



03/24/14 14:00

Date Collected:

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-09 D

Client ID: AX-GW-MW7B-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough La	ab					
p-Chlorotoluene	ND		ug/l	200		100
Hexachlorobutadiene	ND		ug/l	60		100
1,2,4-Trichlorobenzene	ND		ug/l	200		100

	Acceptance					
Surrogate	% Recovery	Qualifier				
1,2-Dichloroethane-d4	110		70-130			
Toluene-d8	92		70-130			
4-Bromofluorobenzene	98		70-130			
Dibromofluoromethane	114		70-130			



**Project Name:** AEROVOX **Lab Number:** L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

### Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 93/28/14 08:12

arameter	Result	Qualifier	Units	RL	MDL
CP Volatile Organics - Wes	tborough Lab for s	sample(s):	06-07,09	Batch:	WG678616-3
Methylene chloride	ND		ug/l	2.0	
1,1-Dichloroethane	ND		ug/l	1.0	
Chloroform	ND		ug/l	1.0	
Carbon tetrachloride	ND		ug/l	1.0	
1,2-Dichloropropane	ND		ug/l	1.0	
Dibromochloromethane	ND		ug/l	1.0	
1,1,2-Trichloroethane	ND		ug/l	1.0	
Tetrachloroethene	ND		ug/l	1.0	<del></del>
Chlorobenzene	ND		ug/l	1.0	
Trichlorofluoromethane	ND		ug/l	2.0	
1,2-Dichloroethane	ND		ug/l	1.0	
1,1,1-Trichloroethane	ND		ug/l	1.0	
Bromodichloromethane	ND		ug/l	1.0	
trans-1,3-Dichloropropene	ND		ug/l	0.50	
cis-1,3-Dichloropropene	ND		ug/l	0.50	
1,1-Dichloropropene	ND		ug/l	2.0	
Bromoform	ND		ug/l	2.0	
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	
Benzene	ND		ug/l	0.50	
Toluene	ND		ug/l	1.0	
Ethylbenzene	ND		ug/l	1.0	
Chloromethane	ND		ug/l	2.0	
Bromomethane	ND		ug/l	2.0	
Vinyl chloride	ND		ug/l	1.0	
Chloroethane	ND		ug/l	2.0	
1,1-Dichloroethene	ND		ug/l	1.0	
trans-1,2-Dichloroethene	ND		ug/l	1.0	
Trichloroethene	ND		ug/l	1.0	
1,2-Dichlorobenzene	ND		ug/l	1.0	
1,3-Dichlorobenzene	ND		ug/l	1.0	
1,4-Dichlorobenzene	ND		ug/l	1.0	



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

#### Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 93/28/14 08:12

Parameter	Result Q	ualifier Units	RL	MDL
MCP Volatile Organics	- Westborough Lab for sam	ple(s): 06-07,09	Batch:	WG678616-3
Methyl tert butyl ether	ND	ug/l	2.0	
p/m-Xylene	ND	ug/l	2.0	
o-Xylene	ND	ug/l	1.0	
cis-1,2-Dichloroethene	ND	ug/l	1.0	
Dibromomethane	ND	ug/l	2.0	
1,2,3-Trichloropropane	ND	ug/l	2.0	
Styrene	ND	ug/l	1.0	
Dichlorodifluoromethane	ND	ug/l	2.0	
Acetone	ND	ug/l	5.0	
Carbon disulfide	ND	ug/l	2.0	
2-Butanone	ND	ug/l	5.0	
4-Methyl-2-pentanone	ND	ug/l	5.0	
2-Hexanone	ND	ug/l	5.0	
Bromochloromethane	ND	ug/l	2.0	
Tetrahydrofuran	ND	ug/l	2.0	
2,2-Dichloropropane	ND	ug/l	2.0	
1,2-Dibromoethane	ND	ug/l	2.0	
1,3-Dichloropropane	ND	ug/l	2.0	
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0	
Bromobenzene	ND	ug/l	2.0	
n-Butylbenzene	ND	ug/l	2.0	
sec-Butylbenzene	ND	ug/l	2.0	
tert-Butylbenzene	ND	ug/l	2.0	
o-Chlorotoluene	ND	ug/l	2.0	
p-Chlorotoluene	ND	ug/l	2.0	
1,2-Dibromo-3-chloropropa	ane ND	ug/l	2.0	
Hexachlorobutadiene	ND	ug/l	0.60	
Isopropylbenzene	ND	ug/l	2.0	
p-Isopropyltoluene	ND	ug/l	2.0	
Naphthalene	ND	ug/l	2.0	
n-Propylbenzene	ND	ug/l	2.0	



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 97,8260C 03/28/14 08:12

Analyst: MM

arameter	Result Qual	fier Units	RL	MDL	
MCP Volatile Organics - Wes	tborough Lab for sample	e(s): 06-07,09	Batch:	WG678616-3	
1,2,3-Trichlorobenzene	ND	ug/l	2.0		
1,2,4-Trichlorobenzene	ND	ug/l	2.0		
1,3,5-Trimethylbenzene	ND	ug/l	2.0		
1,2,4-Trimethylbenzene	ND	ug/l	2.0		
Ethyl ether	ND	ug/l	2.0		
Isopropyl Ether	ND	ug/l	2.0		
Ethyl-Tert-Butyl-Ether	ND	ug/l	2.0		
Tertiary-Amyl Methyl Ether	ND	ug/l	2.0		
1,4-Dioxane	ND	ug/l	250		

Tentatively Identified Compounds

No Tentatively Identified Compounds ND ug/l

	Acceptance						
Surrogate	%Recovery	Qualifier	Criteria				
1,2-Dichloroethane-d4	100		70-130				
Toluene-d8	92		70-130				
4-Bromofluorobenzene	95		70-130				
Dibromofluoromethane	121		70-130				



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

#### Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 03/28/14 06:48

arameter	Result Qua	lifier Units	RL	MDL	
CP Volatile Organics - W	Vestborough Lab for sample	e(s): 01-05	Batch: WG6	78852-3	
Methylene chloride	ND	ug/l	2.0		
1,1-Dichloroethane	ND	ug/l	1.0		
Chloroform	ND	ug/l	1.0		
Carbon tetrachloride	ND	ug/l	1.0		
1,2-Dichloropropane	ND	ug/l	1.0		
Dibromochloromethane	ND	ug/l	1.0		
1,1,2-Trichloroethane	ND	ug/l	1.0		
Tetrachloroethene	ND	ug/l	1.0		
Chlorobenzene	ND	ug/l	1.0		
1,2-Dichloroethane	ND	ug/l	1.0		
1,1,1-Trichloroethane	ND	ug/l	1.0		
Bromodichloromethane	ND	ug/l	1.0		
trans-1,3-Dichloropropene	ND	ug/l	0.50		
cis-1,3-Dichloropropene	ND	ug/l	0.50		
Bromoform	ND	ug/l	2.0		
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0		
Chloromethane	ND	ug/l	2.0		
Vinyl chloride	ND	ug/l	1.0		
Chloroethane	ND	ug/l	2.0		
1,1-Dichloroethene	ND	ug/l	1.0		
trans-1,2-Dichloroethene	ND	ug/l	1.0		
Trichloroethene	ND	ug/l	1.0		
1,2-Dichlorobenzene	ND	ug/l	1.0		
1,3-Dichlorobenzene	ND	ug/l	1.0		
1,4-Dichlorobenzene	ND	ug/l	1.0		
cis-1,2-Dichloroethene	ND	ug/l	1.0		
Dichlorodifluoromethane	ND	ug/l	2.0		
1,2-Dibromoethane	ND	ug/l	2.0		
1,3-Dichloropropane	ND	ug/l	2.0		
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0		
o-Chlorotoluene	ND	ug/l	2.0		



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 97,8260C 03/28/14 06:48

Parameter	Result	Qualifier	Units	RL	MDL	
MCP Volatile Organics - West	borough Lab for	sample(s):	01-05	Batch: WG67	78852-3	
p-Chlorotoluene	ND		ug/l	2.0		
Hexachlorobutadiene	ND		ug/l	0.60		
1,2,4-Trichlorobenzene	ND		ug/l	2.0		

	Acceptance				
Surrogate	%Recovery	Qualifier	Criteria		
1,2-Dichloroethane-d4	102		70-130		
Toluene-d8	99		70-130		
4-Bromofluorobenzene	100		70-130		
Dibromofluoromethane	100		70-130		



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

#### Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 03/29/14 10:04

arameter	Result Qualifie	r Units	RL	MDL	
CP Volatile Organics - \	Westborough Lab for sample(s	): 03 Ba	tch: WG678	852-6	
Methylene chloride	ND	ug/l	2.0		
1,1-Dichloroethane	ND	ug/l	1.0		
Chloroform	ND	ug/l	1.0		
Carbon tetrachloride	ND	ug/l	1.0		
1,2-Dichloropropane	ND	ug/l	1.0		
Dibromochloromethane	ND	ug/l	1.0		
1,1,2-Trichloroethane	ND	ug/l	1.0		
Tetrachloroethene	ND	ug/l	1.0		
Chlorobenzene	ND	ug/l	1.0		
1,2-Dichloroethane	ND	ug/l	1.0		
1,1,1-Trichloroethane	ND	ug/l	1.0		
Bromodichloromethane	ND	ug/l	1.0		
trans-1,3-Dichloropropene	ND	ug/l	0.50		
cis-1,3-Dichloropropene	ND	ug/l	0.50		
Bromoform	ND	ug/l	2.0		
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0		
Chloromethane	ND	ug/l	2.0		
Vinyl chloride	ND	ug/l	1.0		
Chloroethane	ND	ug/l	2.0		
1,1-Dichloroethene	ND	ug/l	1.0		
trans-1,2-Dichloroethene	ND	ug/l	1.0		
Trichloroethene	ND	ug/l	1.0		
1,2-Dichlorobenzene	ND	ug/l	1.0		
1,3-Dichlorobenzene	ND	ug/l	1.0		
1,4-Dichlorobenzene	ND	ug/l	1.0		
cis-1,2-Dichloroethene	ND	ug/l	1.0		
Dichlorodifluoromethane	ND	ug/l	2.0		
1,2-Dibromoethane	ND	ug/l	2.0		
1,3-Dichloropropane	ND	ug/l	2.0		
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0		
o-Chlorotoluene	ND	ug/l	2.0		



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 97,8260C 03/29/14 10:04

Parameter	Result	Qualifier	Unit	s	RL	MDL	
MCP Volatile Organics - Westboro	ugh Lab for	sample(s):	03	Batch:	WG678	3852-6	
p-Chlorotoluene	ND		ug/	I	2.0		
Hexachlorobutadiene	ND		ug/	l	0.60		
1,2,4-Trichlorobenzene	ND		ug/	l	2.0		

		Acceptance						
Surrogate	%Recovery	Qualifier	Criteria					
1,2-Dichloroethane-d4	102		70-130					
Toluene-d8	98		70-130					
4-Bromofluorobenzene	99		70-130					
Dibromofluoromethane	99		70-130					



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

#### Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 93/28/14 14:20

arameter	Result Qualifier	Units	RL	MDL	
CP Volatile Organics - V	Vestborough Lab for sample(s):	08 E	Batch: WG67	8879-3	
Methylene chloride	ND	ug/kg	5000		
1,1-Dichloroethane	ND	ug/kg	750		
Chloroform	ND	ug/kg	750		
Carbon tetrachloride	ND	ug/kg	500		
1,2-Dichloropropane	ND	ug/kg	1800		
Dibromochloromethane	ND	ug/kg	500		
1,1,2-Trichloroethane	ND	ug/kg	750		
Tetrachloroethene	ND	ug/kg	500		
Chlorobenzene	ND	ug/kg	500		
Trichlorofluoromethane	ND	ug/kg	2000		
1,2-Dichloroethane	ND	ug/kg	500		
1,1,1-Trichloroethane	ND	ug/kg	500		
Bromodichloromethane	ND	ug/kg	500		
trans-1,3-Dichloropropene	ND	ug/kg	500		
cis-1,3-Dichloropropene	ND	ug/kg	500		
1,1-Dichloropropene	ND	ug/kg	2000		
Bromoform	ND	ug/kg	2000		
1,1,2,2-Tetrachloroethane	ND	ug/kg	500		
Benzene	ND	ug/kg	500		
Toluene	ND	ug/kg	750		
Ethylbenzene	ND	ug/kg	500		
Chloromethane	ND	ug/kg	2000		
Bromomethane	ND	ug/kg	1000		
Vinyl chloride	ND	ug/kg	1000		
Chloroethane	ND	ug/kg	1000		
1,1-Dichloroethene	ND	ug/kg	500		
trans-1,2-Dichloroethene	ND	ug/kg	750		
Trichloroethene	ND	ug/kg	500		
1,2-Dichlorobenzene	ND	ug/kg	2000		
1,3-Dichlorobenzene	ND	ug/kg	2000		
1,4-Dichlorobenzene	ND	ug/kg	2000		



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

#### Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 93/28/14 14:20

Parameter	Result	Qualifier	Units	3	RL	MDL	
MCP Volatile Organics	- Westborough Lab for	sample(s):	80	Batch:	WG6	78879-3	
Methyl tert butyl ether	ND		ug/kg	)	1000		
p/m-Xylene	ND		ug/kg	)	1000		
o-Xylene	ND		ug/kg	)	1000		
cis-1,2-Dichloroethene	ND		ug/kg	)	500		
Dibromomethane	ND		ug/kg	)	2000		
1,2,3-Trichloropropane	ND		ug/kg	)	2000		
Styrene	ND		ug/kg	)	1000		
Dichlorodifluoromethane	ND		ug/kg	)	5000		
Acetone	ND		ug/kg	)	18000		
Carbon disulfide	ND		ug/kg	)	2000		
2-Butanone	ND		ug/kg	)	5000		
4-Methyl-2-pentanone	ND		ug/kg	)	5000		
2-Hexanone	ND		ug/kg	)	5000		
Bromochloromethane	ND		ug/kg	9	2000		
Tetrahydrofuran	ND		ug/kg	9	2000		
2,2-Dichloropropane	ND		ug/kg	9	2500		
1,2-Dibromoethane	ND		ug/kg	9	2000		
1,3-Dichloropropane	ND		ug/kg	9	2000		
1,1,1,2-Tetrachloroethane	ND		ug/kg	9	500		
Bromobenzene	ND		ug/kg	9	2500		
n-Butylbenzene	ND		ug/kg	9	500		
sec-Butylbenzene	ND		ug/kg	9	500		
tert-Butylbenzene	ND		ug/kg	9	2000		
o-Chlorotoluene	ND		ug/kg	9	2000		
p-Chlorotoluene	ND		ug/kg	9	2000		
1,2-Dibromo-3-chloropropa	ane ND		ug/kg	)	2000		
Hexachlorobutadiene	ND		ug/kg	)	2000		
Isopropylbenzene	ND		ug/kg	9	500		
p-Isopropyltoluene	ND		ug/kg	9	500		
Naphthalene	ND		ug/kg	)	2000		
n-Propylbenzene	ND		ug/kg	9	500		
							<b>50</b>



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 93/28/14 14:20

ICP Volatile Organics -	- Westborough Lab for				
		sample(s): (	08 Batch	WG67887	79-3
1,2,3-Trichlorobenzene	ND		ug/kg	2000	
1,2,4-Trichlorobenzene	ND		ug/kg	2000	
1,3,5-Trimethylbenzene	ND		ug/kg	2000	
1,2,4-Trimethylbenzene	ND		ug/kg	2000	
Ethyl ether	ND		ug/kg	2500	
Isopropyl Ether	ND		ug/kg	2000	
Ethyl-Tert-Butyl-Ether	ND		ug/kg	2000	
Tertiary-Amyl Methyl Ether	ND		ug/kg	2000	
1,4-Dioxane	ND		ug/kg	20000	

		Acceptance
Surrogate	%Recovery	Qualifier Criteria
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	102	70-130
Dibromofluoromethane	88	70-130



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

#### Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 03/29/14 14:07

arameter	Result Qualifier	Units	RL	MDL	
CP Volatile Organics - W	estborough Lab for sample(s):	08 Ba	tch: WG6788	379-6	
Methylene chloride	ND	ug/kg	5000		
1,1-Dichloroethane	ND	ug/kg	750		
Chloroform	ND	ug/kg	750		
Carbon tetrachloride	ND	ug/kg	500		
1,2-Dichloropropane	ND	ug/kg	1800		
Dibromochloromethane	ND	ug/kg	500		
1,1,2-Trichloroethane	ND	ug/kg	750		
Tetrachloroethene	ND	ug/kg	500		
Chlorobenzene	ND	ug/kg	500		
Trichlorofluoromethane	ND	ug/kg	2000		
1,2-Dichloroethane	ND	ug/kg	500		
1,1,1-Trichloroethane	ND	ug/kg	500		
Bromodichloromethane	ND	ug/kg	500		
trans-1,3-Dichloropropene	ND	ug/kg	500		
cis-1,3-Dichloropropene	ND	ug/kg	500		
1,1-Dichloropropene	ND	ug/kg	2000		
Bromoform	ND	ug/kg	2000		
1,1,2,2-Tetrachloroethane	ND	ug/kg	500		
Benzene	ND	ug/kg	500		
Toluene	ND	ug/kg	750		
Ethylbenzene	ND	ug/kg	500		
Chloromethane	ND	ug/kg	2000		
Bromomethane	ND	ug/kg	1000		
Vinyl chloride	ND	ug/kg	1000		
Chloroethane	ND	ug/kg	1000		
1,1-Dichloroethene	ND	ug/kg	500		
trans-1,2-Dichloroethene	ND	ug/kg	750		
Trichloroethene	ND	ug/kg	500		
1,2-Dichlorobenzene	ND	ug/kg	2000		
1,3-Dichlorobenzene	ND	ug/kg	2000		
1,4-Dichlorobenzene	ND	ug/kg	2000		



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

#### Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 03/29/14 14:07

arameter	Result Qualifie	er Units	RL	MDL	
CP Volatile Organics -	Westborough Lab for sample(s	s): 08 Bato	h: WG67	78879-6	
Methyl tert butyl ether	ND	ug/kg	1000		
p/m-Xylene	ND	ug/kg	1000		
o-Xylene	ND	ug/kg	1000		
cis-1,2-Dichloroethene	ND	ug/kg	500		
Dibromomethane	ND	ug/kg	2000		
1,2,3-Trichloropropane	ND	ug/kg	2000		
Styrene	ND	ug/kg	1000		
Dichlorodifluoromethane	ND	ug/kg	5000		
Acetone	ND	ug/kg	18000		
Carbon disulfide	ND	ug/kg	2000		
2-Butanone	ND	ug/kg	5000		
4-Methyl-2-pentanone	ND	ug/kg	5000		
2-Hexanone	ND	ug/kg	5000		
Bromochloromethane	ND	ug/kg	2000		
Tetrahydrofuran	ND	ug/kg	2000		
2,2-Dichloropropane	ND	ug/kg	2500		
1,2-Dibromoethane	ND	ug/kg	2000		
1,3-Dichloropropane	ND	ug/kg	2000		
1,1,1,2-Tetrachloroethane	ND	ug/kg	500		
Bromobenzene	ND	ug/kg	2500		
n-Butylbenzene	ND	ug/kg	500		
sec-Butylbenzene	ND	ug/kg	500		
tert-Butylbenzene	ND	ug/kg	2000		
o-Chlorotoluene	ND	ug/kg	2000		
p-Chlorotoluene	ND	ug/kg	2000		
1,2-Dibromo-3-chloropropar	ne ND	ug/kg	2000		
Hexachlorobutadiene	ND	ug/kg	2000		
Isopropylbenzene	ND	ug/kg	500		
p-Isopropyltoluene	ND	ug/kg	500		
Naphthalene	ND	ug/kg	2000		
n-Propylbenzene	ND	ug/kg	500		



**Project Number:** 39744051.20003 **Report Date:** 03/31/14

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C Analytical Date: 03/29/14 14:07

Parameter	Result	Qualifier l	Units	RL	MDL	
MCP Volatile Organics -	Westborough Lab for	sample(s): 0	8 Batch:	WG6788	379-6	
1,2,3-Trichlorobenzene	ND	l	ug/kg	2000		
1,2,4-Trichlorobenzene	ND	l	ug/kg	2000		
1,3,5-Trimethylbenzene	ND	ı	ug/kg	2000		
1,2,4-Trimethylbenzene	ND	ι	ug/kg	2000		
Ethyl ether	ND	ι	ug/kg	2500		
Isopropyl Ether	ND	ι	ug/kg	2000		
Ethyl-Tert-Butyl-Ether	ND	ι	ug/kg	2000		
Tertiary-Amyl Methyl Ether	ND	l	ug/kg	2000		
1,4-Dioxane	ND	l	ug/kg	20000		
			0 0			

		Acceptance						
Surrogate	%Recovery	Qualifier	Criteria					
1,2-Dichloroethane-d4	93		70-130					
Toluene-d8	101		70-130					
4-Bromofluorobenzene	103		70-130					
Dibromofluoromethane	96		70-130					



**Project Name:** AEROVOX

**Project Number:** 39744051.20003

Lab Number: L1406115

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	RPD Qual Limits	
MCP Volatile Organics - Westborough Lab	Associated samp	ole(s): 06-07,0	9 Batch: WC	G678616-1	WG678616-2			
Methylene chloride	107		100		70-130	7	20	
1,1-Dichloroethane	103		101		70-130	2	20	
Chloroform	103		102		70-130	1	20	
Carbon tetrachloride	101		101		70-130	0	20	
1,2-Dichloropropane	96		96		70-130	0	20	
Dibromochloromethane	82		91		70-130	10	20	
1,1,2-Trichloroethane	88		87		70-130	1	20	
Tetrachloroethene	92		98		70-130	6	20	
Chlorobenzene	95		100		70-130	5	20	
Trichlorofluoromethane	107		104		70-130	3	20	
1,2-Dichloroethane	101		97		70-130	4	20	
1,1,1-Trichloroethane	104		102		70-130	2	20	
Bromodichloromethane	99		99		70-130	0	20	
trans-1,3-Dichloropropene	88		93		70-130	6	20	
cis-1,3-Dichloropropene	97		96		70-130	1	20	
1,1-Dichloropropene	100		102		70-130	2	20	
Bromoform	82		86		70-130	5	20	
1,1,2,2-Tetrachloroethane	92		94		70-130	2	20	
Benzene	100		98		70-130	2	20	
Toluene	97		100		70-130	3	20	
Ethylbenzene	98		100		70-130	2	20	



**Project Name:** AEROVOX

**Project Number:** 39744051.20003

Lab Number: L1406115

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	RPD Qual Limit	
MCP Volatile Organics - Westborough Lab	Associated samp	ole(s): 06-07,09	Batch: Wo	G678616-1	WG678616-2			
Chloromethane	115		112		70-130	3	20	
Bromomethane	120		111		70-130	8	20	
Vinyl chloride	122		119		70-130	2	20	
Chloroethane	121		130		70-130	7	20	
1,1-Dichloroethene	111		111		70-130	0	20	
trans-1,2-Dichloroethene	111		109		70-130	2	20	
Trichloroethene	102		101		70-130	1	20	
1,2-Dichlorobenzene	92		103		70-130	11	20	
1,3-Dichlorobenzene	99		100		70-130	1	20	
1,4-Dichlorobenzene	97		97		70-130	0	20	
Methyl tert butyl ether	97		98		70-130	1	20	
p/m-Xylene	97		102		70-130	5	20	
o-Xylene	96		104		70-130	8	20	
cis-1,2-Dichloroethene	104		101		70-130	3	20	
Dibromomethane	100		100		70-130	0	20	
1,2,3-Trichloropropane	97		99		70-130	2	20	
Styrene	109		97		70-130	12	20	
Dichlorodifluoromethane	129		129		70-130	0	20	
Acetone	114		113		70-130	1	20	
Carbon disulfide	121		120		70-130	1	20	
2-Butanone	93		95		70-130	2	20	



**Project Name:** AEROVOX

**Project Number:** 39744051.20003

Lab Number: L1406115

Parameter	LCS %Recovery	Qual	LCSD %Recovery	' Qual	%Recovery Limits	RPD	RPD Limits
MCP Volatile Organics - Westborough Lab	Associated samp	ole(s): 06-07,09	Batch: V	VG678616-1	WG678616-2		
4-Methyl-2-pentanone	99		96		70-130	3	20
2-Hexanone	88		96		70-130	9	20
Bromochloromethane	109		105		70-130	4	20
Tetrahydrofuran	95		93		70-130	2	20
2,2-Dichloropropane	102		100		70-130	2	20
1,2-Dibromoethane	90		90		70-130	0	20
1,3-Dichloropropane	95		93		70-130	2	20
1,1,1,2-Tetrachloroethane	84		90		70-130	7	20
Bromobenzene	97		100		70-130	3	20
n-Butylbenzene	96		96		70-130	0	20
sec-Butylbenzene	96		98		70-130	2	20
tert-Butylbenzene	96		97		70-130	1	20
o-Chlorotoluene	98		99		70-130	1	20
p-Chlorotoluene	98		100		70-130	2	20
1,2-Dibromo-3-chloropropane	100		90		70-130	11	20
Hexachlorobutadiene	99		101		70-130	2	20
Isopropylbenzene	99		100		70-130	1	20
p-Isopropyltoluene	97		99		70-130	2	20
Naphthalene	95		97		70-130	2	20
n-Propylbenzene	97		99		70-130	2	20
1,2,3-Trichlorobenzene	96		99		70-130	3	20



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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab A	associated sample	(s): 06-07,09	9 Batch: WC	3678616-1	WG678616-2			
1,2,4-Trichlorobenzene	99		101		70-130	2		20
1,3,5-Trimethylbenzene	96		97		70-130	1		20
1,2,4-Trimethylbenzene	95		98		70-130	3		20
Ethyl ether	104		108		70-130	4		20
Isopropyl Ether	92		92		70-130	0		20
Ethyl-Tert-Butyl-Ether	92		90		70-130	2		20
Tertiary-Amyl Methyl Ether	94		92		70-130	2		20
1,4-Dioxane	88		90		70-130	2		20

	LCS		LCSD		Acceptance	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	
1,2-Dichloroethane-d4	98		97		70-130	
Toluene-d8	96		98		70-130	
4-Bromofluorobenzene	97		99		70-130	
Dibromofluoromethane	105		104		70-130	



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Parameter	LCS %Recovery	Qual	LCSD %Recovery	% Qual	Recovery Limits	RPD	RPD Qual Limits	
MCP Volatile Organics - Westborough Lab	Associated samp	ole(s): 01-05	Batch: WG678	8852-1 WG678	8852-2			
Methylene chloride	99		99		70-130	0	20	
1,1-Dichloroethane	99		99		70-130	0	20	
Chloroform	98		97		70-130	1	20	
Carbon tetrachloride	76		79		70-130	4	20	
1,2-Dichloropropane	98		97		70-130	1	20	
Dibromochloromethane	86		88		70-130	2	20	
1,1,2-Trichloroethane	99		97		70-130	2	20	
Tetrachloroethene	101		98		70-130	3	20	
Chlorobenzene	102		100		70-130	2	20	
1,2-Dichloroethane	98		97		70-130	1	20	
1,1,1-Trichloroethane	91		93		70-130	2	20	
Bromodichloromethane	91		93		70-130	2	20	
trans-1,3-Dichloropropene	76		79		70-130	4	20	
cis-1,3-Dichloropropene	89		91		70-130	2	20	
Bromoform	78		81		70-130	4	20	
1,1,2,2-Tetrachloroethane	98		95		70-130	3	20	
Chloromethane	96		96		70-130	0	20	
Vinyl chloride	107		107		70-130	0	20	
Chloroethane	102		100		70-130	2	20	
1,1-Dichloroethene	98		97		70-130	1	20	
trans-1,2-Dichloroethene	101		98		70-130	3	20	



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arameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	PD mits
ICP Volatile Organics - Westborough Lab	Associated samp	le(s): 01-05	Batch: WG678	852-1 WG	678852-2		
Trichloroethene	99		98		70-130	1	20
1,2-Dichlorobenzene	102		101		70-130	1	20
1,3-Dichlorobenzene	102		100		70-130	2	20
1,4-Dichlorobenzene	102		101		70-130	1	20
cis-1,2-Dichloroethene	100		98		70-130	2	20
Dichlorodifluoromethane	114		111		70-130	3	20
1,2-Dibromoethane	97		96		70-130	1	20
1,3-Dichloropropane	98		98		70-130	0	20
1,1,1,2-Tetrachloroethane	87		91		70-130	4	20
o-Chlorotoluene	104		102		70-130	2	20
p-Chlorotoluene	102		102		70-130	0	20
Hexachlorobutadiene	100		102		70-130	2	20
1,2,4-Trichlorobenzene	97		97		70-130	0	20

	LCS		LCSD		Acceptance	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	
1,2-Dichloroethane-d4	101		101		70-130	
Toluene-d8	100		99		70-130	
4-Bromofluorobenzene	100		98		70-130	
Dibromofluoromethane	102		102		70-130	



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arameter	LCS %Recovery	Qual	LCSD %Recovery		ecovery imits I	RPD	Qual	RPD Limits
CP Volatile Organics - Westborough Lab	Associated samp	ole(s): 03	Batch: WG67885	2-4 WG678852-5	5			
Methylene chloride	102		104	7	0-130	2		20
1,1-Dichloroethane	101		106	7	0-130	5		20
Chloroform	99		105	7	0-130	6		20
Carbon tetrachloride	74		89	79	0-130	18		20
1,2-Dichloropropane	99		105	79	0-130	6		20
Dibromochloromethane	84		94	79	0-130	11		20
1,1,2-Trichloroethane	96		100	79	0-130	4		20
Tetrachloroethene	102		104	7	0-130	2		20
Chlorobenzene	102		105	7	0-130	3		20
1,2-Dichloroethane	99		104	7	0-130	5		20
1,1,1-Trichloroethane	91		102	7	0-130	11		20
Bromodichloromethane	91		100	7	0-130	9		20
trans-1,3-Dichloropropene	73		82	7	0-130	12		20
cis-1,3-Dichloropropene	88		99	7	0-130	12		20
Bromoform	76		86	7	0-130	12		20
1,1,2,2-Tetrachloroethane	93		97	70	0-130	4		20
Chloromethane	105		109	70	0-130	4		20
Vinyl chloride	118		124	70	0-130	5		20
Chloroethane	106		110	70	0-130	4		20
1,1-Dichloroethene	101		105	7	0-130	4		20
trans-1,2-Dichloroethene	102		106	7	0-130	4		20



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Parameter	LCS %Recovery	Qual	LCSD %Recovery	%Recovery Qual Limits	, RPD	RPD Qual Limits	
MCP Volatile Organics - Westborough Lab	Associated samp	le(s): 03	Batch: WG678852	2-4 WG678852-5			
Trichloroethene	101		106	70-130	5	20	
1,2-Dichlorobenzene	100		104	70-130	4	20	
1,3-Dichlorobenzene	101		104	70-130	3	20	
1,4-Dichlorobenzene	102		104	70-130	2	20	
cis-1,2-Dichloroethene	102		104	70-130	2	20	
Dichlorodifluoromethane	118		125	70-130	6	20	
1,2-Dibromoethane	96		100	70-130	4	20	
1,3-Dichloropropane	97		102	70-130	5	20	
1,1,1,2-Tetrachloroethane	87		98	70-130	12	20	
o-Chlorotoluene	105		108	70-130	3	20	
p-Chlorotoluene	104		106	70-130	2	20	
Hexachlorobutadiene	100		98	70-130	2	20	
1,2,4-Trichlorobenzene	94		98	70-130	4	20	

	LCS		LCSD		Acceptance	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	
1,2-Dichloroethane-d4	103		104		70-130	
Toluene-d8	100		99		70-130	
4-Bromofluorobenzene	99		98		70-130	
Dibromofluoromethane	102		102		70-130	



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Parameter	LCS %Recovery	Qual	LCSD %Recovery	%Recovery Qual Limits	RPD	RPD Qual Limits
MCP Volatile Organics - Westborough Lab	Associated samp	le(s): 08	Batch: WG67887	9-1 WG678879-2		
Methylene chloride	109		111	70-130	2	20
1,1-Dichloroethane	114		118	70-130	3	20
Chloroform	108		113	70-130	5	20
Carbon tetrachloride	106		110	70-130	4	20
1,2-Dichloropropane	113		117	70-130	3	20
Dibromochloromethane	95		99	70-130	4	20
1,1,2-Trichloroethane	106		108	70-130	2	20
Tetrachloroethene	110		113	70-130	3	20
Chlorobenzene	108		112	70-130	4	20
Trichlorofluoromethane	90		91	70-130	1	20
1,2-Dichloroethane	99		104	70-130	5	20
1,1,1-Trichloroethane	112		116	70-130	4	20
Bromodichloromethane	101		106	70-130	5	20
trans-1,3-Dichloropropene	104		108	70-130	4	20
cis-1,3-Dichloropropene	108		112	70-130	4	20
1,1-Dichloropropene	119		122	70-130	2	20
Bromoform	90		95	70-130	5	20
1,1,2,2-Tetrachloroethane	103		106	70-130	3	20
Benzene	117		121	70-130	3	20
Toluene	113		114	70-130	1	20
Ethylbenzene	113		116	70-130	3	20



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Parameter	LCS %Recovery	Qual	LCSD %Recovery	%Recovery Qual Limits	RPD	RPD Qual Limits
MCP Volatile Organics - Westborough Lab	Associated samp	ole(s): 08	Batch: WG678879-	1 WG678879-2		
Chloromethane	120		120	70-130	0	20
Bromomethane	87		88	70-130	1	20
Vinyl chloride	116		116	70-130	0	20
Chloroethane	104		104	70-130	0	20
1,1-Dichloroethene	109		119	70-130	9	20
trans-1,2-Dichloroethene	117		121	70-130	3	20
Trichloroethene	112		118	70-130	5	20
1,2-Dichlorobenzene	104		106	70-130	2	20
1,3-Dichlorobenzene	106		108	70-130	2	20
1,4-Dichlorobenzene	105		108	70-130	3	20
Methyl tert butyl ether	107		111	70-130	4	20
p/m-Xylene	111		114	70-130	3	20
o-Xylene	110		113	70-130	3	20
cis-1,2-Dichloroethene	113		116	70-130	3	20
Dibromomethane	99		103	70-130	4	20
1,2,3-Trichloropropane	102		107	70-130	5	20
Styrene	109		110	70-130	1	20
Dichlorodifluoromethane	98		100	70-130	2	20
Acetone	93		99	70-130	6	20
Carbon disulfide	100		108	70-130	8	20
2-Butanone	96		107	70-130	11	20



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Lab Number: L1406115

arameter	LCS %Recovery	Qual	LCSD %Recovery		ecovery imits RF	PD	Qual	RPD Limits
ICP Volatile Organics - Westborough Lab	Associated samp	ole(s): 08	Batch: WG678879	9-1 WG678879-2	<u>)</u>			
4-Methyl-2-pentanone	110		114	70	0-130	4		20
2-Hexanone	102		100	70	0-130	2		20
Bromochloromethane	105		109	70	0-130	4		20
Tetrahydrofuran	108		91	70	0-130 1	7		20
2,2-Dichloropropane	113		117	70	0-130	3		20
1,2-Dibromoethane	103		106	70	0-130	3		20
1,3-Dichloropropane	107		110	70	0-130	3		20
1,1,1,2-Tetrachloroethane	102		104	70	0-130	2		20
Bromobenzene	104		107	70	0-130	3		20
n-Butylbenzene	112		116	70	0-130	4		20
sec-Butylbenzene	112		117	70	0-130	4		20
tert-Butylbenzene	112		116	70	0-130	4		20
o-Chlorotoluene	112		116	70	0-130	4		20
p-Chlorotoluene	112		114	70	0-130	2		20
1,2-Dibromo-3-chloropropane	96		99	70	0-130	3		20
Hexachlorobutadiene	104		108	70	0-130	4		20
Isopropylbenzene	112		115	70	0-130	3		20
p-Isopropyltoluene	112		115	70	0-130	3		20
Naphthalene	101		104	70	0-130	3		20
n-Propylbenzene	112		116	70	0-130	4		20
1,2,3-Trichlorobenzene	100		102	70	0-130	2		20



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Parameter	LCS %Recovery	Qual	LCSD %Recovery	9 Qual	%Recovery Limits	RPD	RP Qual Lim	
MCP Volatile Organics - Westborough Lab A	ssociated samp	le(s): 08	Batch: WG678879	9-1 WG67887	79-2			
1,2,4-Trichlorobenzene	102		105		70-130	3	2	0
1,3,5-Trimethylbenzene	111		114		70-130	3	2	0
1,2,4-Trimethylbenzene	110		114		70-130	4	2	0
Ethyl ether	92		92		70-130	0	2	0
Isopropyl Ether	112		116		70-130	4	2	0
Ethyl-Tert-Butyl-Ether	110		112		70-130	2	2	0
Tertiary-Amyl Methyl Ether	108		111		70-130	3	2	0
1,4-Dioxane	129		129		70-130	0	2	0

	LCS		LCSD		Acceptance	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	
1,2-Dichloroethane-d4	90		90		70-130	
Toluene-d8	99		99		70-130	
4-Bromofluorobenzene	103		102		70-130	
Dibromofluoromethane	92		91		70-130	



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Parameter	LCS %Recovery	Qual	LCSD %Recovery	%Recovery Qual Limits	RPD	RPD Qual Limits
MCP Volatile Organics - Westborough Lab	Associated samp	ole(s): 08	Batch: WG678879-	4 WG678879-5		
Methylene chloride	98		97	70-130	1	20
1,1-Dichloroethane	95		92	70-130	3	20
Chloroform	94		91	70-130	3	20
Carbon tetrachloride	90		86	70-130	5	20
1,2-Dichloropropane	94		92	70-130	2	20
Dibromochloromethane	92		91	70-130	1	20
1,1,2-Trichloroethane	93		93	70-130	0	20
Tetrachloroethene	90		87	70-130	3	20
Chlorobenzene	91		88	70-130	3	20
Trichlorofluoromethane	98		93	70-130	5	20
1,2-Dichloroethane	92		92	70-130	0	20
1,1,1-Trichloroethane	92		89	70-130	3	20
Bromodichloromethane	92		92	70-130	0	20
trans-1,3-Dichloropropene	92		92	70-130	0	20
cis-1,3-Dichloropropene	95		94	70-130	1	20
1,1-Dichloropropene	91		89	70-130	2	20
Bromoform	91		91	70-130	0	20
1,1,2,2-Tetrachloroethane	92		92	70-130	0	20
Benzene	92		90	70-130	2	20
Toluene	88		85	70-130	3	20
Ethylbenzene	88		85	70-130	3	20



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Parameter	LCS %Recovery	Qual	LCSD %Recovery	%Recovery Qual Limits	RPD	RPD Qual Limits
MCP Volatile Organics - Westborough Lab	Associated sample	e(s): 08 E	Batch: WG67887	9-4 WG678879-5		
Chloromethane	97		92	70-130	5	20
Bromomethane	114		109	70-130	4	20
Vinyl chloride	96		92	70-130	4	20
Chloroethane	96		92	70-130	4	20
1,1-Dichloroethene	96		92	70-130	4	20
trans-1,2-Dichloroethene	96		92	70-130	4	20
Trichloroethene	91		89	70-130	2	20
1,2-Dichlorobenzene	91		90	70-130	1	20
1,3-Dichlorobenzene	90		89	70-130	1	20
1,4-Dichlorobenzene	91		89	70-130	2	20
Methyl tert butyl ether	99		99	70-130	0	20
p/m-Xylene	90		86	70-130	5	20
o-Xylene	89		86	70-130	3	20
cis-1,2-Dichloroethene	96		92	70-130	4	20
Dibromomethane	95		95	70-130	0	20
1,2,3-Trichloropropane	92		91	70-130	1	20
Styrene	87		85	70-130	2	20
Dichlorodifluoromethane	97		92	70-130	5	20
Acetone	115		109	70-130	5	20
Carbon disulfide	95		90	70-130	5	20
2-Butanone	99		96	70-130	3	20



**Project Name:** AEROVOX

**Project Number:** 39744051.20003

Lab Number: L1406115

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	RPD Qual Limits	
MCP Volatile Organics - Westborough Lab	Associated samp	ole(s): 08	Batch: WG678879	-4 WG67	8879-5			
4-Methyl-2-pentanone	90		92		70-130	2	20	
2-Hexanone	88		89		70-130	1	20	
Bromochloromethane	97		95		70-130	2	20	
Tetrahydrofuran	120		118		70-130	2	20	
2,2-Dichloropropane	95		90		70-130	5	20	
1,2-Dibromoethane	95		94		70-130	1	20	
1,3-Dichloropropane	93		93		70-130	0	20	
1,1,1,2-Tetrachloroethane	90		87		70-130	3	20	
Bromobenzene	90		90		70-130	0	20	
n-Butylbenzene	88		85		70-130	3	20	
sec-Butylbenzene	87		84		70-130	4	20	
tert-Butylbenzene	88		86		70-130	2	20	
o-Chlorotoluene	94		91		70-130	3	20	
p-Chlorotoluene	91		88		70-130	3	20	
1,2-Dibromo-3-chloropropane	97		95		70-130	2	20	
Hexachlorobutadiene	87		84		70-130	4	20	
Isopropylbenzene	87		83		70-130	5	20	
p-Isopropyltoluene	88		85		70-130	3	20	
Naphthalene	92		94		70-130	2	20	
n-Propylbenzene	87		84		70-130	4	20	
1,2,3-Trichlorobenzene	93		94		70-130	1	20	



**Project Name:** AEROVOX

**Project Number:** 39744051.20003

Lab Number:

L1406115

Report Date:

03/31/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	RPD Qual Limits	
MCP Volatile Organics - Westborough Lab A	ssociated samp	le(s): 08 E	Batch: WG67887	9-4 WG678	3879-5			
1,2,4-Trichlorobenzene	96		96		70-130	0	20	
1,3,5-Trimethylbenzene	89		86		70-130	3	20	
1,2,4-Trimethylbenzene	90		87		70-130	3	20	
Ethyl ether	101		98		70-130	3	20	
Isopropyl Ether	95		93		70-130	2	20	
Ethyl-Tert-Butyl-Ether	94		93		70-130	1	20	
Tertiary-Amyl Methyl Ether	94		94		70-130	0	20	
1,4-Dioxane	102		104		70-130	2	20	

	LCS	LCS			Acceptance
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria
1,2-Dichloroethane-d4	94		95		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	100		100		70-130
Dibromofluoromethane	98		100		70-130



#### **PCBS**



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-02 Date Collected: 03/24/14 09:05

Client ID: AX-GW-MW3-032414 Date Received: 03/24/14 Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Matrix: Water Extraction Method: EPA 3510C

Analytical Method: 97,8082 Extraction Date: 03/27/14 17:01

Analytical Date: 03/28/14 09:05 Cleanup Method1: EPA 3665A

Analyst: JW Cleanup Date1: 03/27/14
Cleanup Method2: EPA 3660B
Cleanup Date2: 03/27/14

Qualifier MDL **Parameter** Result Units RL**Dilution Factor** Column MCP Polychlorinated Biphenyls - Westborough Lab Aroclor 1016 ND ug/l 0.250 1 Α ND 0.250 Aroclor 1221 ug/l 1 Α --Aroclor 1232 ND 0.250 1 Α ug/l --ND 1 Aroclor 1242 ug/l 0.250 --Α ND 0.250 1 Α Aroclor 1248 ug/l --Aroclor 1254 ND ug/l 0.250 1 Α Aroclor 1260 ND ug/l 0.250 1 Α Aroclor 1262 ND ug/l 0.250 1 Α --

ug/l

0.250

--

1

Α

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	57		30-150	Α
Decachlorobiphenyl	52		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	46		30-150	В
Decachlorobiphenyl	48		30-150	В

ND



Aroclor 1268

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-03 D
Client ID: AX-GW-MW15B-032414
Sample Location: NEW BEDFORD, MA

Matrix: Water Analytical Method: 97,8082

Analytical Date: 03/28/14 13:50

Analyst: JW

Date Collected: 03/24/14 10:50 Date Received: 03/24/14 Field Prep: Not Specified **Extraction Method: EPA 3510C Extraction Date:** 03/27/14 17:01 Cleanup Method1: EPA 3665A Cleanup Date1: 03/27/14 Cleanup Method2: EPA 3660B Cleanup Date2: 03/27/14

Parameter	Result	Qualifier	Units	RL	MDL	<b>Dilution Factor</b>	Column
MCP Polychlorinated Biphenyls - Wes	stborough Lab						
Aroclor 1016	ND		ug/l	5.00		20	Α
Aroclor 1221	ND		ug/l	5.00		20	Α
Aroclor 1232	ND		ug/l	5.00		20	Α
Aroclor 1242	49.8		ug/l	5.00		20	Α
Aroclor 1248	ND		ug/l	5.00		20	А
Aroclor 1254	ND		ug/l	5.00		20	Α
Aroclor 1260	ND		ug/l	5.00		20	Α
Aroclor 1262	ND		ug/l	5.00		20	Α
Aroclor 1268	ND		ug/l	5.00		20	Α

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	А
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



03/27/14

Cleanup Date1:

**Project Name:** Lab Number: **AEROVOX** L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-04 Date Collected: 03/24/14 10:00

Client ID: Date Received: 03/24/14 AX-GW-MW7A-032414 Sample Location: Field Prep: NEW BEDFORD, MA Not Specified

**Extraction Method:** EPA 3510C Matrix: Water Analytical Method: **Extraction Date:** 03/27/14 17:01 97,8082 Analytical Date: 03/28/14 09:31 Cleanup Method1: EPA 3665A

Cleanup Method2: **EPA 3660B** 

Cleanup Date2: 03/27/14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - We	stborough Lab						
Average 4040	ND			0.050			Δ.
Aroclor 1016	ND		ug/l	0.250		1	Α
Aroclor 1221	ND		ug/l	0.250		1	Α
Aroclor 1232	ND		ug/l	0.250		1	Α
Aroclor 1242	0.493		ug/l	0.250		1	Α
Aroclor 1248	ND		ug/l	0.250		1	Α
Aroclor 1254	ND		ug/l	0.250		1	Α
Aroclor 1260	ND		ug/l	0.250		1	Α
Aroclor 1262	ND		ug/l	0.250		1	Α
Aroclor 1268	ND		ug/l	0.250		1	Α

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	66		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	60		30-150	В
Decachlorobiphenyl	65		30-150	В



Analyst:

JW

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-05 D
Client ID: AX-GW-MW7-032414
Sample Location: NEW BEDFORD, MA

Matrix: Water Analytical Method: 97,8082

Analytical Date: 03/28/14 14:03

Analyst: JW

Date Collected: 03/24/14 11:25 Date Received: 03/24/14 Field Prep: Not Specified **Extraction Method: EPA 3510C Extraction Date:** 03/27/14 17:01 Cleanup Method1: EPA 3665A Cleanup Date1: 03/27/14 Cleanup Method2: EPA 3660B Cleanup Date2: 03/27/14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column		
MCP Polychlorinated Biphenyls - Westborough Lab									
	ND		,,	0.50		40			
Aroclor 1016	ND		ug/l	2.50		10	Α		
Aroclor 1221	ND		ug/l	2.50		10	Α		
Aroclor 1232	ND		ug/l	2.50		10	Α		
Aroclor 1242	22.7		ug/l	2.50		10	Α		
Aroclor 1248	ND		ug/l	2.50		10	Α		
Aroclor 1254	ND		ug/l	2.50		10	Α		
Aroclor 1260	ND		ug/l	2.50		10	Α		
Aroclor 1262	ND		ug/l	2.50		10	Α		
Aroclor 1268	ND		ug/l	2.50		10	Α		

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	Α
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



03/24/14 11:50

Not Specified

**EPA 3510C** 

03/24/14

Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-06 D
Client ID: AX-GW-MW15D-032414
Sample Location: NEW BEDFORD, MA

Matrix: Water
Analytical Method: 97,8082
Analytical Date: 03/28/14

Analyst: JW

 97,8082
 Extraction Date:
 03/27/14 17:01

 03/28/14 14:16
 Cleanup Method1:
 EPA 3665A

 JW
 Cleanup Date1:
 03/27/14

 Cleanup Method2:
 EPA 3660B

Cleanup Date2: 03/27/14

Date Collected:

Date Received:

**Extraction Method:** 

Field Prep:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Wes	stborough Lab						
Aroclor 1016	ND		ug/l	5.00		20	Α
Aroclor 1221	ND		ug/l	5.00		20	А
Aroclor 1232	ND		ug/l	5.00		20	Α
Aroclor 1242	45.2		ug/l	5.00		20	Α
Aroclor 1248	ND		ug/l	5.00		20	Α
Aroclor 1254	ND		ug/l	5.00		20	А
Aroclor 1260	ND		ug/l	5.00		20	Α
Aroclor 1262	ND		ug/l	5.00		20	Α
Aroclor 1268	ND		ug/l	5.00		20	Α

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



**Project Name:** Lab Number: **AEROVOX** L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: D L1406115-07 Client ID: AX-GW-DUP4-032414 Sample Location: NEW BEDFORD, MA

Matrix: Water Analytical Method: 97,8082 Analytical Date: 03/28/14 14:30

Analyst: JW Date Collected: 03/24/14 11:55 Date Received: 03/24/14 Field Prep: Not Specified **Extraction Method: EPA 3510C Extraction Date:** 03/27/14 17:01 Cleanup Method1: EPA 3665A Cleanup Date1: 03/27/14 Cleanup Method2: EPA 3660B Cleanup Date2: 03/27/14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - We	estborough Lab						
Aroclor 1016	ND		ug/l	5.00		20	Α
Aroclor 1221	ND		ug/l	5.00		20	Α
Aroclor 1232	ND		ug/l	5.00		20	Α
Aroclor 1242	44.8		ug/l	5.00		20	Α
Aroclor 1248	ND		ug/l	5.00		20	Α
Aroclor 1254	ND		ug/l	5.00		20	Α
Aroclor 1260	ND		ug/l	5.00		20	Α
Aroclor 1262	ND		ug/l	5.00		20	Α
Aroclor 1268	ND		ug/l	5.00		20	Α

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column	
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	А	
Decachlorobiphenyl	0	Q	30-150	Α	
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В	
Decachlorobiphenyl	0	Q	30-150	В	



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-08 D Date Collected: 03/24/14 12:45

Client ID: AX-DNAPL-MW15D-032414 Date Received: 03/24/14
Sample Location: NEW REDEORD MA

Sample Location: NEW BEDFORD, MA Field Prep: Not Specified **EPA 3580A** Matrix: Oil **Extraction Method:** Analytical Method: 97,8082 **Extraction Date:** 03/27/14 08:09 Analytical Date: 03/30/14 22:37 Cleanup Method1: EPA 3665A Analyst: TQ Cleanup Date1: 03/28/14

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 03/28/14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column			
MCP Polychlorinated Biphenyls - Westborough Lab										
A == = 1 = = 4.040	ND			54000		00000	Δ.			
Aroclor 1016	ND		mg/kg	54000		20000	Α			
Aroclor 1221	ND		mg/kg	54000		20000	Α			
Aroclor 1232	ND		mg/kg	54000		20000	Α			
Aroclor 1242	479000		mg/kg	54000		20000	Α			
Aroclor 1248	ND		mg/kg	54000		20000	Α			
Aroclor 1254	187000		mg/kg	54000		20000	Α			
Aroclor 1260	ND		mg/kg	54000		20000	Α			
Aroclor 1262	ND		mg/kg	54000		20000	Α			
Aroclor 1268	ND		mg/kg	54000		20000	А			

Surrogate	% Recovery	Qualifier	Acceptance Qualifier Criteria Colu			
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	Α		
Decachlorobiphenyl	0	Q	30-150	Α		
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В		
Decachlorobiphenyl	0	Q	30-150	В		



Project Name: AEROVOX Lab Number: L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-09 Date Collected: 03/24/14 14:00

Client ID: AX-GW-MW7B-032414 Date Received: 03/24/14
Sample Location: NEW BEDFORD, MA Field Prep: Not Specified

Matrix: Water Extraction Method: EPA 3510C

Matrix:WaterExtraction Method:EPA 3510CAnalytical Method:97,8082Extraction Date:03/27/14 17:01Analytical Date:03/28/14 11:20Cleanup Method1:EPA 3665A

Analyst: JW Cleanup Date1: 03/27/14
Cleanup Method2: EPA 3660B
Cleanup Date2: 03/27/14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls -	Westborough Lab						
Aroclor 1016	ND		ug/l	0.250		1	A
Aroclor 1221	ND		ug/l	0.250		1	Α
Aroclor 1232	ND		ug/l	0.250		1	Α
Aroclor 1242	1.51		ug/l	0.250		1	Α
Aroclor 1248	ND		ug/l	0.250		1	Α
Aroclor 1254	ND		ug/l	0.250		1	Α
Aroclor 1260	ND		ug/l	0.250		1	Α
Aroclor 1262	ND		ug/l	0.250		1	Α
Aroclor 1268	ND		ug/l	0.250		1	Α

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		30-150	А
Decachlorobiphenyl	92		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	78		30-150	В
Decachlorobiphenyl	93		30-150	В



**Project Name: AEROVOX** 

**Project Number:** 39744051.20003 Lab Number:

L1406115

Report Date:

03/31/14

**Method Blank Analysis Batch Quality Control** 

Analytical Method: Analytical Date:

97,8082 03/31/14 13:48

Analyst:

TQ

Extraction Method: EPA 3580A Extraction Date:

03/27/14 08:09

Cleanup Method1: EPA 3665A Cleanup Date1:

Cleanup Method2: EPA 3660B Cleanup Date2:

03/28/14 03/28/14

Parameter	Result	Qualifier	Units		RL	MDL	Column
MCP Polychlorinated Biphenyls	- Westborough	Lab for sar	nple(s):	80	Batch:	WG678281-1	
Aroclor 1016	ND		mg/kg		3.66		Α
Aroclor 1221	ND		mg/kg		3.66		Α
Aroclor 1232	ND		mg/kg		3.66		Α
Aroclor 1242	ND		mg/kg		3.66		Α
Aroclor 1248	ND		mg/kg		3.66		Α
Aroclor 1254	ND		mg/kg		3.66		Α
Aroclor 1260	5.20		mg/kg		3.66		В
Aroclor 1262	ND		mg/kg		3.66		Α
Aroclor 1268	ND		mg/kg		3.66		Α

			Acceptance	)
Surrogate	%Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	85		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	78		30-150	В
Decachlorobiphenyl	111		30-150	В
Decachlorobiphenyl	113		30-150	Α



**Project Name: AEROVOX** 

**Project Number:** 39744051.20003 Lab Number:

L1406115

Report Date:

03/31/14

**Method Blank Analysis Batch Quality Control** 

Analytical Method: Analytical Date:

97,8082

03/28/14 08:43

Analyst:

JW

Extraction Method: EPA 3510C Extraction Date: 03/27/14 17:01

Cleanup Method1: EPA 3665A Cleanup Date1: 03/27/14 Cleanup Method2: EPA 3660B Cleanup Date2: 03/27/14

Parameter	Result	Qualifier	Units	RL	ı	MDL	Column
MCP Polychlorinated Biphenyls -	Westborough	Lab for sa	mple(s):	02-07,09	Batch:	WG6	78478-1
Aroclor 1016	ND		ug/l	0.250			А
Aroclor 1221	ND		ug/l	0.250			Α
Aroclor 1232	ND		ug/l	0.250			Α
Aroclor 1242	ND		ug/l	0.250			Α
Aroclor 1248	ND		ug/l	0.250			А
Aroclor 1254	ND		ug/l	0.250			А
Aroclor 1260	ND		ug/l	0.250			Α
Aroclor 1262	ND		ug/l	0.250			Α
Aroclor 1268	ND		ug/l	0.250			Α

			Acceptance	•
Surrogate	%Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	46		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	51		30-150	В
Decachlorobiphenyl	74		30-150	В
Decachlorobiphenyl	64		30-150	Α



# Matrix Spike Analysis Batch Quality Control

Project Name: AEROVOX

**Project Number:** 39744051.20003

Lab Number:

L1406115

**Report Date:** 03/31/14

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery		Recovery Limits	RPD	Qual	RPD Limits	Column
MCP Polychlorinated Biphenyl MS Sample	ls - Westbord	ugh Lab Asso	ociated samp	le(s): 02-07,09	QC Bato	h ID: WG	678478-4 WG	678478-	5 QC Sam	ple: L14	106002-	08 Clie	nt ID:
Aroclor 1016	ND	3.12	3.95	126		3.60	115		40-140	9		20	Α
Aroclor 1260	ND	3.12	2.08	67		1.94	62		40-140	7		20	Α

	MS	S	MS	SD	Acceptance		
Surrogate	% Recovery	Qualifier	% Recovery	Qualifier	Criteria	Column	
2,4,5,6-Tetrachloro-m-xylene	52		49		30-150	Α	
Decachlorobiphenyl	58		55		30-150	Α	
2,4,5,6-Tetrachloro-m-xylene	57		54		30-150	В	
Decachlorobiphenyl	67		63		30-150	В	



# Lab Control Sample Analysis Batch Quality Control

**Project Name:** AEROVOX

**Project Number:** 

39744051.20003

Lab Number:

L1406115

03/31/14

Report Date:

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
MCP Polychlorinated Biphenyls - Westboroug	gh Lab Associat	ed sample(s):	08 Batch:	WG678281-2					
Aroclor 1016	92		-		40-140	-		30	Α
Aroclor 1260	125		-		40-140	-		30	А

	LCS		LCSD		Acceptance	Column	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria		
2,4,5,6-Tetrachloro-m-xylene	84				30-150	Α	
Decachlorobiphenyl	116				30-150	Α	
2,4,5,6-Tetrachloro-m-xylene	79				30-150	В	
Decachlorobiphenyl	107				30-150	В	



# Lab Control Sample Analysis Batch Quality Control

Project Name: AEROVOX

**Project Number:** 39744051.20003

Lab Number:

L1406115

Report Date:

03/31/14

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	<del>-</del>	RPD imits	Column
MCP Polychlorinated Biphenyls - Westb	orough Lab Associat	ed sample(s):	02-07,09 Bato	ch: WG67847	78-2 WG67847	'8-3			
Aroclor 1016	78		75		40-140	3		20	А
Aroclor 1260	84		86		40-140	3		20	А

	LCS		LCSD		Acceptance	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	56		62		30-150	Α
Decachlorobiphenyl	76		78		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	59		63		30-150	В
Decachlorobiphenyl	84		85		30-150	В



# Lab Duplicate Analysis Batch Quality Control

Lab Number:

L1406115

**Project Number:** 39744051.20003

AEROVOX

**Project Name:** 

03/31/14 Report Date:

arameter	Native Sample	Duplicate Sample	Units	RPD		PD imits	
MCP Polychlorinated Biphenyls - Westborough Lab	Associated sample(s): 08	QC Batch ID: WC	G678281-4	QC Sample: L1	1406115-08 Clie	ent ID:	AX-
Aroclor 1016	ND	ND	mg/kg	NC		30	Α
Aroclor 1221	ND	ND	mg/kg	NC		30	Α
Aroclor 1232	ND	ND	mg/kg	NC		30	Α
Aroclor 1242	479000	406000	mg/kg	16		30	Α
Aroclor 1248	ND	ND	mg/kg	NC		30	Α
Aroclor 1254	187000	157000	mg/kg	17		30	Α
Aroclor 1260	ND	ND	mg/kg	NC		30	Α
Aroclor 1262	ND	ND	mg/kg	NC		30	Α
Aroclor 1268	ND	ND	mg/kg	NC		30	Α

					Acceptance	
Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	0	Q	30-150	Α
Decachlorobiphenyl	0	Q	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	0	Q	30-150	В
Decachlorobiphenyl	0	Q	0	Q	30-150	В



# INORGANICS & MISCELLANEOUS



**Project Name: AEROVOX** 

Lab Number: Report Date:

L1406115

03/31/14

**Project Number:** 

39744051.20003

Date Collected:

03/24/14 09:05

Lab ID: Client ID:

L1406115-02 AX-GW-MW3-032414

Date Received:

03/24/14

Sample Location: NEW BEDFORD, MA

Field Prep:

Not Specified

Matrix:

Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Wes	stborough Lal	)								
Solids, Total Suspended	44.		mg/l	5.0	NA	1	-	03/27/14 13:30	30,2540D	JT

**SAMPLE RESULTS** 



Project Name: AEROVOX

JVUX

Project Number: 39744051.20003

Lab Number: L1406115

**Report Date:** 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-03

Client ID: AX-GW-MW15B-032414
Sample Location: NEW BEDFORD, MA

Matrix:

Water

Date Collected:

ed: 03/24/14 10:50

Date Received:

03/24/14

Field Prep:

Not Specified

Analytical Method **Dilution** Date Date Factor Prepared Result Qualifier Units Analyzed RL MDL **Parameter Analyst** General Chemistry - Westborough Lab Solids, Total Suspended mg/l 5.0 NA 1 03/27/14 13:30 30,2540D JT



**Project Name: AEROVOX** 

Lab Number:

Report Date:

L1406115

03/31/14

**Project Number:** 

39744051.20003

## **SAMPLE RESULTS**

Lab ID:

L1406115-04

Client ID:

AX-GW-MW7A-032414

Sample Location: NEW BEDFORD, MA

Matrix:

Water

Date Collected:

03/24/14 10:00

Date Received:

03/24/14

Field Prep:

Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westb	orough Lab	)								
Solids, Total Suspended	26.		mg/l	5.0	NA	1	-	03/27/14 13:30	30,2540D	JT



**Project Name: AEROVOX** 

39744051.20003

Lab Number:

L1406115

Report Date:

03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-05

Client ID:

AX-GW-MW7-032414

Project Number:

Sample Location: NEW BEDFORD, MA

Matrix:

Water

Date Collected:

03/24/14 11:25

Date Received:

03/24/14

Field Prep:

Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Wes	tborough Lab	)								
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	03/27/14 13:30	30,2540D	JT



L1406115

**Project Name: AEROVOX** 

Lab Number:

**Project Number:** Report Date: 39744051.20003

03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-06

AX-GW-MW15D-032414 Client ID: Sample Location: NEW BEDFORD, MA

Matrix: Water Date Collected: 03/24/14 11:50

Date Received: 03/24/14

Not Specified Field Prep:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Wes	tborough Lab	)								
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	03/27/14 13:30	30,2540D	JT



**Project Name: AEROVOX** 

Lab Number: Report Date:

L1406115

03/31/14

**Project Number:** 

39744051.20003

03/24/14 11:55

Lab ID: L1406115-07

AX-GW-DUP4-032414

Date Received:

Date Collected:

03/24/14

Client ID:

Sample Location: NEW BEDFORD, MA

Field Prep:

Not Specified

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westl	oorough Lab	)								
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	03/27/14 13:30	30,2540D	JT

**SAMPLE RESULTS** 



**Project Name: AEROVOX** 

Lab Number:

**Project Number:** 39744051.20003 Report Date: 03/31/14

**SAMPLE RESULTS** 

Lab ID: L1406115-09

AX-GW-MW7B-032414 Client ID: Sample Location: NEW BEDFORD, MA

Matrix: Water Date Collected:

03/24/14 14:00

Date Received:

03/24/14

Field Prep:

Not Specified

L1406115

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - West	borough Lab	)								
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	03/27/14 13:30	30,2540D	JT



**Project Name:** AEROVOX **Lab Number:** L1406115

**Project Number:** 39744051.20003 **Report Date:** 03/31/14

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - W	estborough Lab for sam	nple(s): 02	2-07,09	Batch:	WG678197-	1			
Solids, Total Suspended	ND	mg/l	5.0	NA	1	-	03/27/14 13:30	30,2540D	JT



Project Name:AEROVOXLab Number: L1406115Project Number:39744051.20003Report Date: 03/31/14

## **Sample Receipt and Container Information**

Were project specific reporting limits specified?

Reagent H2O Preserved Vials Frozen on: NA

# **Cooler Information Custody Seal**

Cooler

A Absent B Absent

Container Info	rmation			Temp			
Container ID	Container Type	Cooler	рН	deg C	Pres	Seal	Analysis(*)
L1406115-01A	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-02A	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-02B	Vial HCI preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-02C	Vial HCI preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-02D	Amber 1000ml unpreserved	Α	7	3.9	Υ	Absent	MCP-8082-10(365)
L1406115-02E	Amber 1000ml unpreserved	Α	7	3.9	Υ	Absent	MCP-8082-10(365)
L1406115-02F	Plastic 1000ml unpreserved	Α	7	3.9	Υ	Absent	TSS-2540(7)
L1406115-03A	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-03B	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-03C	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-03D	Amber 1000ml unpreserved	Α	7	3.9	Υ	Absent	MCP-8082-10(365)
L1406115-03E	Amber 1000ml unpreserved	Α	7	3.9	Υ	Absent	MCP-8082-10(365)
L1406115-03F	Plastic 1000ml unpreserved	В	7	5.6	Υ	Absent	TSS-2540(7)
L1406115-04A	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-04B	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-04C	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-04D	Amber 1000ml unpreserved	В	7	5.6	Υ	Absent	MCP-8082-10(365)
L1406115-04E	Amber 1000ml unpreserved	В	7	5.6	Υ	Absent	MCP-8082-10(365)
L1406115-04F	Plastic 1000ml unpreserved	В	7	5.6	Υ	Absent	TSS-2540(7)
L1406115-05A	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-05B	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-05C	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-05D	Amber 1000ml unpreserved	В	7	5.6	Υ	Absent	MCP-8082-10(365)
L1406115-05E	Amber 1000ml unpreserved	В	7	5.6	Υ	Absent	MCP-8082-10(365)
L1406115-05F	Plastic 1000ml unpreserved	В	7	5.6	Υ	Absent	TSS-2540(7)
L1406115-06A	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)



Project Name:AEROVOXLab Number:L1406115Project Number:39744051.20003Report Date:03/31/14

Container Info	ormation			Temp			
Container ID	Container Type	Cooler	рН	deg C	Pres	Seal	Analysis(*)
L1406115-06B	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-06C	Vial HCI preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-06D	Amber 1000ml unpreserved	В	7	5.6	Υ	Absent	MCP-8082-10(365)
L1406115-06E	Amber 1000ml unpreserved	В	7	5.6	Υ	Absent	MCP-8082-10(365)
L1406115-06F	Plastic 1000ml unpreserved	В	7	5.6	Υ	Absent	TSS-2540(7)
L1406115-07A	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-07B	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-07C	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-07D	Amber 1000ml unpreserved	Α	7	3.9	Υ	Absent	MCP-8082-10(365)
L1406115-07E	Amber 1000ml unpreserved	Α	7	3.9	Υ	Absent	MCP-8082-10(365)
L1406115-07F	Plastic 1000ml unpreserved	В	7	5.6	Υ	Absent	TSS-2540(7)
L1406115-08A	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-08B	Vial unpreserved	Α	7	3.9	Υ	Absent	MCP-8082-10(365)
L1406115-09A	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-09B	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-09C	Vial HCl preserved	Α	N/A	3.9	Υ	Absent	MCP-8260-10(14)
L1406115-09D	Amber 1000ml unpreserved	В	7	5.6	Υ	Absent	MCP-8082-10(365)
L1406115-09E	Amber 1000ml unpreserved	В	7	5.6	Υ	Absent	MCP-8082-10(365)
L1406115-09F	Plastic 1000ml unpreserved	В	7	5.6	Υ	Absent	TSS-2540(7)



Project Name:AEROVOXLab Number:L1406115Project Number:39744051.20003Report Date:03/31/14

#### **GLOSSARY**

#### **Acronyms**

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes
or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

 Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

#### Footnotes

SRM

 The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

#### Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

#### Data Qualifiers

- A Spectra identified as "Aldol Condensation Product".
- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
- Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
- H The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- The lower value for the two columns has been reported due to obvious interference.

Report Format: Data Usability Report



 Project Name:
 AEROVOX
 Lab Number:
 L1406115

 Project Number:
 39744051.20003
 Report Date:
 03/31/14

#### **Data Qualifiers**

- $\label{eq:main_main_section} \textbf{M} \qquad \text{-Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.}$
- NJ Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P The RPD between the results for the two columns exceeds the method-specified criteria.
- Q The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- **R** Analytical results are from sample re-analysis.
- **RE** Analytical results are from sample re-extraction.
- S Analytical results are from modified screening analysis.
- J Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report



Project Name: AEROVOX Lab Number: L1406115
Project Number: 39744051.20003 Report Date: 03/31/14

#### REFERENCES

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

#### **LIMITATION OF LIABILITIES**

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



#### **Certification Information**

Last revised December 11, 2013

#### The following analytes are not included in our NELAP Scope of Accreditation:

#### Westborough Facility

**EPA 524.2:** Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether.

**EPA 8260C:** 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, Iodomethane (methyl iodide), Methyl methacrylate,

Azobenzene.

EPA 8330A/B: PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT.

**EPA 8270D:** 1-Methylnaphthalene, Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 625:** 4-Chloroaniline, 4-Methylphenol.

**SM4500**: Soil: Total Phosphorus, TKN, NO2, NO3.

EPA 9071: Total Petroleum Hydrocarbons, Oil & Grease.

#### **Mansfield Facility**

EPA 8270D: Biphenyl.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

#### The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

#### **Drinking Water**

EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; EPA 200.7: Ba,Be,Ca,Cd,Cr,Cu,Na; EPA 245.1: Mercury;

EPA 300.0: Nitrate-N, Fluoride, Sulfate; EPA 353.2: Nitrate-N, Nitrite-N; SM4500NO3-F: Nitrate-N, Nitrite-N; SM4500F-C,

SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

**EPA 332**: Perchlorate.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.

#### Non-Potable Water

**EPA 200.8**: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;

EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;

EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC,

SM426C, SM4500NH3-BH, EPA 350.1: Ammonia-N, LACHAT 10-107-06-1-B: Ammonia-N, SM4500NO3-F,

EPA 353.2: Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4,

SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,

Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), EPA 600/4-81-045: PCB-Oil.

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Агрна	CHAIN	OF CU	STO	OY P	AGE	OF <u>/</u>	Date	e Rec'd	in Lab	:	3/24	1/14		ALP	HA Jo	b #:	1406115	
World Class Chamistry  8 Walkup Drive	320 Forbes Blvd	Project	Informati	ion			Re	port Inf	forma	tion -	Data De	eliverat	oles	Billi	ing Info	rmatio	on	
Westboro, MA 07 Tel: 508-898-92	1581 Mansfield, MA 02048	Project N	lame: Aev	SOVO			ر 🗖	ADEx		EN	1AIL			Sa	me as Cl	ient info	PO #:	
Client Information	n	Project L	ocation: 🖊	en Be	dfard,	MA					ents		ject			_		
Client: URS		Project #	3974	4051.2	20003	<b>.</b>	<b>X</b> (Ye	es □ No es □ No	MA M Matrix	1CP An x Spike	alytical N Require	1ethods d on this	SDG'				RCP Analytical Metho organics)	ds
Address: [155 El	inst, Suite 401	Project M	lanager: 🎵	LeCla)	-/m.u	lade	□ Ye		GW1	Standa	ards (Info							
Mancheste	w. NH 03101	ALPHA	Quote #:	. :			1	ther Sta							Criteri	а		
Phone: (603) 6	06-4800		round Tin	ne						P 75	\rac{1}{2}	, / 4/			/ /			
Email: judith.le	eclair durs. con	70.0110		RUSH (only		pprovedl)	ANALYEL	S/0/2		7 /	Ranges Only	Ranges Only	Print	//				T
Additional Pr	oject Information:	Date D	ue:	3/31/	14		\ <u>\</u>	D 524.2	Ŧ/;	CIRCEAL			C Fingerprint		/ /		SAMPLE INFO	) T
	· DNAPL SO	Only amples in a	inprese	evered	Vo.A	s ·	ر گر	ABN		EPH: ORAN	anges & Tar	C PEST	55				Filtration □ Field □ Lab to do  Preservation □ Lab to do	# B O T
ALPHA Lab ID (Lab Use Only)	Sample ID		Colle Date	ction Time	Sample Matrix	Sampler Initials	် တို	3,000	METALS:	Hay				//		/ :/ <del>-</del>	Sample Comments	E S
D6115 01	TB-05		3-24-14		TB		1				•				-	-		1
OZ ,	4x-6W-MW3-6	32414	1	0905	6W	JKH	3				2							6
그를 잃어뜨려면 생물하는 사람들이 나	AX-6W-MWI5E	·		1050	6W	JKH	3				2	1						6
	AX-GW-MW7A-	· ·		1000	6W	cinic	3				2	.					and the second	6
A 52000	AX-6W-MW7-			1125		cnk	3				2							6
1.	4x-6w-MW15]			1150		Jut	3				2							6
(5) 関 した 1 (素のです)	4x-6W-DUP4.			1155		Jett	3				a	-1	1			-		b
08/	420-DNAPE-MWI	5D-632414		1245		JKH	1				Î					D	NAPL Sample	+
04 1	4x-6W-MW7B	~ AGDUIY	1		6W	cmk	3				2	1					··· Courre	6
	11. 000 11(10.12)	OJATI	_ •	1-100		U. V. s												
Container Type P= Plastic	Preservative				Conta	iner Type	V				A	F	<b>&gt;</b>		F.			
A= Amber glass V= Vial	A= None B= HCI C= HNO <sub>3</sub>			- 1	Pre	eservative	B				A	1	7		**		-	
G≃ Glass B= Bacteria cup C= Cube	D= H <sub>2</sub> SO <sub>4</sub> E= NaOH F= MeOH	, Relinqu	ished By:			e/Time				ed By				/Time	45 (* 145 144 144	See See	5.80 J. G. R. 188 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-1
O≔ Other E= Encore D= BOD Botlle	G= NsHSO4 H = Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> I= Ascorbic Àcid J = NH <sub>4</sub> Cl K= Zn Acetate O= Olher	Mate			3/20	f 15:g	3	Ey	riti	$\mathcal{O}$			3/2	<u>પી(</u>	-1 IAD See	há STS revers	s submitted are subjected and Conditions. se side. I-01 (rev. 12-Mar-2012)	) IO

Lab Name: Alpha Analytical Labs

SDG No.: L1406115

Instrument ID: Quimby.i Calibration Date: 28-MAR-2014 Time: 05:13

Lab File ID: 0328A02 Init. Calib. Date(s): 24-MAR-2 24-MAR-2

Compound	RRF	RRF	MIN RRF	%D	MAX %D	
	.37755	.43179	.1	14	20	
vinyl chloride	.41894	.44956	.1	7	20	
bromomethane	.2956	.2079	.1	-30	20	F
chloroethane	.32297	.3304	.1	2	20	
trichlorofluoromethane	.69441	.3304	.1		20	
ethyl ether		.19201	.05	-1	20	
lacrolein	.07673	.07393	.05		20	
freon-113	.44236	.4446	.1	1	20	
lacetone	100		.1	-2	20	
1,1,-dichloroethene	.42433	.41668	.1	-2	20	
tert-butyl alcohol	.01716	.01487	.05	-13	20	F
iodomethane	.35707	.28805	.05	-19	20	
lmethyl acetate		.20041	.01	-6	20	
methylene chloride	.4706	.4679	.1	-1	20	
carbon disulfide	1.0746	1.0891	.1		20	
acrylonitrile methyl tert butyl ether		.13372	.05		20	
methyl tert butyl ether	.83635	.80022	.1	-4	20	
Halothanetrans-1,2-dichloroethene		.33708	.05	-2	20	
trans-1,2-dichloroethene	.46727	.47092	.1		20	
Diisopropyl Ether		1.7500	.05	-1	20	
vinyl acetate	.67567		.05	-13	20	
1,1-dichloroethane	.97574	.96619	. 2	-1	20	
Ethyl-Tert-Butyl-Ether	1.3260	1.2863	.05		20	
2-butanone		.12873	.1		20	
2,2-dichloropropane	100	72.416	.05	-28	1	F
ethyl acetate cis-1,2-dichloroethene	100	94.065	.05	-6	20	
cis-1,2-dichloroethene	.50063	.50165	.1		20	
chloroform	.81007	.79618	.2		20	
bromochloromethane		.20661	.05		20	
tetrahydrofuran		.08556	.05		20	
1,1,1-trichloroethane		.61714	.1	-9	20	
cyclohexane		1.1905	.01	2	30	
1,1-alchioropropene		.69592	.05	0	20	_
carbontetrachloride		76.494	.1	-24	1	F
Tertiary-Amyl Methyl Ether		.82066	.05		20	
1,2-dichloroethane		.62088	.1		20	
benzene	1.8091	1.8794	.5	4	20	
		l		l		

FORM VII MCP-8260-10

Lab Name: Alpha Analytical Labs

SDG No.: L1406115

Instrument ID: Quimby.i Calibration Date: 28-MAR-2014 Time: 05:13

Lab File ID: 0328A02 Init. Calib. Date(s): 24-MAR-2 24-MAR-2

Compound	RRF	RRF	MIN	%D	MAX %D	
Compound	KKF  ======		RRF	3D		1
trichloroethene	1	.49243	.2		20	l
methyl cyclohexane		.86609			30	l
1,2-dichloropropane	.55529		.1		20	l
bromodichloromethane		.52467	.2	-9	20	l
1,4-dioxane	.00242	.0022	.05		20	F
dibromomethane	.2212		.05	0	20	
2-chloroethylvinyl ether		.16101	.05	-13	20	l
4-methyl-2-pentanone		.12322	.1	-7	20	
cis-1,3-dichloropropene		.54545	.2	-11 	20	
toluene		1.5346	.4		20	
ethyl-methacrylate	100	92.337	.01	-8	0	F
trans-1,3-dichloropropene	100	75 889	.1	-24	20	F
2-hexanone	.24277	.2321	1	-4	20	
1,1,2-trichloroethane	.33156	.32813	.1	-1	20	l
1,3-dichloropropane	.72477	.7074	.05	-2	20	1
tetrachloroethene	.65863	.66659	. 2	1	20	
chlorodibromomethane	.43466	.37411	.1	-14	20	l
1,2-dibromoethane	.3744	.36451	.1	-3	20	
chlorobenzene		1.6427	.5		20	ĺ
1,1,1,2-tetrachloroethane	.4734	.41256	.05		20	ĺ
ethyl benzene	2.8947	3.0571	.1	6	20	ĺ
p/m xylene	1.1089	1.1925	.1		20	
o xylene		1.1019	.3	6	20	
lstvrene		1.7856	.31	_	20	l
isopropylbenzene		3.0919	.1	6	20	_
bromoform		.35781	.1	-22	20	F
1,4-dichlorobutane		1.7316	.01	-3	30	1
1,1,2,2,-tetrachloroethane			.3	-2	20	1
1,2,3-trichloropropane		.65121	.05	-3	20	
trans-1,4-dichloro-2-butene		.2718	.05	-10	20	
n-propylbenzene	6.3297		.05	9	20	1
bromobenzene		1.2495	.05	0	20	
4-ethyltoluene	2.4079	2.5973	.05	8 7	20	1
1,3,5-trimethybenzene		4.8690	.05	4	20	1
2-chlorotoluene		4.5931		2	20	1
4-chorotoluene		4.0977	.05	7	20	1
tert-butylbenzene		4.2326	.05	6	20 20	l
1,2,4-trimethylbenzene	4.534	4.8181	.05	٥	40	
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FORM VII MCP-8260-10

Lab Name: Alpha Analytical Labs

SDG No.: L1406115

Instrument ID: Quimby.i Calibration Date: 28-MAR-2014 Time: 05:13

Lab File ID: 0328A02 Init. Calib. Date(s): 24-MAR-2 24-MAR-2

Compound	RRF	RRF	MIN RRF	%D	MAX %D
sec-butylbenzene p-isopropyltoluene 1,3-dichlorobenzene 1,4-dichlorobenzene n-butylbenzene 1,2,4,5-tetramethylbenezene 1,2-dichlorobenzene p-diethylbenzene 1,2-dibromo-3-chloropropane 1,3,5-trichlorobenzene 1,2,4-trichlorobenzene hexachlorobutadiene naphthalene 1,2,3-trichlorobenzene =================================	5.7122 4.6145 2.4376 2.4145 4.7802 1.1426 2.1445 1.5514 100 1.5677 1.2023	6.2686 5.1034 2.4787 2.4626 5.1973 1.2421 2.1881 1.6147 83.400 1.5705 1.1675 .58041 1.7887 .88293 ====== .23901 .28531 1.2813	===== .05 .05 .05 .05 .05 .05 .05 .05 .05 .05	===== 10 11 2 2 9 9 2 4 -17 0 -3 0 -6 -4 ==== 2 1 0 0	==== 20 20 20 20 20 20 20 20 20 20 20 20 20

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Lab Name: Alpha Analytical Labs

SDG No.: L1406115

Instrument ID: Jack.i Calibration Date: 28-MAR-2014 Time: 06:34

			MIN		MAX	
Compound	RRF	RRF	RRF		%D	
======================================		=====			1	_
dichlorodifluoromethane		.6372	.1		20	F
chloromethane	100	115			20	_
vinyl chloride					20	
bromomethane	1.2911/	.3506			20	
chloroethanetrichlorofluoromethane	1.44462	1.0383	.1		20	l F
trichiorofiuoromethane	1.969/2	1.0383	.1		20 20	
ethyl ether	.2810	.29264	.05			
1,1,-dichloroethene	1.5/31/	.63625			20	_
carbon disulfide	1.3889			21	20	F
freon-113		.71564		13	20	_
iodomethane		.27244	.05		20	F
acrolein	.14016			11	20	
methylene chioride	.59834			7	20	
acetone	100			14	20	
trans-1,2-dichloroethene	.65128				20	
methyl acetate	.43017	.44024	.1		20	
methyl tert butyl ether		1.2637			20	_
tert butyl alcohol	04678	.04761			20	F
Diisopropyl Ether	2.8471	2.6328		-8	20	
1,1-dichloroethane	1.5632	1.6086	.2	3	20	
acrylonitrile		.22777			20	
Halothane	1.49604	.51674			20	
Ethyl-Tert-Butyl-Ether	2.2696	2.0799		_	20	
vinyl acetate		1.3863		-8	20	
cis-1,2-dichloroethene		.74406		4	20	
2,2-dichloropropane	1.97271	.98736		2	20	
cyclohexanebromochloromethane	1.8338	1.9389		6	30	
bromochloromethane	.3082	.3369		9	20	
chloroform	1.1828	1.2148	.2		20	
carbontetrachloride	.89326				20	
tetrahydrofuran	.20231				20	
ethyl acetate	.5616	.5182		-8	20	
1,1,1-trichloroethane		1.0602	.1	4	20	
1,1-dichloropropene		.92351		0	20	
2-butanone		.22376			20	
benzene	2.6154	2.6190	.5	0	20	
Tertiary-Amyl Methyl Ether	1.3454	1.2618			20	
1,2-dichloroethane	.93584	.94665	.1	1	20	
		l		l		

FORM VII MCP-8260-10

Lab Name: Alpha Analytical Labs

SDG No.: L1406115

Instrument ID: Jack.i Calibration Date: 28-MAR-2014 Time: 06:34

Compound	RRF	RRF	MIN RRF	%D	MAX %D	
methyl cyclohexane trichloroethene dibromomethane 1,2-dichloropropane bromodichloromethane 1,4-dioxane 2-chloroethylvinyl ether cis-1,3-dichloropropene toluene tetrachloroethene 4-methyl-2-pentanone trans-1,3-dichloropropene 1,1,2-trichloroethane ethyl-methacrylate chlorodibromomethane 1,3-dichloropropane 1,2-dibromoethane 2-hexanone chlorobenzene ethyl benzene 1,1,1,2-tetrachloroethane p/m xylene o xylene bromoform styrene isopropylbenzene 1,4-dichlorobutane 1,1,2,2,-tetrachloroethane 1,1,2,2,-tetrachloroethane 1,1,2,2,-tetrachloroethane 1,2,3-trichloropropane 1,3,5-trimethybenzene trans-1,4-dichloro-2-butene 4-chorotoluene tert-butylbenzene 1,2,4-trimethylbenzene	===== .9805 .63791 .31962 .83876 .82605 .00423 .3725 .98705 2.0122 .87149 .20046 .97089 .46399 .72397 .65484 .97005 .56653 .42284 2.1785 3.8004 .77297 1.4987 1.3908 .65445 2.3580 6.7198 1.6180 7.1776 2.5333 1.0971 6.6232 5.0164 .87607 5.2320 .19049 4.4812	===== .996 .65327 .31877 .80117 .8179 .00372 .35791 .95892 1.9527 .7977 .19801 .85946 .40921 .68859 .53953 .9178	===== .01 .2 .05 .1 .2 .05 .05 .2 .4 .1 .1 .01 .1 .05 .1 .05 .1 .3 .1 .05	====== 2 0 -4 -1 -12 -4 -3 -8 -1 -11 -12 -5 -18 -10 -12 -5 -16 -3 -16 -3 -4 -17 -17 -13 -6 -8 -4 -10 -2	==== 30 20 20 20 20 20	F

FORM VII MCP-8260-10

Lab Name: Alpha Analytical Labs

SDG No.: L1406115

Instrument ID: Jack.i Calibration Date: 28-MAR-2014 Time: 06:34

Lab File ID: 0328B02 Init. Calib. Date(s): 24-MAR-2 24-MAR-2

			MIN		MAX
Compound	RRF	RRF	RRF	%D	%D
sec-butylbenzene p-isopropyltoluene 1,3-dichlorobenzene 1,4-dichlorobenzene p-diethylbenzene n-butylbenzene 1,2-dichlorobenzene 1,2-dichlorobenzene 1,2-dibromo-3-chloropropane 1,3,5-trichlorobenzene 1,2,4-trichlorobenzene hexachlorobutadiene naphthalene 1,2,3-trichlorobenzene =================================	2.8960 2.9931 2.719 3.7940 2.8647 4.0524 .18789 .70684 1.2665	4.7950 2.8781 2.9009 2.5611 3.6247 2.6225 3.9796 .18788 .71121 1.2483 .43177 2.985 1.0564 ===== .2836 .33283 1.2059	===== .01 .05 .6 .5 .05 .05 .05 .05 .05 .05 .05 .05 .05	-1 -3	==== 20 20 20 20 20 20 20 20 20 20 20 20 20

FORM VII MCP-8260-10

Appendix P.
Resistivity and
MALM Report

# GEOPHYSICAL SURVEY FORMER AEROVOX PROPERTY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

# Prepared for:

AECOM 12420 Milestone Center Drive Germantown, Maryland 20876

# Prepared by:

Hager-Richter Geoscience, Inc. 8 Industrial Way - D10 Salem, New Hampshire 03079

File 15MH10 April, 2015

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CONSULTANTS IN GEOLOGY AND GEOPHYSICS

8 INDUSTRIAL WAY - D10

SALEM, NEW HAMPSHIRE 03079-5820

TELEPHONE (603) 893-9944

FAX (603) 893-8313

April 17, 2015 File 15MH10

Chris Beza, P.G.

Principal Hydrogeologist AECOM 12420 Milestone Center Drive Germantown, Maryland 20876 Tel: 301.820.3460

Fax: 301.820.3009 Cell: 703.919.3259

Email: Chris.Beza@aecom.com

RE: Geophysical Survey

Former Aerovox Property 740 Belleville Avenue New Bedford, Massachusetts

Dear Mr. Beza:

In this report, we summarize the results of a geophysical investigation conducted by Hager-Richter Geoscience, Inc. (Hager-Richter) at the Former Aerovox Property in New Bedford, Massachusetts for AECOM. As you know, Hager-Richter conducted a seismic refraction survey at this site for URS in October, 2013.<sup>1</sup> The scope of work and area of interest were specified by AECOM.

#### INTRODUCTION

The site is the former Aerovox Mill located at 740 Belleville Avenue in New Bedford, Massachusetts. Figure 1 shows the general location of the Site. The site is approximately 10 acres in size and is presently a fenced asphalt paved lot. The Former Aerovox Mill, an electronics manufacturing facility, consisted of plant buildings and paved parking lots. The buildings were razed and the site was capped with asphalt in late 2011. Building foundations and multiple utilities still remain in place under the cap.

As part of an ongoing environmental investigation of the site, AECOM requested a geophysical survey to determine: 1) depth of bedrock in the eastern portion of the site; 2) locations of bedrock fractures to a depth of 100 feet in the eastern portion of the site; and 3) the extent of a contaminated groundwater plume around an existing monitoring well. AECOM specified the use of electrical resistivity imaging (ERI) and mise-a-la-masse (MALM) methods to accomplish the objectives of the geophysical survey.

<sup>&</sup>lt;sup>1</sup> Hager-Richter Geoscience, Inc. report entitled: "Seismic Refraction Survey, Former Aerovox Facility, 740 Belleville Avenue, New Bedford, Massachusetts," dated November, 2013.

Geophysical Survey
Former Aerovox Property
740 Belleville Avenue
New Bedford, Massachusetts
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The area of interest (AOI) for the geophysical survey was specified by AECOM as the eastern portion of the former Aerovox site. The AOI is located entirely on the asphalt pavement cap. ERI data were acquired along two SW-NE transects and MALM data were acquired on a 10-foot grid in the vicinity of MW-15D. The locations of the ERI transects and the MALM survey area are shown in Figure 2. AECOM was advised by H-R prior to the survey that data from the geophysical methods specified by AECOM (ERI and MALM) are significantly affected by the presence of buried utilities, buried structures (both metallic and non-metallic), surface metal objects, asphalt and concrete pavements, and live electric lines, all of which are present in the AOI at the former Aerovox site.

#### **OBJECTIVE**

The objectives of the geophysical survey were: 1) to determine the depth of bedrock; 2) to detect fractures within the bedrock; and 3) delineate the extent of a contaminated groundwater plume in an area of interest specified by AECOM around monitoring well MW-15D.

## THE SURVEY

Michael Howley, P.G., Steven Grant, P.G., and Bryan Carnahan of Hager-Richter conducted the geophysical survey on April 8 and 9, 2015. The project was coordinated with Mr. Chris Beza, P.G., and Ms. Judith LeClair, P.G., both of AECOM. Mr. Jeff Harshman, also of AECOM, was present for the duration of the field work. Data analysis and interpretation were completed at the Hager-Richter offices. Original data and field notes reside in the Hager-Richter files and will be retained for a minimum of three years.

As indicated above, the geophysical survey consisted of Electrical Resistivity Imaging (ERI) along two traverses totaling approximately 1,100 linear feet, and a Mise-a-la-masse (MALM) survey in an approximately 110-foot by 110-foot area in the vicinity of MW-15D. MALM data were acquired at 143 measurement stations with 10-foot spacing between stations.

The positions of the ERI transects and the MALM stations were recorded using a Trimble Geo 7X GPS receiver outfitted with a Zephyr 2 external antenna. The locations of the ERI transects and the MALM survey area are shown on Figure 2.

## **EQUIPMENT & PROCEDURES**

**Electrical Resistivity Imaging.** We use an AGI Super Sting R8 earth resistivity instrument with an addressable multi-electrode system for electrical imaging surveys.ERI incorporates both vertical electrical sounding and lateral profiling to produce a data set suitable to create a two-dimensional resistivity model. The Super Sting R8 allows automatic

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measurement of several types of array, i.e., most combinations of current and voltage electrode connections can be controlled by the Super Sting system. Fifty-six electrodes, or any multiple of 14 electrodes (with a maximum of 254 electrodes) can be used with the Super Sting system.

ERI data were acquired using both the Dipole-Dipole and Schlumberger array configurations and an electrode spacing 10 feet. Although only the Dipole-Dipole array was specified by AECOM, we acquired the Schlumberger array as well after viewing the data in the field. These array configurations and electrode spacings provide approximate depths of exploration of about 120 feet and 80 feet respectively, for the Dipole-Dipole and Schlumberger arrays. Data were acquired along two transects totaling about 1,100 feet. The locations of the resistivity lines are shown on Figure 2.

The Super Sting R8 earth resistivity instrument measures the contact resistance of each electrode, and, if the resistance of any electrode is judged to be excessive, salt water is poured on the ground around that electrode to decrease the surface resistance. After the contact resistance of all electrodes is satisfactory, the data are acquired under program control. The electrodes are moved to the next survey line and the procedures repeated.

The resulting data sets are inverted using AGI EarthImager 2D, commercially licensed software, to create two-dimensional resistivity models. Apparent resistivity values are calculated with a forward modeling subroutine, and a smoothness-constrained least-squares optimization routine is used to invert the data. Both finite-difference and finite-element forward modeling techniques are available in the software.

Although there are many ways to display the results of 2D resistivity inversions, the essential element is a plot of the distribution of resistivity as a function of depth and distance along the survey line. The choice of scales affects the appearance of the plots and further emphasizes particular aspects of the results, and the choice is most commonly between linear and logarithmic scales, although others could be made. A resistivity image profile can be made to highlight either local detail or regional information.

The interpretation of resistivity plots is based on the experience of the interpreter, his/her knowledge of typical values or ranges of values of resistivity for the types of geologic materials expected below a survey line. The interpreter uses the measured values to infer what materials are present - including soil and/or rock types, porosity, permeability, presence or absence of contamination, the presence of such geological features as faults and fracture zones, and the presence of such man-made features as tar pits, concrete walls, slurry walls, and former lagoons.

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**Mise-A-La-Masse.** The Mise-a-la-masse (MALM) method, also called "charged body potential method," maps the distribution and magnitude of self-potentials caused in an electrically conducting body due to the injection of electrical current in the body.

We use the AGI Sting R1 resistivity instrument, four stainless steel electrodes, and well insulated cables. For this method, two electrodes (A and B) are used to inject current and two other electrodes (M and N) are used to measure the potential. One current electrode (A) is placed in contact with the conductive body, for this survey at the bottom of MW-15D. The other current electrode (B), called the current reference electrode, is placed at a large distance from the survey grid. For this survey, electrode B was placed approximately 775 feet southwest of MW-15D on the Titleist property. The voltage distribution is measured around the conductive body using one reference potential electrode (N) placed at a large distance from the survey grid (diametrically opposed to the current reference electrode), and the other potential electrode (M) which is moved between stations to be surveyed. For this survey, electrode N was placed approximately 300 feet north of MW-15D on the Precix property. The location of the MALM survey area is shown on Figure 2.

We recorded two or three measurements at each grid point within the survey area. Each measurement consists of an average of four readings of the potential (n=4), along with the standard deviation (%) between the four readings. Measurements with high standard deviation between readings (>5%) were repeated. The measurement with the lowest standard deviation between readings at each grid point was used for contouring the potential distribution.

Processing MALM data consists of contouring the raw data using suitable scales to create lines of equipotential. The interpretation of MALM data is based on pattern recognition coupled with knowledge that potential gradients are lower in conducting bodies than in non- and poorly-conducting bodies. Lines of equipotential should be concentric around a regularly shaped conducting body in a homogenous medium. In the case of an irregularly shaped body, such as the target contaminant plume, equipotential lines are distorted around the extent of the feature. The distribution of equipotential lines measured from the MALM survey can therefore indicate the spatial extent of the conductive body of interest.

## LIMITATIONS OF THE METHODS

**Electrical Resistivity Imaging.** As with any of the electrical geophysical methods, resistivity data are subject to certain limitations, including site surface and subsurface conditions and structures, electrical and "geological" noise, and target depth and size. Interference from such cultural features as buildings, fencing, and underground and overhead power lines is common at many sites, particularly at active industrial sites. Thus, for certain applications, the use of the resistivity method in urban settings might be inappropriate.

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The subsurface is three dimensional in character, and although the resistivity data are acquired along a line, the data are affected by resistivity changes off-line. Therefore, unless there are parallel survey lines that are spaced appropriately, resistivity changes off-line may be interpreted as changes below the survey line. This limitation is particularly significant for single survey lines. A further limitation of the resistivity method arises at the ends of a survey line where the data density is necessarily reduced.

The target depth, size, and of course, resistivity contrast may pose limitations. These three parameters, generally characterized as large or small, are important in the survey design,<sup>2</sup> and extreme values can limit the usefulness of the resistivity method. For example: a small target, a granite boulder 2 ft in diameter at a large depth of 20 ft or more, even with very high resistivity contrast, 10<sup>5</sup> Ohm-m in a medium of 0.2 Ohm-m, cannot be detected. A target of reasonable size, a granite boulder 2 ft in diameter at a shallow depth of 6 ft or less, may not be detectable where the resistivity contrast is low, 10<sup>5</sup> Ohm-m in a medium of 10<sup>4</sup> Ohm-m.

**Mise-A-La-Masse.** Like all geophysical methods, there are limitations to the Mise-a-la-masse method. The limitations are due mainly to site access, inadequate contrast in electrical conductivity of the target and surrounding soil/rock, and the presence of non-target conductors in or around the area of interest.

## **RESULTS**

The surface geophysical survey consisted of two Electrical Resistivity Imaging (ERI) profiles and a Mise-a-la-masse (MALM) survey near MW-15D. Figure 2 is a Site Plan that shows the locations of the ERI transects relative to site features and the MALM survey area. Figures 3 and 4 show the inverted resistivity images for ERI Lines 1 and 2, respectively. Figure 5 shows a color contour plot of the potential distribution measured by the MALM survey, and Figure 6 shows the locations of the ERI lines and the MALM survey area with the locations of mapped subsurface utilities at the Aerovox Site.

**Electrical Resistivity Imaging.** Electrical Resistivity Imaging data were acquired along two traverses in the eastern portion of the Aerovox property. The locations of ERI Lines 1 and 2 are shown on Figure 2. Inverted resistivity profiles for ERI Lines 1 and 2 are shown in Figures 3 and 4, respectively. ERI data were acquired using the dipole-dipole and Schlumberger arrays,

The parameters depth and size scale to the electrode spacing. A "large depth" is any depth greater than 10 times the electrode spacing. A "small depth" is any depth less than 3 times the electrode spacing. Depths less than 10 but greater than 3 times the electrode spacing are termed "intermediate depths." A "large size" is any size greater than 2½ times the electrode spacing. A "small size" is any size less than 1 times the electrode spacing are termed "intermediate sizes." Resistivity contrast refers to the ratio of the resistivity of one material to that of the second material. A large resistivity contrast is any such ratio of at least 100. A small resistivity contrast is any such ratio no greater than 0.5. Ratios less than 100 but greater than 0.5 are termed "intermediate ratios."

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and the inverted resistivity profiles are shown for both electrode configurations in Figures 3 and 4.

*ERI Data Quality*. The table below details the inversion of the ERI data. The default criteria for data removal for surface ERI data were used for the initial settings, and a smooth model inversion was used. A large portion of the dipole-dipole data were removed from both ERI Lines prior to inversion, mostly due to having a minimum voltage of less than the defined 0.2 mV. The raw .stg data files will be electronically transmitted to AECOM separately from this report.

			# of Data		Fit of Resist	ivity Model
Line	Array Type	Inversion Method	Points Removed	Number of Iterations	RMS Error	L2-Norm
ERI Line 1	Dipole-Dipole	smooth model inversion	243 of 746	5	30.85%	72.53
ERI Line 1	Schlumberger	smooth model inversion	0	6	18.21%	36.80
ERI Line 2	Dipole-Dipole	smooth model inversion	214 of 697	4	48.41%	217.73
ERI Line 2	Schlumberger	smooth model inversion	0	3	64.37%	460.12

The horizontal axes in Figures 3 and 4 are the profile distance along the ground surface, and the vertical axes are depth in feet. The red and orange colors typically indicate relatively high resistivity materials such as dry sand and gravel or bedrock, and the blue colors typically indicate relatively low resistivity materials such as saturated or conductive soils and clays. The intermediate colors (yellow and green) typically indicate moderately conductive materials such as partially saturated or moist soils and zones of fractured bedrock. The presence of parallel conductive features such as metallic utilities or fences within approximately half of the array length can adversely affect the quality of ERI data.

Utility plans provided by AECOM, shown in Figure 6, indicate that ERI Line 1 has crossing subsurface utilities at about 22 feet (electric), 220 feet (water), 315 feet (reinforced concrete drain), and a parallel utility (water) from about 410 feet to 480 feet along the line. The inverted dipole-dipole and Schlumberger resistivity profiles for ERI Line 1 (Figure 3) both show large, near-surface resistivity lows at the water line crossing at 220 feet and the sub-parallel water line at 410-480 feet. A large deeper resistivity low at 350 to 420 feet is likely due to the effect of the water line approaching the transect in this area. Anomalies attributed to the

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subsurface utilities dominate the resistivity profiles, and it is nearly impossible to interpret other meaningful information from the profiles for ERI Line 1.

Utility plans provided by AECOM, shown in Figure 6, indicate that ERI Line 2 has a parallel sanitary sewer line from the start of the line through 315 feet where a former pump house vault is present in the subsurface. Another sub-parallel sanitary sewer line is present from the former vault at 315 to the end of the line. A sub-parallel water line is present along the line from about 270 feet to the end of the line and crosses the ERI line at 410 feet along the line. The inverted dipole-dipole and Schlumberger resistivity profiles for ERI Line 2 (Figure 4) both show large, near-surface resistivity lows at the location of the former pump house vault at 315 feet and along the sub-parallel water line and we attribute these anomalies to the presence of the utilities. A broad deep resistivity low present from about 0-270 feet along the profile corresponds to the location of the parallel sanitary sewer. Anomalies attributed to the subsurface utilities dominate the resistivity profiles, and it is nearly impossible to interpret meaningful information from the profiles for ERI Line 2.

The bedrock surface and locations of bedrock fractures could not reliably be detected by the ERI survey due to interference caused by conductive utilities present in the subsurface.

**Mise-a-la-masse.** The location of the Mise-a-la-masse (MALM) survey area is shown in Figure 2, and the MALM data are shown as a color contour plot of potential distribution in Figure 5. The MALM survey area was limited by an adjacent property north of the site where access was not available, and by sheet-pile walls that extends from ground surface to a depth of 20 feet along both the northeastern and eastern boundaries of the survey area.

The MALM data are presented as the potential difference between the infinite potential electrode (N) placed approximately 300 feet north of MW-15D and the roving measurement potential electrode (M) for each data station. A 10mA current was injected into the target contaminant plume identified by AECOM at a depth of 31 feet in MW-15D.

On the basis of the shape of the equipotential lines shown in Figure 5, we infer that the conductive body is present mostly to the southwest of MW-15D. Whether the conductive body is also present on the adjacent property to the north can not be determined from the MALM data. The presence of the sheet-pile wall along the north and east boundaries of the survey area and a mapped water line bisecting the area do not appear to have negatively impacted the MALM data.



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#### CONCLUSIONS

Based on the geophysical survey performed by Hager-Richter Geoscience at the Former Aerovox Site in New Bedford, Massachusetts for AECOM, we conclude that:

- The ERI survey did not reliably detect the bedrock surface or the locations of bedrock fractures, likely due to the presence of subsurface metallic utilities near the ERI line locations.
- A conductive body, likely the target contaminant plume, was detected extending to the southwest of MW-15D on the basis of MALM data acquired at the Site.

#### LIMITATIONS ON USE OF THE REPORT

This Report was prepared for the exclusive use of AECOM (Client). No other party shall be entitled to rely on this Report or any information, documents, records, data, interpretations, advice or opinions given to Client by Hager-Richter Geoscience, Inc. (H-R) in the performance of its work. The Report relates solely to the specific project for which H-R has been retained and shall not be used or relied upon by Client or any third party for any variation or extension of this project, any other project or any other purpose without the express written permission of H-R. Any unpermitted use by Client or any third party shall be at Client's or such third party's own risk and without any liability to H-R.

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If you have any questions or comments on this letter Report, please contact us at your convenience. It has been a pleasure to work with AECOM on this project. We look forward to working with you again in the near future.

Sincerely yours,

HAGER-RICHTER GEOSCIENCE, INC.

Michael W. Howley, P.G.

Geophysicist

Attachments: Figures 1-6

Sorry Richter, P.G.

President







MASS

NOTE:

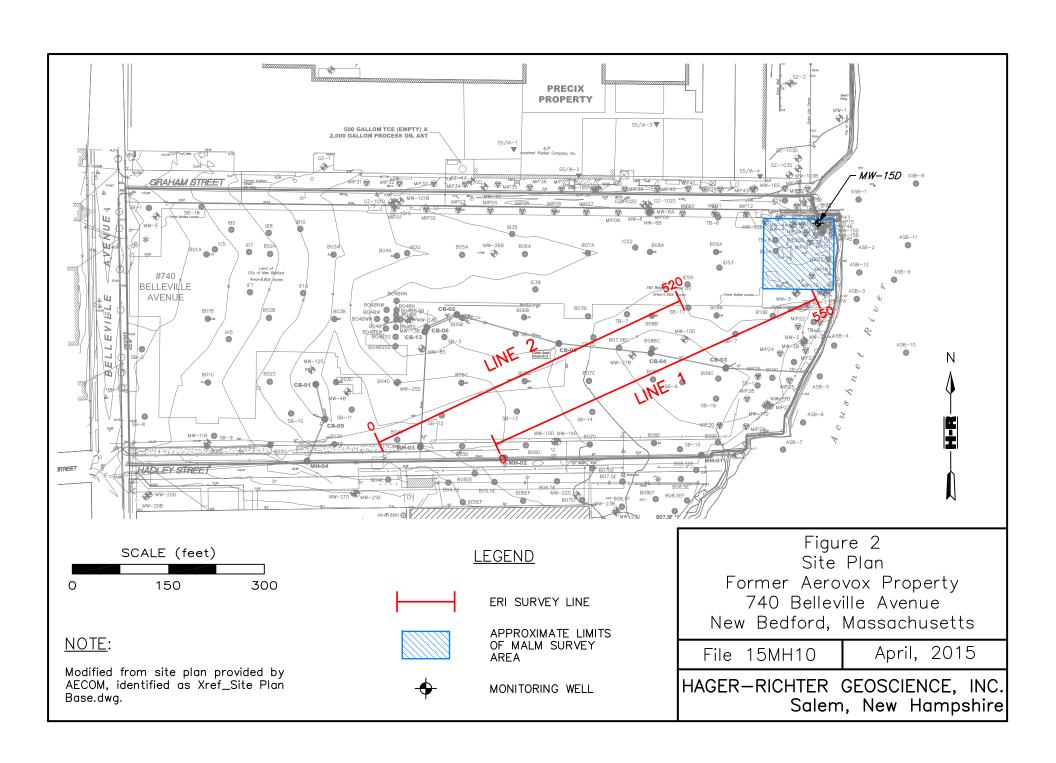
Modified from Google Earth Pro aerial photograph.

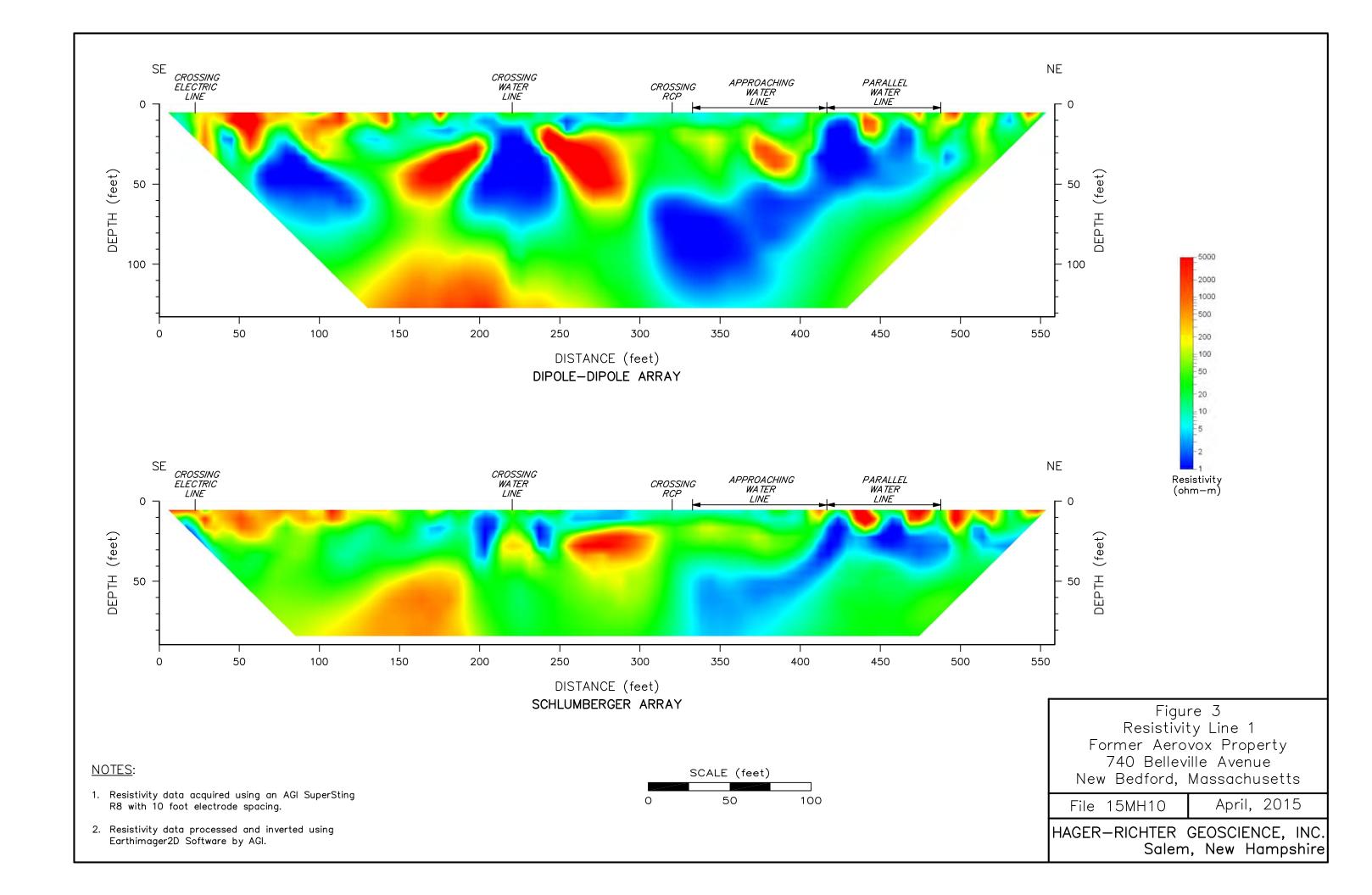
Figure 1
General Site Location
Former Aerovox Property
740 Belleville Avenue
New Bedford, Massachusetts

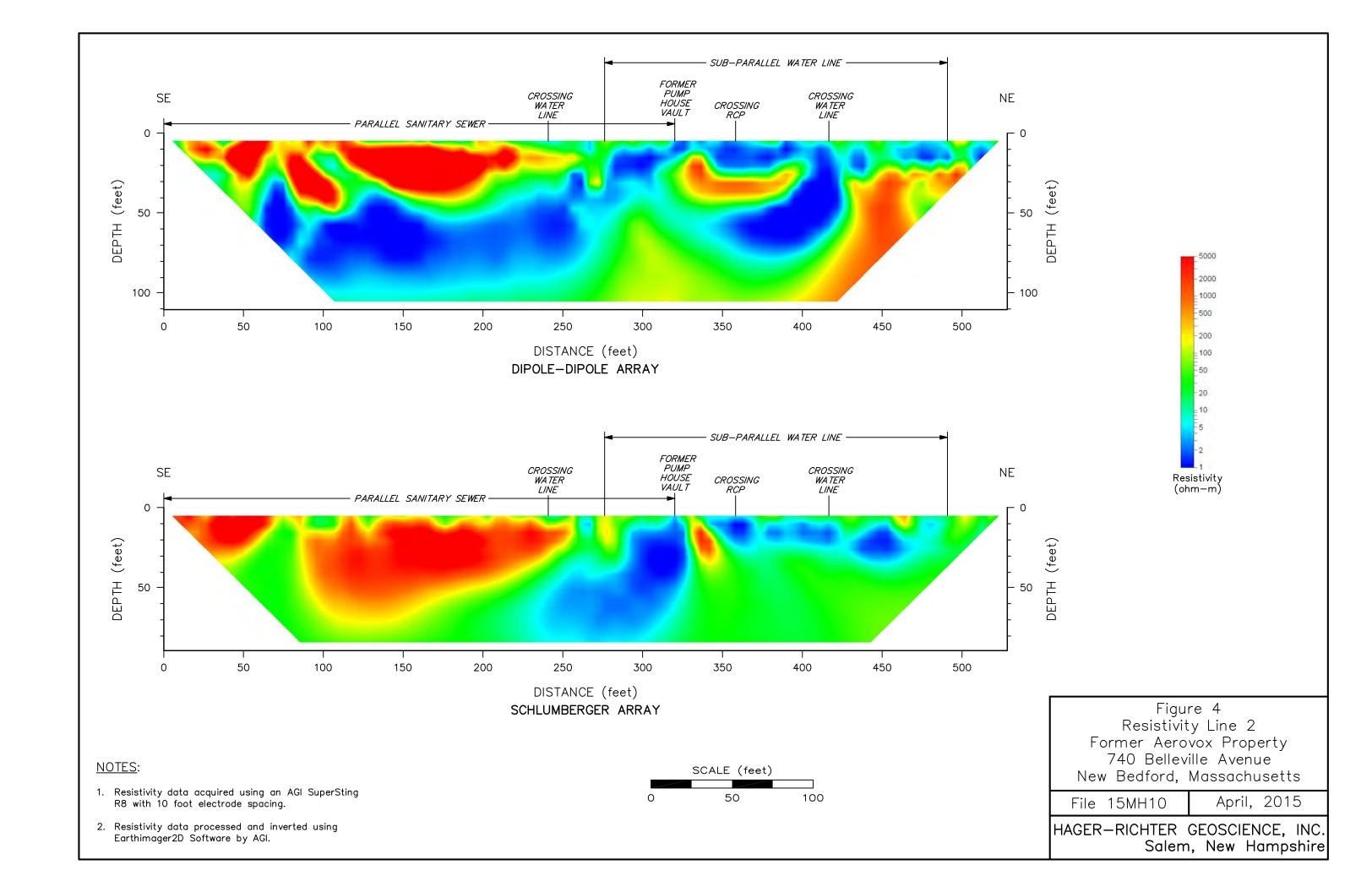
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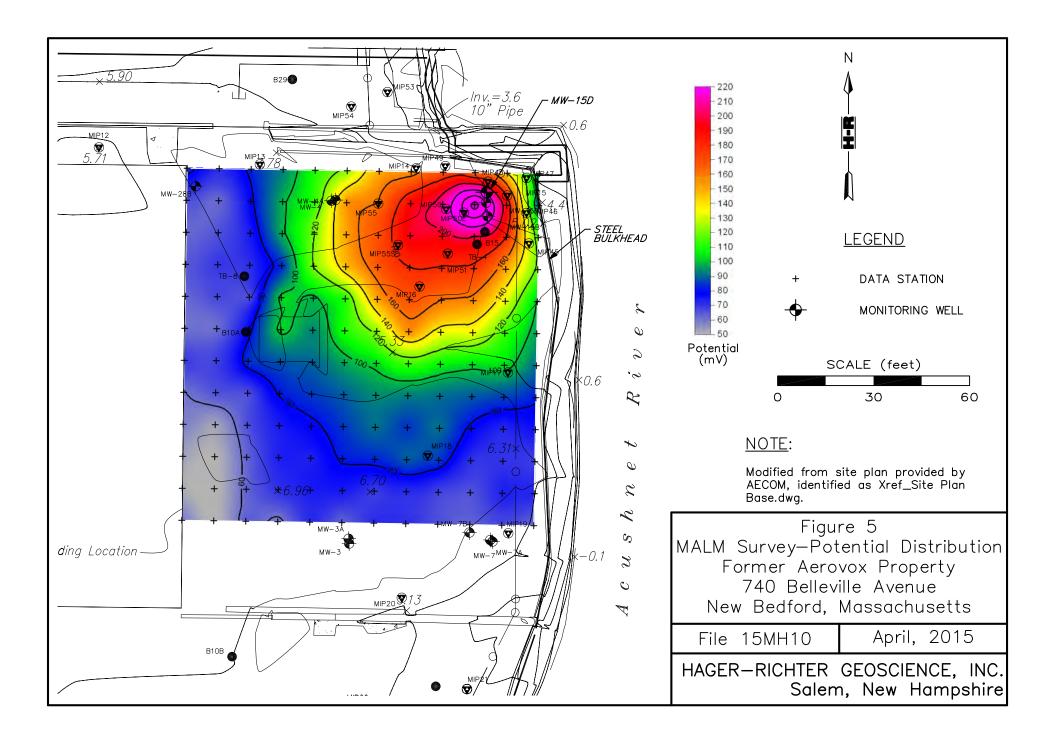
April, 2015

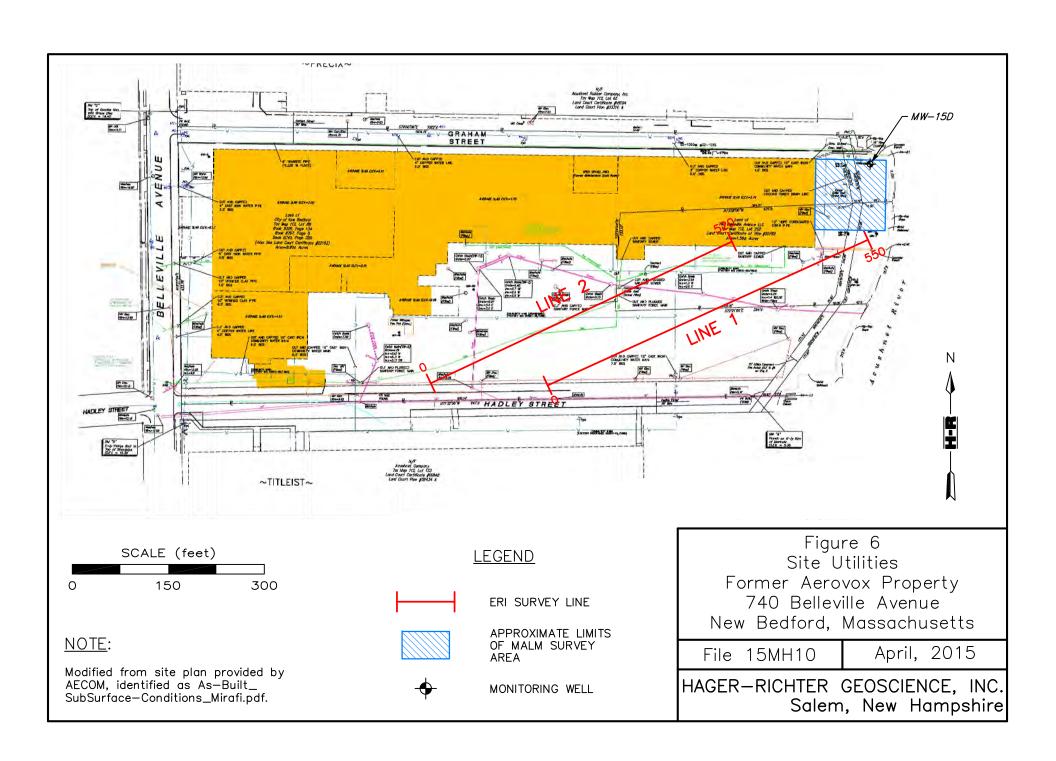
HAGER-RICHTER GEOSCIENCE, INC. Salem, New Hampshire











Appendix Q.
UVOST Logs
(Included on CD only)

Appendix R.
Cross Sections
(Included on CD only)

Appendix S.
Data Validation
Memoranda
(included on CD)

Appendix T.
Method 3 Risk
Assessment

# METHOD 3 RISK ASSESSMENT AEROVOX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

# **Prepared for:**

AECOM 1155 Elm Street, Suite 401 Manchester, New Hampshire 03101

# Prepared by:

Susan A. Sundstrom, Ph.D., D.A.B.T. 9 St. James Place, Unit 904 Nashua, New Hampshire 03062

September 18, 2015

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# METHOD 3 RISK ASSESSMENT AEROVOX FACILTY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

#### 1.0 INTRODUCTION

# 1.1 OBJECTIVE

On behalf of AECOM, a Method 3 Risk Assessment was conducted for the disposal site identified as RTN 4-0601 which includes all or portions of the commercial/industrial properties located at 700, 740 and 744 Belleville Avenue in New Bedford, Massachusetts (the Site). It was performed in accordance with the Massachusetts Contingency Plan (MCP) at 310 CMR 40.0900, which calls for a risk assessment to be completed for all disposal sites for which response actions are required unless response actions have successfully reduced concentrations of chemicals in environmental media to background levels. The purpose of this study was to evaluate whether polychlorinated biphenyls (PCBs) and volatile organic compounds (VOCs) detected in soil, ground water, soil vapor, and indoor air pose a potentially significant risk to human health or the environment, as defined in the MCP. This assessment considers exposure scenarios for current land use and for reasonably foreseeable future land use in the absence of further remediation at the Site.

#### 1.2 METHODS

This risk characterization was performed in accordance with 310 CMR 40.0900 and in general accordance with the Massachusetts Department of Environmental Protection (MassDEP) Guidance for Disposal Site Risk Characterization — In Support of the Massachusetts Contingency Plan (MassDEP, 1995), Background Documentation for the Development of the MCP Numerical Standards (MassDEP, 1994), information provided in MassDEP 2014 MCP Method 1 Standard Workbooks, MassDEP Public Review Draft Vapor Intrusion Guidance

(2014a), and relevant guidance documents from the U.S. Environmental Protection Agency (USEPA).

Risk was characterized for the Site using MassDEP Method 3. This assessment of risk includes a description of the chemicals detected at the Site, their toxicological characteristics, and an evaluation of the potential human health and environmental risks associated with the presence of these chemicals at the Site.

The report is organized as follows:

- Hazard identification;
- Dose-response information;
- Exposure assessment;
- Human health risk characterization; and
- Stage I Environmental Screening Assessment.

All tables appear at the end of the text. Concentrations in soil are reported in milligrams per kilogram (mg/kg), which is equivalent to parts per million (ppm). Concentrations in ground water are reported in micrograms per liter ( $\mu$ g/l), which is equivalent to parts per billion (ppb). Concentrations in air are reported in micrograms per cubic meter ( $\mu$ g/m³) or in parts per billion volume per volume (ppb v/v). Conversion between the two units uses both the Ideal Gas Law and Dalton's Law of Partial Pressure.

# 2.0 HAZARD IDENTIFICATION

The hazard identification process included a review of the analytical database, tabulation of data with regard to detected chemicals, and selection of chemicals of potential concern that were considered further in the risk assessment.

#### 2.1 SITE DEFINITION

The Site is identified as being located at 740 Belleville Avenue in New Bedford, Massachusetts, Release Tracking Number (RTN) 4-601. The Site boundary, prior to completion of the Phase II Comprehensive Site Assessment (Phase II CSA) was defined as the Aerovox Property, approximately 10 acres in size and bordered by Belleville Avenue to the west, the Acushnet River to the east, and Graham and Hadley Streets to the north and south respectively. As a result of the Phase II CSA, consistent with the MCP definition of a disposal site to include areas where contamination has come to be located, the Site boundary now extends to the north onto the Precix Property at 744 Belleville Avenue and based on groundwater contamination and plume migration, potentially further north to 20 Howard Ave., and to the south onto a portion of the Titleist property at 700 Belleville Avenue. In 2011, the buildings were razed on the Aerovox property and the property was covered by a three-inch asphalt cap. The Precix property is currently used for commercial manufacturing purposes. The soil is either covered by the commercial building or paved with asphalt. The Titleist property is also currently used for commercial manufacturing purposes, and is covered by the commercial building, by paved parking areas and by unpaved landscaped areas. Surface soil in landscaped areas is not covered with asphalt but exposure to soil is limited because the area is fenced or covered by clean fill in areas where employees need to access dumpsters, etc. A complete history and description of the Site is provided in the Conceptual Site Model report (URS, 2015). The Site for this assessment is defined as the Aerovox property (currently owned by the City of New Bedford) and areas on the Precix and Titleist properties on which chemicals from former Aerovox facility operations have come to be located (see Figure 1-2, *AECOM*, 2015).

# 2.2 SUMMARY OF SAMPLING PROGRAM AND REVIEW OF THE ANALYTICAL DATABASE

The following guidelines were used to evaluate ground water, soil, soil vapor, and indoor air analytical data and to develop a list of chemicals of potential concern. Chemicals reported by the laboratory as estimated concentrations (*i.e.*, flagged with a "J") were considered to be representative of actual concentrations. The first sample collected for pairs of duplicate samples was considered representative of the conditions at that location. A concentration of one-half of the sample detection limit (*i.e.*, sample quantitation limit) was used to represent the possible presence of a chemical in samples in which the chemical was reported as not detected, unless it had not been positively detected in any samples in that particular medium (MassDEP, 1995). Samples reported as non-detect were excluded if one-half the detection limit was greater than the maximum detected value in that medium.

# 2.2.1 Soil Samples

Soil samples were collected at the Site between 2013 and 2015. On the Aerovox property, 38 soil samples were collected and analyzed for PCBs and 2 samples were analyzed for VOCs between zero and three feet below ground surface (bgs). Between three and 15 feet bgs, 111 samples were collected and analyzed for PCBs and 50 samples were collected and analyzed for VOCs. Sixty-two samples were collected and analyzed for PCBs and 49 samples were collected and analyzed for VOCs at depth greater than 15 feet bgs. A summary of the results including the frequencies of detection, maximum concentrations and average concentrations is presented in Table 1. Figure 2-2 (AECOM, 2015) shows the locations of the samples. The results show that the highest PCB concentrations in surface soil are primarily on the east side of the Aerovox

1 Note that MassDEP considers surface soil to be between zero and three feet bgs and subsurface soil intervals to be from three to 15 feet bgs and greater than 15 feet bgs. If a sample was collected between these depth intervals (*e.g.*, two to four feet bgs) it was included in the summary statistics for both intervals.

SA Sundstrom, Ph.D., D.A.B.T. September 18, 2015

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property between borings B07.5BC and the Acushnet River and in the area around boring B04BN. Likewise, the highest PCB and VOC concentrations in subsurface soil are primarily around boring B04B and on the east side of the property in the IRA investigation area (centered around MW-15D) south toward boring MIP23 along the Acushnet River.

On the Precix property, 10 soil samples were collected and analyzed for PCBs between zero and three feet bgs. Between three and 15 feet bgs, 11 samples were collected and analyzed for PCBs and four samples were analyzed for VOCs. Greater than 15 feet bgs, three samples were collected and analyzed for PCBs and VOCs. Table 2 shows a summary of the results including the frequencies of detection, maximum concentrations and average concentrations.

On the Titleist property, 42 soil samples were collected and analyzed for PCBs between zero and three feet bgs. Between three and 15 feet bgs, 23 samples were collected and analyzed for PCBs and one sample was analyzed for VOCs. Greater than 15 feet bgs, two samples were collected and analyzed for PCBs and one sample was collected and analyzed for VOCs. Table 3 shows a summary of the results including the frequencies of detection, maximum concentrations and average concentrations. On the Titleist property, the highest concentrations of PCBs are on the east side of the property in surface soil.

# 2.2.2 Ground Water Samples

Ground water samples have been collected at the Site since 1998. The ground water samples collected in 2014 and 2015 from 63 monitoring wells are considered representative of current ground water conditions. Samples were collected from 14 wells on the Precix property (GZ-001, GZ-003, GZ-103D, GZ-103S, MW-103B, MW-16S, MW-18D, MW-18S, MW-24B, MW-24D, MW-3, MW-30B, MW-31B, and MW-4S). Samples were collected from nine wells on the Titleist property (MW-20B, MW-20D, MW-21B, MW-21D, MW-22S, MW-23B, MW-23D, MW-29B, and MWTIT01). Samples were collected from 40 wells on the Aerovox property (GZ-002, GZ-004A, GZ-101D, GZ-101S, GZ-102D, GZ-102S, MW-1, MW-101B, MW-10D,

MW-11B, MW-12S, MW-13D, MW-13B, MW-15B, MW-15D, MW-17B, MW-17D, MW-19D, MW-19S, MW-2, MW-25D, MW-26B, MW-27B, MW-28B, MW-2A, MW-2B, MW-32B, MW-34B, MW-3A, MW-4, MW-4A, MW-4B, MW-5, MW-6, MW-6A, MW-6B, MW-7, MW-7A, MW-7B, and MW-8S). The locations of the monitoring wells are shown in Figure 2-2 (AECOM, 2015). The samples were analyzed for VOCs and PCBs. Table 4 presents a summary of the results. VOCs that were detected most frequently and at the highest concentrations were trichloroethene and cis-1,2-dichloroethene. Carbon tetrachloride was detected at relatively high concentrations in one well (MW-24B) on the north side of the Precix property. PCBs were also detected in ground water. The highest concentrations were detected in monitoring well MW-15B. Aroclors 1242 and 1254 were detected most frequently.

# 2.2.3 Soil Vapor Samples

In December 2014 and April 2015, soil vapor samples were collected from four locations beneath the building slab on the Titleist property. The locations of the samples are shown in Figure 2-2 (AECOM, 2015). The samples were analyzed for VOCs. Trichloroethene, tetrachloroethene and 1,3 dichlorobenzene were detected.

In May and December 2014, soil vapor samples were collected from four locations beneath the slab of the Precix building. The locations of the samples are shown in Figure 2-2 (AECOM, 2015). The samples were analyzed for VOCs. Several VOCs were detected including 1,1,1-trichloroethane, 1,1-dichloroethane, cis- and trans- 1,2-dichloroethene, trichloroethene, tetrachloroethene and 1,3 dichlorobenzene.

Table 5 presents a summary of the results. Table 5 also presents the MassDEP Residential Subslab Soil Gas Screening Values. Concentrations below the screening concentrations indicate that migration of VOCs into indoor air is unlikely to be of concern under current conditions (MassDEP, 2014a). Table 5 shows that for the Precix building the maximum concentrations of VOCs detected are below the screening concentrations except for tetrachloroethene, trichloroethene and cis 1,2-dichlorothene. These VOCS were considered VOCs of concern for

future conditions within the Precix building. Table 5 shows for the Titleist building all of the concentrations of the VOCs detected were detected below the screening concentrations indicating that migration of VOCs into indoor air is unlikely to be of concern for the Titleist building.

# 2.2.4 Indoor Air Samples

In May 2014 and December 2014, indoor air samples were collected from four locations within the Precix building. The locations corresponded to the soil vapor locations (see Figure 2-2, AECOM, 2015). The samples were analyzed for VOCs. Trichloroethene and tetrachloroethene were the only VOCS detected in the indoor air samples. The results are show in Table 6.

# 2.3 SOURCE AND ESTIMATED EXTENT OF IMPACT

The source of the PCBs and VOCs detected at the Site are likely from the former operations at the Aerovox facility. The VOC trichloroethene was also used historically on the Precix property and their operations are also a likely potential source for this constituent. A complete description of the source and extent of impact is presented in the Phase II CSA report (AECOM, 2015).

# 3.0 DOSE-RESPONSE ASSESSMENT

The dose-response assessment presents data relating potential doses received from exposure to chemicals to potential health effects (response). Information is provided in this section relative to the dose-response relationships for the chemicals of concern, based on available laboratory animal studies and human epidemiology as reported in the USEPA's Integrated Risk Information System (IRIS) database and information provided in MassDEP 2014 MCP Method 1 Standard Workbooks.

#### 3.1 ASSESSMENT OF NONCARCINOGENIC HEALTH EFFECTS

In accordance with MassDEP guidance, chronic oral Reference Doses (RfD) or chronic Reference Concentrations (RfC) were used to evaluate noncarcinogenic effects. An RfD is a health-based criterion used to evaluate noncarcinogenic effects from exposures involving ingestion or dermal contact. Likewise, subchronic RfDs have been developed to estimate noncarcinogenic health effects from subchronic exposures. The MassDEP defines a subchronic exposure as an exposure between several days and seven years (MassDEP, 1995). An RfC is a health-based criterion used to evaluate noncarcinogenic effects from inhalation exposures. Inhalation RfDs can be calculated according to USEPA guidance (USEPA, 1989b) from RfCs. Chronic RfDs and RfCs are estimates of daily exposure doses or concentrations for the human population (including sensitive sub-populations) that are likely to be without an appreciable risk of deleterious effects during a lifetime of exposure (USEPA, 1989a). RfDs and RfCs are presented in Table 7.

# 3.2 ASSESSMENT OF CARCINOGENIC HEALTH EFFECTS

Carcinogens are considered by MassDEP policy to lack a threshold of no adverse effects; this policy implies that any exposure carries some risk. Cancer potency factors, referred to as slope

factors (SFs), have been derived to estimate risks resulting from oral and dermal exposures based upon this assumption. A SF is equal to the slope of the dose-response curve and, when multiplied by the dose, provides an estimate of the upper 95 percent confidence interval of the incremental lifetime cancer risk, or probability of cancer occurring above normal background rates. Similarly, inhalation Unit Risks have been developed based on cancer slope factors or derived from inhalation studies to evaluate cancer risks resulting from inhalation exposures. Inhalation SFs can be calculated according to USEPA guidance (USEPA, 1989b) from inhalation Unit Risks. SFs are presented in Table 7.

Carcinogens are classified by USEPA using a weight-of-evidence classification system to indicate the degree of confidence between chemical exposure and the likelihood of causing human cancer. Classifications are based primarily on the degree of evidence for cancer to occur based on human and animal studies. USEPA weight-of-evidence categories are: A, known human carcinogen; B1 or B2, probable human carcinogen (B1 indicates that limited human data are available; B2 indicates sufficient data in laboratory animals and inadequate or lack of evidence in humans); C, possible human carcinogen based on limited laboratory animal evidence and inadequate or lack of human data; D, not classifiable based on inadequate or no evidence; and E, no evidence of carcinogenicity to humans.

#### 3.3 TOXICOLOGICAL PROFILES

General information and toxicological summaries for the chemicals of concern to human health are presented in the IRIS database and Agency of Toxic Substances and Disease Registry (ATSDR) Toxicological Profiles. The toxicity factors used in this assessment are described in this section.

#### 3.4 TOXICOLOGICAL PROFILES

General information and a brief toxicological summary for the chemicals of concern to human health at the Site are presented below. Where available, information has been derived from the IRIS Database, from HEAST (USEPA, 1992), from MassDEP guidance documents, and from Toxicological Profiles prepared by the Agency of Toxic Substances and Disease Registry (ATSDR).

# 3.4.1 Polychlorinated biphenyl compounds

PCBs refer to a family of 209 individual compounds. PCBs produced in the United States are known by their industrial trade name, Aroclor. The USEPA has not established RfDs for many of the specific Aroclor mixtures. In 1996, USEPA established an RfD for Aroclor 1016 equal to  $7.0 \times 10^{-5}$  mg/kg/day based on a developmental study. An uncertainty factor of 100 was included in this dose. In 1996, USEPA also established an RfD for Aroclor 1254 equal to  $2.0 \times 10^{-5}$  mg/kg/day based primarily on immune effects. An uncertainty factor of 300 was included in this dose. In this assessment, for all Aroclor mixtures without established RfDs, the RfD for Aroclor 1254 was used to estimate noncancer risks.

In 1997, USEPA classified PCB mixtures as Group B2. USEPA established an oral slope factor for high risk and persistence equal to  $2.0 \text{ (mg/kg/day)}^{-1}$ . USEPA also established an inhalation Unit Risk equal to  $1.0 \times 10^{-4} \text{ (}\mu\text{g/m}^3\text{)}$ .

# 3.4.2 Naphthalene and 2-methyl naphthalene

In 1998, the USEPA established an oral RfD equal to  $2 \times 10^{-2}$  mg/kg/day based on decreased body weight. An uncertainty factor of 3,000 was included in the dose. The USEPA also established an inhalation RfC equal to  $3.0 \times 10^{-3}$  mg/m³ based on nasal epithelial cell toxicity. An uncertainty factor of 3,000 was included in this concentration. In 2003, USEPA established an oral RfD for 2-methyl naphthalene equal to  $4.0 \times 10^{-3}$  mg/kg/day based on alveolar proteinosis observed in mice. An uncertainty factor of 1,000 was included in this concentration. USEPA has not established an RfC; however, MassDEP has established an RfC equal to  $5.0 \times 10^{-2}$  mg/m³.

In 1998, the USEPA classified naphthalene as a Group C carcinogen based on suggestive evidence of benign respiratory tract tumors in rats. USEPA indicate that data are inadequate to assess the carcinogencity of 2-methylnaphthalene.

#### 3.4.3 Chlorobenzene

In 1993, the USEPA established an oral RfD for chlorobenzene equal to  $2 \times 10^{-2}$  mg/kg/day based on pathological changes in the liver in a subchronic study in dogs. An uncertainty factor of 1,000 was included in the dose. The USEPA has not established an inhalation RfC; however, MassDEP established an RfC equal to  $5 \times 10^{-2}$  mg/m<sup>3</sup>. In 1991, the USEPA classified chlorobenzene as a Group D carcinogen based on no human data and inadequate laboratory animal evidence.

#### 3.4.4 Dichlorobenzenes

In 1991, the USEPA established an oral RfD for 1,2-dichlorobenzene equal to  $9 \times 10^{-2}$  mg/kg/day based on no observed adverse effects in a 2-year rat study. An uncertainty factor of 1,000 was included in the dose. The USEPA has not established an inhalation RfC; however, MassDEP established an RfC equal to  $8 \times 10^{-1}$  mg/m³. The USEPA has not established an oral RfD or an inhalation RfC for 1,3-dichlorobenzene. The MassDEP has established an RfD equal to  $9 \times 10^{-2}$  mg/kg/day and an RfC equal to  $8 \times 10^{-1}$  mg/m³. The USEPA has not established an oral RfD for 1,4-dichlorobenzene; however, MassDEP established an RfD equal to  $9 \times 10^{-2}$  mg/kg/day. In 1996, the USEPA established an inhalation RfC for 1,4-dichlorobenzene equal to  $8 \times 10^{-1}$  mg/m³ based on increased liver weights in a rat study. An uncertainty factor of 100 was included in this concentration.

In 1991, the USEPA classified 1,2-dichlorobenzene as a Group D carcinogen based on no human evidence and inadequate laboratory animal data. In 1990, the USEPA classified 1,3-

dichlorobenzene as a Group D carcinogen based on no human or laboratory animal data. The USEPA has not classified 1,4-dichlorobenzene.

#### 3.4.5 Trichlorobenzene

In 1996, the USEPA established an oral RfD for trichlorobenzene equal to  $1 \times 10^{-2}$  mg/kg/day based on pathological changes in the adrenal gland in a reproductive study in rats. An uncertainty factor of 1,000 was included in the dose. The USEPA has not established an inhalation RfC; however, MassDEP established an RfC equal to  $2 \times 10^{-3}$  mg/m<sup>3</sup>. In 1991, the USEPA classified trichlorobenzene as a Group D carcinogen based on no human data and inadequate laboratory animal evidence.

#### 3.4.6 Toluene

In 2005, the USEPA established an oral RfD for toluene equal to  $8 \times 10^{-2}$  mg/kg/day based on increased kidney weights. An uncertainty factor of 3,000 was included in the dose. The USEPA also established an inhalation RfC equal to 5 mg/m<sup>3</sup> based on neurological effects in humans. An uncertainty factor of 10 was included in this concentration. USEPA has not evaluated toluene to determine carcinogenic potential.

# **3.4.7 Xylenes**

In 2003, the USEPA established an oral RfD for xylenes equal to  $2 \times 10^{-1}$  mg/kg/day based on decreased body weight. An uncertainty factor of 1,000 was included in the dose. The USEPA also established an inhalation RfC equal to  $1 \times 10^{-1}$  mg/m<sup>3</sup> based on neurological effects. An uncertainty factor of 300 was included in this concentration. USEPA has not evaluated xylenes to determine carcinogenic potential.

# 3.4.8 Ethyl benzene

In 1991, the USEPA established an oral RfD for ethyl benzene equal to  $1 \times 10^{-1}$  mg/kg/day based on liver and kidney effects. An uncertainty factor of 1,000 was included in the dose. The USEPA

also established an inhalation RfC equal to 1 mg/m³ based on developmental toxicity. An uncertainty factor of 300 was included in this concentration. In 1991, USEPA classified ethyl benzene as a Class D carcinogen.

#### 3.4.9 Carbon tetrachloride

In 2010, USEPA established an oral RfD equal to  $4 \times 10^{-3}$  mg/kg/day based on liver injury in a subchronic rat study. An uncertainty factor of 1,000 was included in the dose. USEPA also established an inhalation RfC equal to  $1 \times 10^{-1}$  mg/m<sup>3</sup> in 2010 based on fatty changes in the liver in a chronic rat study. In 2010, the USEPA classified carbon tetrachloride as a Group B2 carcinogen and establish an oral SF is equal to  $7 \times 10^{-2}$  (mg/kg/day)<sup>-1</sup> and the inhalation unit risk is equal to  $6 \times 10^{-6}$  (µg/m<sup>3</sup>).

#### 3.4.10 Chloroform

In 2001, USEPA established an oral RfD equal to  $1 \times 10^{-2}$  mg/kg/day based on liver toxicity. An uncertainty factor of 1000 was included in the dose. USEPA has not established an inhalation RfC. However, MassDEP has established an inhalation RfC equal to 0.66 mg/m<sup>3</sup> (MassDEP, 2008).

In 2001, the USEPA classified chloroform as a Group B2 carcinogen. Chloroform is likely to be carcinogenic via all routes of exposure at high enough doses or concentrations to cause cytotoxicity and subsequent cell regeneration. Chloroform is not genotoxic, and at low doses and concentrations, which are insufficient to cause cytotoxicity, chloroform is not carcinogenic. To quantify carcinogenic risk, SF and Unit Risks assume a linear dose response curve. Since the mechanism of carcinogenicity appears to be secondary to a cytotoxic effect that occurs above a threshold dose (*i.e.*, a nonlinear dose-response curve), the USEPA recommends using the RfD to assess both noncarcinogenic and carcinogenic health effects. The inhalation unit risk established by USEPA in 1987 (which is equal to  $2.3 \times 10^{-5}$  (µg/m³)) is currently being revised to an RfC.

#### 3.4.11 Trichloroethene

In 2011, USEPA established a chronic RfD equal to 0.0005 mg/kg/day based on multiple effects including immunological and developmental effects. An uncertainty factor of 1,000 was included in the dose. In 2011, USEPA also established an inhalation RfC equal to 0.002 mg/m<sup>3</sup>. An uncertainty factor of 100 was included in the concentration. USEPA also established an oral SF equal to  $5 \times 10^{-2}$  (mg/kg/day)<sup>-1</sup> and an inhalation Unit Risk equal to  $4 \times 10^{-6}$  (µg/m<sup>3</sup>)<sup>-1</sup>.

#### 3.4.12 Tetrachloroethene

In 2012, USEPA established a chronic oral RfD equal to  $6 \times 10^{-3}$  mg/kg/day based on reaction time and altered color vision in exposed humans. An uncertainty factor of 1,000 was included in the dose. Based on the same studies, USEPA established an inhalation RfC equal to 0.04 mg/m<sup>3</sup>. In 2012, USEPA also established toxicity factors for carcinogenicity. An oral SF equal to  $2 \times 10^{-3}$  (mg/kg/day)<sup>-1</sup> and an Inhalation Unit Risk value equal to  $3 \times 10^{-7}$  (µg/m<sup>3</sup>)<sup>-1</sup>. In 2014, MassDEP established an oral SF equal to  $2 \times 10^{-2}$  (mg/kg/day)<sup>-1</sup> and an Inhalation Unit Risk value equal to  $3 \times 10^{-6}$  (µg/m<sup>3</sup>)<sup>-1</sup>.

#### 3.4.13 1,2-Dichloroethene

In 2010, USEPA established an oral RfD for cis-1,2-dichloroethene equal to  $2 \times 10^{-3}$  mg/kg/day based on increased kidney weights in a rodent study. An uncertainty factor of 3,000 was included in the dose. The USEPA has not established an inhalation RfC for cis-1,2-dichloroethene. However, MassDEP has established an inhalation RfC equal to  $6 \times 10^{-3}$  mg/m³ (MassDEP, 2014). USEPA has determined that there is inadequate information to assess carcinogenic potential.

In 2010, USEPA established an oral RfD equal to  $2 \times 10^{-2}$  mg/kg/day for trans-1,2-dichloroethene based on an effect on the immune system in a subchronic mouse study. An

uncertainty factor of 3,000 was included in the dose. An inhalation RfC has not been established by USEPA. However, MassDEP has established an inhalation RfC equal to  $6 \times 10^{-2}$  mg/m<sup>3</sup> (MassDEP, 2014). USEPA has not evaluated trans-1,2-dichloroethene to determine carcinogenic potential.

# 3.4.14 1,1-Dichloroethene

In 2002, USEPA established a chronic RfD equal to  $5 \times 10^{-2}$  mg/kg/day based on liver toxicity in a rat study. An uncertainty factor of 100 was included in the dose. In 2002, USEPA also established an RfC equal to  $2 \times 10^{-1}$  mg/m<sup>3</sup> based on liver toxicity in a rat study. An uncertainty factor of 30 was included in the dose. In 2002, USEPA classified 1,1-dichlroethene as a Class C carcinogen based on suggestive evidence of carcinogenicity but concluded that the evidence is not sufficient to access the human carcinogenic potential.

# 3.4.15 1,1-Dichloroethane

The USEPA has not established an oral RfD or inhalation RfC for 1,1-dichlorothane. However, MassDEP has established an oral RfD equal to  $2 \times 10^{-1}$  mg/kg/day and an inhalation RfC equal to  $8 \times 10^{-1}$  mg/m<sup>3</sup>. MassDEP also established a subchronic RfD equal to  $2 \times 10^{0}$  mg/kg/day. In 1996, USEPA has established that 1,1-dichloroethane is a possible (Class C) human carcinogen.

# 3.4.16 Vinyl chloride

In 2000, the USEPA established an oral RfD equal to  $3 \times 10^{-3}$  mg/kg/day based on liver toxicity. An uncertainty factor of 30 was included in the dose. The USEPA also established an inhalation RfC equal to  $1 \times 10^{-1}$  mg/m³ based on liver toxicity. An uncertainty factor of 30 was included in this concentration. In 2000, the USEPA classified vinyl chloride as a Group A carcinogen. USEPA established an oral SF is equal to 1.4 (mg/kg/day)<sup>-1</sup> and the inhalation unit risk is equal to  $8.8 \times 10^{-6}$  (µg/m³) for continuous lifetime exposures from birth.

# **3.4.17 1,1,1-Trichloroethane**

In 2007, USEPA established a subchronic RfD equal to 7 mg/kg/day based on decreased body weights in a mouse study. An uncertainty factor of 300 was included in the dose. In 2007, USEPA also established a chronic RfD equal to 2 mg/kg/day based on decreased body weights in a mouse study. An uncertainty factor of 1,000 was included in the dose. In 2007, USEPA established a subchronic and chronic RfC equal to 5 mg/m³ based on liver histopathology in a rat study. An uncertainty factor of 100 was included in the dose. USEPA indicates that the database is inadequate to access carcinogenicity.

# 3.4.18 Alkyl benzenes

The USEPA and MassDEP have not established an oral RfD or an inhalation RfC for the alkyl benzene compounds 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, p-isopropyl benzene, secbutyl benzene, n-butyl benzene, tert-butyl benzene, 4-ethyl toluene, and 4-isopropyl toluene.

The USEPA established RfDs for several other alkylbenzene compounds including ethylbenzene (0.1 mg/kg/day), toluene (0.08 mg/kg/day), xylenes (0.2 mg/kg/day), and isopropyl benzene (0.1 mg/kg/day). Likewise, USEPA has established RfCs for ethylbenzene (1 mg/m³), toluene (5 mg/m³) and xylenes (0.1 mg/m³). MassDEP has established an RfD and RfC for alkyl benzene compounds with nine and 10 carbons equal to 0.03 mg/kg/day and 0.05 mg/m³. In this assessment, the toxicity factors for C<sub>9</sub>-C<sub>10</sub> aromatic hydrocarbons were used for alkyl benzenes compounds with nine or 10 carbons.

#### 3.4.19 Chlorofluorocarbons

Although chlorofluorocarbons are structurally related to chlorinated hydrocarbons, they do not appear to cause hepatotoxic effects, developmental abnormalities, mutagenicity, or carcinogenicity. The fluorine molecule stabilizes the adjacent carbon-carbon bonds and reduces biologic activity. Exposures to lethal and sublethal concentrations affect the cardiopulmonary system and the central nervous system. The most serious acute effect resulting from inhalation

of high concentrations of chlorofluorocarbons is cardiac arrhythmias. Trichlorofluoromethane (Freon 11) is the most cardiotoxic. High concentrations may cause central nervous system depression and anesthesia. Other effects include irritation of the respiratory tract, increased airway resistance and decreased pulmonary compliance. Trichlorofluoromethane may also cause bronchospasm in laboratory animals and humans. In 1992, USEPA established an oral RfD equal to  $3 \times 10^{-1}$  mg/kg/day based on survival. An uncertainty factor of 1000 was included in the dose. An inhalation RfC has not been established by USEPA or MassDEP; therefore, an inhalation RfC equal to 1.05 mg/m³ was calculated from the oral RfD assuming a 70 kg body weight and 20 m³/day ventilation rate (USEPA, 1989b). USEPA has not evaluated trichlorofluoromethane for potential carcinogenicity.

In 1995, USEPA has established an oral RfD for dichlorodifluoromethane equal to 0.2 mg/kg/day based on reduced body weight. An uncertainty factor of 100 was included in the dose. USEPA has not established an inhalation RfC. MassDEP has not established an RfD or inhalation RfC. For this assessment, an RfC was calculated from the RfD assuming a 70 kg body weight and 20 m $^3$ /day ventilation rate (USEPA, 1989b), which is equal to  $7 \times 10^{-1}$  mg/m $^3$ . USEPA has not evaluated dichlorodifluoromethane for potential carcinogenicity.

In 1996, USEPA established an oral RfD for 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113) equal to 30 mg/kg/day based on psychomotor impairment. An uncertainty factor of 10 was included in the dose. USEPA has not established an inhalation RfC. MassDEP has not established an RfD or inhalation RfC. For this assessment, an RfC was calculated from the RfD assuming a 70 kg body weight and 20 m³/day ventilation rate (USEPA, 1989b), which is equal to 105 mg/m³. USEPA not evaluated 1,1,2-trichloro-1,2,2-trifluoroethane for potential carcinogenicity.

In 1995, USEPA established an oral RfD equal to  $2 \times 10^{-1}$  mg/kg/day based on reduced body weight. An uncertainty factor of 100 was included in the dose. USEPA has not established an inhalation RfC. MassDEP has not established an RfD or inhalation RfC. For this assessment, an RfC was calculated from the RfD assuming a 70 kg body weight and 20 m³/day ventilation rate

(USEPA, 1989b), which is equal to  $7 \times 10^{-1}$  mg/m<sup>3</sup>. USEPA has not evaluated dichlorodifluoromethane for potential carcinogenicity.

# 4.0EXPOSURE ASSESSMENT

An exposure assessment was performed to identify current or reasonably foreseeable exposure scenarios by which chemicals present at the Site may reach potential human receptors in the absence of further site remediation. Potential receptors and exposure pathways were identified; exposure routes were evaluated; exposure point concentrations were estimated; and average daily exposure doses or concentrations were calculated.

#### 4.1 EXPOSURE SCENARIOS

Potential exposure pathways were evaluated for chemicals detected in soil and ground water. Incomplete exposure pathways are eliminated from further evaluation in the risk assessment. The following criteria must be met for a complete exposure pathway to exist:

- a source and mechanism to release chemicals into the environment,
- an exposure point at which there is a potential for contact with the contaminated medium by a receptor, and
- an exposure route (e.g., ingestion, inhalation or dermal contact) at the exposure point.

If one of these criteria is not met, then the exposure pathway is not complete. In other words, without any exposure, the risk is zero. Thus, incomplete exposure pathways are eliminated from the assessment. The following sections describe: 1) the soil and ground water categories that are used to evaluate potential exposures to site receptors and the potential need for Activity and Use Limitations; 2) the human receptors likely to be present at the Site; and 3) the complete exposure pathways by which the receptors may come into contact with impacted media.

#### 4.1.1 Identification of Site Soil and Ground Water Categories

The Site now consists of all or portions of three commercial/industrial properties. The soil on the Aerovox property is capped with a minimum three inches of asphalt. It is considered to be in an S-3 category. Likewise the soil on the Precix property is currently covered by the building or with asphalt. Thus, under current conditions it was considered to be in an S-3 category. Under future conditions, it was assumed to be in an S-1 category and that adults and children could have routine contact with soil within 15 feet of the ground surface in the future (*i.e.*, S-1). On the Titleist property, surface soil is exposed; however, impacted areas are either fenced or covered with gravel. Under current conditions, it was assumed that this soil was in an S-2 category. Similar to the Precix property, under future conditions it was assumed to be in an S-1 category and that adults and children could have routine contact with soil within 15 feet of the ground surface in the future (*i.e.*, S-1). Impacted soil greater than 15 feet below the ground surface is considered to be isolated soil. It was assumed that receptors would not contact isolated soil.

Ground water is categorized based on its current and/or future use as drinking water (GW-1), its potential to act as a source of volatile material to indoor air (GW-2), and its potential to discharge material to surface water (GW-3). Ground water at the Site is not classified as GW-1. The Site is not classified GW-1 because the ground water is not used as a source or a potential source of drinking water. It is not located within 500 feet of a private well or within an Interim Wellhead Protection Area; it is not located within a Zone A or within 400 feet of a Zone II, Interim Wellhead Protection Area, or a surface water supply intake. In addition, as part of the Declaration recorded July 2010 the City agreed to restrict use of groundwater at the Site. Ground water is located less than 15 feet below the ground surface and impacts are located within 30 feet of an existing building on the Precix and Titleist properties; therefore, the Precix and Titleist portions of the Site are assumed to be in a GW-2 category. The Site is also considered to be in a GW-3 category because all ground water is assumed to eventually discharge to surface water bodies.

# 4.1.2 Potential Human Receptors and Exposure Pathways

The Site now comprises all or portions of three commercial/industrial properties. On the Aerovox property, exposure to soil is unlikely under current conditions because the property is covered by a three-inch asphalt cap. Under future conditions, it was assumed that construction workers could have access to surface and subsurface soil. Exposure pathways include incidental ingestion of soil, skin contact with soil and inhalation of particulate matter. On the Precix property, exposure to soil is unlikely under current conditions because the soil is covered by the building or asphalt. However, to evaluate the need to restrict access to the soil it was assumed that the property could be used for residential purposes in the future. Therefore, it was assumed that adults and children could have routine contact with soil typical of a residential exposure scenario. Exposure pathways include incidental ingestion of soil and skin contact with soil. On the Titleist property, surface soil is exposed. The area is either fenced or covered with gravel; however, it was assumed that employees and trespassers could contact impacted surface soil under current conditions. Exposure pathways include incidental ingestion of soil and skin contact with soil. Similar to the Precix property, to evaluate the need to restrict access to the soil it was assumed that the Titleist property could also be used for residential purposes in the future. Therefore, it was assumed that adults and children could have routine contact with soil typical of a residential exposure scenario. Exposure pathways include incidental ingestion of soil and skin contact with soil.

Because the Site is not located in a GW-1 area, direct contact with ground water is unlikely. Contact with chemicals detected in ground water (or soil) could, however, occur if the chemicals migrated into soil vapor and subsequently into indoor air. Buildings are not present on the Aerovox property. Soil vapor concentrations were below residential soil vapor screening values on the Titleist property; thus, as discussed in Section 2.2.3, migration of VOCs into indoor air is unlikely to be of concern on the Titleist property. On the Precix property, several VOCs were detected at concentrations higher than their respective screening values. Thus, inhalation of indoor air was evaluated for the current commercial scenario and future hypothetical residential scenario for the Precix property.

# 4.1.3 Exposure Assumptions

Exposure assumptions for each receptor are described below. For all exposure scenarios, the averaging period was equal to the exposure period for exposures to noncarcinogenic chemicals and equal to 70 years for exposures to carcinogenic chemicals (MassDEP, 2014b).

# <u> Aerovox Property</u>

If construction work is performed on the Site, construction workers could be exposed to impacted surface and subsurface soil during excavation activities. The following exposure assumptions were applied to estimate the average daily doses for ingestion of soil, skin contact with soil and inhalation of soil particulate matter. The duration of exposure was assumed to be eight hours per day. The frequency and period of exposure of a typical construction project is five days per week for 26 weeks, which is approximately 130 days (MassDEP, 2014b). This exposure is considered to be a subchronic exposure. An average body weight of 58 kg was assumed (based on female workers age 18 to 24 years old) (MassDEP, 2014b). A soil ingestion rate of 100 mg/day was used to estimate average daily doses from incidental ingestion of soil (MassDEP, 2014b). For skin exposures, it was assumed that the head, face, forearms, hands, lower legs, and feet (i.e., 5,653.3 cm<sup>2</sup>) could potentially contact the soil during an exposure event (MassDEP, 2014b). A soil adherence factor of 0.19 mg/cm<sup>2</sup> was used to estimate soil adherence during heavy construction work (MassDEP, 2014b). It was assumed that the respirable particulate concentration in air (i.e., PM<sub>10</sub> concentration) was 60 µg/m<sup>3</sup> and that a worker breathes 20 m<sup>3</sup>/day (MassDEP, 2014b). It was also assumed that 1.5 times the PM<sub>10</sub> would be ingested if inhaled particulates were coughed up and swallowed and that 0.5 times the PM<sub>10</sub> would enter the lungs (MassDEP, 2014b).

# Titleist Property

It was assumed that employees working at the Site could potentially be exposed to PCBs detected in surface soil. Exposure pathways include ingestion of soil and skin contact with soil. For exposure to soil, the frequency of exposure was assumed to be 120 days per year and the period of exposure was assumed to be for 27 years (MassDEP, 2014b). It was assumed that adult facility workers weigh 61.1 kg (based on workers age 18 to 45 years old) (MassDEP, 2014b). It was assumed that workers ingest 50 mg of soil per day (MassDEP, 2014b). It was also assumed that they have their head, face, forearms, hands, lower legs, and feet exposed (3,473cm²) (MassDEP, 2014b). In addition, it was assumed that the soil adherence is equal to 0.026 mg/cm² (MassDEP, 2014b).

For the trespasser scenario, it was assumed that older children (greater than 7 years of age) and adults could access the Site and contact PCBs detected in surface soil. Exposure pathways include ingestion of soil and skin contact with soil. The frequency of exposure was assumed to be 5 days per week during the warmer months of the year (June, July and August) and 2 days per week in April, May, September, and October (*i.e.*, a total of 84 days per year) and the duration of exposure was assumed to be 24 hours per day. The period of exposure was assumed to be 11 years for older children (8 through 18 years) and 12 years as an adult. It was assumed that older children (ages eight through 18 years) weigh 42 kg (Table B-1, MassDEP, 1995) and adults weigh 61.1 (MassDEP, 2014b). It was assumed that older children and adults ingest 50 mg of soil per day (MassDEP, 2014b). It was also assumed that they have their forearms, hands and feet exposed (2,928 cm² for an older child) and (3,107 cm² for an adult) (MassDEP, 2002b). In addition, it was assumed that the soil adherence is equal to 0.14 mg/cm² (MassDEP, 2014b).

To estimate average daily exposure doses for hypothetical future residents who could potentially be exposed to PCBs detected in surface and subsurface soil, several assumptions were made. The frequency of exposure was assumed to be 150 days per year and the duration of exposure was assumed to be 24 hours per day (MassDEP, 2014b). The period of exposure was assumed to be for 30 years assuming seven years as a young child (age 1 through 8) and 23 years as

adolescent through adult (MassDEP, 2014b). Average body weights were assumed to be 17 kilograms (kg) for young children up to the age of eight years, 39.9 kg for children ages eight through 15 years, 58.7 kg for adults ages 15 through 31 (MassDEP, 2014b). Young children were assumed to ingest 100 milligrams (mg) of soil per day and older children and adults were assumed to ingest 50 mg of soil per day (MassDEP, 2014b). Skin exposed to soil was assumed to be the head, face, forearms, hands, lower legs, hands, and feet (MassDEP, 20014b). The body surface area exposed to soil was assumed to be 2,431 cm<sup>2</sup> for young children, 4,427 cm<sup>2</sup> for adolescents and 5,653 cm<sup>2</sup> for adults (MassDEP, 2014b). In the calculations, the surface area for a receptor age 8 through 31 was time weighted over the 23 years to yield a surface area equal to 5,227 cm<sup>2</sup>. Soil adherence was assumed to be 0.35 mg/cm<sup>2</sup> for young children and 0.13 mg/cm<sup>2</sup> for adolescents and adults (MassDEP, 2014b).

#### **Precix Property**

Surface soil is covered either by the building or asphalt paving, which limits current employees' exposure to soil. VOCs were detected in indoor air. To estimate average exposure concentrations several assumptions were made: the duration of exposure was assumed to be 8 hours per day; the frequency of exposure was assumed to be 250 days per year; and the period of exposure was assumed to be 27 years (MassDEP, 2014b).

Under future conditions, it was assumed that hypothetical residents could be exposed to VOCs detected in indoor air via inhalation of indoor air and PCBs and VOCs detected in soil. To estimate average exposure concentrations for indoor air several assumptions were made: the duration of exposure was assumed to be 24 hours per day; the frequency of exposure was assumed to be 365 days per year; and the period of exposure was assumed to be 30 years (MassDEP, 2014a). To estimate average daily doses for soil exposures, the assumptions were the same as discussed for the Titleist property

# Absorption Factors

For risk assessment purposes, MassDEP has established relative absorption factors (RAFs) for absorption of various chemicals from ingestion of water, ingestion of soil and skin contact with soil (MassDEP, 2014). RAFs account for both the absorption efficiency of the chemical via the route (*e.g.*, ingestion, skin contact) and medium (*e.g.*, water, soil) of exposure at the Site, and the absorption efficiency for the route and medium of exposure in the experimental study on which the toxicity information (*e.g.*, RfD, SF) is based. The chemical-specific RAFs used for ingestion and skin contact with soil are presented in the Average Daily Dose calculation tables.

# 4.2 EXPOSURE POINT CONCENTRATIONS

Exposure point concentrations in soil were based on the average concentrations in an exposure point. For surface soil on the Aerovox property, the concentrations of PCBs are highest on the east side of the property and in boring B04BN; thus, they were considered distinct exposure points. Therefore, three exposure points were considered. On the west side of the property the exposure point concentrations included samples from soil borings B01D, B02D, B03C, B03D, BO4A;B;C;D, B05A;B;C;D, B06A;B;C;D, B07A;B;C;D, B09A, B10A, AND MIP03. Although one sample does not make a discrete exposure point, because the concentrations of PCBs were much higher in the sample from boring B04BN than the surrounding area and there were several samples collected at deeper depths in this vicinity that suggested a discrete area, this sample was considered to represent a distinct exposure point. On the east side of the property, the exposure point concentrations included samples from soil borings B07.5BC, B08B;BC;C;D, BO9B;C;D, B10B;C, MIP11;15; and 23. Table 8 presents the exposure point concentrations for surface soil on the Aerovox property. For subsurface soil from three to 15 feet bgs, three exposure points were also considered. On the west side of the property, the exposure point concentrations included samples from soil borings B01A; B; C, B02A; B; C, B03A; B, B04A; C; D, B05A; B; C, B06A; B; C, B07.5BC, B07A; B; C; D, B08A; B; BC; C; D, B09A; B; C; D, B29, MIP03; 11, MW11B, MW-19, MW-25D, and MW26B. In addition, the area around B04B was considered a discrete area. For this exposure point, the following soil borings were included: B04B, B04B0.5N, B04BN, B04BNW, B04BS, B04BSS, B04W, B04WW, and MW-13D. On the east side of the property, the concentrations of PCBs and VOCs were also higher. Samples from the following soil borings were included in the exposure point concentrations: B10A, MIP15, 23, 45, 46, 47, 48, 49, 50E, 53, 54, 55, MW28B, PC-UV-02, UV17, and MW2B. Table 9 presents the exposure point concentrations for subsurface soil on the Aerovox property.

On the Precix property, the soil samples were collected along the property border between the Precix and Aerovox properties and along the east side of the Precix property. The concentrations of PCBs were fairly consistent in the samples; thus, one exposure point was considered for surface soil and one for subsurface soil. The results from boring MW-24D, which is located on the north side of the property, were much lower; thus, this sample was not included in the average concentrations. Table 10 presents the exposure point concentrations for the Precix property.

On the Titleist property, soil samples were collected along the border between the Aerovox property and the Titleist property and on the east side of the Titleist property. The highest concentrations were detected in samples collected on the east side of the property. Therefore two exposure points were considered for both surface and subsurface soil. For surface soil, on the west side of the property, the following soil borings were included in the exposure point concentrations: BO4E, BO4.5E, B05.5E, B05DE; EF, B06.5E, and B06EF. On the east side of the property, the following soil borings were included: B06.5H, B06.5I, B06.5J, B07.5E, B07.5F, B07DE; EF; FG; G; GH; H; I, B08.5DE, B08.5E, B08.5EF, B08.5F, B08EF; FG; G; and GH. For subsurface soil, on the west side of the property, the following soil borings were included in the exposure point concentrations: B05DE, B06EF, MW-20B and MW-22S. For the east side of the property, the following soil borings were included: B06.5H, B06.5I, B06.5J, B07DE; EF; FG; GH; I, B08.5DE, B08.5EF, B08EF; FG; and GH. Table 11 presents the exposure point concentrations for the Titleist property.

For current conditions in the Precix building, exposure point concentrations were based on the average concentrations of VOCs detected in indoor air in each room (Table 12). The highest average concentrations were assumed to represent the exposure point concentrations for indoor air exposure under current conditions. For future conditions, the exposure point concentrations were estimated using a model based on soil vapor-to-indoor air partitioning in which soil vapor concentrations are used as the source term (adopted by MassDEP for the development of GW-2 Standards, MassDEP, 1994a). The soil vapor model uses the following equation to estimate indoor air concentrations:

Indoor 
$$Air(ug/m^3) = \alpha \times Soil\ Vapor(ug/m^3)$$

where  $\alpha$  equals an attenuation factor that relates the indoor air concentration to the concentration in soil vapor directly above the source. The attenuation factor was assumed to be equal to 70, which is the attenuation factor chosen by the MassDEP as a reasonably conservative estimate of sub-slab soil gas attenuation (MassDEP, 2014a). Average soil vapor concentrations detected beneath the building were used as the source concentrations. Table 13 presents the estimated indoor air concentration.

# 4.3 ESTIMATION OF AVERAGE DAILY EXPOSURES

Estimated average daily exposure concentrations for inhalation exposures and average daily exposure doses for ingestion of soil and skin contact with soil were calculated using equations adapted from MassDEP guidance (MassDEP, 1995).

Estimated average daily exposure doses for incidental ingestion of soil were calculated using the following equation:

$$ADD = \frac{C_x x IR x RAF x EF x ED x EP x C_1}{BW x AP x C_2}$$

where:

ADD	=	Chronic or Lifetime Average Daily Dose (mg/kg/day)
$C_{x}$	=	Exposure point concentration (mg/kg)
IR	=	Ingestion rate (mg/day)
RAF	=	Relative absorption factor (dimensionless)
EF	=	Exposure Frequency (events/year)
ED	=	Exposure duration (1 day/event)
EP	=	Exposure period (years)
$C_1$	=	Conversion factor (10 <sup>-6</sup> kg/mg)
BW	=	Body weight (kg)
AP	=	Averaging period (years)
$\mathbf{C}_2$	=	Conversion factor (365 days/year)

Estimated average daily exposure doses for skin contact with soil were calculated using the following equation:

$$ADD = \frac{C_x x SA x AF x F x RAF x EF x ED x EP x C_1}{BW x AP x C_2}$$

where:

Chronic of Lifetime Average Daily Dose (mg/kg/day) ADD Exposure point concentration (mg/kg)  $C_{x}$ = SA Skin surface area in contact with soil (cm<sup>2</sup>/day) = Soil adherence factor (mg/cm<sup>2</sup>) AF = Fraction of adhered material derived from soil F = RAF Relative absorption factor (unitless) = Exposure Frequency (events/year) EF = Exposure duration (1 day/event) ED = EP Exposure period (years) Conversion factor (10<sup>-6</sup> kg/mg)  $\mathbf{C}_1$ = BWBody weight (kg) = AP Averaging period (years) = Conversion factor (365 days/year)  $\mathbb{C}_2$ =

Average daily exposure doses for inhalation of particulate matter were calculated using the updated MassDEP equations to estimate particulate matter entering the lungs and particulate matter that has been coughed up and swallowed (MassDEP, 2014b). The following equation was used:

$$ADD = \frac{C_x \times RP \times VR \times RAF \times EF \times ED \times EP \times C_1}{BW \times AP \times C_2}$$

where:

ADD = Chronic or lifetime average daily dose (mg/kg)

 $C_x$  = Exposure point concentration (mg/kg)

RP = Concentration of respirable particulates or  $PM_{10}$  (mg/m<sup>3</sup>)

 $VR = Ventilation rate (m^3/d)$ 

RAF = Relative absorption factor (unitless)
EF = Exposure frequency (events/year)
ED = Exposure duration (1 day/event)

EP = Exposure period (years)

 $C_1$  = Conversion factor (10<sup>-6</sup> kg/mg)

BW = Body weight (kg)

AP = Averaging period (years)

 $C_3$  = Conversion factor (365 days/year)

The dose ingested following inhalation was assumed to be 1.5-times the amount calculated using this equation and the dose entering the lungs was assumed to be 0.5-times the amount calculated using this equations (MassDEP, 2014b). The two doses were added together for a total dose due to exposure to particulate matter.

Estimated average daily exposure concentrations for inhalation of VOCs in indoor air were calculated using the following equation:

$$ADE = \frac{C_x \times EF \times ED \times EP \times C_1 \times C_2}{AP}$$

where:

ADE = Chronic or Lifetime Average Daily Exposure concentration (mg/m<sup>3</sup>)

 $C_x$  = Exposure point concentration of chemical (mg/m<sup>3</sup>)

EF = Exposure frequency (days/year) ED = Exposure duration (hours/day) EP = Exposure period (years)
C<sub>1</sub> = Conversion factor (days/hour)
C<sub>2</sub> = Conversion factor (years/day)
AP = Averaging period (years)

On the Aerovox property, there are no complete exposure pathways under current conditions. Under future conditions, exposure to surface and subsurface soil is possible during excavations activities. Tables 14, 15, and 16 present the average daily exposure doses for construction workers who could be exposed to surface and subsurface soil via incidental ingestion of soil, skin contact with soil and inhalation of particulate matter on the west side of the Aerovox property under future conditions. Likewise, Tables 17, 18, and 19 presents the average daily exposure doses for construction workers who could be exposed to surface and subsurface soil in the vicinity of borings B04BN/B04B on the AEROVOX property under future conditions. Tables 20, 21, and 22 presents the average daily exposure doses for construction workers who could be exposed to surface and subsurface soil on the east side of the Aerovox property under future conditions.

On the Titleist property, it was assumed that employees and trespassers could contact surface soil even though impacted areas are covered with gravel or fenced. Tables 23 and 24 present the average daily exposure doses for employees who could be exposed to surface soil via incidental ingestion of soil and skin contact on the east and west sides of the Titleist property under current conditions. Tables 25 and 26 present the average daily exposure doses for trespassers (older children and adults) who could be exposed to surface soil via incidental ingestion of soil and skin contact on the east side of the Titleist property under current conditions. Tables 27 and 28 present the average daily exposure doses for trespassers who could be exposed to surface soil via incidental ingestion of soil and skin contact on the west side of the Titleist property under current conditions. Under future conditions, it was assumed the property could be used for residential purposes. Tables 29 and 30 present the average daily exposure doses for a hypothetical residential scenario that may be received from incidental soil ingestion and skin contact with surface soil on the east side of the property. Tables 31 and 32 present the average daily exposure doses for a hypothetical residential scenario that may be received from incidental soil ingestion

and skin contact with subsurface soil on the east side of the property. Tables 33 and 34 present the average daily exposure doses for a hypothetical residential scenario that may be received from incidental soil ingestion and skin contact with surface soil on the west side of the property. Tables 35 and 36 present the average daily exposure doses for a hypothetical residential scenario that may be received from incidental soil ingestion and skin contact with subsurface soil on the west side of the property.

On the Precix property, under current conditions, soil is covered by the building or asphalt pavement; thus, this exposure pathway is incomplete. However, VOCs were detected in indoor air and soil vapor. Table 37 presents the average daily exposure concentrations for inhalation of indoor air for the current commercial scenario. Under future conditions, it was assumed that the property could be used for residential purposes. Table 37 also presents the average daily exposure concentrations for inhalation of indoor air for the future residential scenario. It was also assumed that hypothetical residents could also be exposed to surface and subsurface soil. Tables 38 and 39 present the average daily exposure doses for a hypothetical residential scenario that may be received from incidental soil ingestion and skin contact with surface soil on the property. Tables 40 and 41 present the average daily exposure doses for a hypothetical residential scenario that may be received from incidental soil ingestion and skin contact with subsurface soil on the property.

# 5.0 RISK EVALUATION

# 5.1 METHODS TO EVALUATE RISKS

#### 5.1.1 Estimation of Noncarcinogenic Risks

The risk characterization evaluates current and reasonably foreseeable future health risks associated with site conditions. Risks associated with a site are characterized by integrating data developed in the preceding sections on Hazard Identification, Dose-Response Assessment and Exposure Assessment.

Noncarcinogenic effects are characterized in terms of a hazard index. This method assumes that there is an exposure below which adverse effects are not expected to occur (USEPA, 1989a). The hazard index is calculated for each noncarcinogenic constituent of concern by dividing the chronic average daily exposure dose (ADD), which is in mg/kg/day by the chemical-specific Reference Dose (RfD) also in mg/kg/day as shown in the equation below.

$$Hazard\ Index = \frac{ADD}{RfD}$$

Or by dividing the chronic average daily exposure concentration (ADE) in mg/m³ by the chemical-specific reference concentration (RfC) also in mg/m³ as shown in the equation below.

$$Hazard\ Index = \frac{ADE}{RfC}$$

The hazard indices for each chemical are summed to yield a hazard index for that particular exposure pathway. Then for each receptor, hazard indices for each exposure pathway are summed to yield a total hazard index for the receptor. If the hazard index is equal to or less than

one, risks associated with exposure to the chemicals are not considered to be significant. This hazard index is considered a screening hazard index because it assumes that the effects from different chemicals are additive even if they are acting on different organ systems by different mechanisms of action. A "true hazard index" considers chemicals to be additive if they produce adverse health effects on the same organ system by the same mechanism of action (MassDEP, 1995). Therefore, if the hazard index exceeds one, then further evaluation is needed to classify chemicals into groups that share similar mechanisms of action. Due to the uncertainties in the risk assessment process (*e.g.*, primarily in the derivation of the toxicity factors), the final total hazard index is expressed with one significant figure (USEPA, 1989; MCP, MassDEP, 2010).

# **5.1.2** Estimation of Carcinogenic Risks

The potential for carcinogenic health effects is characterized in terms of an incremental lifetime cancer risk (ILCR). Risks are estimates of the incremental lifetime probability of an individual developing cancer above background cancer incidence. An incremental lifetime cancer risk is calculated for each chemical in the ingestion and dermal exposure pathways by multiplying the lifetime average daily dose (ADD) in mg/kg/day by the chemical-specific cancer Slope Factor (SF) as shown in the equation below.

$$Risk = ADD \times SF$$

Likewise, an incremental lifetime carcinogenic risk is calculated for each chemical in the inhalation pathway by multiplying the lifetime average daily exposure concentration (ADE) in  $\mu g/m^3$  by the chemical-specific Unit Risk in  $(\mu g/m^3)^{-1}$  as shown in the equation below.

$$Risk = ADE \times Unit Risk$$

For each exposure pathway, the chemical-specific risks are summed together, and then the risks for each exposure pathway are summed to yield a total risk for that particular medium. Finally,

risks for all media of concern are summed to yield a total site risk for each receptor. A total incremental lifetime carcinogenic risk that does not exceed the acceptable total lifetime carcinogenic risk limit indicates that the exposure is unlikely to produce a significant risk of cancer above normal background rates. In accordance with the MCP, the acceptable lifetime carcinogenic risk limit is equal to  $1 \times 10^{-5}$  (*i.e.*, one in 100,000). Due to the uncertainties in the risk assessment process (*e.g.*, primarily in the derivation of the toxicity factors), the final incremental lifetime carcinogenic risk is expressed with one significant figure (USEPA, 1989; MCP, MassDEP, 2010).

#### 5.2 RISKS TO HUMAN HEALTH

The potential risks to human health were evaluated for each plausible exposure pathway identified in Section 4.0. The intent was to provide a reasonable, but conservative, assessment of the degree of risk associated with exposure to the chemicals under current and reasonably foreseeable future conditions in the absence of further remediation.

The Site consists of all or portions of three commercial/industrial properties. Ground water at the Site is not a source of tap water; thus, direct contact with ground water is unlikely. On the Aerovox property, current exposure to soil is limited by a three-inch asphalt cap across the property. Under future conditions, construction workers could be exposed to chemicals detected in surface and subsurface soil. Risks were calculated for future construction workers who could be exposed to chemicals detected in soil on the west side of the property, in the vicinity of B04BN/B04B, and on the east side of the property. The results are shown in Tables 42 through 47 and are summarized below:

Construction Worker	Hazard Index	Cancer Risk
West side – surface soil	1	$7 \times 10^{-7}$
West side – subsurface soil	2	$1 \times 10^{-6}$
B04BN/B04B – surface soil	10	$1 \times 10^{-5}$
B04BN/B04B – subsurface soil	9	$6 \times 10^{-6}$
East side – surface soil	40	$3 \times 10^{-5}$
East side – subsurface soil	200	$1 \times 10^{-4}$

Based on the results, noncancer risks are above acceptable limits (*i.e.*, above one and shown in bold print) for construction work on the Aerovox property except in surface soil on the west side of the property. Incremental lifetime carcinogenic risks are above acceptable limits (*i.e.*, greater than  $1 \times 10^{-5}$ ) on the east side of the property.

On the Titleist property, employees and trespassers could be exposed to chemicals detected in surface soil under current conditions. Under future conditions, it was assumed that hypothetical residents could be exposed to chemicals detected in surface and subsurface soil. Risks were calculated for employees (Tables 48 and 49) and trespassers (Tables 50 through 53) exposed to surface soil on the east and west sides of the property. Risks were also calculated for future residents (Tables 54 through 61) exposed to both surface and subsurface soil on the east and west sides of the property. The results are shown below:

<u>Employee</u>	Hazard Index	Cancer Risk
East side West side	1 0.2	$2 \times 10^{-5}$ $3 \times 10^{-6}$
Trespasser	Hazard Index	Cancer Risk
East side West side	<b>2</b> 0.3	$3 \times 10^{-5}$ $3 \times 10^{-6}$
<u>Future Resident</u>	<u>Hazard Index</u>	<u>Cancer Risk</u>
East side – surface soil East side – subsurface soil West side – surface soil West side – subsurface soil	20 5 3 0.009	$1 \times 10^{-4}$ $3 \times 10^{-5}$ $2 \times 10^{-5}$ $6 \times 10^{-8}$

Based on the results, under current conditions noncancer risks are within acceptable limits for employees. Incremental lifetime carcinogenic risks are above acceptable limits on the east side of the property. For trespassers, under current conditions, both noncancer and cancer risks are within acceptable limits on the west side of the property; however, both noncancer and cancer risks are above acceptable limits on the east side of the property. For hypothetical residents

under future conditions, noncancer and cancer risks are above acceptable limits for surface and subsurface soil on the east side of the property. For the west side of the property, noncancer and cancer risks are within acceptable limits for subsurface soil but above acceptable limits for surface soil.

On the Precix property, VOCs were detected in indoor air and soil vapor; thus, it was assumed that current employees could be exposed to VOCs via inhalation of indoor air. Surface soil is covered by the building or asphalt pavement; thus, exposure to soil is an incomplete pathway under current conditions. Under future conditions, it was assumed that future hypothetical residents could be exposed to VOCs via inhalation of indoor air and chemicals detected in surface and subsurface soil. Risks were calculated for employees who could be exposed to VOCs detected in indoor air under current conditions (Table 62). Risks were also calculated for future residents exposed to VOCs in indoor air (estimated from soil vapor concentrations) (Table 62) and to surface and subsurface soil on the property (Tables 63 through 66). The results are shown below:

<u>Employee</u>	<u>Hazard Index</u>	Cancer Risk
Indoor air	0.5	$2 \times 10^{-6}$
Future Resident	Hazard Index	Cancer Risk
Indoor air	30	$1 \times 10^{-4}$
Surface soil	1	$9 \times 10^{-6}$
Subsurface soil	0.1	$8 \times 10^{-7}$
Total residential risk	30	$1 \times 10^{-4}$

Based on the results, under current conditions noncancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees who could be exposed to VOCs in indoor air. Under future conditions, noncancer and cancer risks are above acceptable limits for residents who could be exposed to VOCs in indoor air via inhalation. Noncancer and cancer risks are within acceptable limits for residents who could be exposed to chemicals detected in soil. The total risks (Table 67) for residents are above acceptable limits due to the risks from inhalation of indoor air.

# 5.3 RISKS TO SAFETY AND PUBLIC WELFARE

The risks associated with exposure to the chemicals of potential concern at the Site were evaluated in terms of safety, public welfare and the environment. Rusted drums and containers are not present on the Site; danger from fire or explosion from chemicals in the soil is not present; and uncontained materials that may be corrosive, reactive or flammable are not present. Thus, conditions at the Site do not pose a risk to safety.

MassDEP has developed Upper Concentration Limits (UCLs) for chemicals detected in soil and ground water. UCLs are concentrations established to protect public welfare and the environment from harm that could potentially occur in the future if these concentrations are exceeded (MCP). The average concentrations of PCBs detected in soil on the Aerovox property were above UCLs in surface and subsurface soil in the area around B04BN/B04B and the east side of the property (Table 68). The average concentration of trichloroethene in subsurface soil on the east side of the property was also above the UCL. The concentrations detected in soil on the west side are less than their respective UCLs. Table 69 shows that the concentrations of chemicals of concern were below UCLs on the Precix and Titleist properties; thus, soil does not pose a future risk to public welfare on these properties.

Table 70 shows that average ground water concentrations are below their respective UCLs. The maximum concentrations of trichloroethene, carbon tetrachloride and several PCB Aroclors exceeded their respective UCLs. Typically, discrete areas of contamination are not identified in ground water because ground water conditions are more dynamic than media such as soil. However, at this Site, carbon tetrachloride was detected only in one well (MW-24B), which is located on the Precix property. The maximum concentration exceeded the UCL, however, since the average concentration (40,750 ug/liter) in the four samples collected from that well was below the UCL, carbon tetrachloride does not pose a future public welfare risk. Note that carbon tetrachloride, is present in the northernmost well at the Precix property, but was not used or

released from Aerovox and is not a COC for this RTN. Trichloroethene exceeded the UCL in several wells; however, the wells are not located in one discrete area. The overall average trichloroethene concentration is below the UCL. PCBs exceeded the UCL in one area in the vicinity of monitoring well MW-15B. PCBs were not detected or were detected at much lower concentrations in wells located in other areas of the Site. The average concentration of Aroclor 1248 detected in monitoring well MW-15B also exceeded the UCL; thus, the concentration of PCBs in ground water pose an unacceptable risk to future public welfare in this location.

# 6.0 SOURCES OF UNCERTAINTY

Uncertainty is inherent to each stage of the risk characterization process. It is therefore important to identify those uncertainties most critical to the evaluation and to consider their potential impact on the estimation of total site risk because a meaningful risk assessment is a tool for managing anticipated on-site activities. Many kinds of uncertainty enter into the calculation of carcinogenic and noncarcinogenic health risks. Distinguishing these uncertainties clarifies the ways that this risk assessment manages uncertainty. Decisions will be made based on a future use scenario, on the estimated toxicity of the chemicals of concern, and on estimated chemical concentrations in on-site media. Each of these three decision components is uncertain. First, actual future uses are likely to deviate from current assumptions about who will be on-site, where they will be active, how they will be exposed to the chemical, how long they will be exposed, how repeatedly, and so on. Standard practice in human health risk assessment builds safety factors into almost every form of uncertainty. The resulting safety factor is so large that levels of risks may be overestimated by orders of magnitude. Second, the estimated toxicities are uncertain due to uncertainties in the toxicological data. Third, the chemical concentrations in onsite media are uncertain because they are estimated from samples and there are random fluctuations in analytical results due to variations over time, over distance, and in sampling and analytical procedures.

A large component of uncertainty arises from the inability to predict future use scenarios. No one can precisely predict the duration or frequency of exposure, the soil ingestion rates, the skin surface area and the body weights of exposed receptors, chemical absorption rates, and fraction of time spent in the areas of highest chemical concentrations. This creates a level of uncertainty in estimating health risks that can result in either overestimation or underestimation of health risks. One approach to address uncertainty in estimating risks is to use health-protective or conservative assumptions in estimating risks. Health-protective assumptions are those that systematically overstate the magnitude of health risks to ensure protection of public health.

Traditionally, the concern with uncertainty in risk assessment procedures stems from exposure assessment methods; however, the uncertainty associated with the exposure parameters seldom spans more than one or two orders of magnitude (10- to 100-fold). In contrast, the assumptions used to evaluate the toxicity of chemicals, rather than exposure, may represent the greatest sources of uncertainty. To protect human health and safety, standard practice and regulation require that toxicity values reflect "worst-case" results. For most chemicals, actual results — expected ones, in the statistical sense — are likely to result in much less risk than estimated here.

The actual concentrations to which receptors will be exposed are uncertain because our estimates of them are based on laboratory analyses of samples. The true concentrations in these samples are probably different from those reported by the laboratory, because analytical results inherently fluctuate about the true concentration. The true values are likely to be within a factor or two of the reported ones. Although it is possible that laboratory results could be underestimated, since the samples were collected in locations likely to exhibit the highest concentrations of the chemicals of concern and since the combined safety factors built into other aspects of the calculations range over several orders of magnitude, the conservative risk estimates are unlikely to be underestimated.

In summary, risk is characterized by combining assumptions regarding the source of contamination, the exposure scenario and the toxic potency of the chemical. Since conservative assumptions are used throughout the process, the uncertainties associated with each of these assumptions become multiplicative, which generally results in an overall conservative risk estimate.

7.0 STAGE I ENVIRONMENTAL SCREENING

A Stage I Environmental Screening was conducted in accordance with 310 CMR 40.0900 of the

MCP. Subpart I of the MCP calls for completion of a Stage I Environmental Screening

Assessment for all sites where current and reasonably foreseeable site activities and uses by

environmental receptors (e.g., foraging by wildlife and support of plant or wildlife populations)

have been identified unless response actions have successfully reduced concentrations of

chemicals in environmental media to background levels.

The objective of a Stage I Environmental Screening is to identify whether exposure pathways

may require further quantitative assessment (i.e., Stage II Environmental Assessment). Exposure

pathways may be eliminated from the screening process: 1) if significant risk is readily apparent

(therefore additional assessment would not yield additional useful data); 2) if an exposure

pathway is incomplete because environmental receptors would not be exposed (therefore

receptors would not be at risk of harmful effects); or 3) if an exposure pathway is complete, but

does not pose a significant risk.

The general procedures include a review of analytical data indicating contamination of surface

water, sediment or surface soil, an evaluation of the potential for transport of contamination to

receptors, identification of environmental receptors, and an evaluation of current or potential

future exposure to environmental receptors. If potential current or future exposure is not

identified, then a condition of no significant risk exists at the site. If potential exposure is

identified, then the site conditions are evaluated to determine whether significant environmental

harm is apparent.

Laboratory analytical data indicate that PCBs are present in surface soil. Because the Site is

located in a commercial/industrial area and impacted soil is located below asphalt pavement on

most areas of the Site, exposure to terrestrial receptors is unlikely.

SA Sundstrom, Ph.D., D.A.B.T. September 18, 2015

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Compounds have also detected in ground water, and a DNAPL condition has also been identified in the limited area around MW-15d/MW-15B at the northeast boundary of the Aerovox property. The Acushnet River is located along the east side of the Site. It was assumed that compounds present in ground water could be transported to the river.

To evaluate whether ground water concentrations could impact the river, potential concentrations of chemicals were estimated for surface water using the average concentrations detected in ground water in the monitoring wells located along the east side of the Site near the river (GZ-103D, GZ-103S, GZ-002, MW-1, MW-103B. MW-15B. MW-15D, MW-16S, MW-17B, MW-17D, MW-2, MW-22S, MW-23B, MW-23D, MW-28B, MW-29B, MW-2A, MW-2B, MW-3, MW-31B, MW-32B, MW-34B, MW-3A, MW-4, MW-4A, MW-7, MW-7A, and MW-7B) and ground water to surface water attenuation/dilution factors published by MassDEP (MassDEP, 2014b). The estimated surface water concentrations are presented in Table 71. The screening surface water concentrations were compared with MassDEP published ecologically-based criteria for development of GW-3 Standards (MassDEP, 2014b). Table 71 also shows that the estimated surface water concentrations are less than their respective water quality benchmarks for most of the VOCs except trichloroethene. Trichloroethene was detected consistently in most of the samples. The highest concentrations were detected in monitoring wells MW-15B, MW-32B and MW-34B. In addition, the estimated surface water concentrations of PCBs also exceeded the benchmark for PCBs. The highest concentrations were detected in monitoring well MW-15B. The results indicate that the concentrations of trichloroethene and PCBs in ground water may migrate to and potentially result in adverse impacts to aquatic species inhabiting the Acushnet River.

Note that the above Stage I Environmental Screening considers only whether the current site conditions, as measured by sampling and analysis of on-site soil and groundwater, could serve as a future potential source of exposure. Substantial historical records generated as part of the New Bedford Harbor Superfund Site include analytical data indicating the presence of oil and/or hazardous material attributable to the Site in the adjacent Acushnet River surface water and sediment. Historically such data would have qualified as "readily apparent harm" in the Stage I

process as defined in the MCP. However, multiple remedial events have occurred under the CERCLA umbrella to address these impacts and additional CERCLA response actions are planned. The Acushnet River adjacent to the Site is a part of the New Bedford Harbor Superfund Site and is by agreement a separate and distinct site from Aerovox (RTN 4-601). The Aerovox Site's eastern boundary is defined by the mean high water elevation and the existing sheet pile wall, and all environmental risk and corresponding response actions to the east of that boundary are under the purview of EPA and the Superfund program. Only the potential for the Aerovox Site to be a source for a continuing release of oil and/or hazardous material to surface waters is to be considered in determining risk of harm to the environment from the Aerovox Site. The concentrations of oil and/or hazardous material already present in Acushnet River surface water and sediment are not part of this evaluation.

# 8.0 SUMMARY

A Human Health Risk Assessment was performed to evaluate potential risks to human health and the environment in the absence of further remediation. The risk assessment was performed in accordance with the MCP using the MassDEP guidance document, *Guidance for Disposal Site Risk Characterization* — *In Support of the Massachusetts Contingency Plan* (MassDEP, 1995), the MassDEP document *Background Documentation for the Development of the MCP Numerical Standards* (MassDEP, 1994), information provided in MassDEP 2014 MCP Method 1 Standard Workbooks, MassDEP *Public Review Draft Vapor Intrusion Guidance* (2014a), and relevant guidance documents from the U.S. Environmental Protection Agency (USEPA). The evaluation was divided into four major sections: hazard identification, dose-response assessment, exposure assessment, and risk characterization. Current and future risks were evaluated with respect to exposure to chemicals detected in soil, ground water, soil vapor and indoor air.

The hazard identification section describes the chemicals of concern. The primary impacts at the Site are due to the presence of PCBs and VOCs in soil and ground water and VOCs in indoor air and soil vapor. Exposure scenarios were described, exposure doses and concentrations were calculated, and noncarcinogenic and carcinogenic risks were estimated for construction workers who could work at the Aerovox property in the future, employees and trespassers who could work or be present at the Precix and Titleist properties under current conditions and hypothetical residents who could live at the Precix and Titleist properties under future conditions.

The results show that noncancer risks are above acceptable limits for future construction work on the Aerovox property except in surface soil on the west side of the property. Incremental lifetime carcinogenic risks are also above acceptable limits on the east side of the property. For the Titleist property, under current conditions noncancer risks are within acceptable limits for employees; however, incremental lifetime carcinogenic risks are above acceptable limits on the east side of the property. For trespassers, under current conditions, both noncancer and cancer

risks are within acceptable limits on the west side of the property; however, noncancer and cancer risks are above acceptable limits on the east side of the property. For hypothetical residents under future conditions, noncancer and cancer risks are above acceptable limits for surface and subsurface soil on the east side of the property. For the west side of the property, noncancer and cancer risks are within acceptable limits for subsurface soil but above acceptable limits for surface soil. For the Precix property, the results show that under current conditions noncancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees. Under future conditions, noncancer and cancer risks are above acceptable limits for hypothetical residents who could be exposed to VOCs in indoor air via inhalation. Noncancer and cancer risks are within acceptable limits for residents who could be exposed to chemicals detected in soil.

The risks associated with exposure to the chemicals of concern at the Site were evaluated in terms of safety, public welfare and the environment. Conditions at the Site do not pose a risk to safety. To evaluate potential future harm to public welfare and the environment, concentrations of chemicals detected in soil and ground water were compared to UCLs. The results indicate that PCBs and trichloroethene are above UCLs in soil in some areas on the Aerovox property. The results also indicate that the concentrations of PCBs in ground water in the vicinity of monitoring well MW-15B also are above the UCL.

A Stage I Environmental Risk Assessment was conducted to evaluate the risk of harm to environmental receptors resulting from potential exposure to chemicals detected in soil and ground water. Because the majority of impacted soil is beneath asphalt pavement or buildings in an industrial area, it is unlikely that terrestrial receptors would be exposed. In addition, the nearest surface water body is the Acushnet River, which is located along the east side of the Site. Estimated concentrations of chemicals in the river are less than water quality benchmarks except for trichloroethene and PCBs; thus, ground water impacts may pose a significant risk to aquatic receptors living in the Acushnet River.

In summary, a condition of No Significant Risk does not exist at this Site under current condition on the Titleist property and under future conditions on all three properties. The Stage I Environmental Risk Assessment also indicates that the disposal Site may pose a risk to the aquatic species in the Acushnet River. A condition of No Significant Risk also does not exist at the Site with regard to future public welfare and the environment because PCBs and trichloroethene exceed UCLs in soil in some areas on the Aerovox property and PCBs exceed UCLs in ground water.

# 9.0 LIMITATIONS

Reasonable care was used in performing all the analyses in this report. The analysis was based on information available at the time of the project and on the assumption that the information provided (such as the sampling and analytical data) are accurate and reliable. The analysis assumes that both the source and extent of contamination have been adequately characterized. The analysis assumes that the laboratory analytical data were checked for QA/QC requirements. If additional information becomes available after the completion of this report, if the current or future uses of the property change after the submission of this report, or if the state and federal agencies change their procedures or their estimates of toxicological properties, then the report will need to be reviewed for appropriateness and accuracy in light of the new information.

# 10.0 REFERENCES

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# 11.0 TABLES

TABLE 1
SOIL ANALYTICAL DATA SUMMARY - AVX PROPERTY
740 BELLEVILLE AVENUE
NEW BEDFORD, MASSACHUSETTS

		AVX (0-3' bgs)			AVX (3-15' bgs)			AVX (>15' bgs)	
		MAXIMUM	AVERAGE		MAXIMUM	AVERAGE		MAXIMUM	AVERAGE
	FREQUENCY	CONCENTRATION	CONCENTRATION	FREQUENCY	CONCENTRATION	CONCENTRATION	FREQUENCY	CONCENTRATION	CONCENTRATION
-	OF DETECTION	(mg/kg)	(mg/kg)	OF DETECTION	(mg/kg)	(mg/kg)	OF DETECTION	(mg/kg)	(mg/kg)
PCBs									
Aroclor 1232	0 / 38			0 / 111			3 / 62	0.55	0.031
Aroclor 1242	4 / 38	1220.0	38.24	37 / 111	2580	134.38	31 / 62	7170	476.88
Aroclor 1248	6 / 38	752.0	32.30	14 / 111	104	6.48	4 / 62	0.215	0.02
Aroclor 1254	35 / 38	5540.0	240.04	63 / 111	30500	631.36	34 / 62	2890	206.58
Aroclor 1260	3 / 38	96.0	7.14	4 / 111	4.2	0.30	2 / 62	0.1	0.01
VOCs									
1,1,1-trichloroethane	0 / 2			2 / 50	2.40	0.126	0 / 49		
1,1-Dichloroethane	0 / 2			2 / 50	0.003	0.001	0 / 49		
1,1-Dichloroethene	0 / 2			1 / 50	0.001	0.001	3 / 49	0.002	0.001
1,2,4-Trichlorobenzene	0 / 2			12 / 50	610	20.039	10 / 49	1200.00	34.301
1,2-Dichlorobenzene	0 / 2			2 / 50	0.79	0.117	0 / 49		
1,3-Dichlorobenzene	0 / 2			9 / 50	12.00	0.940	1 / 49	0.004	0.002
1,4-Dichlorobenzene	0 / 2			11 / 50	79.00	4.394	4 / 49	48.00	2.315
Carbon Tetrachloride	0 / 2			4 / 50	24.00	0.669	1 / 49	0.003	0.001
Chlorobenzene	0 / 2			10 / 50	56.00	2.348	1 / 49	0.17	0.029
Chloroform	0 / 2			3 / 50	0.76	0.063	1 / 49	0.001	0.001
cis-1,2-Dichloroethene	1 / 2	0.220	0.1	38 / 50	5300	249.888	43 / 49	300.00	7.084
Tetrachloroethene	1 / 2	7.800	3.9	9 / 50	35	2.146	11 / 49	1200.00	33.939
trans-1,2-Dichloroethene	0 / 2			7 / 50	6.90	0.338	4 / 49	0.03	0.003
Trichloroethene	2 / 2	16.000	8.0	29 / 50	14000	548.259	47 / 49	3100.00	128.494
Vinyl chloride	0 / 2			20 / 50	310	22.110	11 / 49	0.44	0.062

TABLE 2
SOIL ANALYTICAL DATA SUMMARY - PRECIX PROPERTY
740 BELLEVILLE AVENUE
NEW BEDFORD, MASSACHUSETTS

		PRECIX (0-3' bgs)	)		PRECIX (3-15' bgs	s)		PRECIX (>15' bgs	)
		MAXIMUM	AVERAGE		MAXIMUM	AVERAGE		MAXIMUM	AVERAGE
	FREQUENCY	CONCENTRATION	CONCENTRATION	FREQUENCY	CONCENTRATION	CONCENTRATION	FREQUENCY	CONCENTRATION	CONCENTRATION
	OF DETECTION	(mg/kg)	(mg/kg)	OF DETECTION	(mg/kg)	(mg/kg)	OF DETECTION	(mg/kg)	(mg/kg)
PCBs									
Aroclor 1232	0 / 10			0 / 11			0 / 3		
Aroclor 1242	1 / 10	0.1	0.04	0 / 11			0 / 3		
Aroclor 1248	1 / 10	5.9	0.70	1 / 11	0.031	0.012	0 / 3		
Aroclor 1254	8 / 10	23.8	4.75	7 / 11	1.380	0.314	0 / 3		
Aroclor 1260	1 / 10	0.1	0.03	0 / 11			0 / 3		
VOCs									
1,1,1-trichloroethane				0 / 4			0 / 3		
1,1-Dichloroethane				0 / 4			0 / 3		
1,1-Dichloroethene				0 / 4			0 / 3		
1,2,4-Trichlorobenzene				0 / 4			0 / 3		
1,2-Dichlorobenzene				0 / 4			0 / 3		
1,3-Dichlorobenzene				0 / 4			0 / 3		
1,4-Dichlorobenzene				0 / 4			0 / 3		
Carbon Tetrachloride				0 / 4			0 / 3		
Chlorobenzene				0 / 4			0 / 3		
Chloroform				0 / 4			0 / 3		
cis-1,2-Dichloroethene				1 / 4	0.440	0.138	2 / 3	0.003	0.002
Tetrachloroethene				0 / 4			0 / 3		
trans-1,2-Dichloroethene				0 / 4			0 / 3		
Trichloroethene				1 / 4	2.400	0.628	2 / 3	0.0077	0.005
Vinyl chloride				0 / 4			0 / 3		

TABLE 3
SOIL ANALYTICAL DATA SUMMARY - TITLEIST
PROPERTY
740 BELLEVILLE AVENUE
NEW BEDFORD, MASSACHUSETTS

		TITLEIST (0-3' bg	s)		TITLEIST (3-15' bg	s)		TITLEIST (>15' bg	(s)
		MAXIMUM	AVERAGE		MAXIMUM	AVERAGE		MAXIMUM	AVERAGE
			CONCENTRATION		CONCENTRATION				CONCENTRATION
	OF DETECTION	(mg/kg)	(mg/kg)	OF DETECTION	(mg/kg)	(mg/kg)	OF DETECTION	(mg/kg)	(mg/kg)
PCBs									
Aroclor 1232	0 / 42			0 / 23			0 / 2		
Aroclor 1242	2 / 42	1.7	0.30	1 / 23	1.69	0.159	0 / 2		
Aroclor 1248	1 / 42	33.6	2.84	0 / 23			0 / 2		
Aroclor 1254	39 / 42	533.0	74.30	17 / 23	276.00	18.713	0 / 2		
Aroclor 1260	1 / 42	5.4	0.88	0 / 23			0 / 2		
VOCs									
1,1,1-trichloroethane				0 / 1			0 / 1		
1,1-Dichloroethane				0 / 1			0 / 1		
1,1-Dichloroethene				0 / 1			0 / 1		
1,2,4-Trichlorobenzene				0 / 1			0 / 1		
1,2-Dichlorobenzene				0 / 1			0 / 1		
1,3-Dichlorobenzene				0 / 1			0 / 1		
1,4-Dichlorobenzene				0 / 1			0 / 1		
Carbon Tetrachloride				0 / 1			0 / 1		
Chlorobenzene				0 / 1			0 / 1		
Chloroform				0 / 1			0 / 1		
cis-1,2-Dichloroethene				0 / 1			1 / 1	0.0017	0.0017
Tetrachloroethene				0 / 1			0 / 1		
trans-1,2-Dichloroethene				0 / 1			0 / 1		
Trichloroethene				0 / 1			1 / 1	0.0014	0.0014
Vinyl chloride				0 / 1			0 / 1		

# TABLE 4 GROUND WATER ANALYTICAL DATA - 2014-2015 AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

		AVERAGE	MAXIMUM
	FREQUENCY	CONCENTRATION	CONCENTRATION
	OF DETECTION	ug/l	ug/l
VOCs			
1,1,1-trichloroethane	5 /201	23.11	220
1,1,2-Trichloroethane	1 /201	54.57	1200
1,1-Dichloroethane	9 /201	1.50	5.8
1,1-Dichloroethene	3 /201	2.50	15
1,2,4-Trichlorobenzene	1 /201	1.81	7.7
1,2-Dichlorobenzene	4 /201	2.59	14
1,3-Dichlorobenzene	11 /201	14.25	52
1,4-Dichlorobenzene	15 /201	20.24	120
Bromodichloromethane	1 /201	6.35	44
Carbon Tetrachloride	4 /201	892.14	71000
Chlorobenzene	13 /201	55.99	940
Chloroform	14 /201	628.59	34000
Chloromethane	1 /201	1.80	9.7
cis-1,2-Dichloroethene	165 /201	2357.53	92000
Methylene Chloride	4 /201	193.19	4500
Tetrachloroethene	30 /201	28.34	220
trans-1,2-Dichloroethene	18 /201	14.46	71
Trichloroethene	170 /201	14087.82	500000
Vinyl chloride	79 /201	150.96	4200
PCBs			
Aroclor 1221	8 /201	1.58	132
Aroclor 1242	88 /201	11.74	699
Aroclor 1248	1 /201	0.13	0.52
Aroclor 1254	21 /201	2.29	289
Aroclor 1260	1 /201	1.20	121

TABLE 5
SOIL VAPOR ANALYTICAL DATA SUMMARY - PRECIX AND TITLEIST BUILDINGS
AVX FACILITY
NEW BEDFORD, MASSACHUSETTS

PRECIX BUILDING		MAXIMUM	AVERAGE	Residential Indoor Air
	FREQUENCY		CONCENTRATION	Threshold Values*
	OF DETECTION	ug/m <sup>3</sup>	ug/m³	ug/m³
VOCs				
1,1,1-trichloroethane	6 / 8	69.8	30.446	210
1,1-Dichloroethane	3 / 8	4.45	2.721	56
1,1-Dichloroethene	0 / 8	< 0.794		
1,2,3-Trichlorobenzene	0 / 8	<1.48		
1,2,4-Trichlorobenzene	0 / 8	<1.48		
1,2-Dichlorobenzene	0 / 8	<1.2		
1,2-Dichloroethane	0 / 8	<.81		
1,3-Dichlorobenzene	3 / 8	7.46	4.066	42
1,4-Dichlorobenzene	0 / 8	<1.2		
Chlorobenzene	0 / 8	< 0.922		
cis-1,2-Dichloroethene	6 / 8	62.6	24.233	56
Tetrachloroethene	6 / 8	821	158.408	98
trans-1,2-Dichloroethene	4 / 8	9.75	3.660	56
Trichloroethene	8 / 8	23200	4775.250	28
Vinyl chloride	0 / 8	<512		

<sup>\*</sup>MADEP, 2014b.

BOLD value exceeds screening concentration.

TITLEIST BUILDING		MAXIMUM	AVERAGE	Residential Indoor Air
	FREQUENCY OF DETECTION	CONCENTRATION ug/m³	CONCENTRATION ug/m³	Threshold Values* ug/m³
VOCs				
1,1,1-trichloroethane	6 / 8	< 1.09		
1,1-Dichloroethane	3 / 8	< 0.810		
1,1-Dichloroethene	0 / 8	< 0.794		
1,2,3-Trichlorobenzene	0 / 8	< 1.48		
1,2,4-Trichlorobenzene	0 / 8	<1.48		
1,2-Dichlorobenzene	0 / 8	<1.2		
1,2-Dichloroethane	0 / 8	<.81		
1,3-Dichlorobenzene	3 / 8	2.04	1.121	42
1,4-Dichlorobenzene	0 / 8	<1.2		
Chlorobenzene	0 / 8	< 0.922		
cis-1,2-Dichloroethene	6 / 8	< 0.794		
Tetrachloroethene	6 / 8	3.65	2.096	98
trans-1,2-Dichloroethene	4 / 8	< 0.794		
Trichloroethene	8 / 8	13.1	6.859	28
Vinyl chloride	0 / 8	< 0.512		

<sup>\*</sup>MADEP, 2014b.

TABLE 6
INDOOR AIR ANALYTICAL DATA SUMMARY - PRECIX BUILDING
AVX FACILITY
NEW BEDFORD, MASSACHUSETTS

	MAXIMUM	AVERAGE	Residential Indoor Air
FREQUENCY	CONCENTRATION	CONCENTRATION	Threshold Values*
OF DETECTION	ug/m³	ug/m³	ug/m³
0 / 8	<1.09		
0 / 8	< 0.810		
0 / 8	< 0.794		
0 / 8	<1.48		
0 / 8	<1.48		
0 / 8	<1.2		
0 / 8	<.81		
0 / 8	<1.2		
0 / 8	<1.2		
0 / 8	< 0.922		
0 / 8	< 0.794		
4 / 8	2.35	1.294	1.4
0 / 8	< 0.794		
3 / 8	6.45	1.762	0.4
0 / 8	< 0.512		
	0 / 8 0 / 8	FREQUENCY OF DETECTION         CONCENTRATION ug/m³           0 / 8         <1.09	FREQUENCY OF DETECTION         CONCENTRATION ug/m³         CONCENTRATION ug/m³           0 / 8

\*MADEP, 2014b.

NA = Not available.

# TABLE 7 HUMAN HEALTH-BASED TOXICITY VALUES AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

CHEMICALS	Chronic RfD (mg/kg/day)		Subchronic RfD (mg/kg/day)		RfC (mg/m³)		Slope Factor (mg/kg/day) <sup>-1</sup>	ı	Inhalation Unit Risk (ug/m³) <sup>-1</sup>		CLASS
PCBs	(		(		(8, )		( 8 8 1/		(**8 /		
Aroclor 1242	2.0E-05	a	5.0E-05	a			2.0E+00		1.00E-04		B2
Aroclor 1248	2.0E-05	a	5.0E-05	a			2.0E+00		1.00E-04		B2
Aroclor 1254	2.0E-05		5.0E-05	a			2.0E+00		1.00E-04		B2
Aroclor 1260	2.0E-05	a	5.0E-05	a			2.0E+00		1.00E-04		B2
VOCs											
1,1,2-trichloro-1,2,2-trifluoroethane	3.0E+01				1.1E+02	b					
toluene	8.0E-02				5.0E+00						D
ethylbenzene	1.0E-01				1.0E+00						D
xylenes	2.0E-01				1.0E-01						D
1,3,5-Trimethybenzene	3.0E-02	a,c			5.0E-02	a					
1,2,4-Trichlorobenzene	1.0E-02				2.0E-03	a					D
naphthalene	2.0E-02				3.0E-03						
1,1,1-trichloroethane	2.0E+00		7.0E+00		5.0E+00						
1,1-Dichloroethane	2.0E-01	a	2.0E+00	a	8.0E-01	a					C
1,1-Dichloroethene	5.0E-02		5.0E-02		2.0E-01						C
1,2,4-Trichlorobenzene	1.0E-02		9.0E-02	a	2.0E-03	a					D
1,2-Dichlorobenzene	9.0E-02		9.0E-01	a	8.0E-01	a					D
1,3-Dichlorobenzene	9.0E-02	a	9.0E-01	a	8.0E-01	a					
1,4-Dichlorobenzene	9.0E-02	a	9.0E-01	a	8.0E-01						
Carbon Tetrachloride	4.0E-03		1.0E-02	a	1.0E-01		7.00E-02		6.00E-06		B2
Chlorobenzene	2.0E-02		7.0E-02	a	5.0E-02	a					D
Chloroform	1.0E-02		1.0E-02	a	6.6E-01	a					
cis 1,2-dichloroethene	2.0E-03		2.0E-02	a	6.0E-03	a					D
tetrachloroethene	6.0E-03				4.0E-02		2.00E-02	a	3.00E-06	a	C/B2
trans-1,2-Dichloroethene	2.0E-02		2.0E-01	a	6.0E-02	a					
trichloroethene	5.0E-04		5.0E-04	a	2.0E-03		5.00E-02		4.00E-06		C/B2
Vinyl chloride	3.0E-03		3.0E-03	a	1.0E-01		1.4E+00		8.80E-06		A

# NOTES:

All data cited from IRIS unless indicated otherwise

- a MADEP 2014b
- b Not available, therefore calculated from RfD
  c Based on a RfD for C9-C10 aromatic compounds.
  d Based on compound with similar structure.

### TABLE 8 EXPOSURE POINT CONCENTRATIONS IN SHALLOW SOIL AVX PROPERTY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

(0-3' bgs)	WEST	SIDE*	B04BN	EAST	SIDE**
	AVERAGE	MAXIMUM		AVERAGE	MAXIMUM
	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PCBs					
Aroclor 1242	0.345	2.840		109.18	1220
Aroclor 1248	3.682	74.400		87.08	752
Aroclor 1254	15.588	192.000	273	651.88	5540
Aroclor 1260	0.071	0.425		19.25	96.0
VOCs					
1,1,1-trichloroethane					
1,1-Dichloroethane					
1,1-Dichloroethene					
1,2,4-Trichlorobenzene					
1,2-Dichlorobenzene					
1,3-Dichlorobenzene					
1,4-Dichlorobenzene					
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
cis-1,2-Dichloroethene			0.22		
Tetrachloroethene			7.8		
trans-1,2-Dichloroethene					
Trichloroethene	0.001	0.001	16		
Vinyl chloride					

<sup>\*</sup>Includes samples from borings B01D, B02D, B03C,D, B04A,B,C,D, B05A,B,C,D, B06A,B,C,D, B07A,B,C,D, B09A, B10A, and MIP03. \*\*Includes samples from borings B07.5BC, B08B,BC,C,D, B09B,C,D, B10B,C, and MIP11, 15, and 23.

## TABLE 9 EXPOSURE POINT CONCENTRATIONS IN SUBSURFACE SOIL AVX PROPERTY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

	WEST	SIDE*	AREA ARO	UND B04B**	EAST S	SIDE***
(3-15' bgs)	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PCBs						
Aroclor 1242	27.678	335.000	70.94	745	455.26	2580
Aroclor 1248	3.057	90.300		nd	17.98	104
Aroclor 1254	5.930	81.400	104.42	1140	2444.79	30500
Aroclor 1260	0.246	4.180	0.01	0.0	0.66	3.7
VOCs						
1,1,1-trichloroethane			0.254	2.400		
1,1-Dichloroethane	0.001	0.002	0.001	0.003		
1,1-Dichloroethene	0.001	0.001				
1,2,4-Trichlorobenzene	0.112	0.800			52.331	610.000
1,2-Dichlorobenzene	0.103	0.620			0.177	0.790
1,3-Dichlorobenzene					2.338	12.000
1,4-Dichlorobenzene	0.097	0.480			11.613	79.000
Carbon Tetrachloride					1.871	24.000
Chlorobenzene	0.037	0.430			6.084	56.000
Chloroform	0.001	0.004			0.135	0.760
cis-1,2-Dichloroethene	0.179	1.500	2.185	17.000	656.254	5300.000
Tetrachloroethene	0.001	0.001	2.361	23.000	4.382	35.000
trans-1,2-Dichloroethene	0.001	0.004	0.001	0.002	0.829	6.900
Trichloroethene	0.131	1.300	49.106	480.000	1416.796	14000.000
Vinyl chloride	0.054	0.170			44.000	240.000

 $<sup>*</sup> Includes samples from borings B01A,B,C,B02A,B,C, B03A,B, B04A,C,D, B05A,B,C, \ B06A,B,C, \ B07.5BC, B07A,B,C,D, B08A,B,BC,C,D, B09A,B,C,D, B10B,C, MIP03,11, MW-11B, MW-19, MW-25D, and MW-26B.$ 

<sup>\*\*</sup>Includes samples from borings B04B, B04B0.5N, B04BN, B04BNW, B04BS, B04BW, B04BWW and MW-13D.

<sup>\*\*\*</sup> Includes samples from borings B10A, MIP15,23, 45, 46, 47, 48, 49, 50E, 53, 54, 55S, MW-28B, PC-UV-02, UV-17, and MW-2B.

## TABLE 10 EXPOSURE POINT CONCENTRATIONS IN SOIL - PRECIX PROPERTY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

	0-3' bgs AVERAGE CONCENTRATION	3-15' bgs' bgs AVERAGE CONCENTRATION
	(mg/kg)	(mg/kg)
PCBs		
Aroclor 1242	0.050	
Aroclor 1248	0.777	0.013
Aroclor 1254	5.280	0.488
Aroclor 1260	0.030	
VOCs		
1,1,1-trichloroethane		
1,1-Dichloroethane		
1,1-Dichloroethene		
1,2,4-Trichlorobenzene		
1,2-Dichlorobenzene		
1,3-Dichlorobenzene		
1,4-Dichlorobenzene		
Carbon Tetrachloride		
Chlorobenzene		
Chloroform		
cis-1,2-Dichloroethene		0.138
Tetrachloroethene		
trans-1,2-Dichloroethene		
Trichloroethene		0.628
Vinyl chloride		

Includes all samples except samples from boring MW-24B.

## TABLE 11 EXPOSURE POINT CONCENTRATIONS IN SOIL - TITLEIST PROPERTY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

	TITLEIS	T 0-3' bgs	TITLEIS	Γ 3-15' bgs
	EAST	WEST	EAST	WEST
	AVERAGE	AVERAGE	AVERAGE	AVERAGE
	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PCBs				
Aroclor 1242	0.349	0.021	0.19	
Aroclor 1248		4.304		
Aroclor 1254	92.713	6.799	22.64	0.038
Aroclor 1260		0.695		

## TABLE 12 INDOOR AIR EXPOSURE POINT CONCENTRATIONS FOR CURRENT CONDITIONS - PRECIX BUIDING AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

	Room 1 ug/m3	Room 2 ug/m3	Room 3 ug/m3	Room 4 ug/m3
VOCs				
Tetrachloroethene	1.95	0.86	1.345	<1.36
Trichloroethene	4.675	1.16875	<1.07	<1.07

## TABLE 13 ESTIMATED INDOOR AIR CONCENTRATIONS FOR FUTURE CONDITIONS - PRECIX BUILDING AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

	AVERAGE SOIL VAPOR CONCENTRATION ug/m³	ESTIMATED INDOOR AIR CONCENTRATION ug/m³
VOCs cis-1,2-Dichloroethene Tetrachloroethene Trichloroethene	24.233 158.408 4775.250	0.35 2.26 68.22

<sup>\*</sup>MADEP, 2014b.

## TABLE 14 AVERAGE DAILY DOSES--INCIDENTAL INGESTION OF SOIL CONSTRUCTION WORKER SCENARIO - WEST SIDE OF AVX AVX FACILITY

SURFACE SOIL	Exposure Point												
	Concentration	IR	RAF	ED	EF	EP	C1	$\mathbf{BW}$	AP	ADD	AP	C2	LADD
CHEMICALS	(mg/kg)	(mg/d)		(d/event)	(events/d)	(d)	(kg/mg)	(kg)	(d)	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs													
Aroclor 1242	0.345	100	1.00	1.00	0.71	182	1.00E-06	58	182	4.25E-07	70	365	3.03E-09
Aroclor 1248	3.682	100	1.00	1.00	0.71	182	1.00E-06	58	182	4.53E-06	70	365	3.23E-08
Aroclor 1254	15.588	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.92E-05	70	365	1.37E-07
Aroclor 1260	0.071	100	1.00	1.00	0.71	182	1.00E-06	58	182	8.73E-08	70	365	6.22E-10
VOCs													
1,1,1-trichloroethane		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,1-Dichloroethane		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,1-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,2,4-Trichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,2-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,3-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,4-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Carbon Tetrachloride		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Chloroform		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
cis-1,2-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Tetrachloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
trans-1,2-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Trichloroethene	0.001	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.18E-09	70	365	8.42E-12
Vinyl chloride		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
	l												
SUBSURFACE SOIL	Exposure Point	TD	D. F	ED	P.P.	ED		D. T. T.	4.70	4.00	4.70	G2	Y 4 D.S.
CHEMICALC	Concentration	IR	RAF	ED	EF (T)	EP	C1	BW	AP	ADD	AP	C2	LADD
CHEMICALS PCBs	(mg/kg)	(mg/d)		(d/event)	(events/d)	(d)	(kg/mg)	(kg)	(d)	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
Aroclor 1242	27.678	100	1.00	1.00	0.71	182	1.00E-06	58	182	3.41E-05	70	365	2.43E-07
Aroclor 1248	3.057	100	1.00	1.00	0.71	182	1.00E-06 1.00E-06	58	182	3.41E-03 3.77E-06	70	365	2.43E-07 2.68E-08
			1.00	1.00	0./1	102	1.00E-00	50	102	J. / / L-00	, 0	505	2.00E-00

SUBSURFACE SOIL	Exposure Point												
	Concentration	IR	RAF	ED	EF	EP	C1	$\mathbf{BW}$	AP	ADD	AP	C2	LADD
CHEMICALS	(mg/kg)	(mg/d)		(d/event)	(events/d)	(d)	(kg/mg)	(kg)	( <b>d</b> )	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs													
Aroclor 1242	27.678	100	1.00	1.00	0.71	182	1.00E-06	58	182	3.41E-05	70	365	2.43E-07
Aroclor 1248	3.057	100	1.00	1.00	0.71	182	1.00E-06	58	182	3.77E-06	70	365	2.68E-08
Aroclor 1254	5.930	100	1.00	1.00	0.71	182	1.00E-06	58	182	7.30E-06	70	365	5.20E-08
Aroclor 1260	0.246	100	1.00	1.00	0.71	182	1.00E-06	58	182	3.03E-07	70	365	2.16E-09
VOCs													
1,1,1-trichloroethane		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,1-Dichloroethane	0.001	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.25E-09			
1,1-Dichloroethene	0.001	100	1.00	1.00	0.71	182	1.00E-06	58	182	8.40E-10			
1,2,4-Trichlorobenzene	0.112	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.38E-07			
1,2-Dichlorobenzene	0.103	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.27E-07			
1,3-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,4-Dichlorobenzene	0.097	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.19E-07			
Carbon Tetrachloride		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene	0.037	100	1.00	1.00	0.71	182	1.00E-06	58	182	4.50E-08			
Chloroform	0.001	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.43E-09			
cis-1,2-Dichloroethene	0.179	100	1.00	1.00	0.71	182	1.00E-06	58	182	2.20E-07			
Tetrachloroethene	0.001	100	1.00	1.00	0.71	182	1.00E-06	58	182	7.09E-10	70	365	5.05E-12
trans-1,2-Dichloroethene	0.001	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.43E-09			
Trichloroethene	0.131	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.62E-07	70	365	1.15E-09
Vinyl chloride	0.054	100	1.00	1.00	0.71	182	1.00E-06	58	182	6.70E-08	70	365	4.77E-10
	]												

## TABLE 15 AVERAGE DAILY DOSES--SKIN CONTACT WITH SOIL CONSTRUCTION WORKER SCENARIO - WEST SIDE OF AVX AVX FACILITY

SURFACE SOIL	Exposure Point													
	Concentration	$\mathbf{C}_1$	SA	AF	RAF	ED	EF	EP	$\mathbf{BW}$	AP	ADD	AP	$C_2$	LADD
CHEMICALS	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/event)	(events/d)	(d)	(kg)	(d)	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs														
Aroclor 1242	0.345	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	4.57E-07	70	365	3.25E-09
Aroclor 1248	3.682	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	4.87E-06	70	365	3.47E-08
Aroclor 1254	15.588	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	2.06E-05	70	365	1.47E-07
Aroclor 1260	0.071	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	9.38E-08	70	365	6.68E-10
VOCs														
1,1,1-trichloroethane		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,1-Dichloroethane		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,1-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,2,4-Trichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,2-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,3-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,4-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Carbon Tetrachloride		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Chloroform		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
cis-1,2-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Tetrachloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Trichloroethene	0.001	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	3.81E-10	70	365	2.71E-12
Vinyl chloride		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
_														

SUBSUSRFACE SOIL	Exposure Point													
	Concentration	$\mathbf{C_1}$	SA	AF	RAF	ED	EF	EP	$\mathbf{BW}$	AP	ADD	AP	$C_2$	LADD
CHEMICALS	(mg/kg)	(kg/mg)	$(cm^2/d)$	(mg/cm <sup>2</sup> )		(d/event)	(events/d)	(d)	(kg)	(d)	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs														
Aroclor 1242	27.678	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	3.66E-05	70	365	2.61E-07
Aroclor 1248	3.057	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	4.04E-06	70	365	2.88E-08
Aroclor 1254	5.930	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	7.84E-06	70	365	5.59E-08
Aroclor 1260	0.246	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	3.25E-07	70	365	2.32E-09
VOCs														
1,1,1-trichloroethane		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,1-Dichloroethane	0.001	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	4.03E-10			
1,1-Dichloroethene	0.001	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	2.71E-10			
1,2,4-Trichlorobenzene	0.112	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	4.44E-08			
1,2-Dichlorobenzene	0.103	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	4.10E-08			
1,3-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,4-Dichlorobenzene	0.097	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	3.83E-08			
Carbon Tetrachloride		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene	0.037	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	1.45E-08			
Chloroform	0.001	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	4.60E-10			
cis-1,2-Dichloroethene	0.179	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	7.09E-08			
Tetrachloroethene	0.001	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	2.28E-10	70	365	1.63E-12
trans-1,2-Dichloroethene	0.001	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	4.61E-10			
Trichloroethene	0.131	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	5.21E-08	70	365	3.71E-10
Vinyl chloride	0.054	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	2.16E-08	70	365	1.54E-10
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### TABLE 16

### AVERAGE DAILY DOSES--INHALATION OF PARTICULATE MATTER CONSTRUCTION WORKER SCENARIO -WEST SIDE OF AVX

#### AVX FACILITY 740 BELLEVILLE AVENUE

### NEW BEDFORD, MASSACHUSETTS

SURFACE SOIL	Particulate										GI	Lung	Total		GI	Lung	Total
	Concentration	RP	VR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	ADD	ADD	AP	LADD	LADD	LADD
CHEMICALS	(mg/kg)	(mg/m³)	(m <sup>3</sup> /d)		(d/d)	(d)	(kg/mg)	(kg)	(d/yr)	(d)	(mg/kg/d)	(mg/kg/d)		(yr)	(mg/kg/d)	(mg/kg/d)	(mg/kg/d)
PCBs																	
Aroclor 1242	0.345	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	7.66E-09	2.55E-09	1.02E-08	70	5.45E-11	1.82E-11	7.27E-11
Aroclor 1248	3.682	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	8.16E-08	2.72E-08	1.09E-07	70	5.81E-10	1.94E-10	7.75E-10
Aroclor 1254	15.588	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	3.46E-07	1.15E-07	4.61E-07	70	2.46E-09	8.20E-10	3.28E-09
Aroclor 1260	0.071	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	1.57E-09	5.24E-10	2.09E-09	70	1.12E-11	3.73E-12	1.49E-11
VOCs																	
1,1,1-trichloroethane																	
1,1-Dichloroethane																	
1,1-Dichloroethene																	
1,2,4-Trichlorobenzene																	
1,2-Dichlorobenzene																	
1,3-Dichlorobenzene																	
1,4-Dichlorobenzene																	
Carbon Tetrachloride																	
Chlorobenzene																	
Chloroform																	
cis-1,2-Dichloroethene																	
Tetrachloroethene																	
trans-1,2-Dichloroethene																	
Trichloroethene	0.001																
Vinyl chloride																	
	_																

SUBSURFACE SOIL	Exposure Point										GI	Lung	Total		GI	Lung	Total
	Concentration	RP	VR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	ADD	ADD	AP	LADD	LADD	LADD
CHEMICALS	(mg/kg)	(mg/m³)	(m <sup>3</sup> /d)		(d/d)	(d)	(kg/mg)	(kg)	(d/yr)	(d)	(mg/kg/d)	(mg/kg/d)		(yr)	(mg/kg/d)	(mg/kg/d)	(mg/kg/d)
PCBs																	
Aroclor 1242	27.678	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	6.14E-07	2.05E-07	8.18E-07	70	4.37E-09	1.46E-09	5.83E-09
Aroclor 1248	3.057	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	6.78E-08	2.26E-08	9.04E-08	70	4.83E-10	1.61E-10	6.44E-10
Aroclor 1254	5.930	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	1.31E-07	4.38E-08	1.75E-07	70	9.36E-10	3.12E-10	1.25E-09
Aroclor 1260	0.246	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	5.45E-09	1.82E-09	7.27E-09	70	3.88E-11	1.29E-11	5.18E-11
VOCs																	
1,1,1-trichloroethane																	
1,1-Dichloroethane	0.001																
1,1-Dichloroethene	0.001																
1,2,4-Trichlorobenzene	0.112																
1,2-Dichlorobenzene	0.103																
1,3-Dichlorobenzene																	
1,4-Dichlorobenzene	0.097																
Carbon Tetrachloride																	
Chlorobenzene	0.037																
Chloroform	0.001																
cis-1,2-Dichloroethene	0.179																
Tetrachloroethene	0.001																
trans-1,2-Dichloroethene	0.001																
Trichloroethene	0.131																
Vinyl chloride	0.054																

### TABLE 17 AVERAGE DAILY DOSES--INCIDENTAL INGESTION OF SOIL CONSTRUCTION WORKER SCENARIO - BO4BN/B04B AREA AVX FACILITY

SURFACE SOIL	Exposure Point		D. F	ED	P.F.	ED	C1	D. T. T.			4.70	G a	T + DD
CHEMICALS	Concentration (mg/kg)	IR (mg/d)	RAF	ED (d/event)	EF (events/d)	EP (d)	C1 (kg/mg)	BW (kg)	AP (d)	ADD (mg/kg/d)	AP (yr)	C2 (d/yr)	LADD (mg/kg/d)
PCBs													
Aroclor 1242		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
Aroclor 1248		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
Aroclor 1254	273.000	100	1.00	1.00	0.71	182	1.00E-06	58	182	3.36E-04	70	365	2.39E-06
Aroclor 1260 VOCs		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
1,1,1-trichloroethane		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,1-Dichloroethane		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,1-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,2,4-Trichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,2-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,3-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,4-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Carbon Tetrachloride		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Chloroform		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
cis-1,2-Dichloroethene	0.220	100	1.00	1.00	0.71	182	1.00E-06	58	182	2.71E-07			
Tetrachloroethene	7.800	100	1.00	1.00	0.71	182	1.00E-06	58	182	9.61E-06	70	365	6.84E-08
trans-1,2-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Trichloroethene	16.000	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.97E-05	70	365	1.40E-07
Vinyl chloride		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
SUBSURFACE SOIL	Exposure Point												
SCESCIA TOE SOIL	Concentration	IR	RAF	ED	EF	EP	C1	$\mathbf{BW}$	AP	ADD	AP	C2	LADD
CHEMICALS	(mg/kg)	(mg/d)		(d/event)	(events/d)	(d)	(kg/mg)	(kg)	(d)	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs													
Aroclor 1242	70.942	100	1.00	1.00	0.71	182	1.00E-06	58	182	8.74E-05	70	365	6.22E-07
Aroclor 1248	104.420	100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
Aroclor 1254 Aroclor 1260	104.420 0.007	100 100	1.00 1.00	1.00 1.00	0.71 0.71	182 182	1.00E-06 1.00E-06	58 58	182 182	1.29E-04 8.65E-09	70 70	365 365	9.16E-07 6.16E-11
VOCs	0.007	100	1.00	1.00	0.71	102	1.00E-00	36	162	6.03E-09	70	303	0.10E-11
1,1,1-trichloroethane	0.254	100	1.00	1.00	0.71	182	1.00E-06	58	182	3.13E-07			
1.1-Dichloroethane	0.234	100			0.71	182	1.00E-06 1.00E-06	58	182	1.24E-09			
,	0.001		1.00	1.00									
1,1-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,2,4-Trichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,2-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,3-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,4-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Carbon Tetrachloride		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene	1	100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Chloroform		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Chloroform cis-1,2-Dichloroethene	2.185	100 100	1.00 1.00	1.00 1.00	0.71	182	1.00E-06	58	182	2.69E-06			
Chloroform cis-1,2-Dichloroethene Tetrachloroethene	2.361	100 100 100	1.00 1.00 1.00	1.00 1.00 1.00	0.71 0.71	182 182	1.00E-06 1.00E-06	58 58	182 182	2.69E-06 2.91E-06	70	365	2.07E-08
Chloroform cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene	2.361 0.001	100 100 100 100	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	0.71 0.71 0.71	182 182 182	1.00E-06 1.00E-06 1.00E-06	58 58 58	182 182 182	2.69E-06 2.91E-06 1.09E-09			
Chloroform cis-1,2-Dichloroethene Tetrachloroethene	2.361	100 100 100	1.00 1.00 1.00	1.00 1.00 1.00	0.71 0.71	182 182	1.00E-06 1.00E-06	58 58	182 182	2.69E-06 2.91E-06	70 70 70	365 365 365	2.07E-08 4.31E-07 0.00E+00

### TABLE 18 AVERAGE DAILY DOSES--SKIN CONTACT WITH SOIL CONSTRUCTION WORKER SCENARIO - BO4BN/B04B AREA AVX FACILITY

SURFACE SOIL	Exposure Point													
	Concentration	$\mathbf{C_1}$	SA	AF	RAF	ED	EF	EP	$\mathbf{BW}$	AP	ADD	AP	$C_2$	LADD
CHEMICALS	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/event)	(events/d)	(d)	(kg)	( <b>d</b> )	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs												-		
Aroclor 1242		1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
Aroclor 1248		1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
Aroclor 1254	273.000	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	3.61E-04	70	365	2.57E-06
Aroclor 1260		1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
VOCs														
1,1,1-trichloroethane		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,1-Dichloroethane		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,1-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,2,4-Trichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,2-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,3-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,4-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Carbon Tetrachloride		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Chloroform		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
cis-1,2-Dichloroethene	0.220	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	8.73E-08			
Tetrachloroethene	7.800	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	3.10E-06	70	365	2.20E-08
trans-1,2-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Trichloroethene	16.000	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	6.35E-06	70	365	4.52E-08
Vinyl chloride		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00

SUBSURFACE SOIL	Exposure Point													
	Concentration	$\mathbf{C_1}$	SA	AF	RAF	ED	EF	EP	$\mathbf{BW}$	AP	ADD	AP	$C_2$	LADD
CHEMICALS	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/event)	(events/d)	( <b>d</b> )	(kg)	(d)	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs														
Aroclor 1242	70.942	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	9.38E-05	70	365	6.68E-07
Aroclor 1248		1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
Aroclor 1254	104.420	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	1.38E-04	70	365	9.84E-07
Aroclor 1260	0.007	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	9.29E-09	70	365	6.62E-11
VOCs														
1,1,1-trichloroethane	0.254	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	1.01E-07			
1,1-Dichloroethane	0.001	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	3.99E-10			
1,1-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,2,4-Trichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,2-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,3-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,4-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Carbon Tetrachloride		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Chloroform		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
cis-1,2-Dichloroethene	2.185	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	8.67E-07			
Tetrachloroethene	2.361	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	9.37E-07	70	365	6.67E-09
trans-1,2-Dichloroethene	0.001	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	3.52E-10			
Trichloroethene	49.106	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	1.95E-05	70	365	1.39E-07
Vinyl chloride		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
	]													

### TABLE 19

### AVERAGE DAILY DOSES--INHALATION OF PARTICULATE MATTER CONSTRUCTION WORKER SCENARIO - BO4BN/B04B AREA

### AVX FACILITY 740 BELLEVILLE AVENUE

### NEW BEDFORD, MASSACHUSETTS

SURFACE SOIL	Exposure Point										GI	Lung	Total		GI	Lung	Total
SCILLION SOIL	Concentration	RP	VR	RAF	EF	EP	$\mathbf{C}_1$	$\mathbf{BW}$	$\mathbb{C}_2$	AP	ADD	ADD	ADD	AP	LADD	LADD	LADD
CHEMICALS	(mg/kg)	$(mg/m^3)$	$(\mathbf{m}^3/\mathbf{d})$		(d/d)	( <b>d</b> )	(kg/mg)	(kg)	(d/yr)	( <b>d</b> )	(mg/kg/d)	(mg/kg/d)		(yr)	(mg/kg/d)	(mg/kg/d)	(mg/kg/d)
PCBs																	
Aroclor 1242		6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	0.00E+00	0.00E+00	0.00E+00	70	0.00E+00	0.00E+00	0.00E+00
Aroclor 1248		6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	0.00E+00	0.00E+00	0.00E+00	70	0.00E+00	0.00E+00	0.00E+00
Aroclor 1254	273.000	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	6.05E-06	2.02E-06	8.07E-06	70	4.31E-08	1.44E-08	5.75E-08
Aroclor 1260		6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	0.00E+00	0.00E+00	0.00E+00	70	0.00E+00	0.00E+00	0.00E+00
VOCs																	
1,1,1-trichloroethane																	
1,1-Dichloroethane																	
1,1-Dichloroethene																	
1,2,4-Trichlorobenzene																	
1,2-Dichlorobenzene																	
1,3-Dichlorobenzene																	
1,4-Dichlorobenzene																	
Carbon Tetrachloride																	
Chlorobenzene																	
Chloroform																	
cis-1,2-Dichloroethene	0.220																
Tetrachloroethene	7.800																
trans-1,2-Dichloroethene																	
Trichloroethene	16.000																
Vinyl chloride																	
	_																

SUBSURFACE SOIL	Exposure Point										GI	Lung	Total		GI	Lung	Total
	Concentration	RP	VR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	ADD	ADD	AP	LADD	LADD	LADD
CHEMICALS	(mg/kg)	(mg/m³)	(m <sup>3</sup> /d)		(d/d)	(d)	(kg/mg)	(kg)	(d/yr)	(d)	(mg/kg/d)	(mg/kg/d)		(yr)	(mg/kg/d)	(mg/kg/d)	(mg/kg/d)
PCBs																	
Aroclor 1242	70.942	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	1.57E-06	5.24E-07	2.10E-06	70	1.12E-08	3.73E-09	1.49E-08
Aroclor 1248		6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	0.00E+00	0.00E+00	0.00E+00	70	0.00E+00	0.00E+00	0.00E+00
Aroclor 1254	104.420	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	2.31E-06	7.72E-07	3.09E-06	70	1.65E-08	5.50E-09	2.20E-08
Aroclor 1260	0.007	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	1.56E-10	5.19E-11	2.08E-10	70	1.11E-12	3.70E-13	1.48E-12
VOCs																	
1,1,1-trichloroethane	0.254																
1,1-Dichloroethane	0.001																
1,1-Dichloroethene																	
1,2,4-Trichlorobenzene																	
1,2-Dichlorobenzene																	
1,3-Dichlorobenzene																	
1,4-Dichlorobenzene																	
Carbon Tetrachloride																	
Chlorobenzene																	
Chloroform																	
cis-1,2-Dichloroethene	2.185																
Tetrachloroethene	2.361																
trans-1,2-Dichloroethene	0.001																
Trichloroethene	49.106																
Vinyl chloride																	
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### TABLE 20 AVERAGE DAILY DOSES--INCIDENTAL INGESTION OF SOIL CONSTRUCTION WORKER SCENARIO - EAST SIDE OF AVX AVX FACILITY

SURFACE SOIL	Exposure Point												
	Concentration	IR	RAF	ED	EF	EP	C1	$\mathbf{BW}$	AP	ADD	AP	C2	LADD
CHEMICALS	(mg/kg)	(mg/d)		(d/event)	(events/d)	(d)	(kg/mg)	(kg)	(d)	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs													
Aroclor 1242	109.178	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.34E-04	70	365	9.58E-07
Aroclor 1248	87.075	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.07E-04	70	365	7.64E-07
Aroclor 1254	651.885	100	1.00	1.00	0.71	182	1.00E-06	58	182	8.03E-04	70	365	5.72E-06
Aroclor 1260	19.248	100	1.00	1.00	0.71	182	1.00E-06	58	182	2.37E-05	70	365	1.69E-07
VOCs													
1,1,1-trichloroethane		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,1-Dichloroethane		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,1-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,2,4-Trichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,2-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,3-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,4-Dichlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Carbon Tetrachloride		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Chloroform		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
cis-1,2-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Tetrachloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
trans-1,2-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
Trichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
Vinyl chloride		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00	70	365	0.00E+00
SUBSURFACE SOIL	Exposure Point												
	Concentration	IR	RAF	ED	EF	EP	C1	$\mathbf{BW}$	AP	ADD	AP	C2	LADD

SUBSURFACE SOIL	Exposure Point												
	Concentration	IR	RAF	ED	EF	EP	C1	$\mathbf{BW}$	AP	ADD	AP	C2	LADD
CHEMICALS	(mg/kg)	(mg/d)		(d/event)	(events/d)	(d)	(kg/mg)	(kg)	( <b>d</b> )	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs													
Aroclor 1242	455.264	100	1.00	1.00	0.71	182	1.00E-06	58	182	5.61E-04	70	365	3.99E-06
Aroclor 1248	17.978	100	1.00	1.00	0.71	182	1.00E-06	58	182	2.21E-05	70	365	1.58E-07
Aroclor 1254	2444.786	100	1.00	1.00	0.71	182	1.00E-06	58	182	3.01E-03	70	365	2.14E-05
Aroclor 1260	0.658	100	1.00	1.00	0.71	182	1.00E-06	58	182	8.10E-07	70	365	5.77E-09
VOCs													
1,1,1-trichloroethane		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,1-Dichloroethane		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,1-Dichloroethene		100	1.00	1.00	0.71	182	1.00E-06	58	182	0.00E+00			
1,2,4-Trichlorobenzene	52.331	100	1.00	1.00	0.71	182	1.00E-06	58	182	6.44E-05			
1,2-Dichlorobenzene	0.177	100	1.00	1.00	0.71	182	1.00E-06	58	182	2.18E-07			
1,3-Dichlorobenzene	2.338	100	1.00	1.00	0.71	182	1.00E-06	58	182	2.88E-06			
1,4-Dichlorobenzene	11.613	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.43E-05			
Carbon Tetrachloride	1.871	100	1.00	1.00	0.71	182	1.00E-06	58	182	2.30E-06	70	365	1.64E-08
Chlorobenzene	6.084	100	1.00	1.00	0.71	182	1.00E-06	58	182	7.49E-06			
Chloroform	0.135	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.67E-07			
cis-1,2-Dichloroethene	656.254	100	1.00	1.00	0.71	182	1.00E-06	58	182	8.08E-04			
Tetrachloroethene	4.382	100	1.00	1.00	0.71	182	1.00E-06	58	182	5.40E-06	70	365	3.84E-08
trans-1,2-Dichloroethene	0.829	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.02E-06			
Trichloroethene	1416.796	100	1.00	1.00	0.71	182	1.00E-06	58	182	1.74E-03	70	365	1.24E-05
Vinyl chloride	44.000	100	1.00	1.00	0.71	182	1.00E-06	58	182	5.42E-05	70	365	3.86E-07

## TABLE 21 AVERAGE DAILY DOSES--SKIN CONTACT WITH SOIL CONSTRUCTION WORKER SCENARIO - EAST SIDE OF AVX AVX FACILITY

SURFACE SOIL	Exposure Point													
	Concentration	$\mathbf{C_1}$	SA	AF	RAF	ED	EF	EP	$\mathbf{BW}$	AP	ADD	AP	$C_2$	LADD
CHEMICALS	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/event)	(events/d)	(d)	(kg)	( <b>d</b> )	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs														
Aroclor 1242	109.178	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	1.44E-04	70	365	1.03E-06
Aroclor 1248	87.075	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	1.15E-04	70	365	8.20E-07
Aroclor 1254	651.885	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	8.62E-04	70	365	6.14E-06
Aroclor 1260	19.248	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	2.55E-05	70	365	1.81E-07
VOCs														
1,1,1-trichloroethane		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,1-Dichloroethane		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,1-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,2,4-Trichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,2-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,3-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,4-Dichlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Carbon Tetrachloride		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
Chlorobenzene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Chloroform		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
cis-1,2-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Tetrachloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
Trichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00
Vinyl chloride		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00	70	365	0.00E+00

SUBSURFACE SOIL	Exposure Point													
	Concentration	$\mathbf{C_1}$	SA	AF	RAF	ED	EF	EP	$\mathbf{BW}$	AP	ADD	AP	$C_2$	LADD
CHEMICALS	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/event)	(events/d)	(d)	(kg)	( <b>d</b> )	(mg/kg/d)	(yr)	(d/yr)	(mg/kg/d)
PCBs														
Aroclor 1242	455.264	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	6.02E-04	70	365	4.29E-06
Aroclor 1248	17.978	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	2.38E-05	70	365	1.69E-07
Aroclor 1254	2444.786	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	3.23E-03	70	365	2.30E-05
Aroclor 1260	0.658	1.00E-06	5653	0.19	0.1	1	0.71	182	58	182	8.70E-07	70	365	6.20E-09
VOCs														
1,1,1-trichloroethane		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,1-Dichloroethane		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,1-Dichloroethene		1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	0.00E+00			
1,2,4-Trichlorobenzene	52.331	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	2.08E-05			
1,2-Dichlorobenzene	0.177	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	7.01E-08			
1,3-Dichlorobenzene	2.338	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	9.28E-07			
1,4-Dichlorobenzene	11.613	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	4.61E-06			
Carbon Tetrachloride	1.871	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	7.43E-07	70	365	5.29E-09
Chlorobenzene	6.084	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	2.41E-06			
Chloroform	0.135	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	5.37E-08			
cis-1,2-Dichloroethene	656.254	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	2.60E-04			
Tetrachloroethene	4.382	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	1.74E-06	70	365	1.24E-08
trans-1,2-Dichloroethene	0.829	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	3.29E-07			
Trichloroethene	1416.796	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	5.62E-04	70	365	4.01E-06
Vinyl chloride	44.000	1.00E-06	5653	0.19	0.03	1	0.71	182	58	182	1.75E-05	70	365	1.24E-07

### TABLE 22

### AVERAGE DAILY DOSES--INHALATION OF PARTICULATE MATTER CONSTRUCTION WORKER SCENARIO - EAST SIDE OF AVX

### AVX FACILITY

SURFACE SOIL	Exposure Point										GI	Lung	Total		GI	Lung	Total
	Concentration	RP	VR	RAF	$\mathbf{EF}$	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	ADD	ADD	AP	LADD	LADD	LADD
CHEMICALS	(mg/kg)	(mg/m³)	(m <sup>3</sup> /d)		(d/d)	(d)	(kg/mg)	(kg)	(d/yr)	(d)	(mg/kg/d)	(mg/kg/d)		(yr)	(mg/kg/d)	(mg/kg/d)	(mg/kg/d)
PCBs																	
Aroclor 1242	109.178	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	2.42E-06	8.07E-07	3.23E-06	70	1.72E-08	5.75E-09	2.30E-08
Aroclor 1248	87.075	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	1.93E-06	6.43E-07	2.57E-06	70	1.37E-08	4.58E-09	1.83E-08
Aroclor 1254	651.885	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	1.45E-05	4.82E-06	1.93E-05	70	1.03E-07	3.43E-08	1.37E-07
Aroclor 1260	19.248	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	4.27E-07	1.42E-07	5.69E-07	70	3.04E-09	1.01E-09	4.05E-09
VOCs																	
1,1,1-trichloroethane																	
1,1-Dichloroethane																	
1,1-Dichloroethene																	
1,2,4-Trichlorobenzene																	
1,2-Dichlorobenzene																	
1,3-Dichlorobenzene																	
1,4-Dichlorobenzene																	
Carbon Tetrachloride																	
Chlorobenzene																	
Chloroform																	
cis-1,2-Dichloroethene																	
Tetrachloroethene																	
trans-1,2-Dichloroethene																	
Trichloroethene																	
Vinyl chloride																	
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SUBSURFACE SOIL	Exposure Point										GI	Lung	Total		GI	Lung	Total
	Concentration	RP	VR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	ADD	ADD	AP	LADD	LADD	LADD
CHEMICALS	(mg/kg)	(mg/m³)	(m <sup>3</sup> /d)		(d/d)	(d)	(kg/mg)	(kg)	(d/yr)	(d)	(mg/kg/d)	(mg/kg/d)		(yr)	(mg/kg/d)	(mg/kg/d)	(mg/kg/d)
PCBs																	
Aroclor 1242	455.264	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	1.01E-05	3.36E-06	1.35E-05	70	7.19E-08	2.40E-08	9.59E-08
Aroclor 1248	17.978	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	3.99E-07	1.33E-07	5.31E-07	70	2.84E-09	9.46E-10	3.79E-09
Aroclor 1254	2444.786	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	5.42E-05	1.81E-05	7.23E-05	70	3.86E-07	1.29E-07	5.15E-07
Aroclor 1260	0.658	6.00E-02	20.0	1.00	0.71	182	1.00E-06	58	365	182	1.46E-08	4.86E-09	1.94E-08	70	1.04E-10	3.46E-11	1.38E-10
VOCs																	
1,1,1-trichloroethane																	
1,1-Dichloroethane																	
1,1-Dichloroethene																	
1,2,4-Trichlorobenzene	52.331																
1,2-Dichlorobenzene	0.177																
1,3-Dichlorobenzene	2.338																
1,4-Dichlorobenzene	11.613																
Carbon Tetrachloride	1.871																
Chlorobenzene	6.084																
Chloroform	0.135																
cis-1,2-Dichloroethene	656.254																
Tetrachloroethene	4.382																
trans-1,2-Dichloroethene	0.829																
Trichloroethene	1416.796																
Vinyl chloride	44.000																
	⅃																

# TABLE 23 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SOIL CURRENT EMPLOYEE SCENARIO - TITLEIST PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

EAST SIDE	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C}_{1}$	$\mathbf{BW}$	$\mathbf{C}_2$	AP	ADD	AP	LADD
COMPOUNDS	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs		_						-				
Aroclor 1242	0.349	50	1.00	120	27	1.00E-06	61.1	365	27	9.39E-08	70	3.62E-08
Aroclor 1248		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00
Aroclor 1254	92.713	50	1.00	120	27	1.00E-06	61.1	365	27	2.49E-05	70	9.62E-06
Aroclor 1260		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,1-Dichloroethane		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,1-Dichloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,2-Dichlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,3-Dichlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,4-Dichlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
Carbon Tetrachloride		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
Chloroform		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
Tetrachloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
Trichloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00

WEST SIDE	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
COMPOUNDS	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs												
Aroclor 1242	0.021	50	1.00	120	27	1.00E-06	61.1	365	27	5.61E-09	70	2.16E-09
Aroclor 1248	4.304	50	1.00	120	27	1.00E-06	61.1	365	27	1.16E-06	70	4.47E-07
Aroclor 1254	6.799	50	1.00	120	27	1.00E-06	61.1	365	27	1.83E-06	70	7.06E-07
Aroclor 1260	0.695	50	1.00	120	27	1.00E-06	61.1	365	27	1.87E-07	70	7.21E-08
VOCs												
1,1,1-trichloroethane		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,1-Dichloroethane		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,1-Dichloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,2-Dichlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,3-Dichlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
1,4-Dichlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
Carbon Tetrachloride		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
Chloroform		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
Tetrachloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00		
Trichloroethene		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	120	27	1.00E-06	61.1	365	27	0.00E+00	70	0.00E+00

# TABLE 24 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL CURRENT EMPLOYEE SCENARIO - TITLEIST PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

EAST SIDE	Exposure Point												
COMPOUNDS	Concentration (mg/kg)	C1 (kg/mg)	SA (cm²/d)	AF (mg/cm <sup>2</sup> )	RAF	EF (d/yr)	EP (vr)	BW (kg)	C2 (d/yr)	AP (vr)	ADD (mg/kg/d)	AP (vr)	LADD (mg/kg/d)
PCBs							* /	. 0/			· 0 0	* /	
Aroclor 1242	0.349	1.00E-06	3473	0.026	0.1	120	27	61.1	365	27	1.70E-08	70	6.54E-09
Aroclor 1248		1.00E-06	3473	0.026	0.1	120	27	61.1	365	27	0.00E+00	70	0.00E+00
Aroclor 1254	92.713	1.00E-06	3473	0.026	0.1	120	27	61.1	365	27	4.50E-06	70	1.74E-06
Aroclor 1260		1.00E-06	3473	0.026	0.1	120	27	61.1	365	27	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,1-Dichloroethane		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,1-Dichloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
Carbon Tetrachloride		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
Chloroform		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
Tetrachloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
Trichloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00	70	0.00E+00
WEST SIDE	Exposure Point												
GOL MOLINING	Concentration	C1	SA	AF	RAF	EF	EP	BW	C2	AP	ADD	AP	LADD
COMPOUNDS	(mg/kg)	(kg/mg)	(cm²/d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													

WEST SIDE	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
COMPOUNDS	(mg/kg)	(kg/mg)	(cm²/d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242	0.021	1.00E-06	3473	0.026	0.1	120	27	61.1	365	27	1.01E-09	70	3.91E-10
Aroclor 1248	4.304	1.00E-06	3473	0.026	0.1	120	27	61.1	365	27	2.09E-07	70	8.07E-08
Aroclor 1254	6.799	1.00E-06	3473	0.026	0.1	120	27	61.1	365	27	3.30E-07	70	1.27E-07
Aroclor 1260	0.695	1.00E-06	3473	0.026	0.1	120	27	61.1	365	27	3.38E-08	70	1.30E-08
VOCs													
1,1,1-trichloroethane		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,1-Dichloroethane		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,1-Dichloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
Carbon Tetrachloride		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
Chloroform		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
Tetrachloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00		
Trichloroethene		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	3473	0.026	0.03	120	27	61.1	365	27	0.00E+00	70	0.00E+00

# TABLE 25 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SOIL TRESPASSER SCENARIO - EAST SIDE OF TITLEIST PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

OLDER CHILD	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C}_{1}$	$\mathbf{BW}$	С,	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs		_		-				-				
Aroclor 1242	0.349	50	1.00	84	11	1.00E-06	42	365	11	9.56E-08	70	1.50E-08
Aroclor 1248		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00
Aroclor 1254	92.713	50	1.00	84	11	1.00E-06	42	365	11	2.54E-05	70	3.99E-06
Aroclor 1260		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,1-Dichloroethane		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,1-Dichloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,2-Dichlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,3-Dichlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,4-Dichlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
Carbon Tetrachloride		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
Chloroform		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
Tetrachloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
Trichloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00

ADULT	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs												
Aroclor 1242	0.349	50	1.00	84	12	1.00E-06	61.1	365	12	6.57E-08	70	1.13E-08
Aroclor 1248		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00
Aroclor 1254	92.713	50	1.00	84	12	1.00E-06	61.1	365	12	1.75E-05	70	2.99E-06
Aroclor 1260		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,1-Dichloroethane		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,1-Dichloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,2-Dichlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,3-Dichlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,4-Dichlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
Carbon Tetrachloride		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
Chloroform		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
Tetrachloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
Trichloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00

# TABLE 26 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL TRESPASSER SCENARIO - EAST SIDE OF TITLEIST PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

OLDER CHILD	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242	0.349	1.00E-06	2928	0.14	0.1	84	11	42	365	11	7.84E-08	70	1.23E-08
Aroclor 1248		1.00E-06	2928	0.14	0.1	84	11	42	365	11	0.00E+00	70	0.00E+00
Aroclor 1254	92.713	1.00E-06	2928	0.14	0.1	84	11	42	365	11	2.08E-05	70	3.27E-06
Aroclor 1260		1.00E-06	2928	0.14	0.1	84	11	42	365	11	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,1-Dichloroethane		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,1-Dichloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
Carbon Tetrachloride		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
Chloroform		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
cis-1.2-Dichloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
Tetrachloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00	70	0.00E+00
trans-1.2-Dichloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
Trichloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00	70	0.00E+00
ADULT	Exposure Point												
ADOLI	Concentration	C1	SA	AF	RAF	EF	EP	BW	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )	IVAT.	(d/yr)	(yr)	(kg)	(d/vr)	(vr)	(mg/kg/d)	(vr)	(mg/kg/d)
PCBs	( <b>i</b> g/ <b>i</b> g/	\ <del>B</del> /B/	(	( 8 )		(, j - )	(J-)	\- <b>8</b> /	( 3 - )	()-/	( <b>g</b> , <b>g</b> , <b></b>	(J-)	( <del>-</del> 8/ <b></b> 8/0-)
Aroclor 1242	0.349	1.00E-06	3107	0.13	0.1	84	12	61.1	365	12	5.31E-08	70	9.10E-09
Aroclor 1248	1	1.00F-06	3107	0.13	0.1	84	12	61.1	365	12	$0.00E \pm 00$	70	$0.00E \pm 00$

ADULT	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm²/d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242	0.349	1.00E-06	3107	0.13	0.1	84	12	61.1	365	12	5.31E-08	70	9.10E-09
Aroclor 1248		1.00E-06	3107	0.13	0.1	84	12	61.1	365	12	0.00E+00	70	0.00E+00
Aroclor 1254	92.713	1.00E-06	3107	0.13	0.1	84	12	61.1	365	12	1.41E-05	70	2.42E-06
Aroclor 1260		1.00E-06	3107	0.13	0.1	84	12	61.1	365	12	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,1-Dichloroethane		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,1-Dichloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
Carbon Tetrachloride		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
Chloroform		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
Tetrachloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
Trichloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00	70	0.00E+00

# TABLE 27 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SOIL TRESPASSER SCENARIO - WEST SIDE OF TITLEIST PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

OLDER CHILD	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$\mathbf{C}_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs		_		-				-	-			
Aroclor 1242	0.021	50	1.00	84	11	1.00E-06	42	365	11	5.71E-09	70	8.97E-10
Aroclor 1248	4.304	50	1.00	84	11	1.00E-06	42	365	11	1.18E-06	70	1.85E-07
Aroclor 1254	6.799	50	1.00	84	11	1.00E-06	42	365	11	1.86E-06	70	2.93E-07
Aroclor 1260	0.695	50	1.00	84	11	1.00E-06	42	365	11	1.90E-07	70	2.99E-08
VOCs												
1,1,1-trichloroethane		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,1-Dichloroethane		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,1-Dichloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,2-Dichlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,3-Dichlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
1,4-Dichlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
Carbon Tetrachloride		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
Chloroform		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
Tetrachloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00		
Trichloroethene		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	84	11	1.00E-06	42	365	11	0.00E+00	70	0.00E+00

ADULT	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$\mathbf{C}_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs												
Aroclor 1242	0.021	50	1.00	84	12	1.00E-06	61.1	365	12	3.92E-09	70	6.73E-10
Aroclor 1248	4.304	50	1.00	84	12	1.00E-06	61.1	365	12	8.11E-07	70	1.39E-07
Aroclor 1254	6.799	50	1.00	84	12	1.00E-06	61.1	365	12	1.28E-06	70	2.19E-07
Aroclor 1260	0.695	50	1.00	84	12	1.00E-06	61.1	365	12	1.31E-07	70	2.24E-08
VOCs												
1,1,1-trichloroethane		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,1-Dichloroethane		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,1-Dichloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,2-Dichlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,3-Dichlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
1,4-Dichlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
Carbon Tetrachloride		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
Chloroform		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
Tetrachloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00		
Trichloroethene		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	84	12	1.00E-06	61.1	365	12	0.00E+00	70	0.00E+00

# TABLE 28 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL TRESPASSER SCENARIO - WEST SIDE OF TITLEIST PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

OLDER CHILD	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs						-		_					
Aroclor 1242	0.021	1.00E-06	2928	0.14	0.1	84	11	42	365	11	4.68E-09	70	7.36E-10
Aroclor 1248	4.304	1.00E-06	2928	0.14	0.1	84	11	42	365	11	9.67E-07	70	1.52E-07
Aroclor 1254	6.799	1.00E-06	2928	0.14	0.1	84	11	42	365	11	1.53E-06	70	2.40E-07
Aroclor 1260	0.695	1.00E-06	2928	0.14	0.1	84	11	42	365	11	1.56E-07	70	2.45E-08
VOCs													
1,1,1-trichloroethane		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,1-Dichloroethane		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,1-Dichloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
Carbon Tetrachloride		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
Chloroform		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
Tetrachloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00		
Trichloroethene		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	2928	0.14	0.03	84	11	42	365	11	0.00E+00	70	0.00E+00

ADULT	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs									-				
Aroclor 1242	0.021	1.00E-06	3107	0.13	0.1	84	12	61.1	365	12	3.17E-09	70	5.44E-10
Aroclor 1248	4.304	1.00E-06	3107	0.13	0.1	84	12	61.1	365	12	6.55E-07	70	1.12E-07
Aroclor 1254	6.799	1.00E-06	3107	0.13	0.1	84	12	61.1	365	12	1.03E-06	70	1.77E-07
Aroclor 1260	0.695	1.00E-06	3107	0.13	0.1	84	12	61.1	365	12	1.06E-07	70	1.81E-08
VOCs													
1,1,1-trichloroethane		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,1-Dichloroethane		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,1-Dichloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
Carbon Tetrachloride		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
Chloroform		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
Tetrachloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00		
Trichloroethene		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	3107	0.13	0.03	84	12	61.1	365	12	0.00E+00	70	0.00E+00
<u>I</u>													

## TABLE 29 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SURFACE SOIL FUTURE RESIDENTIAL SCENARIO -EAST SIDE OF TITLEIST PROPERTY AVX FACILITY

Exposure Point											
Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
	_		-				-	-			
0.349	100	1.00	150	7	1.00E-06	17.0	365	7	8.44E-07	70	8.44E-08
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
92.713	100	1.00	150	7	1.00E-06	17.0	365	7	2.24E-04	70	2.24E-05
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
		1.00									
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
	100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
	Concentration (mg/kg) 0.349	Concentration (mg/kg) IR (mg/d)  0.349 100 100 92.713 100 100 100 100 100 100 100 100 100 100	Concentration (mg/kg)         IR (mg/d)         RAF           0.349         100         1.00           100         1.00         1.00           92.713         100         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           100         1.00         1.00           1.00         1.00         1.00	Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)           0.349         100         1.00         150           100         1.00         150         150           92.713         100         1.00         150           100	Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (yr)           0.349         100         1.00         150         7           100         1.00         150         7           92.713         100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7           100         1.00         150         7 </td <td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (dyr)         EP (kg/mg)         C1 (kg/mg)           0.349         100         1.00         150         7         1.00E-06           92.713         100         1.00         150         7         1.00E-06           92.713         100         1.00         150         7         1.00E-06           100         1.00         150         7         1.00E-06<!--</td--><td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (kg/mg)         C1 (kg/mg)         BW (kg)           0.349         100         1.00         150         7         1.00E-06         17.0           92.713         100         1.00         150         7         1.00E-06         17.0           100         1.00         150         7         1.00E-06</td><td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (kg/mg)         C1 (kg/mg)         BW (kg)         C2 (d/yr)           0.349         100         1.00         150         7         1.00E-06         17.0         365           92.713         100         1.00         150         7         1.00E-06         17.0         365           92.713         100         1.00         150         7         1.00E-06         17.0         365           100         1.00         150         7         1.00E-06         17.0         365</td><td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (kg/mg)         C1 (kg/mg)         BW (kg)         C2 (d/yr)         AP (yr)           0.349         100         1.00         150         7         1.00E-06         17.0         365         7           92.713         100         1.00         150         7         1.00E-06         17.0         365         7           100         1.00         150         7         1.00E-06         17.0         365         7</td><td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         C1 (kg/mg)         BW (kg)         C2 (d/yr)         AP (yr)         ADD (mg/kg/d)           0.349         100         1.00         150         7         1.00E-06         17.0         365         7         8.44E-07           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           92.713         100         1.00         150         7         1.00E-06         17.0         365         7         2.24E-04           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00</td><td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         C1 (kg/mg)         BW (kg)         C2 (d/yr)         AP (yr)         ADD (mg/kg/d)         AP (yr)           0.349         100         1.00         150         7         1.00E-06         17.0         365         7         8.44E-07         70           92.713         100         1.00         150         7         1.00E-06         17.0         365         7         2.24E-04         70           100         1.00         1.50         7         1.00E-06         17.0         365         7         2.24E-04         70           92.713         100         1.00         150         7         1.00E-06         17.0         365         7         2.24E-04         70           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00         70           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00         70           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00         70         1.00E+00</td></td>	Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (dyr)         EP (kg/mg)         C1 (kg/mg)           0.349         100         1.00         150         7         1.00E-06           92.713         100         1.00         150         7         1.00E-06           92.713         100         1.00         150         7         1.00E-06           100         1.00         150         7         1.00E-06 </td <td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (kg/mg)         C1 (kg/mg)         BW (kg)           0.349         100         1.00         150         7         1.00E-06         17.0           92.713         100         1.00         150         7         1.00E-06         17.0           100         1.00         150         7         1.00E-06</td> <td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (kg/mg)         C1 (kg/mg)         BW (kg)         C2 (d/yr)           0.349         100         1.00         150         7         1.00E-06         17.0         365           92.713         100         1.00         150         7         1.00E-06         17.0         365           92.713         100         1.00         150         7         1.00E-06         17.0         365           100         1.00         150         7         1.00E-06         17.0         365</td> <td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (kg/mg)         C1 (kg/mg)         BW (kg)         C2 (d/yr)         AP (yr)           0.349         100         1.00         150         7         1.00E-06         17.0         365         7           92.713         100         1.00         150         7         1.00E-06         17.0         365         7           100         1.00         150         7         1.00E-06         17.0         365         7</td> <td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         C1 (kg/mg)         BW (kg)         C2 (d/yr)         AP (yr)         ADD (mg/kg/d)           0.349         100         1.00         150         7         1.00E-06         17.0         365         7         8.44E-07           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           92.713         100         1.00         150         7         1.00E-06         17.0         365         7         2.24E-04           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00</td> <td>Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         C1 (kg/mg)         BW (kg)         C2 (d/yr)         AP (yr)         ADD (mg/kg/d)         AP (yr)           0.349         100         1.00         150         7         1.00E-06         17.0         365         7         8.44E-07         70           92.713         100         1.00         150         7         1.00E-06         17.0         365         7         2.24E-04         70           100         1.00         1.50         7         1.00E-06         17.0         365         7         2.24E-04         70           92.713         100         1.00         150         7         1.00E-06         17.0         365         7         2.24E-04         70           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00         70           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00         70           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00         70         1.00E+00</td>	Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (kg/mg)         C1 (kg/mg)         BW (kg)           0.349         100         1.00         150         7         1.00E-06         17.0           92.713         100         1.00         150         7         1.00E-06         17.0           100         1.00         150         7         1.00E-06	Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (kg/mg)         C1 (kg/mg)         BW (kg)         C2 (d/yr)           0.349         100         1.00         150         7         1.00E-06         17.0         365           92.713         100         1.00         150         7         1.00E-06         17.0         365           92.713         100         1.00         150         7         1.00E-06         17.0         365           100         1.00         150         7         1.00E-06         17.0         365	Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         EP (kg/mg)         C1 (kg/mg)         BW (kg)         C2 (d/yr)         AP (yr)           0.349         100         1.00         150         7         1.00E-06         17.0         365         7           92.713         100         1.00         150         7         1.00E-06         17.0         365         7           100         1.00         150         7         1.00E-06         17.0         365         7	Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         C1 (kg/mg)         BW (kg)         C2 (d/yr)         AP (yr)         ADD (mg/kg/d)           0.349         100         1.00         150         7         1.00E-06         17.0         365         7         8.44E-07           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           92.713         100         1.00         150         7         1.00E-06         17.0         365         7         2.24E-04           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00	Concentration (mg/kg)         IR (mg/d)         RAF (d/yr)         EF (d/yr)         C1 (kg/mg)         BW (kg)         C2 (d/yr)         AP (yr)         ADD (mg/kg/d)         AP (yr)           0.349         100         1.00         150         7         1.00E-06         17.0         365         7         8.44E-07         70           92.713         100         1.00         150         7         1.00E-06         17.0         365         7         2.24E-04         70           100         1.00         1.50         7         1.00E-06         17.0         365         7         2.24E-04         70           92.713         100         1.00         150         7         1.00E-06         17.0         365         7         2.24E-04         70           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00         70           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00         70           100         1.00         150         7         1.00E-06         17.0         365         7         0.00E+00         70         1.00E+00

ADULT	Exposure Point					•						
	Concentration	IR	RAF	EF	EP	$\mathbf{C}_1$	$\mathbf{BW}$	$\mathbb{C}_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs		_						365	-			
Aroclor 1242	0.349	50	1.00	150	23	1.00E-06	52.16	365	23	1.38E-07	70	4.52E-08
Aroclor 1248		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Aroclor 1254	92.713	50	1.00	150	23	1.00E-06	52.16	365	23	3.65E-05	70	1.20E-05
Aroclor 1260		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,3-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,4-Dichlorobenzene			1.00									
Carbon Tetrachloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Chloroform		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Tetrachloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Trichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00

## TABLE 30 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SURFACE SOIL FUTURE RESIDENTIAL SCENARIO -EAST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs				_		•							
Aroclor 1242	0.349	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	7.18E-07	70	7.18E-08
Aroclor 1248		1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Aroclor 1254	92.713	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	1.91E-04	70	1.91E-05
Aroclor 1260		1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Carbon Tetrachloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Chloroform		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Tetrachloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Trichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00

ADULT	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242	0.349	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	1.87E-07	70	6.14E-08
Aroclor 1248		1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Aroclor 1254	92.713	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	4.96E-05	70	1.63E-05
Aroclor 1260		1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Carbon Tetrachloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Chloroform		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Tetrachloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Trichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00

## TABLE 31 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO -EAST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs				•								
Aroclor 1242	0.194	100	1.00	150	7	1.00E-06	17.0	365	7	4.70E-07	70	4.70E-08
Aroclor 1248		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Aroclor 1254	22.645	100	1.00	150	7	1.00E-06	17.0	365	7	5.47E-05	70	5.47E-06
Aroclor 1260		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Carbon Tetrachloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Chloroform		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
cis-1.2-Dichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Tetrachloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene			1.00									
Trichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Vinyl chloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00

ADULT	Exposure Point					•						
	Concentration	IR	RAF	EF	EP	$\mathbf{C}_1$	$\mathbf{BW}$	$\mathbb{C}_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs				•				365				
Aroclor 1242	0.194	50	1.00	150	23	1.00E-06	52.16	365	23	7.65E-08	70	2.51E-08
Aroclor 1248		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Aroclor 1254	22.645	50	1.00	150	23	1.00E-06	52.16	365	23	8.92E-06	70	2.93E-06
Aroclor 1260		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,3-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,4-Dichlorobenzene			1.00									
Carbon Tetrachloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Chloroform		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Tetrachloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Trichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00

### TABLE 32 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO -EAST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm²/d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242	0.194	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	4.00E-07	70	4.00E-08
Aroclor 1248		1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Aroclor 1254	22.645	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	4.66E-05	70	4.66E-06
Aroclor 1260		1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Carbon Tetrachloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Chloroform		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Tetrachloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Trichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00

ADULT	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs				_		-							
Aroclor 1242	0.194	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	1.04E-07	70	3.42E-08
Aroclor 1248		1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Aroclor 1254	22.645	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	1.21E-05	70	3.98E-06
Aroclor 1260		1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Carbon Tetrachloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Chloroform		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Tetrachloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Trichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00

## TABLE 33 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SURFACE SOIL FUTURE RESIDENTIAL SCENARIO -WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs												
Aroclor 1242	0.021	100	1.00	150	7	1.00E-06	17.0	365	7	5.04E-08	70	5.04E-09
Aroclor 1248	4.304	100	1.00	150	7	1.00E-06	17.0	365	7	1.04E-05	70	1.04E-06
Aroclor 1254	6.799	100	1.00	150	7	1.00E-06	17.0	365	7	1.64E-05	70	1.64E-06
Aroclor 1260	0.695	100	1.00	150	7	1.00E-06	17.0	365	7	1.68E-06	70	1.68E-07
VOCs												
1,1,1-trichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Carbon Tetrachloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Chloroform		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
cis-1,2-Dichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Tetrachloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene			1.00									
Trichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Vinyl chloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00

ADULT	Exposure Point			•			_	•	-		-	
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$\mathbf{C_2}$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs								365				
Aroclor 1242	0.021	50	1.00	150	23	1.00E-06	52.16	365	23	8.21E-09	70	2.70E-09
Aroclor 1248	4.304	50	1.00	150	23	1.00E-06	52.16	365	23	1.70E-06	70	5.57E-07
Aroclor 1254	6.799	50	1.00	150	23	1.00E-06	52.16	365	23	2.68E-06	70	8.80E-07
Aroclor 1260	0.695	50	1.00	150	23	1.00E-06	52.16	365	23	2.74E-07	70	8.99E-08
VOCs												
1,1,1-trichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,3-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,4-Dichlorobenzene			1.00									
Carbon Tetrachloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Chloroform		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Tetrachloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Trichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00

## TABLE 34 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SURFACE SOIL FUTURE RESIDENTIAL SCENARIO -WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs				_		•							
Aroclor 1242	0.021	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	4.29E-08	70	4.29E-09
Aroclor 1248	4.304	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	8.85E-06	70	8.85E-07
Aroclor 1254	6.799	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	1.40E-05	70	1.40E-06
Aroclor 1260	0.695	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	1.43E-06	70	1.43E-07
VOCs													
1,1,1-trichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Carbon Tetrachloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Chloroform		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Tetrachloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Trichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00

ADULT	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242	0.021	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	1.12E-08	70	3.67E-09
Aroclor 1248	4.304	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	2.30E-06	70	7.57E-07
Aroclor 1254	6.799	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	3.64E-06	70	1.20E-06
Aroclor 1260	0.695	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	3.72E-07	70	1.22E-07
VOCs													
1,1,1-trichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Carbon Tetrachloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Chloroform		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Tetrachloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Trichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
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## TABLE 35 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO -WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD	Exposure Point	•		•		•						•
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs				•				•				
Aroclor 1242		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Aroclor 1248		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Aroclor 1254	0.038	100	1.00	150	7	1.00E-06	17.0	365	7	9.28E-08	70	9.28E-09
Aroclor 1260		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Carbon Tetrachloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Chloroform		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
cis-1,2-Dichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Tetrachloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene			1.00									
Trichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Vinyl chloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00

ADULT	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs								365				
Aroclor 1242		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Aroclor 1248		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Aroclor 1254	0.038	50	1.00	150	23	1.00E-06	52.16	365	23	1.51E-08	70	4.97E-09
Aroclor 1260		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,3-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,4-Dichlorobenzene			1.00									
Carbon Tetrachloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Chloroform		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Tetrachloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Trichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00

## TABLE 36 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO -WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242		1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Aroclor 1248		1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Aroclor 1254	0.038	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	7.90E-08	70	7.90E-09
Aroclor 1260		1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Carbon Tetrachloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Chloroform		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
cis-1.2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Tetrachloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
trans-1.2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Trichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
/						-20		-7.0	2.50	*		. 0	
ADULT	Exposure Point												

ADULT	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242		1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Aroclor 1248		1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Aroclor 1254	0.038	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	2.06E-08	70	6.75E-09
Aroclor 1260		1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Carbon Tetrachloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Chloroform		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Tetrachloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Trichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00

## TABLE 37 AVERAGE DAILY EXPOSURE CONCENTRATIONS -- INHALATION OF INDOOR AIR CURRENT COMMERIAL AND FUTURE RESIDENTIAL SCENARIOS - PRECIX PROPERTY AVX FACILITY

CURRENT EMPLOYEES	Exposure Point Concentration (ug/m³)	EF (hr/d)	ED (d/y)	EP (yr)	C <sub>1</sub> (d/hr)	C <sub>2</sub> (yr/d))	AP (yr)	CADE (mg/m³)	AP (yr)	LADE (ug/m³)
VOCs										
Tetrachloroethene	1.95	8	250	27	0.042	0.003	27	4.45E-04	70	1.72E-01
Trichloroethene	4.675	8	250	27	0.042	0.003	27	1.07E-03	70	4.12E-01

FUTURE	Exposure Point									
RESIDENTS	Concentration	EF	ED	EP	$\mathbf{C_1}$	$C_2$	AP	CADE	AP	LADE
	(ug/m <sup>3</sup> )	(hr/d)	(d/y)	(yr)	(d/hr)	(yr/d))	(yr)	$(mg/m^3)$	(yr)	(ug/m <sup>3</sup> )
VOCs										
cis-1,2-Dichloroethene	0.35	24	365	30	0.042	0.003	30	3.46E-04		
Tetrachloroethene	2.26	24	365	30	0.042	0.003	30	2.26E-03	70	9.70E-01
Trichloroethene	68.22	24	365	30	0.042	0.003	30	6.82E-02	70	2.92E+01

## TABLE 38 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SURFACE SOIL FUTURE RESIDENTIAL SCENARIO -PRECIX PROPERTY AVX FACILITY

CHILD	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_i}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs												
Aroclor 1242	0.050	100	1.00	150	7	1.00E-06	17.0	365	7	1.20E-07	70	1.20E-08
Aroclor 1248	0.777	100	1.00	150	7	1.00E-06	17.0	365	7	1.88E-06	70	1.88E-07
Aroclor 1254	5.280	100	1.00	150	7	1.00E-06	17.0	365	7	1.28E-05	70	1.28E-06
Aroclor 1260	0.030	100	1.00	150	7	1.00E-06	17.0	365	7	7.37E-08	70	7.37E-09
VOCs												
1,1,1-trichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Carbon Tetrachloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Chloroform		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
cis-1,2-Dichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Tetrachloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene			1.00									
Trichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Vinyl chloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
' ' ' ' '					·			- /-				

ADULT	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C_1}$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs								365	-			
Aroclor 1242	0.050	50	1.00	150	23	1.00E-06	52.16	365	23	1.96E-08	70	6.44E-09
Aroclor 1248	0.777	50	1.00	150	23	1.00E-06	52.16	365	23	3.06E-07	70	1.01E-07
Aroclor 1254	5.280	50	1.00	150	23	1.00E-06	52.16	365	23	2.08E-06	70	6.83E-07
Aroclor 1260	0.030	50	1.00	150	23	1.00E-06	52.16	365	23	1.20E-08	70	3.95E-09
VOCs												
1,1,1-trichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,3-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,4-Dichlorobenzene			1.00									
Carbon Tetrachloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Chloroform		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
cis-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Tetrachloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Trichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00

# TABLE 39 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SURFACE SOIL FUTURE RESIDENTIAL SCENARIO -PRECIX PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

CHILD	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm²/d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242	0.050	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	1.02E-07	70	1.02E-08
Aroclor 1248	0.777	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	1.60E-06	70	1.60E-07
Aroclor 1254	5.280	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	1.09E-05	70	1.09E-06
Aroclor 1260	0.030	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	6.27E-08	70	6.27E-09
VOCs													
1,1,1-trichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Carbon Tetrachloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Chloroform		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
cis-1.2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Tetrachloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Trichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00

ADULT	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs				_		-							
Aroclor 1242	0.050	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	2.66E-08	70	8.75E-09
Aroclor 1248	0.777	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	4.16E-07	70	1.37E-07
Aroclor 1254	5.280	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	2.83E-06	70	9.29E-07
Aroclor 1260	0.030	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	1.63E-08	70	5.36E-09
VOCs													
1,1,1-trichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Carbon Tetrachloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Chloroform		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
cis-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Tetrachloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Trichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Vinyl chloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00

### TABLE 40 AVERAGE DAILY DOSES -- INCIDENTAL INGESTION OF SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO -PRECIX PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE

### NEW BEDFORD, MASSACHUSETTS

CHILD	Exposure Point											
	Concentration	IR	RAF	EF	EP	$\mathbf{C}_1$	$\mathbf{BW}$	$\mathbb{C}_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs		_						-	-			
Aroclor 1242		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Aroclor 1248	0.013	100	1.00	150	7	1.00E-06	17.0	365	7	3.06E-08	70	3.06E-09
Aroclor 1254	0.488	100	1.00	150	7	1.00E-06	17.0	365	7	1.18E-06	70	1.18E-07
Aroclor 1260		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethane		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,1-Dichloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Carbon Tetrachloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
Chloroform		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00		
cis-1,2-Dichloroethene	0.138	100	1.00	150	7	1.00E-06	17.0	365	7	3.33E-07		
Tetrachloroethene		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene			1.00									
Trichloroethene	0.628	100	1.00	150	7	1.00E-06	17.0	365	7	1.52E-06	70	1.52E-07
Vinyl chloride		100	1.00	150	7	1.00E-06	17.0	365	7	0.00E+00	70	0.00E+00

ADULT	Exposure Point											
	Concentration	IR	RAF	EF	EP	$C_1$	$\mathbf{BW}$	$C_2$	AP	ADD	AP	LADD
	(mg/kg)	(mg/d)		(d/yr)	(yr)	(kg/mg)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs		_						365	-			
Aroclor 1242		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Aroclor 1248	0.013	50	1.00	150	23	1.00E-06	52.16	365	23	4.98E-09	70	1.64E-09
Aroclor 1254	0.488	50	1.00	150	23	1.00E-06	52.16	365	23	1.92E-07	70	6.31E-08
Aroclor 1260		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
VOCs												
1,1,1-trichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethane		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,1-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2,4-Trichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,2-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,3-Dichlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
1,4-Dichlorobenzene			1.00									
Carbon Tetrachloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Chloroform		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
cis-1,2-Dichloroethene	0.138	50	1.00	150	23	1.00E-06	52.16	365	23	5.42E-08		
Tetrachloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00		
Trichloroethene	0.628	50	1.00	150	23	1.00E-06	52.16	365	23	2.47E-07	70	8.12E-08
Vinyl chloride		50	1.00	150	23	1.00E-06	52.16	365	23	0.00E+00	70	0.00E+00

# TABLE 41 AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO -PRECIX PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

CHILD	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm²/d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs									-				
Aroclor 1242		1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Aroclor 1248	0.013	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	2.60E-08	70	2.60E-09
Aroclor 1254	0.488	1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	1.00E-06	70	1.00E-07
Aroclor 1260		1.00E-06	2431	0.35	0.1	150	7	17.0	365	7	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethane		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,1-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Carbon Tetrachloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Chloroform		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
cis-1,2-Dichloroethene	0.138	1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	8.49E-08		
Tetrachloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00		
Trichloroethene	0.628	1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	3.87E-07	70	3.87E-08
Vinyl chloride		1.00E-06	2431	0.35	0.03	150	7	17.0	365	7	0.00E+00	70	0.00E+00

ADULT	Exposure Point												
	Concentration	C1	SA	AF	RAF	EF	EP	$\mathbf{BW}$	C2	AP	ADD	AP	LADD
	(mg/kg)	(kg/mg)	(cm <sup>2</sup> /d)	(mg/cm <sup>2</sup> )		(d/yr)	(yr)	(kg)	(d/yr)	(yr)	(mg/kg/d)	(yr)	(mg/kg/d)
PCBs													
Aroclor 1242		1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Aroclor 1248	0.013	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	6.77E-09	70	2.22E-09
Aroclor 1254	0.488	1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	2.61E-07	70	8.58E-08
Aroclor 1260		1.00E-06	5227	0.13	0.1	150	23	52.2	365	23	0.00E+00	70	0.00E+00
VOCs													
1,1,1-trichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethane		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,1-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2,4-Trichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,2-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,3-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
1,4-Dichlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Carbon Tetrachloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
Chlorobenzene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Chloroform		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
cis-1,2-Dichloroethene	0.138	1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	2.21E-08		
Tetrachloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00
trans-1,2-Dichloroethene		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00		
Trichloroethene	0.628	1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	1.01E-07	70	3.31E-08
Vinyl chloride		1.00E-06	5227	0.13	0.03	150	23	52.2	365	23	0.00E+00	70	0.00E+00

### TABLE 42 SUBCHRONIC HAZARD INDICES CONSTRUCTION WORKER SCENARIO -WEST SIDE OF AVX AVX FACILITY

SURFACE SOIL		INGESTION		DE	RMAL CONTA	ACT	INHALA	TION OF PARTI	CULATES	Total
	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs										
Aroclor 1242	4.25E-07	5.0E-05	8.51E-03	4.57E-07	5.0E-05	9.14E-03	1.02E-08	5.0E-05	2.04E-04	1.78E-02
Aroclor 1248	4.53E-06	5.0E-05	9.07E-02	4.87E-06	5.0E-05	9.74E-02	1.09E-07	5.0E-05	2.18E-03	1.90E-01
Aroclor 1254	1.92E-05	5.0E-05	3.84E-01	2.06E-05	5.0E-05	4.12E-01	4.61E-07	5.0E-05	9.21E-03	8.06E-01
Aroclor 1260	8.73E-08	5.0E-05	1.75E-03	9.38E-08	5.0E-05	1.88E-03	2.09E-09	5.0E-05	4.19E-05	3.66E-03
VOCs										
1,1,1-trichloroethane	0.00E+00	7.0E+00	0.00E+00	0.00E+00	7.0E+00	0.00E+00				0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00				0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00				0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00				0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
Carbon Tetrachloride	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00				0.00E+00
Chlorobenzene	0.00E+00	7.0E-02	0.00E+00	0.00E+00	7.0E-02	0.00E+00				0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00				0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00				0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00				0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00				0.00E+00
Trichloroethene	1.18E-09	5.0E-04	2.36E-06	3.81E-10	5.0E-04	7.62E-07				3.13E-06
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00				0.00E+00
			4.85E-01			5.21E-01			1.16E-02	1.E+00

SUBSURFACE SOIL							INHALATION OF PARTICULATES			Total
	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs										
Aroclor 1242	3.41E-05	5.0E-05	6.82E-01	3.66E-05	5.0E-05	7.32E-01	8.18E-07	5.0E-05	1.64E-02	1.43E+00
Aroclor 1248	3.77E-06	5.0E-05	7.53E-02	4.04E-06	5.0E-05	8.09E-02	9.04E-08	5.0E-05	1.81E-03	1.58E-01
Aroclor 1254	7.30E-06	5.0E-05	1.46E-01	7.84E-06	5.0E-05	1.57E-01	1.75E-07	5.0E-05	3.51E-03	3.06E-01
Aroclor 1260	3.03E-07	5.0E-05	6.06E-03	3.25E-07	5.0E-05	6.51E-03	7.27E-09	5.0E-05	1.45E-04	1.27E-02
VOCs										
1,1,1-trichloroethane	0.00E+00	7.0E+00	0.00E+00	0.00E+00	7.0E+00	0.00E+00				0.00E+00
1,1-Dichloroethane	1.25E-09	2.0E+00	6.25E-10	4.03E-10	2.0E+00	2.01E-10				8.26E-10
1,1-Dichloroethene	8.40E-10	5.0E-02	1.68E-08	2.71E-10	5.0E-02	5.41E-09				2.22E-08
1,2,4-Trichlorobenzene	1.38E-07	9.0E-02	1.53E-06	4.44E-08	9.0E-02	4.94E-07				2.03E-06
1,2-Dichlorobenzene	1.27E-07	9.0E-01	1.41E-07	4.10E-08	9.0E-01	4.55E-08				1.87E-07
1,3-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
1,4-Dichlorobenzene	1.19E-07	9.0E-01	1.32E-07	3.83E-08	9.0E-01	4.26E-08				1.75E-07
Carbon Tetrachloride	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00				0.00E+00
Chlorobenzene	4.50E-08	7.0E-02	6.43E-07	1.45E-08	7.0E-02	2.07E-07				8.50E-07
Chloroform	1.43E-09	1.0E-02	1.43E-07	4.60E-10	1.0E-02	4.60E-08				1.89E-07
cis-1,2-Dichloroethene	2.20E-07	2.0E-02	1.10E-05	7.09E-08	2.0E-02	3.55E-06				1.45E-05
Tetrachloroethene	7.09E-10	6.0E-03	1.18E-07	2.28E-10	6.0E-03	3.81E-08				1.56E-07
trans-1,2-Dichloroethene	1.43E-09	2.0E-01	7.15E-09	4.61E-10	2.0E-01	2.30E-09				9.45E-09
Trichloroethene	1.62E-07	5.0E-04	3.23E-04	5.21E-08	5.0E-04	1.04E-04				4.28E-04
Vinyl chloride	6.70E-08	3.0E-03	2.23E-05	2.16E-08	3.0E-03	7.19E-06				2.95E-05
-			9.09E-01			9.77E-01			2.18E-02	2.E+00

## TABLE 43 INCREMENTAL LIFETIME CARCINOGENIC RISKS CONSTRUCTION WORKER SCENARIO - WEST SIDE OF AVX AVX FACILITY

SURFACE SOIL		INGESTION		DE	RMAL CONTA	.CT	INHALAT	ION OF PARTI	CULATES	
	LADD	SF	ILCR	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs										
Aroclor 1242	3.03E-09	2.0E+00	6.06E-09	3.25E-09	2.0E+00	6.51E-09	7.27E-11	2.0E+00	1.45E-10	1.27E-08
Aroclor 1248	3.23E-08	2.0E+00	6.46E-08	3.47E-08	2.0E+00	6.94E-08	7.75E-10	2.0E+00	1.55E-09	1.36E-07
Aroclor 1254	1.37E-07	2.0E+00	2.73E-07	1.47E-07	2.0E+00	2.94E-07	3.28E-09	2.0E+00	6.56E-09	5.74E-07
Aroclor 1260	6.22E-10	2.0E+00	1.24E-09	6.68E-10	2.0E+00	1.34E-09	1.49E-11	2.0E+00	2.98E-11	2.61E-09
VOCs										
1,1,1-trichloroethane										
1,1-Dichloroethane										
1,1-Dichloroethene										
1,2,4-Trichlorobenzene										
1,2-Dichlorobenzene										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00				0.00E+00
Chlorobenzene										
Chloroform										
cis-1,2-Dichloroethene										
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00				0.00E+00
trans-1,2-Dichloroethene										
Trichloroethene	8.42E-12	5.00E-02	4.21E-13	2.71E-12	5.00E-02	1.36E-13				5.57E-13
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00				0.00E+00
			3.45E-07			3.71E-07			8.29E-09	7.E-07

SUBSURFACE SOIL							INHALAT			
	LADD	SF	ILCR	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs										
Aroclor 1242	2.43E-07	2.0E+00	4.86E-07	2.61E-07	2.0E+00	5.22E-07	5.83E-09	2.0E+00	1.17E-08	1.02E-06
Aroclor 1248	2.68E-08	2.0E+00	5.36E-08	2.88E-08	2.0E+00	5.76E-08	6.44E-10	2.0E+00	1.29E-09	1.13E-07
Aroclor 1254	5.20E-08	2.0E+00	1.04E-07	5.59E-08	2.0E+00	1.12E-07	1.25E-09	2.0E+00	2.50E-09	2.18E-07
Aroclor 1260	2.16E-09	2.0E+00	4.31E-09	2.32E-09	2.0E+00	4.63E-09	5.18E-11	2.0E+00	1.04E-10	9.05E-09
VOCs										
1,1,1-trichloroethane										
1,1-Dichloroethane										
1,1-Dichloroethene										
1,2,4-Trichlorobenzene										
1,2-Dichlorobenzene										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00				0.00E+00
Chlorobenzene										
Chloroform										
cis-1,2-Dichloroethene										
Tetrachloroethene	5.05E-12	2.00E-02	1.01E-13	1.63E-12	2.00E-02	3.25E-14				1.34E-13
trans-1,2-Dichloroethene										
Trichloroethene	1.15E-09	5.00E-02	5.76E-11	3.71E-10	5.00E-02	1.86E-11				7.62E-11
Vinyl chloride	4.77E-10	1.4E+00	6.68E-10	1.54E-10	1.4E+00	2.15E-10				8.83E-10
			6.48E-07			6.96E-07			1.55E-08	1.E-06

## TABLE 44 SUBCHRONIC HAZARD INDICES CONSTRUCTION WORKER SCENARIO - B04BN/B04B AREA AVX FACILITY

SURFACE SOIL		INGESTION		DE	RMAL CONTA	ACT	INHALA	TION OF PARTI	CULATES	Total
	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs										
Aroclor 1242	0.00E+00	5.0E-05	0.00E+00	0.00E+00	5.0E-05	0.00E+00	0.00E+00	5.0E-05	0.00E+00	0.00E+00
Aroclor 1248	0.00E+00	5.0E-05	0.00E+00	0.00E+00	5.0E-05	0.00E+00	0.00E+00	5.0E-05	0.00E+00	0.00E+00
Aroclor 1254	3.36E-04	5.0E-05	6.72E+00	3.61E-04	5.0E-05	7.22E+00	8.07E-06	5.0E-05	1.61E-01	1.41E+01
Aroclor 1260	0.00E+00	5.0E-05	0.00E+00	0.00E+00	5.0E-05	0.00E+00	0.00E+00	5.0E-05	0.00E+00	0.00E+00
VOCs										
1,1,1-trichloroethane	0.00E+00	7.0E+00	0.00E+00	0.00E+00	7.0E+00	0.00E+00				0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00				0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00				0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00				0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
Carbon Tetrachloride	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00				0.00E+00
Chlorobenzene	0.00E+00	7.0E-02	0.00E+00	0.00E+00	7.0E-02	0.00E+00				0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00				0.00E+00
cis-1,2-Dichloroethene	2.71E-07	2.0E-02	1.35E-05	8.73E-08	2.0E-02	4.37E-06				1.79E-05
Tetrachloroethene	9.61E-06	6.0E-03	1.60E-03	3.10E-06	6.0E-03	5.16E-04				2.12E-03
trans-1,2-Dichloroethene	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00				0.00E+00
Trichloroethene	1.97E-05	5.0E-04	3.94E-02	6.35E-06	5.0E-04	1.27E-02				5.21E-02
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00				0.00E+00
			6.77E+00			7.24E+00			1.61E-01	1.E+01

SUBSURFACE SOIL							INHALA'	TION OF PARTI	CULATES	Total
	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs										
Aroclor 1242	8.74E-05	5.0E-05	1.75E+00	9.38E-05	5.0E-05	1.88E+00	2.10E-06	5.0E-05	4.19E-02	3.67E+00
Aroclor 1248	0.00E+00	5.0E-05	0.00E+00	0.00E+00	5.0E-05	0.00E+00	0.00E+00	5.0E-05	0.00E+00	0.00E+00
Aroclor 1254	1.29E-04	5.0E-05	2.57E+00	1.38E-04	5.0E-05	2.76E+00	3.09E-06	5.0E-05	6.17E-02	5.40E+00
Aroclor 1260	8.65E-09	5.0E-05	1.73E-04	9.29E-09	5.0E-05	1.86E-04	2.08E-10	5.0E-05	4.15E-06	3.63E-04
VOCs										
1,1,1-trichloroethane	3.13E-07	7.0E+00	4.47E-08	1.01E-07	7.0E+00	1.44E-08				5.91E-08
1,1-Dichloroethane	1.24E-09	2.0E+00	6.19E-10	3.99E-10	2.0E+00	2.00E-10				8.19E-10
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00				0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00				0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
Carbon Tetrachloride	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00				0.00E+00
Chlorobenzene	0.00E+00	7.0E-02	0.00E+00	0.00E+00	7.0E-02	0.00E+00				0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00				0.00E+00
cis-1,2-Dichloroethene	2.69E-06	2.0E-02	1.35E-04	8.67E-07	2.0E-02	4.34E-05				1.78E-04
Tetrachloroethene	2.91E-06	6.0E-03	4.85E-04	9.37E-07	6.0E-03	1.56E-04				6.41E-04
trans-1,2-Dichloroethene	1.09E-09	2.0E-01	5.46E-09	3.52E-10	2.0E-01	1.76E-09				7.21E-09
Trichloroethene	6.05E-05	5.0E-04	1.21E-01	1.95E-05	5.0E-04	3.90E-02				1.60E-01
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00				0.00E+00
-			4.44E+00			4.68E+00			1.04E-01	9.E+00

## TABLE 45 INCREMENTAL LIFETIME CARCINOGENIC RISKS CONSTRUCTION WORKER SCENARIO - B04BN/B04B AREA AVX FACILITY

SURFACE SOIL		INGESTION		DE	RMAL CONTA	CT	INHALAT	ION OF PARTI	CULATES	
	LADD	SF	ILCR	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs										
Aroclor 1242	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	2.39E-06	2.0E+00	4.79E-06	2.57E-06	2.0E+00	5.14E-06	5.75E-08	2.0E+00	1.15E-07	1.00E-05
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs										
1,1,1-trichloroethane										
1,1-Dichloroethane										
1,1-Dichloroethene										
1,2,4-Trichlorobenzene										
1,2-Dichlorobenzene										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00				0.00E+00
Chlorobenzene										
Chloroform										
cis-1,2-Dichloroethene										
Tetrachloroethene	6.84E-08	2.00E-02	1.37E-09	2.20E-08	2.00E-02	4.41E-10				1.81E-09
trans-1,2-Dichloroethene										
Trichloroethene	1.40E-07	5.00E-02	7.02E-09	4.52E-08	5.00E-02	2.26E-09				9.28E-09
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00				0.00E+00
			4.80E-06			5.15E-06			1.15E-07	1.E-05

SUBSURFACE SOIL							INHALAT	ION OF PARTI	CULATES	
	LADD	SF	ILCR	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs										
Aroclor 1242	6.22E-07	2.0E+00	1.24E-06	6.68E-07	2.0E+00	1.34E-06	1.49E-08	2.0E+00	2.99E-08	2.61E-06
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	9.16E-07	2.0E+00	1.83E-06	9.84E-07	2.0E+00	1.97E-06	2.20E-08	2.0E+00	4.40E-08	3.84E-06
Aroclor 1260	6.16E-11	2.0E+00	1.23E-10	6.62E-11	2.0E+00	1.32E-10	1.48E-12	2.0E+00	2.96E-12	2.59E-10
VOCs										
1,1,1-trichloroethane										
1,1-Dichloroethane										
1,1-Dichloroethene										
1,2,4-Trichlorobenzene										
1,2-Dichlorobenzene										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00				0.00E+00
Chlorobenzene										
Chloroform										
cis-1,2-Dichloroethene										
Tetrachloroethene	2.07E-08	2.00E-02	4.14E-10	6.67E-09	2.00E-02	1.33E-10				5.48E-10
trans-1,2-Dichloroethene										
Trichloroethene	4.31E-07	5.00E-02	2.15E-08	1.39E-07	5.00E-02	6.94E-09				2.85E-08
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00				0.00E+00
			3.10E-06			3.31E-06			7.38E-08	6.E-06

#### TABLE 46 SUBCHRONIC HAZARD INDICES CONSTRUCTION WORKER SCENARIO - EAST SIDE OF AVX AVX FACILITY

SURFACE SOIL		INGESTION		DE	RMAL CONTA	ACT	INHALAT	TION OF PARTI	CULATES	Total
	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs										
Aroclor 1242	1.34E-04	5.0E-05	2.69E+00	1.44E-04	5.0E-05	2.89E+00	3.23E-06	5.0E-05	6.45E-02	5.64E+00
Aroclor 1248	1.07E-04	5.0E-05	2.14E+00	1.15E-04	5.0E-05	2.30E+00	2.57E-06	5.0E-05	5.15E-02	4.50E+00
Aroclor 1254	8.03E-04	5.0E-05	1.61E+01	8.62E-04	5.0E-05	1.72E+01	1.93E-05	5.0E-05	3.85E-01	3.37E+01
Aroclor 1260	2.37E-05	5.0E-05	4.74E-01	2.55E-05	5.0E-05	5.09E-01	5.69E-07	5.0E-05	1.14E-02	9.95E-01
VOCs										
1,1,1-trichloroethane	0.00E+00	7.0E+00	0.00E+00	0.00E+00	7.0E+00	0.00E+00				0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00				0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00				0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00				0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-01	0.00E+00	0.00E+00	9.0E-01	0.00E+00				0.00E+00
Carbon Tetrachloride	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00				0.00E+00
Chlorobenzene	0.00E+00	7.0E-02	0.00E+00	0.00E+00	7.0E-02	0.00E+00				0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00				0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00				0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00				0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00				0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00				0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00				0.00E+00
			2.14E+01			2.29E+01			5.13E-01	4.E+01

SUBSURFACE SOIL							INHALA'	TION OF PARTI	CULATES	Total
CHEMICALC	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	ADD	SubRfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs										
Aroclor 1242	5.61E-04	5.0E-05	1.12E+01	6.02E-04	5.0E-05	1.20E+01	1.35E-05	5.0E-05	2.69E-01	2.35E+01
Aroclor 1248	2.21E-05	5.0E-05	4.43E-01	2.38E-05	5.0E-05	4.76E-01	5.31E-07	5.0E-05	1.06E-02	9.29E-01
Aroclor 1254	3.01E-03	5.0E-05	6.02E+01	3.23E-03	5.0E-05	6.47E+01	7.23E-05	5.0E-05	1.45E+00	1.26E+02
Aroclor 1260	8.10E-07	5.0E-05	1.62E-02	8.70E-07	5.0E-05	1.74E-02	1.94E-08	5.0E-05	3.89E-04	3.40E-02
VOCs										
1,1,1-trichloroethane	0.00E+00	7.0E+00	0.00E+00	0.00E+00	7.0E+00	0.00E+00				0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00				0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00				0.00E+00
1,2,4-Trichlorobenzene	6.44E-05	9.0E-02	7.16E-04	2.08E-05	9.0E-02	2.31E-04				9.47E-04
1,2-Dichlorobenzene	2.18E-07	9.0E-01	2.42E-07	7.01E-08	9.0E-01	7.79E-08				3.20E-07
1,3-Dichlorobenzene	2.88E-06	9.0E-01	3.20E-06	9.28E-07	9.0E-01	1.03E-06				4.23E-06
1,4-Dichlorobenzene	1.43E-05	9.0E-01	1.59E-05	4.61E-06	9.0E-01	5.12E-06				2.10E-05
Carbon Tetrachloride	2.30E-06	1.0E-02	2.30E-04	7.43E-07	1.0E-02	7.43E-05				3.05E-04
Chlorobenzene	7.49E-06	7.0E-02	1.07E-04	2.41E-06	7.0E-02	3.45E-05				1.42E-04
Chloroform	1.67E-07	1.0E-02	1.67E-05	5.37E-08	1.0E-02	5.37E-06				2.20E-05
cis-1,2-Dichloroethene	8.08E-04	2.0E-02	4.04E-02	2.60E-04	2.0E-02	1.30E-02				5.34E-02
Tetrachloroethene	5.40E-06	6.0E-03	8.99E-04	1.74E-06	6.0E-03	2.90E-04				1.19E-03
trans-1,2-Dichloroethene	1.02E-06	2.0E-01	5.11E-06	3.29E-07	2.0E-01	1.65E-06				6.75E-06
Trichloroethene	1.74E-03	5.0E-04	3.49E+00	5.62E-04	5.0E-04	1.12E+00				4.61E+00
Vinyl chloride	5.42E-05	3.0E-03	1.81E-02	1.75E-05	3.0E-03	5.82E-03				2.39E-02
-			7.54E+01			7.84E+01			1.73E+00	2.E+02

## TABLE 47 INCREMENTAL LIFETIME CARCINOGENIC RISKS CONSTRUCTION WORKER SCENARIO - EAST SIDE OF AVX AVX FACILITY

SURFACE SOIL		INGESTION		DE	RMAL CONTA	CT	INHALAT	ION OF PARTI	CULATES	
	LADD	SF	ILCR	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs										
Aroclor 1242	9.58E-07	2.0E+00	1.92E-06	1.03E-06	2.0E+00	2.06E-06	2.30E-08	2.0E+00	4.60E-08	4.02E-06
Aroclor 1248	7.64E-07	2.0E+00	1.53E-06	8.20E-07	2.0E+00	1.64E-06	1.83E-08	2.0E+00	3.67E-08	3.21E-06
Aroclor 1254	5.72E-06	2.0E+00	1.14E-05	6.14E-06	2.0E+00	1.23E-05	1.37E-07	2.0E+00	2.74E-07	2.40E-05
Aroclor 1260	1.69E-07	2.0E+00	3.38E-07	1.81E-07	2.0E+00	3.63E-07	4.05E-09	2.0E+00	8.11E-09	7.09E-07
VOCs										
1,1,1-trichloroethane										
1,1-Dichloroethane										
1,1-Dichloroethene										
1,2,4-Trichlorobenzene										
1,2-Dichlorobenzene										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00				0.00E+00
Chlorobenzene										
Chloroform										
cis-1,2-Dichloroethene										
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00				0.00E+00
trans-1,2-Dichloroethene										
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00				0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00				0.00E+00
			1.52E-05			1.63E-05			3.65E-07	3.E-05

SUBSURFACE SOIL							INHALAT	ION OF PARTI	CULATES	
	LADD	SF	ILCR	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs										
Aroclor 1242	3.99E-06	2.0E+00	7.99E-06	4.29E-06	2.0E+00	8.58E-06	9.59E-08	2.0E+00	1.92E-07	1.68E-05
Aroclor 1248	1.58E-07	2.0E+00	3.15E-07	1.69E-07	2.0E+00	3.39E-07	3.79E-09	2.0E+00	7.57E-09	6.62E-07
Aroclor 1254	2.14E-05	2.0E+00	4.29E-05	2.30E-05	2.0E+00	4.61E-05	5.15E-07	2.0E+00	1.03E-06	9.00E-05
Aroclor 1260	5.77E-09	2.0E+00	1.15E-08	6.20E-09	2.0E+00	1.24E-08	1.38E-10	2.0E+00	2.77E-10	2.42E-08
VOCs										
1,1,1-trichloroethane										
1,1-Dichloroethane										
1,1-Dichloroethene										
1,2,4-Trichlorobenzene										
1,2-Dichlorobenzene										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
Carbon Tetrachloride	1.64E-08	7.00E-02	1.15E-09	5.29E-09	7.00E-02	3.70E-10				1.52E-09
Chlorobenzene										
Chloroform										
cis-1,2-Dichloroethene										
Tetrachloroethene	3.84E-08	2.00E-02	7.69E-10	1.24E-08	2.00E-02	2.48E-10				1.02E-09
trans-1,2-Dichloroethene										
Trichloroethene	1.24E-05	5.00E-02	6.21E-07	4.01E-06	5.00E-02	2.00E-07				8.22E-07
Vinyl chloride	3.86E-07	1.4E+00	5.40E-07	1.24E-07	1.4E+00	1.74E-07				7.15E-07
			5.24E-05			5.54E-05			1.23E-06	1.E-04

## TABLE 48 CHRONIC HAZARD INDICES - SURFACE SOIL CURRENT EMPLOYEE SCENARIO - TITLEIST PROPERTY AVX FACILITY

EAST SIDE		INGESTION		DE	RMAL CONTA	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	9.39E-08	2.0E-05	4.70E-03	1.70E-08	2.0E-05	8.48E-04	5.54E-03
Aroclor 1248	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1254	2.49E-05	2.0E-05	1.25E+00	4.50E-06	2.0E-05	2.25E-01	1.47E+00
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			1.25E+00			2.26E-01	1.E+00

WEST SIDE							Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	5.61E-09	2.0E-05	2.80E-04	1.01E-09	2.0E-05	5.06E-05	3.31E-04
Aroclor 1248	1.16E-06	2.0E-05	5.79E-02	2.09E-07	2.0E-05	1.05E-02	6.84E-02
Aroclor 1254	1.83E-06	2.0E-05	9.15E-02	3.30E-07	2.0E-05	1.65E-02	1.08E-01
Aroclor 1260	1.87E-07	2.0E-05	9.35E-03	3.38E-08	2.0E-05	1.69E-03	1.10E-02
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			1.59E-01			2.87E-02	2.E-01

## TABLE 49 INCREMENTAL LIFETIME CARCINOGENIC RISKS -SURFACE SOIL CURRENT EMPLOYEE SCENARIO - TITLEIST PROPERTY AVX FACILITY

EAST SIDE		INGESTION		DE	RMAL CONTA	CT	
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	3.62E-08	2.0E+00	7.24E-08	6.54E-09	2.0E+00	1.31E-08	8.55E-08
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	9.62E-06	2.0E+00	1.92E-05	1.74E-06	2.0E+00	3.48E-06	2.27E-05
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			1.93E-05			3.49E-06	2.E-05

WEST SIDE							
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	2.16E-09	2.0E+00	4.33E-09	3.91E-10	2.0E+00	7.81E-10	5.11E-09
Aroclor 1248	4.47E-07	2.0E+00	8.93E-07	8.07E-08	2.0E+00	1.61E-07	1.05E-06
Aroclor 1254	7.06E-07	2.0E+00	1.41E-06	1.27E-07	2.0E+00	2.55E-07	1.67E-06
Aroclor 1260	7.21E-08	2.0E+00	1.44E-07	1.30E-08	2.0E+00	2.60E-08	1.70E-07
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			2.45E-06			4.43E-07	3.E-06

#### TABLE 50 CHRONIC HAZARD INDICES - SURFACE SOIL CURRENT TRESPASSER SCENARIO - EAST SIDE OF TITLEIST PROPERTY AVX FACILITY

OLDSER CHILD		INGESTION		DF	RMAL CONTA	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	9.56E-08	2.0E-05	4.78E-03	7.84E-08	2.0E-05	3.92E-03	8.70E-03
Aroclor 1248	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1254	2.54E-05	2.0E-05	1.27E+00	2.08E-05	2.0E-05	1.04E+00	2.31E+00
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			1.27E+00			1.05E+00	2.E+00

ADULT							Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	6.57E-08	2.0E-05	3.29E-03	5.31E-08	2.0E-05	2.66E-03	5.94E-03
Aroclor 1248	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1254	1.75E-05	2.0E-05	8.73E-01	1.41E-05	2.0E-05	7.05E-01	1.58E+00
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
-			8.76E-01			7.08E-01	2.E+00

### TABLE 51 INCREMENTAL LIFETIME CARCINOGENIC RISKS -SURFACE SOIL CURRENT TRESPASSER SCENARIO - EAST SIDE OF TITLEIST PROPERTY AVX FACILITY

#### 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

OLDER CHILD		INGESTION		DE	.CT		
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	1.50E-08	2.0E+00	3.01E-08	1.23E-08	2.0E+00	2.46E-08	5.47E-08
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	3.99E-06	2.0E+00	7.98E-06	3.27E-06	2.0E+00	6.54E-06	1.45E-05
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			8.01E-06			6.57E-06	1.46E-05

ADULT							
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	1.13E-08	2.0E+00	2.25E-08	9.10E-09	2.0E+00	1.82E-08	4.07E-08
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	2.99E-06	2.0E+00	5.99E-06	2.42E-06	2.0E+00	4.84E-06	1.08E-05
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			6.01E-06			4.85E-06	1.09E-05

TOTAL ILCR 3.E-05

## TABLE 52 CHRONIC HAZARD INDICES - SURFACE SOIL CURRENT TRESPASSER SCENARIO - WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

OLDER CHILD		INGESTION		DE	RMAL CONTA	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	5.71E-09	2.0E-05	2.85E-04	4.68E-09	2.0E-05	2.34E-04	5.20E-04
Aroclor 1248	1.18E-06	2.0E-05	5.90E-02	9.67E-07	2.0E-05	4.83E-02	1.07E-01
Aroclor 1254	1.86E-06	2.0E-05	9.31E-02	1.53E-06	2.0E-05	7.64E-02	1.69E-01
Aroclor 1260	1.90E-07	2.0E-05	9.52E-03	1.56E-07	2.0E-05	7.80E-03	1.73E-02
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			1.62E-01			1.33E-01	3.E-01

ADULT							Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	3.92E-09	2.0E-05	1.96E-04	3.17E-09	2.0E-05	1.59E-04	3.55E-04
Aroclor 1248	8.11E-07	2.0E-05	4.05E-02	6.55E-07	2.0E-05	3.27E-02	7.33E-02
Aroclor 1254	1.28E-06	2.0E-05	6.40E-02	1.03E-06	2.0E-05	5.17E-02	1.16E-01
Aroclor 1260	1.31E-07	2.0E-05	6.54E-03	1.06E-07	2.0E-05	5.28E-03	1.18E-02
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			1.11E-01			8.99E-02	2.E-01

### TABLE 53 INCREMENTAL LIFETIME CARCINOGENIC RISKS -SURFACE SOIL CURRENT TRESPASSER SCENARIO - WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

#### 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

EAST SIDE		INGESTION		DE	RMAL CONTA	CT	
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	8.97E-10	2.0E+00	1.79E-09	7.36E-10	2.0E+00	1.47E-09	3.27E-09
Aroclor 1248	1.85E-07	2.0E+00	3.71E-07	1.52E-07	2.0E+00	3.04E-07	6.74E-07
Aroclor 1254	2.93E-07	2.0E+00	5.85E-07	2.40E-07	2.0E+00	4.80E-07	1.07E-06
Aroclor 1260	2.99E-08	2.0E+00	5.98E-08	2.45E-08	2.0E+00	4.90E-08	1.09E-07
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			1.02E-06			8.34E-07	1.85E-06

WEST SIDE							
CHEMICALS	LADD	SF	ILCR	LADD	SF (mg/kg/d) <sup>-1</sup>	ILCR	Total ILCR
	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(IIIg/Kg/u)		ILCK
PCBs							
Aroclor 1242	6.73E-10	2.0E+00	1.35E-09	5.44E-10	2.0E+00	1.09E-09	2.43E-09
Aroclor 1248	1.39E-07	2.0E+00	2.78E-07	1.12E-07	2.0E+00	2.25E-07	5.02E-07
Aroclor 1254	2.19E-07	2.0E+00	4.39E-07	1.77E-07	2.0E+00	3.55E-07	7.94E-07
Aroclor 1260	2.24E-08	2.0E+00	4.49E-08	1.81E-08	2.0E+00	3.62E-08	8.11E-08
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
,		22.00	7.63E-07		22.00	6.16E-07	1.38E-06

TOTAL ILCR 3.E-06

## TABLE 54 CHRONIC HAZARD INDICES - SURFACE SOIL FUTURE RESIDENTIAL SCENARIO - EAST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD		INGESTION		DF	RMAL CONTA	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	8.44E-07	2.0E-05	4.22E-02	7.18E-07	2.0E-05	3.59E-02	7.81E-02
Aroclor 1248	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1254	2.24E-04	2.0E-05	1.12E+01	1.91E-04	2.0E-05	9.53E+00	2.07E+01
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene		2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
-			1.12E+01			9.57E+00	2.E+01

ADULT							Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	1.38E-07	2.0E-05	6.88E-03	1.87E-07	2.0E-05	9.34E-03	1.62E-02
Aroclor 1248	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1254	3.65E-05	2.0E-05	1.83E+00	4.96E-05	2.0E-05	2.48E+00	4.31E+00
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene		9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			1.83E+00			2.49E+00	4.E+00

#### TABLE 55 INCREMENTAL LIFETIME CARCINOGENIC RISKS -SURFACE SOIL FUTURE RESIDENTIAL SCENARIO - EAST SIDE OF TITLEIST PROPERTY AVX FACILITY

#### 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

CHILD		INGESTION		DE	RMAL CONTA	CT	
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	8.44E-08	2.0E+00	1.69E-07	7.18E-08	2.0E+00	1.44E-07	3.12E-07
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	2.24E-05	2.0E+00	4.48E-05	1.91E-05	2.0E+00	3.81E-05	8.30E-05
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			4.50E-05			3.83E-05	8.33E-05

ADULT							
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	4.52E-08	2.0E+00	9.04E-08	6.14E-08	2.0E+00	1.23E-07	2.13E-07
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	1.20E-05	2.0E+00	2.40E-05	1.63E-05	2.0E+00	3.26E-05	5.66E-05
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
_			2.41E-05			3.27E-05	5.68E-05

TOTAL ILCR 1.E-04

# TABLE 56 CHRONIC HAZARD INDICES - SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO - EAST SIDE OF TITLEIST PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE

CHILD		INGESTION		DE	RMAL CONTA	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	4.70E-07	2.0E-05	2.35E-02	4.00E-07	2.0E-05	2.00E-02	4.35E-02
Aroclor 1248	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1254	5.47E-05	2.0E-05	2.74E+00	4.66E-05	2.0E-05	2.33E+00	5.07E+00
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene		2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			2.76E+00			2.35E+00	5.E+00

ADULT							Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	7.65E-08	2.0E-05	3.83E-03	1.04E-07	2.0E-05	5.20E-03	9.03E-03
Aroclor 1248	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1254	8.92E-06	2.0E-05	4.46E-01	1.21E-05	2.0E-05	6.06E-01	1.05E+00
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene		9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			4.50E-01			6.11E-01	1.E+00

### TABLE 57 INCREMENTAL LIFETIME CARCINOGENIC RISKS -SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO - EAST SIDE OF TITLEIST PROPERTY AVX FACILITY

#### 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

CHILD		INGESTION		DE	RMAL CONTA	.CT	
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	4.70E-08	2.0E+00	9.39E-08	4.00E-08	2.0E+00	7.99E-08	1.74E-07
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	5.47E-06	2.0E+00	1.09E-05	4.66E-06	2.0E+00	9.32E-06	2.03E-05
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
1			1.10E-05			9.40E-06	2.04E-05

ADULT							
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	2.51E-08	2.0E+00	5.03E-08	3.42E-08	2.0E+00	6.83E-08	1.19E-07
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	2.93E-06	2.0E+00	5.86E-06	3.98E-06	2.0E+00	7.97E-06	1.38E-05
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
_			5.91E-06			8.04E-06	1.39E-05

TOTAL ILCR 3.E-05

## TABLE 58 CHRONIC HAZARD INDICES - SURFACE SOIL FUTURE RESIDENTIAL SCENARIO - WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD		INGESTION		DE	RMAL CONTA	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	5.04E-08	2.0E-05	2.52E-03	4.29E-08	2.0E-05	2.14E-03	4.66E-03
Aroclor 1248	1.04E-05	2.0E-05	5.20E-01	8.85E-06	2.0E-05	4.43E-01	9.63E-01
Aroclor 1254	1.64E-05	2.0E-05	8.22E-01	1.40E-05	2.0E-05	6.99E-01	1.52E+00
Aroclor 1260	1.68E-06	2.0E-05	8.40E-02	1.43E-06	2.0E-05	7.14E-02	1.55E-01
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene		2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			1.43E+00			1.22E+00	3.E+00

ADULT							Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	8.21E-09	2.0E-05	4.10E-04	1.12E-08	2.0E-05	5.58E-04	9.68E-04
Aroclor 1248	1.70E-06	2.0E-05	8.48E-02	2.30E-06	2.0E-05	1.15E-01	2.00E-01
Aroclor 1254	2.68E-06	2.0E-05	1.34E-01	3.64E-06	2.0E-05	1.82E-01	3.16E-01
Aroclor 1260	2.74E-07	2.0E-05	1.37E-02	3.72E-07	2.0E-05	1.86E-02	3.23E-02
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene		9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			2.33E-01			3.16E-01	5.E-01

### TABLE 59 INCREMENTAL LIFETIME CARCINOGENIC RISKS -SURFACE SOIL FUTURE RESIDENTIAL SCENARIO - WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

#### 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

CHILD		INGESTION		DE	RMAL CONTA	.CT	
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	5.04E-09	2.0E+00	1.01E-08	4.29E-09	2.0E+00	8.57E-09	1.86E-08
Aroclor 1248	1.04E-06	2.0E+00	2.08E-06	8.85E-07	2.0E+00	1.77E-06	3.85E-06
Aroclor 1254	1.64E-06	2.0E+00	3.29E-06	1.40E-06	2.0E+00	2.80E-06	6.08E-06
Aroclor 1260	1.68E-07	2.0E+00	3.36E-07	1.43E-07	2.0E+00	2.86E-07	6.22E-07
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			5.71E-06			4.86E-06	1.06E-05

ADULT							
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	2.70E-09	2.0E+00	5.39E-09	3.67E-09	2.0E+00	7.33E-09	1.27E-08
Aroclor 1248	5.57E-07	2.0E+00	1.11E-06	7.57E-07	2.0E+00	1.51E-06	2.63E-06
Aroclor 1254	8.80E-07	2.0E+00	1.76E-06	1.20E-06	2.0E+00	2.39E-06	4.15E-06
Aroclor 1260	8.99E-08	2.0E+00	1.80E-07	1.22E-07	2.0E+00	2.44E-07	4.24E-07
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
_			3.06E-06			4.16E-06	7.22E-06

TOTAL ILCR 2.E-05

#### TABLE 60 CHRONIC HAZARD INDICES - SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO - WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

CHILD		INGESTION		DE	RMAL CONTA	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1248	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1254	9.28E-08	2.0E-05	4.64E-03	7.90E-08	2.0E-05	3.95E-03	8.59E-03
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene		2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			4.64E-03			3.95E-03	9.E-03

ADULT							Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1248	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1254	1.51E-08	2.0E-05	7.56E-04	2.06E-08	2.0E-05	1.03E-03	1.78E-03
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene		9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			7.56E-04			1.03E-03	2.E-03

### TABLE 61 INCREMENTAL LIFETIME CARCINOGENIC RISKS -SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO - WEST SIDE OF TITLEIST PROPERTY AVX FACILITY

#### 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

CHILD		INGESTION		DE	RMAL CONTA	.CT	
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	9.28E-09	2.0E+00	1.86E-08	7.90E-09	2.0E+00	1.58E-08	3.44E-08
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			1.86E-08			1.58E-08	3.44E-08

ADULT							
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1248	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1254	4.97E-09	2.0E+00	9.94E-09	6.75E-09	2.0E+00	1.35E-08	2.35E-08
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
-			9.94E-09			1.35E-08	2.35E-08

TOTAL ILCR 6.E-08

TABLE 62
CHRONIC HAZARD INDICES AND INCREMENTAL LIFETIME CARCINOGENIC RISKS - INHALATION OF INDOOR AIR
CURRENT COMMERCIAL AND FUTURE RESIDENTIAL SCENARIOS - PRECIX
740 BELLEVILLE AVENUE

#### NEW BEDFORD, MASSACHUSETTS

CURRENT EMPLOYEES	CADE (mg/m3)	RfC (mg/m³)	НІ	LADE (ug/m3)	Unit Risk (ug/m³)·1	ILCR
VOCs						
Tetrachloroethene	4.45E-04	4.00E-02	1.11E-02	1.72E-01	3.00E-06	5.15E-07
Trichloroethene	1.07E-03	2.00E-03	5.34E-01	4.12E-01	4.00E-06	1.65E-06
TOTAL			5.E-01			2.E-06

FUTURE RESIDENTS	CADE (mg/m3)	RfC (mg/m³)	НІ	LADE (ug/m3)	Unit Risk (ug/m³)·1	ILCR
VOCs						
cis-1,2-Dichloroethene	3.46E-04	6.00E-03	5.77E-02			
Tetrachloroethene	2.26E-03	4.00E-02	5.66E-02	9.70E-01	3.00E-06	2.91E-06
Trichloroethene	6.82E-02	2.00E-03	3.41E+01	2.92E+01	4.00E-06	1.17E-04
TOTAL			3.E+01			1.E-04

# TABLE 63 CHRONIC HAZARD INDICES - SURFACE SOIL FUTURE RESIDENTIAL SCENARIO - PRECIX PROPERTY AVX FACILITY 740 BELLEVILLE AVENUE

### NEW BEDFORD, MASSACHUSETTS

CHILD		INGESTION		DE	RMAL CONTA	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	1.20E-07	2.0E-05	6.01E-03	1.02E-07	2.0E-05	5.11E-03	1.11E-02
Aroclor 1248	1.88E-06	2.0E-05	9.39E-02	1.60E-06	2.0E-05	7.99E-02	1.74E-01
Aroclor 1254	1.28E-05	2.0E-05	6.38E-01	1.09E-05	2.0E-05	5.43E-01	1.18E+00
Aroclor 1260	7.37E-08	2.0E-05	3.69E-03	6.27E-08	2.0E-05	3.14E-03	6.82E-03
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene		2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
_			7.42E-01			6.31E-01	1.E+00

ADULT							Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	1.96E-08	2.0E-05	9.80E-04	2.66E-08	2.0E-05	1.33E-03	2.31E-03
Aroclor 1248	3.06E-07	2.0E-05	1.53E-02	4.16E-07	2.0E-05	2.08E-02	3.61E-02
Aroclor 1254	2.08E-06	2.0E-05	1.04E-01	2.83E-06	2.0E-05	1.41E-01	2.45E-01
Aroclor 1260	1.20E-08	2.0E-05	6.01E-04	1.63E-08	2.0E-05	8.16E-04	1.42E-03
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene		9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	0.00E+00	2.0E-03	0.00E+00	0.00E+00	2.0E-03	0.00E+00	0.00E+00
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	0.00E+00	5.0E-04	0.00E+00	0.00E+00	5.0E-04	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			1.21E-01			1.64E-01	3.E-01

## TABLE 64 INCREMENTAL LIFETIME CARCINOGENIC RISKS -SURFACE SOIL FUTURE RESIDENTIAL SCENARIO - PRECIX PROPERTY AVX FACILITY

#### 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

CHILD		INGESTION		DE	RMAL CONTA	CT	
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	1.20E-08	2.0E+00	2.40E-08	1.02E-08	2.0E+00	2.05E-08	4.45E-08
Aroclor 1248	1.88E-07	2.0E+00	3.76E-07	1.60E-07	2.0E+00	3.20E-07	6.95E-07
Aroclor 1254	1.28E-06	2.0E+00	2.55E-06	1.09E-06	2.0E+00	2.17E-06	4.72E-06
Aroclor 1260	7.37E-09	2.0E+00	1.47E-08	6.27E-09	2.0E+00	1.25E-08	2.73E-08
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			2.97E-06			2.52E-06	5.49E-06

ADULT							
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	6.44E-09	2.0E+00	1.29E-08	8.75E-09	2.0E+00	1.75E-08	3.04E-08
Aroclor 1248	1.01E-07	2.0E+00	2.01E-07	1.37E-07	2.0E+00	2.73E-07	4.74E-07
Aroclor 1254	6.83E-07	2.0E+00	1.37E-06	9.29E-07	2.0E+00	1.86E-06	3.22E-06
Aroclor 1260	3.95E-09	2.0E+00	7.89E-09	5.36E-09	2.0E+00	1.07E-08	1.86E-08
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.00E-02	0.00E+00	0.00E+00
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			1.59E-06			2.16E-06	3.75E-06

TOTAL ILCR 9.E-06

#### TABLE 65 CHRONIC HAZARD INDICES - SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO - PRECIX PROPERTY AVX FACILITY

CHILD		INGESTION		DE	RMAL CONTA	ACT	Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1248	3.06E-08	2.0E-05	1.53E-03	2.60E-08	2.0E-05	1.30E-03	2.83E-03
Aroclor 1254	1.18E-06	2.0E-05	5.89E-02	1.00E-06	2.0E-05	5.02E-02	1.09E-01
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	3.33E-07	2.0E-03	1.66E-04	8.49E-08	2.0E-03	4.25E-05	2.09E-04
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene		2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	1.52E-06	5.0E-04	3.03E-03	3.87E-07	5.0E-04	7.75E-04	3.81E-03
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			6.37E-02			5.23E-02	1.E-01

ADULT							Total
	ADD	RfD	Hazard	ADD	RfD	Hazard	Hazard
CHEMICALS	(mg/kg/d)	(mg/kg/d)	Index	(mg/kg/d)	(mg/kg/d)	Index	Index
PCBs							
Aroclor 1242	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
Aroclor 1248	4.98E-09	2.0E-05	2.49E-04	6.77E-09	2.0E-05	3.38E-04	5.88E-04
Aroclor 1254	1.92E-07	2.0E-05	9.61E-03	2.61E-07	2.0E-05	1.31E-02	2.27E-02
Aroclor 1260	0.00E+00	2.0E-05	0.00E+00	0.00E+00	2.0E-05	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00	2.0E-01	0.00E+00	0.00E+00	2.0E-01	0.00E+00	0.00E+00
1,1-Dichloroethene	0.00E+00	5.0E-02	0.00E+00	0.00E+00	5.0E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
1,2-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	0.00E+00	9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
1,4-Dichlorobenzene		9.0E-02	0.00E+00	0.00E+00	9.0E-02	0.00E+00	0.00E+00
Carbon Tetrachloride	0.00E+00	4.0E-03	0.00E+00	0.00E+00	4.0E-03	0.00E+00	0.00E+00
Chlorobenzene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Chloroform	0.00E+00	1.0E-02	0.00E+00	0.00E+00	1.0E-02	0.00E+00	0.00E+00
cis-1,2-Dichloroethene	5.42E-08	2.0E-03	2.71E-05	2.21E-08	2.0E-03	1.11E-05	3.82E-05
Tetrachloroethene	0.00E+00	6.0E-03	0.00E+00	0.00E+00	6.0E-03	0.00E+00	0.00E+00
trans-1,2-Dichloroethene	0.00E+00	2.0E-02	0.00E+00	0.00E+00	2.0E-02	0.00E+00	0.00E+00
Trichloroethene	2.47E-07	5.0E-04	4.94E-04	1.01E-07	5.0E-04	2.02E-04	6.96E-04
Vinyl chloride	0.00E+00	3.0E-03	0.00E+00	0.00E+00	3.0E-03	0.00E+00	0.00E+00
			1.04E-02			1.36E-02	2.E-02

## TABLE 66 INCREMENTAL LIFETIME CARCINOGENIC RISKS -SUBSURFACE SOIL FUTURE RESIDENTIAL SCENARIO - PRECIX PROPERTY AVX FACILITY

#### 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

CHILD		INGESTION		DE	RMAL CONTA	CT	
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1248	3.06E-09	2.0E+00	6.11E-09	2.60E-09	2.0E+00	5.20E-09	1.13E-08
Aroclor 1254	1.18E-07	2.0E+00	2.36E-07	1.00E-07	2.0E+00	2.01E-07	4.36E-07
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	1.52E-07	5.00E-02	7.59E-09	3.87E-08	5.00E-02	1.94E-09	9.52E-09
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			2.49E-07			2.08E-07	4.57E-07

ADULT							
	LADD	SF	ILCR	LADD	SF	ILCR	Total
CHEMICALS	(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		(mg/kg/d)	(mg/kg/d) <sup>-1</sup>		ILCR
PCBs							
Aroclor 1242	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
Aroclor 1248	1.64E-09	2.0E+00	3.27E-09	2.22E-09	2.0E+00	4.45E-09	7.72E-09
Aroclor 1254	6.31E-08	2.0E+00	1.26E-07	8.58E-08	2.0E+00	1.72E-07	2.98E-07
Aroclor 1260	0.00E+00	2.0E+00	0.00E+00	0.00E+00	2.0E+00	0.00E+00	0.00E+00
VOCs							
1,1,1-trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Carbon Tetrachloride	0.00E+00	7.00E-02	0.00E+00	0.00E+00	7.00E-02	0.00E+00	0.00E+00
Chlorobenzene							
Chloroform							
cis-1,2-Dichloroethene							
Tetrachloroethene	0.00E+00	2.00E-02	0.00E+00	0.00E+00	2.00E-02	0.00E+00	0.00E+00
trans-1,2-Dichloroethene							
Trichloroethene	8.12E-08	5.00E-02	4.06E-09	3.31E-08	5.00E-02	1.66E-09	5.72E-09
Vinyl chloride	0.00E+00	1.4E+00	0.00E+00	0.00E+00	1.4E+00	0.00E+00	0.00E+00
			1.34E-07			1.78E-07	3.11E-07

TOTAL ILCR 8.E-07

#### **TABLE 67**

### CHRONIC HAZARD INDICES AND INCREMENTAL LIFETIME CARCINOGENIC RISKS - TOTAL RISKS FOR FUTURE RESIDENTS - PRECIX PROPERTY AVX FACILITY

#### 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS MEDFORD, MASSACHUSETTS

EXPOSURE PATHWAY	HAZARD INDEX	ILCR
INHALATION OF INDOOR AIR	3.42E+01	1.17E-04
CONTACT WITH SURFACE SOIL	7.42E-01	9.24E-06
TOTAL	3.E+01	1.E-04

EXPOSURE PATHWAY	HAZARD INDEX	ILCR
INHALATION OF INDOOR AIR	3.42E+01	1.17E-04
CONTACT WITH SUBSURFACE SOIL	1.16E-01	7.68E-07
TOTAL	3.E+01	1.E-04

#### TABLE 68 COMPARISON OF EXPOSURE POINT CONCENTRATIONS IN SOIL ON AVX PROPERTY TO UPPER CONCENTRATION LIMITS AVX PROPERTY 740 BELLEVILLE AVENUE

### NEW BEDFORD, MASSACHUSETTS

	WEST SIDE		AREA AROUNDB04BN/ B04B		EAST SIDE		
	(0-3'bgs)	(3-15' bgs)	(0-3'bgs)	(3-15' bgs)	(0-3'bgs)	(3-15' bgs)	
	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	UCL
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PCBs							
Aroclor 1242	0.345	27.678		70.94	109.18	455.26	
Aroclor 1248	3.682	3.057			87.08	17.98	
Aroclor 1254	15.588	5.930	273.00	104.42	651.88	2444.79	
Aroclor 1260	0.071	0.246		0.01	19.25	0.66	
TOTAL PCBS	19.686	36.911	273.000	175.369	867.386	2918.685	100
VOCs							
1,1,1-trichloroethane				0.254			10,000
1,1-Dichloroethane		0.001		0.001			10,000
1,1-Dichloroethene		0.001					10,000
1,2,4-Trichlorobenzene		0.112				52.331	10,000
1,2-Dichlorobenzene		0.103				0.177	10,000
1,3-Dichlorobenzene						2.338	5,000
1,4-Dichlorobenzene		0.097				11.613	10,000
Carbon Tetrachloride						1.871	10,000
Chlorobenzene		0.037				6.084	10,000
Chloroform		0.001				0.135	10,000
cis-1,2-Dichloroethene		0.179	0.220	2.185		656.254	5,000
Tetrachloroethene		0.001	7.800	2.361		4.382	10,000
trans-1,2-Dichloroethene		0.001		0.001		0.829	10,000
Trichloroethene	0.001	0.131	16.000	49.106		1416.796	600
Vinyl chloride		0.054				44.000	600

# TABLE 69 COMPARISON OF EXPOSURE POINT CONCENTRATIONS IN SOIL TO UPPER CONCENTRATION LIMITS PRECIX AND TITLEIST PROPERTIES 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

<u> </u>	PRECIX		WEST SIDE (	WEST SIDE OF TITLEIST		EAST SIDE OF TITLEIST	
	(0-3'bgs)	(3-15' bgs)	(0-3'bgs)	(3-15' bgs)	(0-3'bgs)	(3-15' bgs)	
	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	UCL
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PCBs							
Aroclor 1242	0.050		0.021		0.349	0.19	
Aroclor 1248	0.777	0.013	4.304				
Aroclor 1254	5.280	0.488	6.799	0.038	92.713	22.64	
Aroclor 1260	0.030		0.695				
TOTAL PCBS	6.137	0.500	11.819	0.038	93.062	22.839	100
VOCs	,						
1,1,1-trichloroethane	,						10,000
1,1-Dichloroethane	,						10,000
1,1-Dichloroethene	,						10,000
1,2,4-Trichlorobenzene	,						10,000
1,2-Dichlorobenzene	,						10,000
1,3-Dichlorobenzene	!						5,000
1,4-Dichlorobenzene	!						10,000
Carbon Tetrachloride	!						10,000
Chlorobenzene	!						10,000
Chloroform	,						10,000
cis-1,2-Dichloroethene	,	0.138					5,000
Tetrachloroethene	!						10,000
rans-1,2-Dichloroethene							10,000
*		0.628					600
							600
Chloroform cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene Trichloroethene Vinyl chloride							

## TABLE 70 COMPARISON OF GROUND WATER CONCENTRATIONS TO UPPER CONCENTRATION LIMITS AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

	AVERAGE	MAXIMUM		
	CONCENTRATION	CONCENTRATION	UCL	
	ug/l	ug/l	ug/l	
VOCs				
1,1,1-trichloroethane	23.11	220	100,000	
1,1,2-Trichloroethane	54.57	1200	100,000	
1,1-Dichloroethane	1.50	5.8	100,000	
1,1-Dichloroethene	2.50	15	100,000	
1,2,4-Trichlorobenzene	1.81	7.7	100,000	
1,2-Dichlorobenzene	2.59	14	80,000	
1,3-Dichlorobenzene	14.25	52	100,000	
1,4-Dichlorobenzene	20.24	120	80,000	
Bromodichloromethane	6.35	44	100,000	
Carbon Tetrachloride	892.14	71000	50,000	
Chlorobenzene	55.99	940	10,000	
Chloroform	628.59	34000	100,000	
Chloromethane*	1.80	9.7	10,000	
cis-1,2-Dichloroethene	2357.53	92000	100,000	
Methylene Chloride	193.19	4500	100,000	
Tetrachloroethene	28.34	220	100,000	
trans-1,2-Dichloroethene	14.46	71	100,000	
Trichloroethene	14087.82	500000	50,000	
Vinyl chloride	150.96	4200	100,000	
PCBs			100	
Aroclor 1221	1.58	132		
Aroclor 1242	11.74	699		
Aroclor 1248	0.13	0.52		
Aroclor 1254	2.29	289		
Aroclor 1260	1.20	121		

<sup>\*</sup>Default MCP value, 40.0996.

# TABLE 71 COMPARISON OF ESTIMATED SURFACE WATER CONCENTRATIONS TO SURFACE WATER QUALITY BENCHMARKS AVX FACILITY 740 BELLEVILLE AVENUE NEW BEDFORD, MASSACHUSETTS

	AVERAGE GROUND WATER	ESTIMATED SURFACE WATER	WATER QUALITY
	CONCENTRATION	CONCENTRATION	BENCHMARK*
	(ug/l)	(ug/l)	(ug/l)
VOCs			
1,1,2-Trichloroethane	81.42	3.26	15,000
1,1-Dichloroethane	0.65	0.03	990
1,1-Dichloroethene	2.72	0.11	1200
1,2,4-Trichlorobenzene	2.33	0.01	340
1,2-Dichlorobenzene	2.96	0.12	78
1,3-Dichlorobenzene	18.26	0.07	150
1,4-Dichlorobenzene	26.52	1.06	310
Chlorobenzene	95.33	3.81	38
Chloroform	1.21	0.05	970
cis-1,2-Dichloroethene	3812.30	152.49	14000
Tetrachloroethene	29.26	1.17	1100
trans-1,2-Dichloroethene	18.44	0.74	22000
Trichloroethene	23944.72	957.79	190
Vinyl chloride	93.40	3.74	41000
PCBs			
Aroclor 1221	2.74	0.0027	0.014
Aroclor 1242	20.26	0.0203	0.014
Aroclor 1248	0.13	0.0001	0.014
Aroclor 1254	4.52	0.0045	0.014
Aroclor 1260	2.21	0.0022	0.014

<sup>\*</sup>MADEP, 2014b.

Bold value exceeds benchmark.

Appendix U.
Waste Manifests
(Included on CD only)

Appendix V
Public Notification
Letters



AECOM 1155 Elm Street, Suite 401 Manchester, NH 03101-1508 www.aecom.com 603 606 4800 tel 603 606 4801 fax

September 20, 2015 PN: 60422003

Dr. Brenda K. Weis, Director Board of Health City of New Bedford City Hall 133 William Street New Bedford, MA 02740

Re: Notification of Phase II Comprehensive Site Assessment Former Aerovox Facility
740 Belleville Avenue, New Bedford, Massachusetts
Release Tracking Number (RTN) 4-0601

Dear Dr. Weis:

On behalf of AVX Corporation (AVX) and as required by the Massachusetts Contingency Plan (MCP) subpart 310 CMR 40.1403(3)(e), this letter is notification to the Chief Municipal Officer and Board of Health of the submittal of a Phase II Comprehensive Site Assessment Report (Phase II CSA) for the above-referenced Site. The Phase II Report is being submitted to the Massachusetts Department of Environmental Protection (MassDEP) in accordance with the MCP, pursuant to 310 CMR 40.0480, and the provisions of an Administrative Consent Order between AVX and MassDEP.

The Phase II Report will be filed electronically, and may be accessed by searching for the referenced RTN number MassDEP on the web site: http://public.dep.state.ma.us/SearchableSites2/Search.aspx. The full report may also be reviewed by contacting the Southeast Regional Office of MassDEP located at 20 Riverside Drive in Lakeville, Massachusetts. For information about accessing files for review, contact the MassDEP file review coordinator at (508) 946-2718 or submit a file review request online at http://www.mass.gov/eea/agencies/massdep/about/contacts/southeast-region-file-reviewand-public-records-request.html. In addition, the following text provides a summary of findings and statement of conclusions from the Phase II Report, as provided in 310 CMR 40.0483(h). A copy of the disposal site map is also attached.

Based on the results of investigations and evaluations undertaken as part of the Phase II CSA, and concurrently as part of the implementation of the IRA for DNAPL found in the a portion of the Site, the following findings and conclusions are presented:.

1. The primary source of the release of oil and hazardous materials to the environment that is the subject of RTN 4-601 is the historic discharge and spilling of chlorinated solvents and PCB oil used in the manufacture of liquid filled capacitors. These spills occurred at the surface and in the subsurface, in unknown quantities over the course of decades. The evidence suggests that the locations of these releases centered around the previously unpaved area along the shoreline, particularly between the



former building and the river, the previously unpaved area along the north side of the building, the two drainage culverts on the north and south sides of the former building and a discrete area within the parking lot between the former boiler house and main building entrance.

- 2. These historic spills have resulted in the classification of the Site as a late-stage release (e.g., environmental impacts). The original released constituents have either migrated down to and into fractured bedrock, dissolved and migrated with groundwater, or collected as DNAPL in one limited area around monitoring well MW-15D. In the case of chlorinated VOCs, the analytical results show that the constituents have also attenuated and degraded into daughter products. Released PCBs remain adsorbed to surface soils along the riverfront and in deep soils and groundwater at the overburden and bedrock interface.
- 3. The nature of the hazardous materials found at the Site include PCBs, specifically Aroclors 1232, 1242, 1248, 1254 and 1260. The most frequently detected were Aroclors 1254 and 1242. The highest concentrations found were of Aroclor 1254. Chlorinated benzenes, common components of the PCB carrier oil were also found with 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene and Chlorobenzene found most frequently. Finally, the nature of hazardous materials found at the Site included chlorinated ethenes, from tetrachloroethene (PCE) and trichloroethene (TCE) down through cis-1,2-dichloroethene and vinyl chloride. TCE and cis-1,2-dichloroethene were found most frequently and at the highest concentrations.
- 4. The extent of soil impacted by PCBs is relatively ubiquitous across the Property and across the riverfront portion of the Titleist property. Shallow soil above the identified peat layer was found to be impacted with PCBs along the riverfront on the Precix and Titleist properties at levels that exceed UCLs. Deep soils in the vicinity of the identified DNAPL (MW-15D) and a limited area of soils centered around boring B04B also exceeded UCL levels. While the soil sample collected beneath the building slab former pump room location also had significant levels of PCBs, the soil beneath the remainder of the former building slab did not. Significant PCB impacts were not identified north or east of the Precix building, on the western portion of the Property or the north side of the western portion of the Titleist building. The chlorinated benzene detections generally coincided with the PCB impacted locations, but chlorinated benzenes were not found at significant concentration levels or levels approaching the UCLs.
- 5. There are no concentrations of TCE, cis-1,2-dichloroethene and PCE detected in shallow surface soils (< 3 feet bgs) on the Property. Within the soil profile from 3 feet bgs down to 15 feet, chlorinated ethenes are present below the former Aerovox building foundation, in the south central area of the Property near B04B and B04C, at B08B (near MW-10D and MW-27B), at MIP-43, in the UV-17 area, and within the



northeast corner of the Property. Inaccessible soils below 15 feet bgs are present more pervasively across the eastern two-thirds of the Property. The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. TCE is the only chlorinated ethene exceeding its UCL, which occurs both in the northeast corner of the Property and in the vicinity of UV-17.

- 6. The extent of PCB impacts to shallow overburden groundwater is limited to a small area along the waterfront centered near where the southern culvert discharge was located. The remaining shallow groundwater results across the Property and the Titleist and Precix properties indicate low or non-detect levels of PCBs. The extent of PCB impacts in deep overburden groundwater extends from midway within the Property out to the shoreline with increasing levels of PCBs closer to the river. PCB impacts in deep overburden groundwater extend partially onto the northeast corner of the Titleist property, and low levels of PCBs in deep overburden groundwater were also found in two wells on the south side of the Precix property. PCB impacts to bedrock groundwater were found in wells across the eastern two thirds of the Property, with the highest concentrations centered around the central (B04B) primary release area and along the waterfront. Bedrock groundwater concentrations in the northeast corner, in the area of identified DNAPL, exceeded the groundwater UCL for PCBs. Bedrock concentrations of PCBs on the Titleist and Precix properties were found only in a single well each, close to the river, and only at low levels.
- 7. The extent of chlorinated ethenes in shallow overburden groundwater extends across all but the western quarter of the Property, the southern and eastern half of the Precix property and in one location along the north side of the Titleist building. Because TCE is the dominant detected chlorinated ethene and has a heightened potential for impacting receptors via indoor air, the presence of TCE in the shallow groundwater gave rise to a vapor intrusion evaluation for the Precix and Titleist properties. The highest levels of TCE in shallow groundwater were found along Graham Street and at the discrete central (B04B) area on the Property. TCE was not found in shallow groundwater along the Aerovox waterfront. The extent of chlorinated ethenes in deep overburden groundwater covers all but the westernmost portion of the Property, the eastern half of the Precix property and the northeastern quarter of the Titleist property. Deep overburden concentrations on average are one to two orders of magnitude higher than shallow overburden concentrations. The highest levels of chlorinated ethenes in deep overburden groundwater are centered around the Aerovox waterfront and the location of the deeper bedrock trough just inland from the waterfront. Neither shallow nor deep overburden groundwater concentrations for TCE exceed UCL levels.
- 8. The extent of chlorinated ethenes in bedrock groundwater could not be measured to the north of the Site because access to the Coyne property (north of the Precix



property) was denied. The inferred extent, based on concentration and bedrock fracture trends would be expected to reach beyond the northern Precix property line. MassDEP assistance in obtaining access has been requested, and once access is provided additional investigation in this direction will be completed. Otherwise, the extent of chlorinated ethene impacts in bedrock extends across all but the westernmost portion of the Property and extends along the waterfront to the southern end of the Titleist property. The highest levels of TCE impacts to bedrock groundwater, above UCL concentrations, were found in the deepest fracture zone encountered at the Site in the center of the Property (MW-26B), in the deep fracture zone of MW-34B in the northeast corner of the Property, and in the shallow bedrock groundwater associated with the DNAPL area (MW-15B). (Note that carbon tetrachloride was also found above UCL levels in the northernmost bedrock well, MW-24B on the Precix property. This is not a constituent related to or originating from the Aerovox releases.)

- 9. A peat layer of varying thickness is present across much of the eastern portions of the Site. The sheet pile wall that defines the edge of the Property and is keyed into this peat impede the flow of contaminants with shallow groundwater and from shallow soils into the river, but constituents in deep groundwater and at the overburden bedrock interface can migrate with tidal flow both toward and away from the river.
- 10. The identified DNAPL area is limited in extent at the northeast corner of the sheet pile wall. It is present only at depth and likely originated both from the northern culvert discharges and from near shore dumping of capacitors. The DNAPL contains both PCBs and chlorinated solvents. Based on soil concentrations and UVOST screening results, DNAPL may also be present in shallow soil above the peat layer near the south culvert, but it has not accumulated to measureable amounts in a well. If DNAPL is present in this location, it is presently contained by the HAC cap and sheet pile wall.
- 11. Groundwater flow in deep overburden and in bedrock is strongly influenced by the tides, and flow direction reverses in response to tidal changes. There is strong interconnection between the shallow overburden, deep overburden and shallow bedrock aquifers and between groundwater and surface water. Vertical groundwater gradients exist at the Site between the three aquifer types, and vary between positive (upward) and negative (downward) across the Site. In portions of the Site where tidal influence on groundwater levels is greatest, reversals in vertical gradient from positive to negative are observed with changing tides. Further inland, vertical gradients are largely upward, with the magnitude of the gradient also changing with the tides. Based on data collected for the multi-level bedrock sampling devices (Water FLUTes), a positive vertical gradient is observed in shallow bedrock, while negative vertical gradients are observed in deeper bedrock sampling intervals.



- 12. A vapor intrusion assessment was completed for both the Titleist and Precix properties. The weight of evidence indicated that vapor intrusion was not a pathway of concern for Titleist. For Precix, the vapor intrusion pathway is complete but does not present a risk under current site uses. If foreseeable future uses were to include residential use, the vapor intrusion pathway would need to be mitigated.
- 13. A Method 3 Risk Assessment was completed based on the data collected during the Phase II CSA. The Method 3 identified receptors, exposure scenarios and calculated human health risks for current and foreseeable future uses. Risk to public safety and welfare and a Stage 1 environmental risk characterization were also competed. The Method 3 Risk assessment found that:
  - o For the Titleist property, concentrations in surface soil present unacceptable chronic non-cancer and cancer risks for various current (employee, trespasser) and future (potential residential) exposure scenarios. (Note that access control measure, including signage, fencing and gravel coverings were put in place at the outset of the Phase II to limit and control exposure under current site conditions, mitigating any subchronic or acute potential impacts until final response actions can be implemented)
  - For the Precix property, under current conditions non-cancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees. Under future conditions, non-cancer and cancer risks are above acceptable limits for hypothetical residents who could be exposed to VOCs in indoor air via inhalation.
  - o For the Property, the results show that non-cancer and cancer risks are within acceptable limits for future construction work on the western side of the Property but above acceptable limits for future construction work within the eastern half of the Property and in the central area surrounding boring B 04BN.
  - A risk to public welfare exists for the Site because PCBs and TCE are above UCLs in soil in some areas on the Property. The results also indicate that the average concentrations of PCBs in groundwater in the vicinity of the DNAPL area (MW-15B) are above the UCL.
  - A Stage I Environmental Screening indicates that groundwater concentrations have the potential to impact surface water above the MassDEP benchmarks. However the foreseeable migration of groundwater contaminants to surface water is valid if and only to the extent that the Site could act as a continuing source to the river after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete. Only clearly identified contaminants, if any, coming from the Site can be compared to these benchmarks, and not contaminants from other sources historically or presently impacting the river or from historical conditions in the river that may remain after EPA CERCLA response actions are complete.



Based on the findings of the Phase II CSA described herein, the updated Conceptual Site Model and the results of the Risk Characterization, in the opinion of the Licensed Site Professional of record for the Site, Comprehensive Remedial Actions are necessary at the Site to achieve a Permanent or Temporary Solution as described in 310 CMR 40.1000. A Phase III study for the identification, evaluation and selection of Comprehensive Remedial Action Alternatives as described in 310 CMR 40.0850 is necessary to select remedial action alternatives.

In accordance with the requirements of the MCP at 310 CMR 40.1003, additional response actions will be evaluated to provide source elimination and control, to control subsurface migration of PCBs and CVOCs remaining at the Site in soil and groundwater and to eliminate non-stable NAPL and remove or contain the identified NAPL if and to the extent feasible. Source control remedial action alternatives to be evaluated will include an assessment of a variety of containment or combination containment and treatment technologies.

If you have questions concerning these actions, please contact the undersigned at (603) 606-4824

Sincerely, **AECOM** 

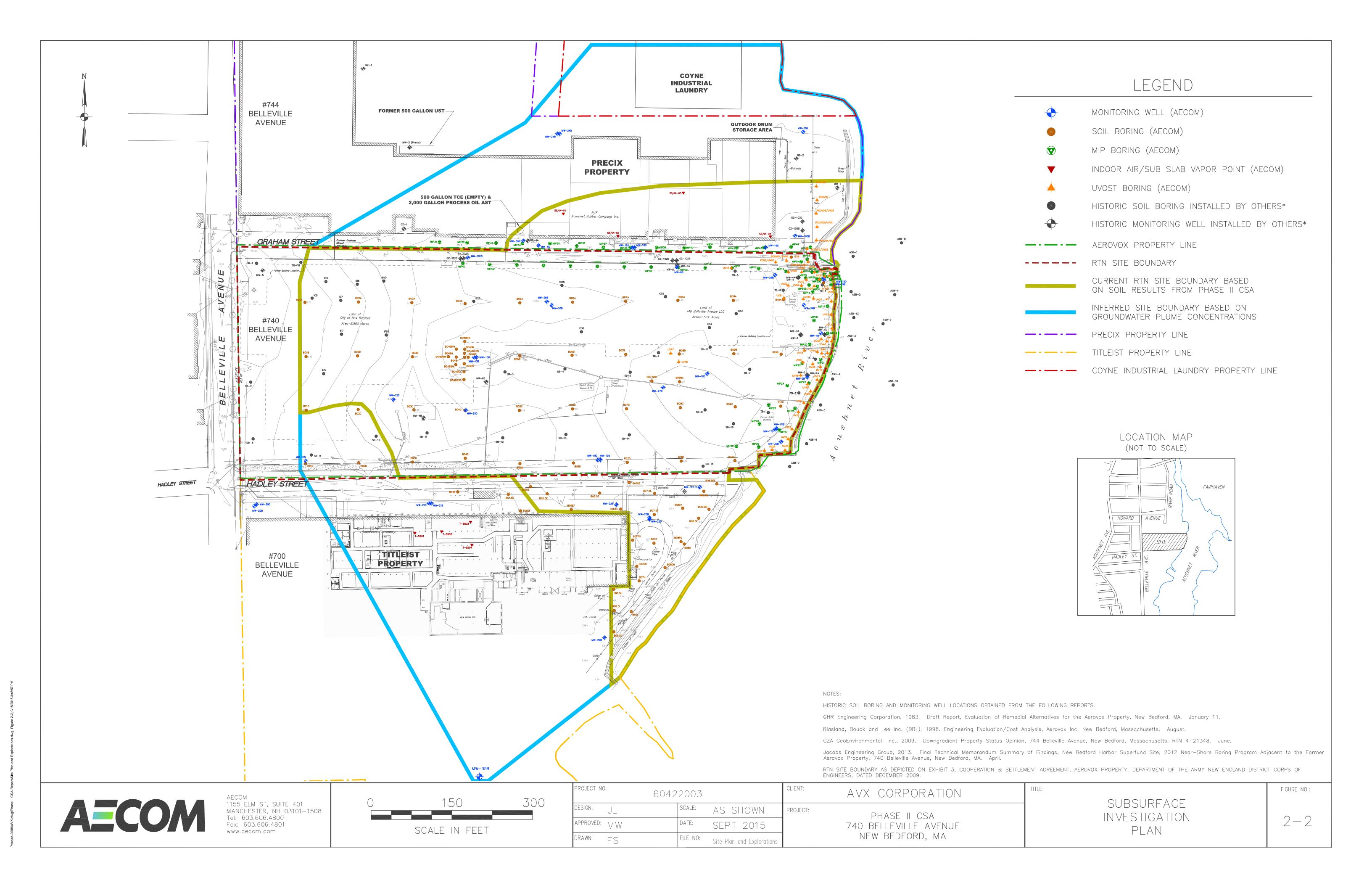
Marilyn Wade, P.E. LSP Senior Project Manager

Skirty I Wade

cc: Mr. Evan Slavitt, AVX Corporation

Ms. Michele Paul, City of New Bedford

Attachment: Site Figure





603 606 4800 tel 603 606 4801 fax

PN: 60422003

September 20, 2015

Mr. Jon Mitchell, Mayor City of New Bedford City Hall 133 William Street New Bedford, MA 02740

Re: Notification of Phase II Comprehensive Site Assessment Former Aerovox Facility
740 Belleville Avenue, New Bedford, Massachusetts
Release Tracking Number (RTN) 4-0601

### Honorable Mayor Mitchell:

On behalf of AVX Corporation (AVX) and as required by the Massachusetts Contingency Plan (MCP) subpart 310 CMR 40.1403(3)(e), this letter is notification to the Chief Municipal Officer and Board of Health of the submittal of a Phase II Comprehensive Site Assessment Report (Phase II CSA) for the above-referenced Site. The Phase II Report is being submitted to the Massachusetts Department of Environmental Protection (MassDEP) in accordance with the MCP, pursuant to 310 CMR 40.0480, and the provisions of an Administrative Consent Order between AVX and MassDEP.

The Phase II Report will be filed electronically, and may be accessed by searching for the referenced RTN number MassDEP on the web site: http://public.dep.state.ma.us/SearchableSites2/Search.aspx. The full report may also be reviewed by contacting the Southeast Regional Office of MassDEP located at 20 Riverside Drive in Lakeville, Massachusetts. For information about accessing files for review, contact the MassDEP file review coordinator at (508) 946-2718 or submit a file review request online at http://www.mass.gov/eea/agencies/massdep/about/contacts/southeast-region-file-reviewand-public-records-request.html. In addition, the following text provides a summary of findings and statement of conclusions from the Phase II Report, as provided in 310 CMR 40.0483(h). A copy of the disposal site map is also attached.

Based on the results of investigations and evaluations undertaken as part of the Phase II CSA, and concurrently as part of the implementation of the IRA for DNAPL found in the a portion of the Site, the following findings and conclusions are presented:.

1. The primary source of the release of oil and hazardous materials to the environment that is the subject of RTN 4-601 is the historic discharge and spilling of chlorinated solvents and PCB oil used in the manufacture of liquid filled capacitors. These spills occurred at the surface and in the subsurface, in unknown quantities over the course of decades. The evidence suggests that the locations of these releases centered around the previously unpaved area along the shoreline, particularly between the



former building and the river, the previously unpaved area along the north side of the building, the two drainage culverts on the north and south sides of the former building and a discrete area within the parking lot between the former boiler house and main building entrance.

- 2. These historic spills have resulted in the classification of the Site as a late-stage release (e.g., environmental impacts). The original released constituents have either migrated down to and into fractured bedrock, dissolved and migrated with groundwater, or collected as DNAPL in one limited area around monitoring well MW-15D. In the case of chlorinated VOCs, the analytical results show that the constituents have also attenuated and degraded into daughter products. Released PCBs remain adsorbed to surface soils along the riverfront and in deep soils and groundwater at the overburden and bedrock interface.
- 3. The nature of the hazardous materials found at the Site include PCBs, specifically Aroclors 1232, 1242, 1248, 1254 and 1260. The most frequently detected were Aroclors 1254 and 1242. The highest concentrations found were of Aroclor 1254. Chlorinated benzenes, common components of the PCB carrier oil were also found with 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene and Chlorobenzene found most frequently. Finally, the nature of hazardous materials found at the Site included chlorinated ethenes, from tetrachloroethene (PCE) and trichloroethene (TCE) down through cis-1,2-dichloroethene and vinyl chloride. TCE and cis-1,2-dichloroethene were found most frequently and at the highest concentrations.
- 4. The extent of soil impacted by PCBs is relatively ubiquitous across the Property and across the riverfront portion of the Titleist property. Shallow soil above the identified peat layer was found to be impacted with PCBs along the riverfront on the Precix and Titleist properties at levels that exceed UCLs. Deep soils in the vicinity of the identified DNAPL (MW-15D) and a limited area of soils centered around boring B04B also exceeded UCL levels. While the soil sample collected beneath the building slab former pump room location also had significant levels of PCBs, the soil beneath the remainder of the former building slab did not. Significant PCB impacts were not identified north or east of the Precix building, on the western portion of the Property or the north side of the western portion of the Titleist building. The chlorinated benzene detections generally coincided with the PCB impacted locations, but chlorinated benzenes were not found at significant concentration levels or levels approaching the UCLs.
- 5. There are no concentrations of TCE, cis-1,2-dichloroethene and PCE detected in shallow surface soils (< 3 feet bgs) on the Property. Within the soil profile from 3 feet bgs down to 15 feet, chlorinated ethenes are present below the former Aerovox building foundation, in the south central area of the Property near B04B and B04C, at B08B (near MW-10D and MW-27B), at MIP-43, in the UV-17 area, and within the



northeast corner of the Property. Inaccessible soils below 15 feet bgs are present more pervasively across the eastern two-thirds of the Property. The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. TCE is the only chlorinated ethene exceeding its UCL, which occurs both in the northeast corner of the Property and in the vicinity of UV-17.

- 6. The extent of PCB impacts to shallow overburden groundwater is limited to a small area along the waterfront centered near where the southern culvert discharge was located. The remaining shallow groundwater results across the Property and the Titleist and Precix properties indicate low or non-detect levels of PCBs. The extent of PCB impacts in deep overburden groundwater extends from midway within the Property out to the shoreline with increasing levels of PCBs closer to the river. PCB impacts in deep overburden groundwater extend partially onto the northeast corner of the Titleist property, and low levels of PCBs in deep overburden groundwater were also found in two wells on the south side of the Precix property. PCB impacts to bedrock groundwater were found in wells across the eastern two thirds of the Property, with the highest concentrations centered around the central (B04B) primary release area and along the waterfront. Bedrock groundwater concentrations in the northeast corner, in the area of identified DNAPL, exceeded the groundwater UCL for PCBs. Bedrock concentrations of PCBs on the Titleist and Precix properties were found only in a single well each, close to the river, and only at low levels.
- 7. The extent of chlorinated ethenes in shallow overburden groundwater extends across all but the western quarter of the Property, the southern and eastern half of the Precix property and in one location along the north side of the Titleist building. Because TCE is the dominant detected chlorinated ethene and has a heightened potential for impacting receptors via indoor air, the presence of TCE in the shallow groundwater gave rise to a vapor intrusion evaluation for the Precix and Titleist properties. The highest levels of TCE in shallow groundwater were found along Graham Street and at the discrete central (B04B) area on the Property. TCE was not found in shallow groundwater along the Aerovox waterfront. The extent of chlorinated ethenes in deep overburden groundwater covers all but the westernmost portion of the Property, the eastern half of the Precix property and the northeastern quarter of the Titleist property. Deep overburden concentrations on average are one to two orders of magnitude higher than shallow overburden concentrations. The highest levels of chlorinated ethenes in deep overburden groundwater are centered around the Aerovox waterfront and the location of the deeper bedrock trough just inland from the waterfront. Neither shallow nor deep overburden groundwater concentrations for TCE exceed UCL levels.
- 8. The extent of chlorinated ethenes in bedrock groundwater could not be measured to the north of the Site because access to the Coyne property (north of the Precix



property) was denied. The inferred extent, based on concentration and bedrock fracture trends would be expected to reach beyond the northern Precix property line. MassDEP assistance in obtaining access has been requested, and once access is provided additional investigation in this direction will be completed. Otherwise, the extent of chlorinated ethene impacts in bedrock extends across all but the westernmost portion of the Property and extends along the waterfront to the southern end of the Titleist property. The highest levels of TCE impacts to bedrock groundwater, above UCL concentrations, were found in the deepest fracture zone encountered at the Site in the center of the Property (MW-26B), in the deep fracture zone of MW-34B in the northeast corner of the Property, and in the shallow bedrock groundwater associated with the DNAPL area (MW-15B). (Note that carbon tetrachloride was also found above UCL levels in the northernmost bedrock well, MW-24B on the Precix property. This is not a constituent related to or originating from the Aerovox releases.)

- 9. A peat layer of varying thickness is present across much of the eastern portions of the Site. The sheet pile wall that defines the edge of the Property and is keyed into this peat impede the flow of contaminants with shallow groundwater and from shallow soils into the river, but constituents in deep groundwater and at the overburden bedrock interface can migrate with tidal flow both toward and away from the river.
- 10. The identified DNAPL area is limited in extent at the northeast corner of the sheet pile wall. It is present only at depth and likely originated both from the northern culvert discharges and from near shore dumping of capacitors. The DNAPL contains both PCBs and chlorinated solvents. Based on soil concentrations and UVOST screening results, DNAPL may also be present in shallow soil above the peat layer near the south culvert, but it has not accumulated to measureable amounts in a well. If DNAPL is present in this location, it is presently contained by the HAC cap and sheet pile wall.
- 11. Groundwater flow in deep overburden and in bedrock is strongly influenced by the tides, and flow direction reverses in response to tidal changes. There is strong interconnection between the shallow overburden, deep overburden and shallow bedrock aquifers and between groundwater and surface water. Vertical groundwater gradients exist at the Site between the three aquifer types, and vary between positive (upward) and negative (downward) across the Site. In portions of the Site where tidal influence on groundwater levels is greatest, reversals in vertical gradient from positive to negative are observed with changing tides. Further inland, vertical gradients are largely upward, with the magnitude of the gradient also changing with the tides. Based on data collected for the multi-level bedrock sampling devices (Water FLUTes), a positive vertical gradient is observed in shallow bedrock, while negative vertical gradients are observed in deeper bedrock sampling intervals.



- 12. A vapor intrusion assessment was completed for both the Titleist and Precix properties. The weight of evidence indicated that vapor intrusion was not a pathway of concern for Titleist. For Precix, the vapor intrusion pathway is complete but does not present a risk under current site uses. If foreseeable future uses were to include residential use, the vapor intrusion pathway would need to be mitigated.
- 13. A Method 3 Risk Assessment was completed based on the data collected during the Phase II CSA. The Method 3 identified receptors, exposure scenarios and calculated human health risks for current and foreseeable future uses. Risk to public safety and welfare and a Stage 1 environmental risk characterization were also competed. The Method 3 Risk assessment found that:
  - o For the Titleist property, concentrations in surface soil present unacceptable chronic non-cancer and cancer risks for various current (employee, trespasser) and future (potential residential) exposure scenarios. (Note that access control measure, including signage, fencing and gravel coverings were put in place at the outset of the Phase II to limit and control exposure under current site conditions, mitigating any subchronic or acute potential impacts until final response actions can be implemented)
  - For the Precix property, under current conditions non-cancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees. Under future conditions, non-cancer and cancer risks are above acceptable limits for hypothetical residents who could be exposed to VOCs in indoor air via inhalation.
  - For the Property, the results show that non-cancer and cancer risks are within acceptable limits for future construction work on the western side of the Property but above acceptable limits for future construction work within the eastern half of the Property and in the central area surrounding boring B 04BN.
  - A risk to public welfare exists for the Site because PCBs and TCE are above UCLs in soil in some areas on the Property. The results also indicate that the average concentrations of PCBs in groundwater in the vicinity of the DNAPL area (MW-15B) are above the UCL.
  - A Stage I Environmental Screening indicates that groundwater concentrations have the potential to impact surface water above the MassDEP benchmarks. However the foreseeable migration of groundwater contaminants to surface water is valid if and only to the extent that the Site could act as a continuing source to the river after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete. Only clearly identified contaminants, if any, coming from the Site can be compared to these benchmarks, and not contaminants from other sources historically or presently impacting the river or from historical conditions in the river that may remain after EPA CERCLA response actions are complete.



Based on the findings of the Phase II CSA described herein, the updated Conceptual Site Model and the results of the Risk Characterization, in the opinion of the Licensed Site Professional of record for the Site, Comprehensive Remedial Actions are necessary at the Site to achieve a Permanent or Temporary Solution as described in 310 CMR 40.1000. A Phase III study for the identification, evaluation and selection of Comprehensive Remedial Action Alternatives as described in 310 CMR 40.0850 is necessary to select remedial action alternatives.

In accordance with the requirements of the MCP at 310 CMR 40.1003, additional response actions will be evaluated to provide source elimination and control, to control subsurface migration of PCBs and CVOCs remaining at the Site in soil and groundwater and to eliminate non-stable NAPL and remove or contain the identified NAPL if and to the extent feasible. Source control remedial action alternatives to be evaluated will include an assessment of a variety of containment or combination containment and treatment technologies.

If you have questions concerning these actions, please contact the undersigned at (603) 606-4824

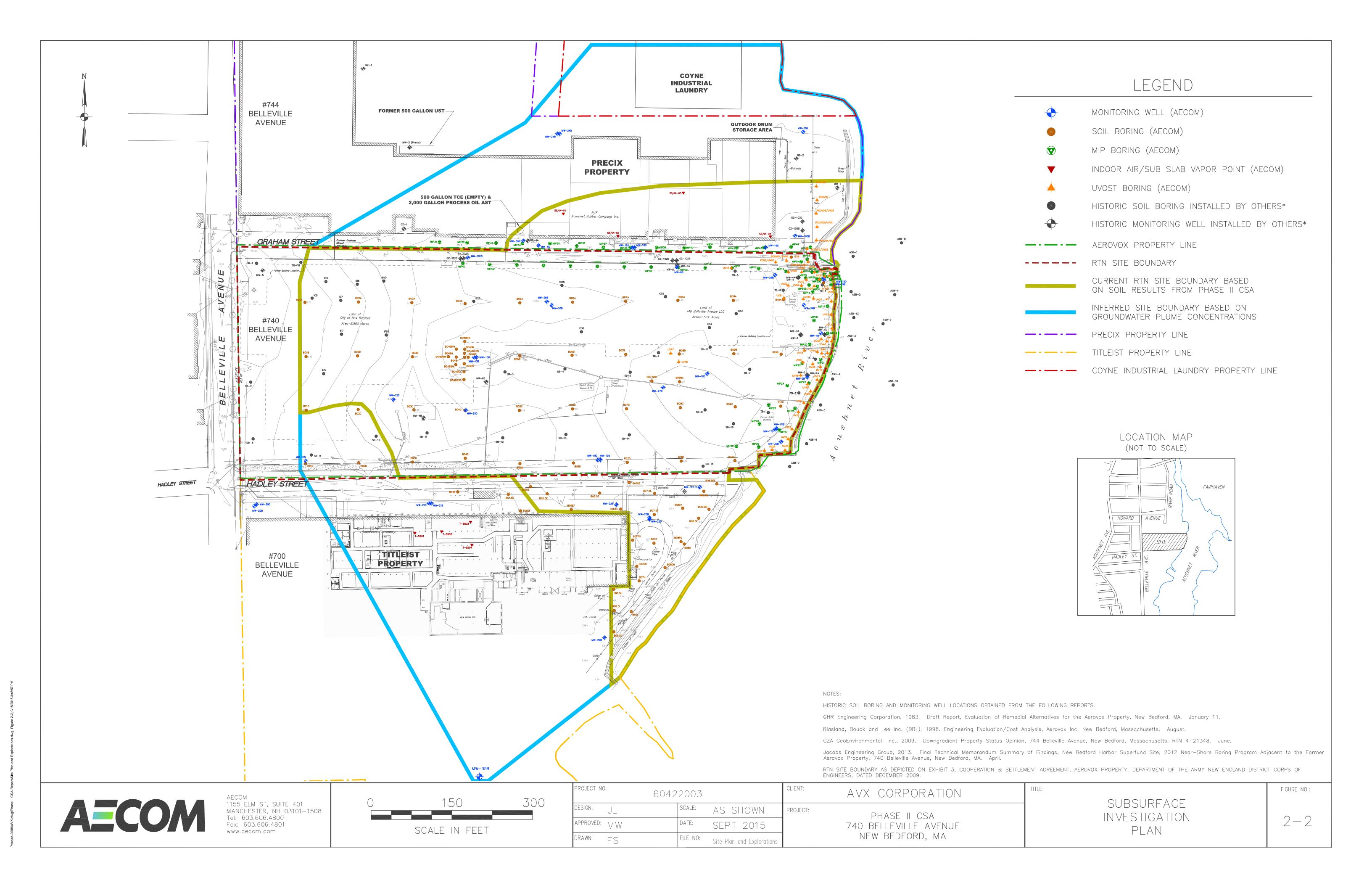
Sincerely, **AECOM** 

Marilyn Wade, P.E. LSP Senior Project Manager

Skirty I Wade

cc: Mr. Evan Slavitt, AVX Corporation

Ms. Michele Paul, City of New Bedford





603 606 4800 tel 603 606 4801 fax

September 20, 2015 PN: 60422003

Mr. Jon Mitchell, Mayor City of New Bedford City Hall 133 William Street New Bedford, MA 02740

RE: Notification of Property Inclusion in Disposal Site Former Aerovox Facility
740 Belleville Avenue, New Bedford, Massachusetts Release Tracking Number (RTN) 4-0601

### Honorable Mayor Mitchell:

On behalf of AVX Corporation and as required by the Massachusetts Contingency Plan (MCP) subpart 310 CMR 40.1406(1), this letter is notification of inclusion of the City of New Bedford property located at 740 Belleville Avenue, New Bedford, Massachusetts within the Disposal Site Boundary as currently delineated for the above referenced Site. The Phase II Report is being submitted to the Massachusetts Department of Environmental Protection (MassDEP) in accordance with the MCP, pursuant to 310 CMR 40.0480, and the provisions of an Administrative Consent Order between AVX and MassDEP.

The Phase II Report will be filed electronically, and may be accessed by searching for the referenced RTN number **MassDEP** on the web site: http://public.dep.state.ma.us/SearchableSites2/Search.aspx. The full report may also be reviewed by contacting the Southeast Regional Office of MassDEP located at 20 Riverside Drive in Lakeville, Massachusetts. For information about accessing files for review, contact the MassDEP file review coordinator at (508) 946-2718 or submit a file review request online at http://www.mass.gov/eea/agencies/massdep/about/contacts/southeast-region-file-reviewand-public-records-request.html. In addition, the following text provides a summary of findings and statement of conclusions from the Phase II Report, as provided in 310 CMR 40.0483(h). A copy of the disposal site map is also attached.

## Phase II Report Conclusions

Based on the results of investigations and evaluations undertaken as part of the Phase II CSA, and concurrently as part of the implementation of the IRA for DNAPL found in the a portion of the Site, the following findings and conclusions are presented:.

 The primary source of the release of oil and hazardous materials to the environment that is the subject of RTN 4-601 is the historic discharge and spilling of chlorinated solvents and PCB oil used in the manufacture of liquid filled capacitors. These spills occurred at the surface and in the subsurface, in unknown quantities over the course



of decades. The evidence suggests that the locations of these releases centered around the previously unpaved area along the shoreline, particularly between the former building and the river, the previously unpaved area along the north side of the building, the two drainage culverts on the north and south sides of the former building and a discrete area within the parking lot between the former boiler house and main building entrance.

- 2. These historic spills have resulted in the classification of the Site as a late-stage release (e.g., environmental impacts). The original released constituents have either migrated down to and into fractured bedrock, dissolved and migrated with groundwater, or collected as DNAPL in one limited area around monitoring well MW-15D. In the case of chlorinated VOCs, the analytical results show that the constituents have also attenuated and degraded into daughter products. Released PCBs remain adsorbed to surface soils along the riverfront and in deep soils and groundwater at the overburden and bedrock interface.
- 3. The nature of the hazardous materials found at the Site include PCBs, specifically Aroclors 1232, 1242, 1248, 1254 and 1260. The most frequently detected were Aroclors 1254 and 1242. The highest concentrations found were of Aroclor 1254. Chlorinated benzenes, common components of the PCB carrier oil were also found with 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene and Chlorobenzene found most frequently. Finally, the nature of hazardous materials found at the Site included chlorinated ethenes, from tetrachloroethene (PCE) and trichloroethene (TCE) down through cis-1,2-dichloroethene and vinyl chloride. TCE and cis-1,2-dichloroethene were found most frequently and at the highest concentrations.
- 4. The extent of soil impacted by PCBs is relatively ubiquitous across the Property and across the riverfront portion of the Titleist property. Shallow soil above the identified peat layer was found to be impacted with PCBs along the riverfront on the Precix and Titleist properties at levels that exceed UCLs. Deep soils in the vicinity of the identified DNAPL (MW-15D) and a limited area of soils centered around boring B04B also exceeded UCL levels. While the soil sample collected beneath the building slab former pump room location also had significant levels of PCBs, the soil beneath the remainder of the former building slab did not. Significant PCB impacts were not identified north or east of the Precix building, on the western portion of the Property or the north side of the western portion of the Titleist building. The chlorinated benzene detections generally coincided with the PCB impacted locations, but chlorinated benzenes were not found at significant concentration levels or levels approaching the UCLs.
- 5. There are no concentrations of TCE, cis-1,2-dichloroethene and PCE detected in shallow surface soils (< 3 feet bgs) on the Property. Within the soil profile from 3 feet bgs down to 15 feet, chlorinated ethenes are present below the former Aerovox



building foundation, in the south central area of the Property near B04B and B04C, at B08B (near MW-10D and MW-27B), at MIP-43, in the UV-17 area, and within the northeast corner of the Property. Inaccessible soils below 15 feet bgs are present more pervasively across the eastern two-thirds of the Property. The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. TCE is the only chlorinated ethene exceeding its UCL, which occurs both in the northeast corner of the Property and in the vicinity of UV-17.

- 6. The extent of PCB impacts to shallow overburden groundwater is limited to a small area along the waterfront centered near where the southern culvert discharge was located. The remaining shallow groundwater results across the Property and the Titleist and Precix properties indicate low or non-detect levels of PCBs. The extent of PCB impacts in deep overburden groundwater extends from midway within the Property out to the shoreline with increasing levels of PCBs closer to the river. PCB impacts in deep overburden groundwater extend partially onto the northeast corner of the Titleist property, and low levels of PCBs in deep overburden groundwater were also found in two wells on the south side of the Precix property. PCB impacts to bedrock groundwater were found in wells across the eastern two thirds of the Property, with the highest concentrations centered around the central (B04B) primary release area and along the waterfront. Bedrock groundwater concentrations in the northeast corner, in the area of identified DNAPL, exceeded the groundwater UCL for PCBs. Bedrock concentrations of PCBs on the Titleist and Precix properties were found only in a single well each, close to the river, and only at low levels.
- 7. The extent of chlorinated ethenes in shallow overburden groundwater extends across all but the western quarter of the Property, the southern and eastern half of the Precix property and in one location along the north side of the Titleist building. Because TCE is the dominant detected chlorinated ethene and has a heightened potential for impacting receptors via indoor air, the presence of TCE in the shallow groundwater gave rise to a vapor intrusion evaluation for the Precix and Titleist properties. The highest levels of TCE in shallow groundwater were found along Graham Street and at the discrete central (B04B) area on the Property. TCE was not found in shallow groundwater along the Aerovox waterfront. The extent of chlorinated ethenes in deep overburden groundwater covers all but the westernmost portion of the Property, the eastern half of the Precix property and the northeastern quarter of the Titleist property. Deep overburden concentrations on average are one to two orders of magnitude higher than shallow overburden concentrations. The highest levels of chlorinated ethenes in deep overburden groundwater are centered around the Aerovox waterfront and the location of the deeper bedrock trough just inland from the waterfront. Neither shallow nor deep overburden groundwater concentrations for TCE exceed UCL levels.



- 8. The extent of chlorinated ethenes in bedrock groundwater could not be measured to the north of the Site because access to the Coyne property (north of the Precix property) was denied. The inferred extent, based on concentration and bedrock fracture trends would be expected to reach beyond the northern Precix property line. MassDEP assistance in obtaining access has been requested, and once access is provided additional investigation in this direction will be completed. Otherwise, the extent of chlorinated ethene impacts in bedrock extends across all but the westernmost portion of the Property and extends along the waterfront to the southern end of the Titleist property. The highest levels of TCE impacts to bedrock groundwater, above UCL concentrations, were found in the deepest fracture zone encountered at the Site in the center of the Property (MW-26B), in the deep fracture zone of MW-34B in the northeast corner of the Property, and in the shallow bedrock groundwater associated with the DNAPL area (MW-15B). (Note that carbon tetrachloride was also found above UCL levels in the northernmost bedrock well, MW-24B on the Precix property. This is not a constituent related to or originating from the Aerovox releases.)
- 9. A peat layer of varying thickness is present across much of the eastern portions of the Site. The sheet pile wall that defines the edge of the Property and is keyed into this peat impede the flow of contaminants with shallow groundwater and from shallow soils into the river, but constituents in deep groundwater and at the overburden bedrock interface can migrate with tidal flow both toward and away from the river.
- 10. The identified DNAPL area is limited in extent at the northeast corner of the sheet pile wall. It is present only at depth and likely originated both from the northern culvert discharges and from near shore dumping of capacitors. The DNAPL contains both PCBs and chlorinated solvents. Based on soil concentrations and UVOST screening results, DNAPL may also be present in shallow soil above the peat layer near the south culvert, but it has not accumulated to measureable amounts in a well. If DNAPL is present in this location, it is presently contained by the HAC cap and sheet pile wall.
- 11. Groundwater flow in deep overburden and in bedrock is strongly influenced by the tides, and flow direction reverses in response to tidal changes. There is strong interconnection between the shallow overburden, deep overburden and shallow bedrock aquifers and between groundwater and surface water. Vertical groundwater gradients exist at the Site between the three aquifer types, and vary between positive (upward) and negative (downward) across the Site. In portions of the Site where tidal influence on groundwater levels is greatest, reversals in vertical gradient from positive to negative are observed with changing tides. Further inland, vertical gradients are largely upward, with the magnitude of the gradient also changing with the tides. Based on data collected for the multi-level bedrock sampling devices



- (Water FLUTes), a positive vertical gradient is observed in shallow bedrock, while negative vertical gradients are observed in deeper bedrock sampling intervals.
- 12. A vapor intrusion assessment was completed for both the Titleist and Precix properties. The weight of evidence indicated that vapor intrusion was not a pathway of concern for Titleist. For Precix, the vapor intrusion pathway is complete but does not present a risk under current site uses. If foreseeable future uses were to include residential use, the vapor intrusion pathway would need to be mitigated.
- 13. A Method 3 Risk Assessment was completed based on the data collected during the Phase II CSA. The Method 3 identified receptors, exposure scenarios and calculated human health risks for current and foreseeable future uses. Risk to public safety and welfare and a Stage 1 environmental risk characterization were also competed. The Method 3 Risk assessment found that:
  - o For the Titleist property, concentrations in surface soil present unacceptable chronic non-cancer and cancer risks for various current (employee, trespasser) and future (potential residential) exposure scenarios. (Note that access control measure, including signage, fencing and gravel coverings were put in place at the outset of the Phase II to limit and control exposure under current site conditions, mitigating any subchronic or acute potential impacts until final response actions can be implemented)
  - o For the Precix property, under current conditions non-cancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees. Under future conditions, non-cancer and cancer risks are above acceptable limits for hypothetical residents who could be exposed to VOCs in indoor air via inhalation.
  - o For the Property, the results show that non-cancer and cancer risks are within acceptable limits for future construction work on the western side of the Property but above acceptable limits for future construction work within the eastern half of the Property and in the central area surrounding boring B 04BN.
  - A risk to public welfare exists for the Site because PCBs and TCE are above UCLs in soil in some areas on the Property. The results also indicate that the average concentrations of PCBs in groundwater in the vicinity of the DNAPL area (MW-15B) are above the UCL.
  - A Stage I Environmental Screening indicates that groundwater concentrations have the potential to impact surface water above the MassDEP benchmarks. However the foreseeable migration of groundwater contaminants to surface water is valid if and only to the extent that the Site could act as a continuing source to the river after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete. Only clearly identified contaminants, if any, coming from the Site can be compared to these



benchmarks, and not contaminants from other sources historically or presently impacting the river or from historical conditions in the river that may remain after EPA CERCLA response actions are complete.

Based on the findings of the Phase II CSA described herein, the updated Conceptual Site Model and the results of the Risk Characterization, in the opinion of the Licensed Site Professional of record for the Site, Comprehensive Remedial Actions are necessary at the Site to achieve a Permanent or Temporary Solution as described in 310 CMR 40.1000. A Phase III study for the identification, evaluation and selection of Comprehensive Remedial Action Alternatives as described in 310 CMR 40.0850 is necessary to select remedial action alternatives.

In accordance with the requirements of the MCP at 310 CMR 40.1003, additional response actions will be evaluated to provide source elimination and control, to control subsurface migration of PCBs and CVOCs remaining at the Site in soil and groundwater and to eliminate non-stable NAPL and remove or contain the identified NAPL if and to the extent feasible. Source control remedial action alternatives to be evaluated will include an assessment of a variety of containment or combination containment and treatment technologies.

# Public Involvement Statement

Additional public involvement opportunities are available under the MCP pursuant to 310 CMR 40.1400.

#### Point of Contact

If you have questions concerning these actions, please contact the undersigned at (603) 606-4824, as the LSP of Record and contact person representing AVX Corporation, who is conducting the response actions at the Site.

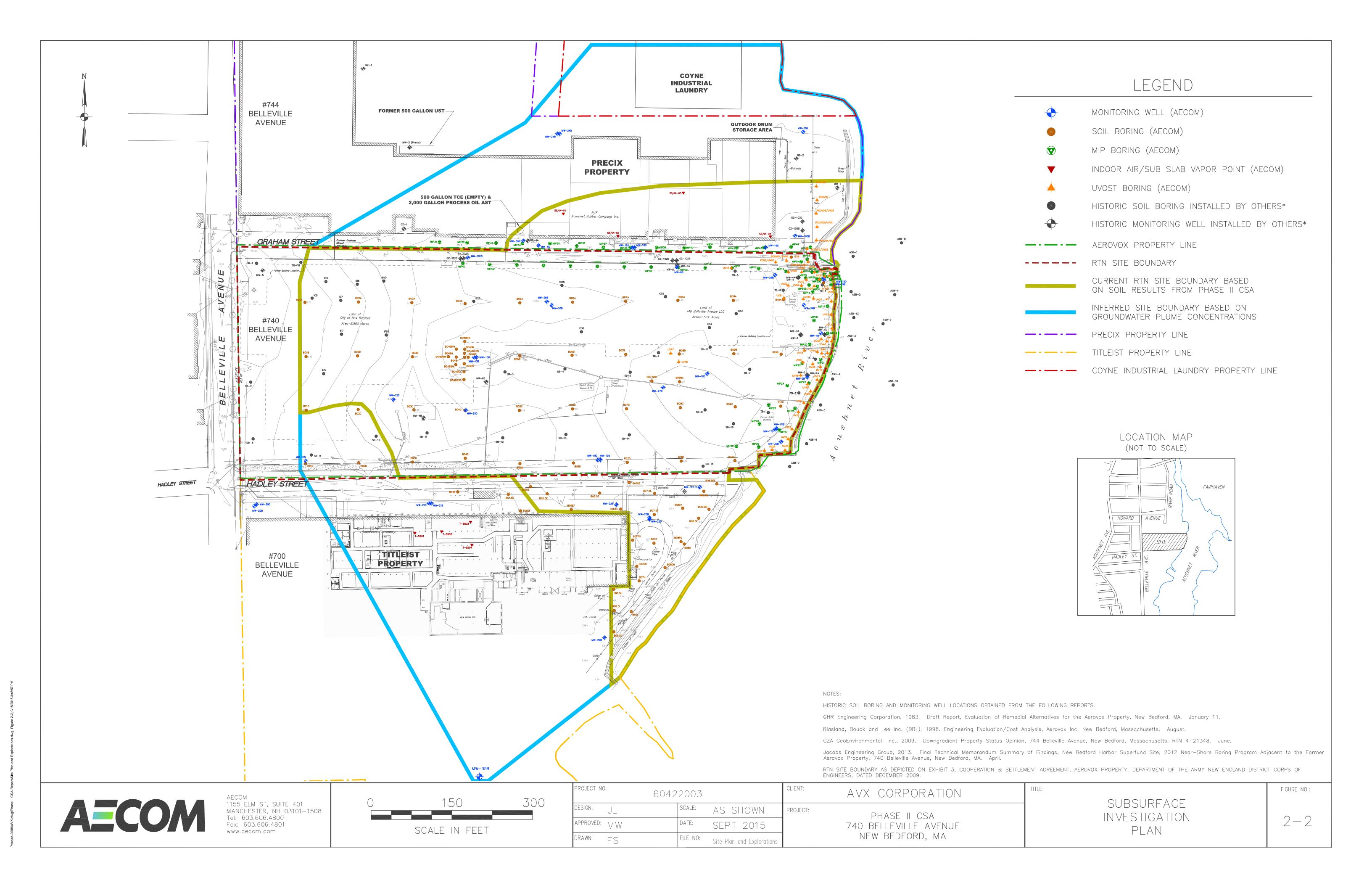
Sincerely, **AECOM** 

Marilyn Wade, P.E. LSP Senior Project Manager

Skirly I Wade

cc: Mr. Evan Slavitt, AVX Corporation

Ms. Michele Paul, City of New Bedford





603 606 4800 tel 603 606 4801 fax

September 20, 2015 PN: 60422003

Jeanine L. Grachuk As Special Environmental Counsel to Coyne International Enterprises Corp Beveredge and Diamond, PC 15 Walnut Street Suite 400 Wellesley, MA 02481

RE: Notification of Property Inclusion in Disposal Site Former Aerovox Facility
740 Belleville Avenue, New Bedford, Massachusetts Release Tracking Number (RTN) 4-0601

Dear Ms. Grachuk:

On behalf of AVX Corporation and as required by the Massachusetts Contingency Plan (MCP) subpart 310 CMR 40.1406(1), this letter is notification of inclusion of the Acushnet Company property located at 20 Howard Avenue, New Bedford, Massachusetts within the Disposal Site Boundary as currently delineated for the above referenced Site. The Phase II Report is being submitted to the Massachusetts Department of Environmental Protection (MassDEP) in accordance with the MCP, pursuant to 310 CMR 40.0480, and the provisions of an Administrative Consent Order between AVX and MassDEP.

The Phase II Report will be filed electronically, and may be accessed by searching for the referenced RTN number on the MassDEP web site: <a href="http://public.dep.state.ma.us/SearchableSites2/Search.aspx">http://public.dep.state.ma.us/SearchableSites2/Search.aspx</a>. The full report may also be reviewed by contacting the Southeast Regional Office of MassDEP located at 20 Riverside Drive in Lakeville, Massachusetts. For information about accessing files for review, contact the MassDEP file review coordinator at (508) 946-2718 or submit a file review request online at <a href="http://www.mass.gov/eea/agencies/massdep/about/contacts/southeast-region-file-review-and-public-records-request.html">http://www.mass.gov/eea/agencies/massdep/about/contacts/southeast-region-file-review-and-public-records-request.html</a>. In addition, the following text provides a summary of findings and statement of conclusions from the Phase II Report, as provided in 310 CMR 40.0483(h). A copy of the disposal site map is also attached.

### Phase II Report Conclusions

Based on the results of investigations and evaluations undertaken as part of the Phase II CSA, and concurrently as part of the implementation of the IRA for DNAPL found in the a portion of the Site, the following findings and conclusions are presented:.

 The primary source of the release of oil and hazardous materials to the environment that is the subject of RTN 4-601 is the historic discharge and spilling of chlorinated solvents and PCB oil used in the manufacture of liquid filled capacitors. These spills occurred at the surface and in the subsurface, in unknown quantities over the course



of decades. The evidence suggests that the locations of these releases centered around the previously unpaved area along the shoreline, particularly between the former building and the river, the previously unpaved area along the north side of the building, the two drainage culverts on the north and south sides of the former building and a discrete area within the parking lot between the former boiler house and main building entrance.

- 2. These historic spills have resulted in the classification of the Site as a late-stage release (e.g., environmental impacts). The original released constituents have either migrated down to and into fractured bedrock, dissolved and migrated with groundwater, or collected as DNAPL in one limited area around monitoring well MW-15D. In the case of chlorinated VOCs, the analytical results show that the constituents have also attenuated and degraded into daughter products. Released PCBs remain adsorbed to surface soils along the riverfront and in deep soils and groundwater at the overburden and bedrock interface.
- 3. The nature of the hazardous materials found at the Site include PCBs, specifically Aroclors 1232, 1242, 1248, 1254 and 1260. The most frequently detected were Aroclors 1254 and 1242. The highest concentrations found were of Aroclor 1254. Chlorinated benzenes, common components of the PCB carrier oil were also found with 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene and Chlorobenzene found most frequently. Finally, the nature of hazardous materials found at the Site included chlorinated ethenes, from tetrachloroethene (PCE) and trichloroethene (TCE) down through cis-1,2-dichloroethene and vinyl chloride. TCE and cis-1,2-dichloroethene were found most frequently and at the highest concentrations.
- 4. The extent of soil impacted by PCBs is relatively ubiquitous across the Property and across the riverfront portion of the Titleist property. Shallow soil above the identified peat layer was found to be impacted with PCBs along the riverfront on the Precix and Titleist properties at levels that exceed UCLs. Deep soils in the vicinity of the identified DNAPL (MW-15D) and a limited area of soils centered around boring B04B also exceeded UCL levels. While the soil sample collected beneath the building slab former pump room location also had significant levels of PCBs, the soil beneath the remainder of the former building slab did not. Significant PCB impacts were not identified north or east of the Precix building, on the western portion of the Property or the north side of the western portion of the Titleist building. The chlorinated benzene detections generally coincided with the PCB impacted locations, but chlorinated benzenes were not found at significant concentration levels or levels approaching the UCLs.
- 5. There are no concentrations of TCE, cis-1,2-dichloroethene and PCE detected in shallow surface soils (< 3 feet bgs) on the Property. Within the soil profile from 3 feet bgs down to 15 feet, chlorinated ethenes are present below the former Aerovox



building foundation, in the south central area of the Property near B04B and B04C, at B08B (near MW-10D and MW-27B), at MIP-43, in the UV-17 area, and within the northeast corner of the Property. Inaccessible soils below 15 feet bgs are present more pervasively across the eastern two-thirds of the Property. The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. TCE is the only chlorinated ethene exceeding its UCL, which occurs both in the northeast corner of the Property and in the vicinity of UV-17.

- 6. The extent of PCB impacts to shallow overburden groundwater is limited to a small area along the waterfront centered near where the southern culvert discharge was located. The remaining shallow groundwater results across the Property and the Titleist and Precix properties indicate low or non-detect levels of PCBs. The extent of PCB impacts in deep overburden groundwater extends from midway within the Property out to the shoreline with increasing levels of PCBs closer to the river. PCB impacts in deep overburden groundwater extend partially onto the northeast corner of the Titleist property, and low levels of PCBs in deep overburden groundwater were also found in two wells on the south side of the Precix property. PCB impacts to bedrock groundwater were found in wells across the eastern two thirds of the Property, with the highest concentrations centered around the central (B04B) primary release area and along the waterfront. Bedrock groundwater concentrations in the northeast corner, in the area of identified DNAPL, exceeded the groundwater UCL for PCBs. Bedrock concentrations of PCBs on the Titleist and Precix properties were found only in a single well each, close to the river, and only at low levels.
- 7. The extent of chlorinated ethenes in shallow overburden groundwater extends across all but the western quarter of the Property, the southern and eastern half of the Precix property and in one location along the north side of the Titleist building. Because TCE is the dominant detected chlorinated ethene and has a heightened potential for impacting receptors via indoor air, the presence of TCE in the shallow groundwater gave rise to a vapor intrusion evaluation for the Precix and Titleist properties. The highest levels of TCE in shallow groundwater were found along Graham Street and at the discrete central (B04B) area on the Property. TCE was not found in shallow groundwater along the Aerovox waterfront. The extent of chlorinated ethenes in deep overburden groundwater covers all but the westernmost portion of the Property, the eastern half of the Precix property and the northeastern quarter of the Titleist property. Deep overburden concentrations on average are one to two orders of magnitude higher than shallow overburden concentrations. The highest levels of chlorinated ethenes in deep overburden groundwater are centered around the Aerovox waterfront and the location of the deeper bedrock trough just inland from the waterfront. Neither shallow nor deep overburden groundwater concentrations for TCE exceed UCL levels.



- 8. The extent of chlorinated ethenes in bedrock groundwater could not be measured to the north of the Site because access to the Coyne property (north of the Precix property) was denied. The inferred extent, based on concentration and bedrock fracture trends would be expected to reach beyond the northern Precix property line. MassDEP assistance in obtaining access has been requested, and once access is provided additional investigation in this direction will be completed. Otherwise, the extent of chlorinated ethene impacts in bedrock extends across all but the westernmost portion of the Property and extends along the waterfront to the southern end of the Titleist property. The highest levels of TCE impacts to bedrock groundwater, above UCL concentrations, were found in the deepest fracture zone encountered at the Site in the center of the Property (MW-26B), in the deep fracture zone of MW-34B in the northeast corner of the Property, and in the shallow bedrock groundwater associated with the DNAPL area (MW-15B). (Note that carbon tetrachloride was also found above UCL levels in the northernmost bedrock well, MW-24B on the Precix property. This is not a constituent related to or originating from the Aerovox releases.)
- 9. A peat layer of varying thickness is present across much of the eastern portions of the Site. The sheet pile wall that defines the edge of the Property and is keyed into this peat impede the flow of contaminants with shallow groundwater and from shallow soils into the river, but constituents in deep groundwater and at the overburden bedrock interface can migrate with tidal flow both toward and away from the river.
- 10. The identified DNAPL area is limited in extent at the northeast corner of the sheet pile wall. It is present only at depth and likely originated both from the northern culvert discharges and from near shore dumping of capacitors. The DNAPL contains both PCBs and chlorinated solvents. Based on soil concentrations and UVOST screening results, DNAPL may also be present in shallow soil above the peat layer near the south culvert, but it has not accumulated to measureable amounts in a well. If DNAPL is present in this location, it is presently contained by the HAC cap and sheet pile wall.
- 11. Groundwater flow in deep overburden and in bedrock is strongly influenced by the tides, and flow direction reverses in response to tidal changes. There is strong interconnection between the shallow overburden, deep overburden and shallow bedrock aquifers and between groundwater and surface water. Vertical groundwater gradients exist at the Site between the three aquifer types, and vary between positive (upward) and negative (downward) across the Site. In portions of the Site where tidal influence on groundwater levels is greatest, reversals in vertical gradient from positive to negative are observed with changing tides. Further inland, vertical gradients are largely upward, with the magnitude of the gradient also changing with the tides. Based on data collected for the multi-level bedrock sampling devices



- (Water FLUTes), a positive vertical gradient is observed in shallow bedrock, while negative vertical gradients are observed in deeper bedrock sampling intervals.
- 12. A vapor intrusion assessment was completed for both the Titleist and Precix properties. The weight of evidence indicated that vapor intrusion was not a pathway of concern for Titleist. For Precix, the vapor intrusion pathway is complete but does not present a risk under current site uses. If foreseeable future uses were to include residential use, the vapor intrusion pathway would need to be mitigated.
- 13. A Method 3 Risk Assessment was completed based on the data collected during the Phase II CSA. The Method 3 identified receptors, exposure scenarios and calculated human health risks for current and foreseeable future uses. Risk to public safety and welfare and a Stage 1 environmental risk characterization were also competed. The Method 3 Risk assessment found that:
  - o For the Titleist property, concentrations in surface soil present unacceptable chronic non-cancer and cancer risks for various current (employee, trespasser) and future (potential residential) exposure scenarios. (Note that access control measure, including signage, fencing and gravel coverings were put in place at the outset of the Phase II to limit and control exposure under current site conditions, mitigating any subchronic or acute potential impacts until final response actions can be implemented)
  - o For the Precix property, under current conditions non-cancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees. Under future conditions, non-cancer and cancer risks are above acceptable limits for hypothetical residents who could be exposed to VOCs in indoor air via inhalation.
  - o For the Property, the results show that non-cancer and cancer risks are within acceptable limits for future construction work on the western side of the Property but above acceptable limits for future construction work within the eastern half of the Property and in the central area surrounding boring B 04BN.
  - A risk to public welfare exists for the Site because PCBs and TCE are above UCLs in soil in some areas on the Property. The results also indicate that the average concentrations of PCBs in groundwater in the vicinity of the DNAPL area (MW-15B) are above the UCL.
  - A Stage I Environmental Screening indicates that groundwater concentrations have the potential to impact surface water above the MassDEP benchmarks. However the foreseeable migration of groundwater contaminants to surface water is valid if and only to the extent that the Site could act as a continuing source to the river after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete. Only clearly identified contaminants, if any, coming from the Site can be compared to these



benchmarks, and not contaminants from other sources historically or presently impacting the river or from historical conditions in the river that may remain after EPA CERCLA response actions are complete.

Based on the findings of the Phase II CSA described herein, the updated Conceptual Site Model and the results of the Risk Characterization, in the opinion of the Licensed Site Professional of record for the Site, Comprehensive Remedial Actions are necessary at the Site to achieve a Permanent or Temporary Solution as described in 310 CMR 40.1000. A Phase III study for the identification, evaluation and selection of Comprehensive Remedial Action Alternatives as described in 310 CMR 40.0850 is necessary to select remedial action alternatives.

In accordance with the requirements of the MCP at 310 CMR 40.1003, additional response actions will be evaluated to provide source elimination and control, to control subsurface migration of PCBs and CVOCs remaining at the Site in soil and groundwater and to eliminate non-stable NAPL and remove or contain the identified NAPL if and to the extent feasible. Source control remedial action alternatives to be evaluated will include an assessment of a variety of containment or combination containment and treatment technologies.

# Public Involvement Statement

Additional public involvement opportunities are available under the MCP pursuant to 310 CMR 40.1400.

#### Point of Contact

If you have questions concerning these actions, please contact the undersigned at (603) 606-4824, as the LSP of Record and contact person representing AVX Corporation, who is conducting the response actions at the Site.

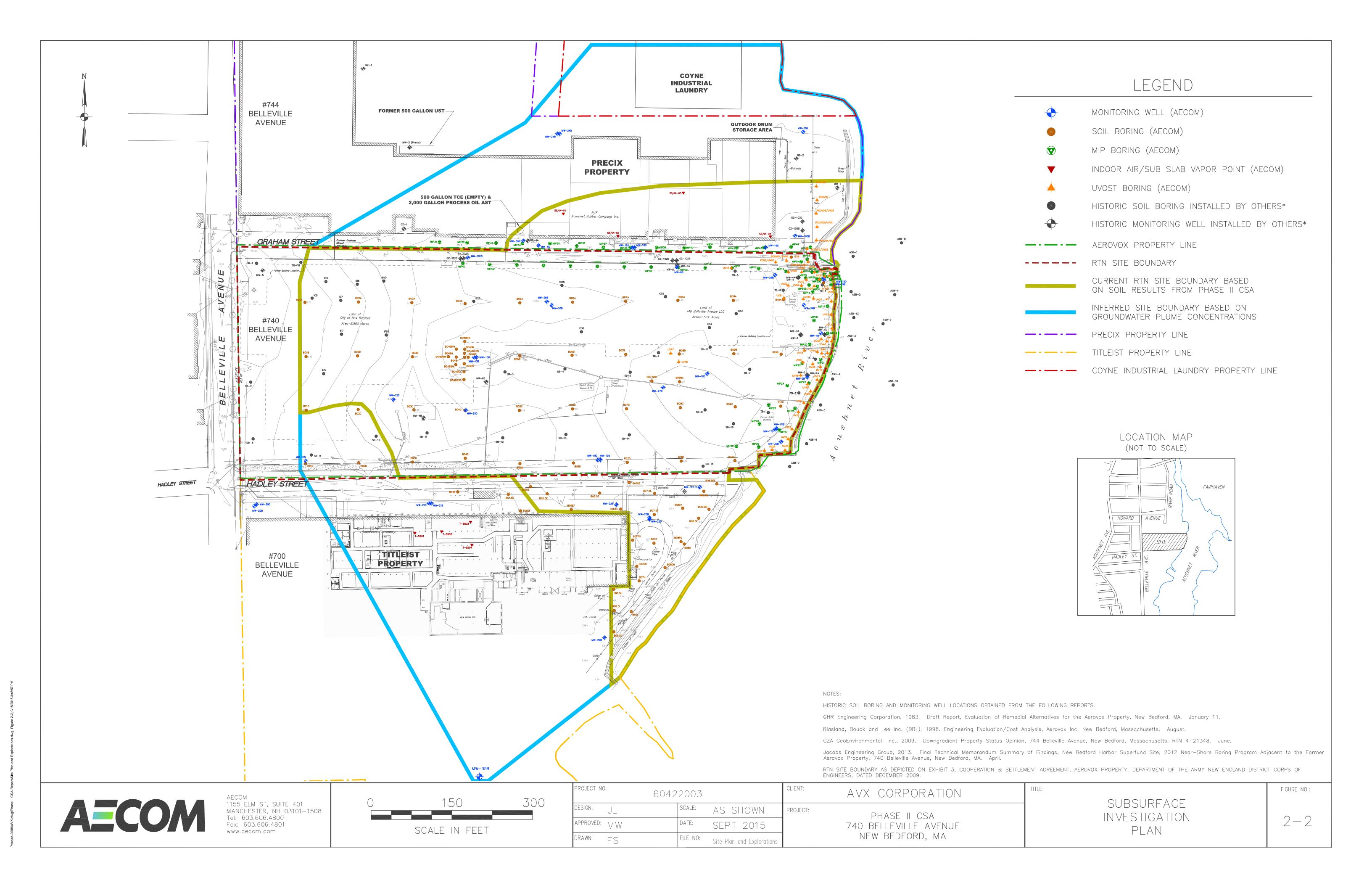
Sincerely, **AECOM** 

Marilyn Wade, P.E. LSP Senior Project Manager

Skirly I Wade

cc: Mr. Evan Slavitt, AVX Corporation

Ms. Michele Paul, City of New Bedford





603 606 4800 tel 603 606 4801 fax

September 20, 2015 PN: 60422003

Mr. Keith Goettlich Precix, Inc. 744 Belleville Avenue New Bedford, MA 02745

RE: Notification of Property Inclusion in Disposal Site Former Aerovox Facility
740 Belleville Avenue, New Bedford, Massachusetts Release Tracking Number (RTN) 4-0601

Dear Mr. Goettlich:

On behalf of AVX Corporation and as required by the Massachusetts Contingency Plan (MCP) subpart 310 CMR 40.1406(1), this letter is notification of inclusion of the Acushnet Company property located at 744 Belleville Avenue, New Bedford, Massachusetts within the Disposal Site Boundary as currently delineated for the above referenced Site. The Phase II Report is being submitted to the Massachusetts Department of Environmental Protection (MassDEP) in accordance with the MCP, pursuant to 310 CMR 40.0480, and the provisions of an Administrative Consent Order between AVX and MassDEP.

The Phase II Report will be filed electronically, and may be accessed by searching for the referenced number **MassDEP** web RTN on the http://public.dep.state.ma.us/SearchableSites2/Search.aspx. The full report may also be reviewed by contacting the Southeast Regional Office of MassDEP located at 20 Riverside Drive in Lakeville, Massachusetts. For information about accessing files for review, contact the MassDEP file review coordinator at (508) 946-2718 or submit a file review request online at http://www.mass.gov/eea/agencies/massdep/about/contacts/southeast-region-file-reviewand-public-records-request.html. In addition, the following text provides a summary of findings and statement of conclusions from the Phase II Report, as provided in 310 CMR 40.0483(h). A copy of the disposal site map is also attached.

### Phase II Report Conclusions

Based on the results of investigations and evaluations undertaken as part of the Phase II CSA, and concurrently as part of the implementation of the IRA for DNAPL found in the a portion of the Site, the following findings and conclusions are presented:.

1. The primary source of the release of oil and hazardous materials to the environment that is the subject of RTN 4-601 is the historic discharge and spilling of chlorinated solvents and PCB oil used in the manufacture of liquid filled capacitors. These spills occurred at the surface and in the subsurface, in unknown quantities over the course of decades. The evidence suggests that the locations of these releases centered



around the previously unpaved area along the shoreline, particularly between the former building and the river, the previously unpaved area along the north side of the building, the two drainage culverts on the north and south sides of the former building and a discrete area within the parking lot between the former boiler house and main building entrance.

- 2. These historic spills have resulted in the classification of the Site as a late-stage release (e.g., environmental impacts). The original released constituents have either migrated down to and into fractured bedrock, dissolved and migrated with groundwater, or collected as DNAPL in one limited area around monitoring well MW-15D. In the case of chlorinated VOCs, the analytical results show that the constituents have also attenuated and degraded into daughter products. Released PCBs remain adsorbed to surface soils along the riverfront and in deep soils and groundwater at the overburden and bedrock interface.
- 3. The nature of the hazardous materials found at the Site include PCBs, specifically Aroclors 1232, 1242, 1248, 1254 and 1260. The most frequently detected were Aroclors 1254 and 1242. The highest concentrations found were of Aroclor 1254. Chlorinated benzenes, common components of the PCB carrier oil were also found with 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene and Chlorobenzene found most frequently. Finally, the nature of hazardous materials found at the Site included chlorinated ethenes, from tetrachloroethene (PCE) and trichloroethene (TCE) down through cis-1,2-dichloroethene and vinyl chloride. TCE and cis-1,2-dichloroethene were found most frequently and at the highest concentrations.
- 4. The extent of soil impacted by PCBs is relatively ubiquitous across the Property and across the riverfront portion of the Titleist property. Shallow soil above the identified peat layer was found to be impacted with PCBs along the riverfront on the Precix and Titleist properties at levels that exceed UCLs. Deep soils in the vicinity of the identified DNAPL (MW-15D) and a limited area of soils centered around boring B04B also exceeded UCL levels. While the soil sample collected beneath the building slab former pump room location also had significant levels of PCBs, the soil beneath the remainder of the former building slab did not. Significant PCB impacts were not identified north or east of the Precix building, on the western portion of the Property or the north side of the western portion of the Titleist building. The chlorinated benzene detections generally coincided with the PCB impacted locations, but chlorinated benzenes were not found at significant concentration levels or levels approaching the UCLs.
- 5. There are no concentrations of TCE, cis-1,2-dichloroethene and PCE detected in shallow surface soils (< 3 feet bgs) on the Property. Within the soil profile from 3 feet bgs down to 15 feet, chlorinated ethenes are present below the former Aerovox building foundation, in the south central area of the Property near B04B and B04C, at



B08B (near MW-10D and MW-27B), at MIP-43, in the UV-17 area, and within the northeast corner of the Property. Inaccessible soils below 15 feet bgs are present more pervasively across the eastern two-thirds of the Property. The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. TCE is the only chlorinated ethene exceeding its UCL, which occurs both in the northeast corner of the Property and in the vicinity of UV-17.

- 6. The extent of PCB impacts to shallow overburden groundwater is limited to a small area along the waterfront centered near where the southern culvert discharge was located. The remaining shallow groundwater results across the Property and the Titleist and Precix properties indicate low or non-detect levels of PCBs. The extent of PCB impacts in deep overburden groundwater extends from midway within the Property out to the shoreline with increasing levels of PCBs closer to the river. PCB impacts in deep overburden groundwater extend partially onto the northeast corner of the Titleist property, and low levels of PCBs in deep overburden groundwater were also found in two wells on the south side of the Precix property. PCB impacts to bedrock groundwater were found in wells across the eastern two thirds of the Property, with the highest concentrations centered around the central (B04B) primary release area and along the waterfront. Bedrock groundwater concentrations in the northeast corner, in the area of identified DNAPL, exceeded the groundwater UCL for PCBs. Bedrock concentrations of PCBs on the Titleist and Precix properties were found only in a single well each, close to the river, and only at low levels.
- 7. The extent of chlorinated ethenes in shallow overburden groundwater extends across all but the western quarter of the Property, the southern and eastern half of the Precix property and in one location along the north side of the Titleist building. Because TCE is the dominant detected chlorinated ethene and has a heightened potential for impacting receptors via indoor air, the presence of TCE in the shallow groundwater gave rise to a vapor intrusion evaluation for the Precix and Titleist properties. The highest levels of TCE in shallow groundwater were found along Graham Street and at the discrete central (B04B) area on the Property. TCE was not found in shallow groundwater along the Aerovox waterfront. The extent of chlorinated ethenes in deep overburden groundwater covers all but the westernmost portion of the Property, the eastern half of the Precix property and the northeastern quarter of the Titleist property. Deep overburden concentrations on average are one to two orders of magnitude higher than shallow overburden concentrations. The highest levels of chlorinated ethenes in deep overburden groundwater are centered around the Aerovox waterfront and the location of the deeper bedrock trough just inland from the waterfront. Neither shallow nor deep overburden groundwater concentrations for TCE exceed UCL levels.



- 8. The extent of chlorinated ethenes in bedrock groundwater could not be measured to the north of the Site because access to the Coyne property (north of the Precix property) was denied. The inferred extent, based on concentration and bedrock fracture trends would be expected to reach beyond the northern Precix property line. MassDEP assistance in obtaining access has been requested, and once access is provided additional investigation in this direction will be completed. Otherwise, the extent of chlorinated ethene impacts in bedrock extends across all but the westernmost portion of the Property and extends along the waterfront to the southern end of the Titleist property. The highest levels of TCE impacts to bedrock groundwater, above UCL concentrations, were found in the deepest fracture zone encountered at the Site in the center of the Property (MW-26B), in the deep fracture zone of MW-34B in the northeast corner of the Property, and in the shallow bedrock groundwater associated with the DNAPL area (MW-15B). (Note that carbon tetrachloride was also found above UCL levels in the northernmost bedrock well, MW-24B on the Precix property. This is not a constituent related to or originating from the Aerovox releases.)
- 9. A peat layer of varying thickness is present across much of the eastern portions of the Site. The sheet pile wall that defines the edge of the Property and is keyed into this peat impede the flow of contaminants with shallow groundwater and from shallow soils into the river, but constituents in deep groundwater and at the overburden bedrock interface can migrate with tidal flow both toward and away from the river.
- 10. The identified DNAPL area is limited in extent at the northeast corner of the sheet pile wall. It is present only at depth and likely originated both from the northern culvert discharges and from near shore dumping of capacitors. The DNAPL contains both PCBs and chlorinated solvents. Based on soil concentrations and UVOST screening results, DNAPL may also be present in shallow soil above the peat layer near the south culvert, but it has not accumulated to measureable amounts in a well. If DNAPL is present in this location, it is presently contained by the HAC cap and sheet pile wall.
- 11. Groundwater flow in deep overburden and in bedrock is strongly influenced by the tides, and flow direction reverses in response to tidal changes. There is strong interconnection between the shallow overburden, deep overburden and shallow bedrock aquifers and between groundwater and surface water. Vertical groundwater gradients exist at the Site between the three aquifer types, and vary between positive (upward) and negative (downward) across the Site. In portions of the Site where tidal influence on groundwater levels is greatest, reversals in vertical gradient from positive to negative are observed with changing tides. Further inland, vertical gradients are largely upward, with the magnitude of the gradient also changing with the tides. Based on data collected for the multi-level bedrock sampling devices



- (Water FLUTes), a positive vertical gradient is observed in shallow bedrock, while negative vertical gradients are observed in deeper bedrock sampling intervals.
- 12. A vapor intrusion assessment was completed for both the Titleist and Precix properties. The weight of evidence indicated that vapor intrusion was not a pathway of concern for Titleist. For Precix, the vapor intrusion pathway is complete but does not present a risk under current site uses. If foreseeable future uses were to include residential use, the vapor intrusion pathway would need to be mitigated.
- 13. A Method 3 Risk Assessment was completed based on the data collected during the Phase II CSA. The Method 3 identified receptors, exposure scenarios and calculated human health risks for current and foreseeable future uses. Risk to public safety and welfare and a Stage 1 environmental risk characterization were also competed. The Method 3 Risk assessment found that:
  - o For the Titleist property, concentrations in surface soil present unacceptable chronic non-cancer and cancer risks for various current (employee, trespasser) and future (potential residential) exposure scenarios. (Note that access control measure, including signage, fencing and gravel coverings were put in place at the outset of the Phase II to limit and control exposure under current site conditions, mitigating any subchronic or acute potential impacts until final response actions can be implemented)
  - o For the Precix property, under current conditions non-cancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees. Under future conditions, non-cancer and cancer risks are above acceptable limits for hypothetical residents who could be exposed to VOCs in indoor air via inhalation.
  - o For the Property, the results show that non-cancer and cancer risks are within acceptable limits for future construction work on the western side of the Property but above acceptable limits for future construction work within the eastern half of the Property and in the central area surrounding boring B 04BN.
  - A risk to public welfare exists for the Site because PCBs and TCE are above UCLs in soil in some areas on the Property. The results also indicate that the average concentrations of PCBs in groundwater in the vicinity of the DNAPL area (MW-15B) are above the UCL.
  - A Stage I Environmental Screening indicates that groundwater concentrations have the potential to impact surface water above the MassDEP benchmarks. However the foreseeable migration of groundwater contaminants to surface water is valid if and only to the extent that the Site could act as a continuing source to the river after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete. Only clearly identified contaminants, if any, coming from the Site can be compared to these



benchmarks, and not contaminants from other sources historically or presently impacting the river or from historical conditions in the river that may remain after EPA CERCLA response actions are complete.

Based on the findings of the Phase II CSA described herein, the updated Conceptual Site Model and the results of the Risk Characterization, in the opinion of the Licensed Site Professional of record for the Site, Comprehensive Remedial Actions are necessary at the Site to achieve a Permanent or Temporary Solution as described in 310 CMR 40.1000. A Phase III study for the identification, evaluation and selection of Comprehensive Remedial Action Alternatives as described in 310 CMR 40.0850 is necessary to select remedial action alternatives.

In accordance with the requirements of the MCP at 310 CMR 40.1003, additional response actions will be evaluated to provide source elimination and control, to control subsurface migration of PCBs and CVOCs remaining at the Site in soil and groundwater and to eliminate non-stable NAPL and remove or contain the identified NAPL if and to the extent feasible. Source control remedial action alternatives to be evaluated will include an assessment of a variety of containment or combination containment and treatment technologies.

# Public Involvement Statement

Additional public involvement opportunities are available under the MCP pursuant to 310 CMR 40.1400.

#### Point of Contact

If you have questions concerning these actions, please contact the undersigned at (603) 606-4824, as the LSP of Record and contact person representing AVX Corporation, who is conducting the response actions at the Site.

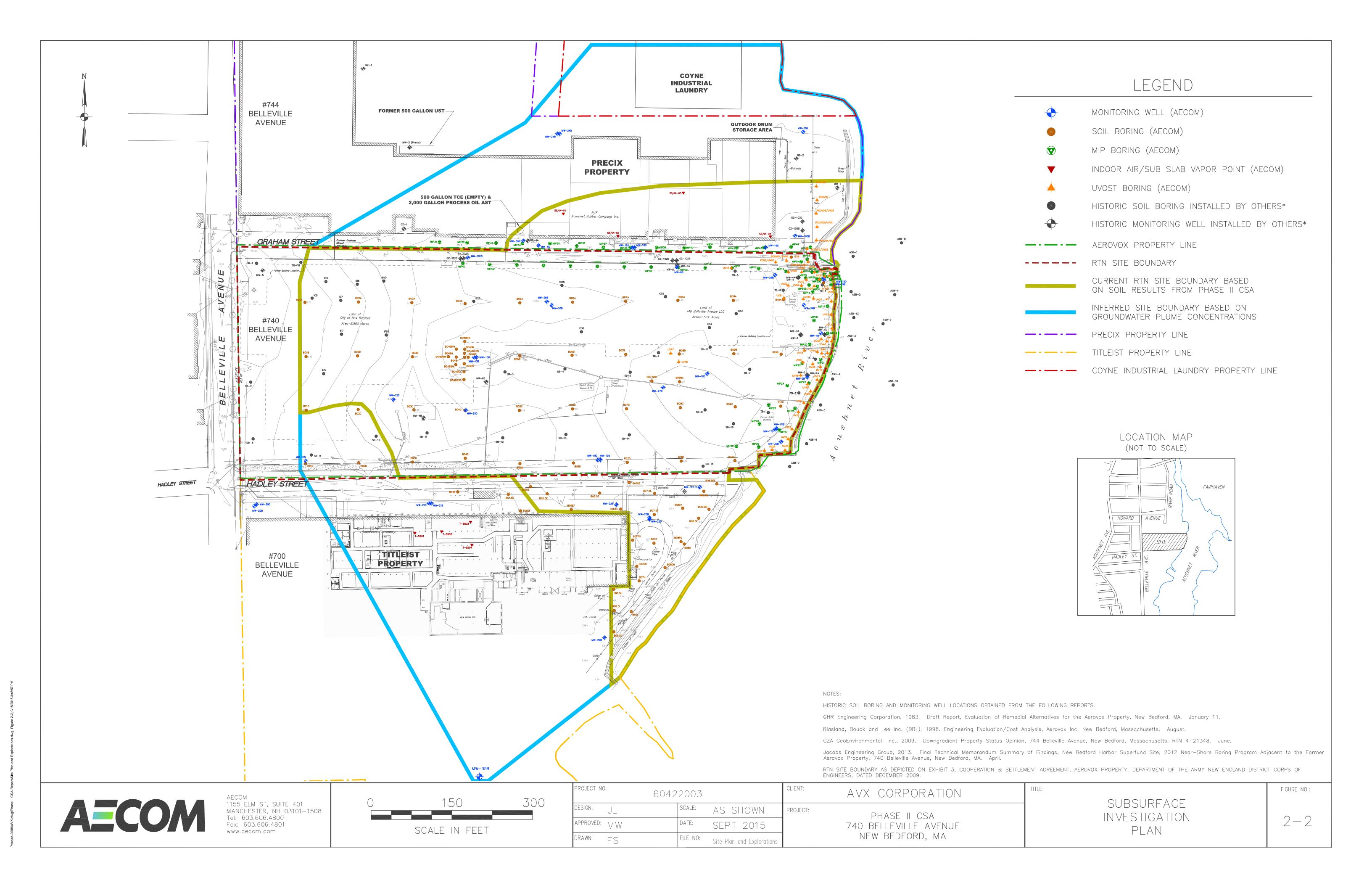
Sincerely, **AECOM** 

Marilyn Wade, P.E. LSP Senior Project Manager

Skirly I Wade

cc: Mr. Evan Slavitt, AVX Corporation

Ms. Michele Paul, City of New Bedford





603 606 4800 tel 603 606 4801 fax

September 20, 2015 PN: 60422003

Mr. Kevin Kelly Manager of Regulatory Affairs Acushnet Company 700 Belleville Avenue New Bedford, MA 02745

RE: Notification of Property Inclusion in Disposal Site Former Aerovox Facility
740 Belleville Avenue, New Bedford, Massachusetts Release Tracking Number (RTN) 4-0601

Dear Mr. Kelly:

On behalf of AVX Corporation and as required by the Massachusetts Contingency Plan (MCP) subpart 310 CMR 40.1406(1), this letter is notification of inclusion of the Acushnet Company property located at 700 Belleville Avenue, New Bedford, Massachusetts within the Disposal Site Boundary as currently delineated for the above referenced Site. The Phase II Report is being submitted to the Massachusetts Department of Environmental Protection (MassDEP) in accordance with the MCP, pursuant to 310 CMR 40.0480, and the provisions of an Administrative Consent Order between AVX and MassDEP.

The Phase II Report will be filed electronically, and may be accessed by searching for the referenced RTN number **MassDEP** on the web site: http://public.dep.state.ma.us/SearchableSites2/Search.aspx. The full report may also be reviewed by contacting the Southeast Regional Office of MassDEP located at 20 Riverside Drive in Lakeville, Massachusetts. For information about accessing files for review, contact the MassDEP file review coordinator at (508) 946-2718 or submit a file review request online at http://www.mass.gov/eea/agencies/massdep/about/contacts/southeast-region-file-reviewand-public-records-request.html. In addition, the following text provides a summary of findings and statement of conclusions from the Phase II Report, as provided in 310 CMR 40.0483(h). A copy of the disposal site map is also attached.

## Phase II Report Conclusions

Based on the results of investigations and evaluations undertaken as part of the Phase II CSA, and concurrently as part of the implementation of the IRA for DNAPL found in the a portion of the Site, the following findings and conclusions are presented:.

 The primary source of the release of oil and hazardous materials to the environment that is the subject of RTN 4-601 is the historic discharge and spilling of chlorinated solvents and PCB oil used in the manufacture of liquid filled capacitors. These spills occurred at the surface and in the subsurface, in unknown quantities over the course



of decades. The evidence suggests that the locations of these releases centered around the previously unpaved area along the shoreline, particularly between the former building and the river, the previously unpaved area along the north side of the building, the two drainage culverts on the north and south sides of the former building and a discrete area within the parking lot between the former boiler house and main building entrance.

- 2. These historic spills have resulted in the classification of the Site as a late-stage release (e.g., environmental impacts). The original released constituents have either migrated down to and into fractured bedrock, dissolved and migrated with groundwater, or collected as DNAPL in one limited area around monitoring well MW-15D. In the case of chlorinated VOCs, the analytical results show that the constituents have also attenuated and degraded into daughter products. Released PCBs remain adsorbed to surface soils along the riverfront and in deep soils and groundwater at the overburden and bedrock interface.
- 3. The nature of the hazardous materials found at the Site include PCBs, specifically Aroclors 1232, 1242, 1248, 1254 and 1260. The most frequently detected were Aroclors 1254 and 1242. The highest concentrations found were of Aroclor 1254. Chlorinated benzenes, common components of the PCB carrier oil were also found with 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene and Chlorobenzene found most frequently. Finally, the nature of hazardous materials found at the Site included chlorinated ethenes, from tetrachloroethene (PCE) and trichloroethene (TCE) down through cis-1,2-dichloroethene and vinyl chloride. TCE and cis-1,2-dichloroethene were found most frequently and at the highest concentrations.
- 4. The extent of soil impacted by PCBs is relatively ubiquitous across the Property and across the riverfront portion of the Titleist property. Shallow soil above the identified peat layer was found to be impacted with PCBs along the riverfront on the Precix and Titleist properties at levels that exceed UCLs. Deep soils in the vicinity of the identified DNAPL (MW-15D) and a limited area of soils centered around boring B04B also exceeded UCL levels. While the soil sample collected beneath the building slab former pump room location also had significant levels of PCBs, the soil beneath the remainder of the former building slab did not. Significant PCB impacts were not identified north or east of the Precix building, on the western portion of the Property or the north side of the western portion of the Titleist building. The chlorinated benzene detections generally coincided with the PCB impacted locations, but chlorinated benzenes were not found at significant concentration levels or levels approaching the UCLs.
- 5. There are no concentrations of TCE, cis-1,2-dichloroethene and PCE detected in shallow surface soils (< 3 feet bgs) on the Property. Within the soil profile from 3 feet bgs down to 15 feet, chlorinated ethenes are present below the former Aerovox



building foundation, in the south central area of the Property near B04B and B04C, at B08B (near MW-10D and MW-27B), at MIP-43, in the UV-17 area, and within the northeast corner of the Property. Inaccessible soils below 15 feet bgs are present more pervasively across the eastern two-thirds of the Property. The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. TCE is the only chlorinated ethene exceeding its UCL, which occurs both in the northeast corner of the Property and in the vicinity of UV-17.

- 6. The extent of PCB impacts to shallow overburden groundwater is limited to a small area along the waterfront centered near where the southern culvert discharge was located. The remaining shallow groundwater results across the Property and the Titleist and Precix properties indicate low or non-detect levels of PCBs. The extent of PCB impacts in deep overburden groundwater extends from midway within the Property out to the shoreline with increasing levels of PCBs closer to the river. PCB impacts in deep overburden groundwater extend partially onto the northeast corner of the Titleist property, and low levels of PCBs in deep overburden groundwater were also found in two wells on the south side of the Precix property. PCB impacts to bedrock groundwater were found in wells across the eastern two thirds of the Property, with the highest concentrations centered around the central (B04B) primary release area and along the waterfront. Bedrock groundwater concentrations in the northeast corner, in the area of identified DNAPL, exceeded the groundwater UCL for PCBs. Bedrock concentrations of PCBs on the Titleist and Precix properties were found only in a single well each, close to the river, and only at low levels.
- 7. The extent of chlorinated ethenes in shallow overburden groundwater extends across all but the western quarter of the Property, the southern and eastern half of the Precix property and in one location along the north side of the Titleist building. Because TCE is the dominant detected chlorinated ethene and has a heightened potential for impacting receptors via indoor air, the presence of TCE in the shallow groundwater gave rise to a vapor intrusion evaluation for the Precix and Titleist properties. The highest levels of TCE in shallow groundwater were found along Graham Street and at the discrete central (B04B) area on the Property. TCE was not found in shallow groundwater along the Aerovox waterfront. The extent of chlorinated ethenes in deep overburden groundwater covers all but the westernmost portion of the Property, the eastern half of the Precix property and the northeastern quarter of the Titleist property. Deep overburden concentrations on average are one to two orders of magnitude higher than shallow overburden concentrations. The highest levels of chlorinated ethenes in deep overburden groundwater are centered around the Aerovox waterfront and the location of the deeper bedrock trough just inland from the waterfront. Neither shallow nor deep overburden groundwater concentrations for TCE exceed UCL levels.



- 8. The extent of chlorinated ethenes in bedrock groundwater could not be measured to the north of the Site because access to the Coyne property (north of the Precix property) was denied. The inferred extent, based on concentration and bedrock fracture trends would be expected to reach beyond the northern Precix property line. MassDEP assistance in obtaining access has been requested, and once access is provided additional investigation in this direction will be completed. Otherwise, the extent of chlorinated ethene impacts in bedrock extends across all but the westernmost portion of the Property and extends along the waterfront to the southern end of the Titleist property. The highest levels of TCE impacts to bedrock groundwater, above UCL concentrations, were found in the deepest fracture zone encountered at the Site in the center of the Property (MW-26B), in the deep fracture zone of MW-34B in the northeast corner of the Property, and in the shallow bedrock groundwater associated with the DNAPL area (MW-15B). (Note that carbon tetrachloride was also found above UCL levels in the northernmost bedrock well, MW-24B on the Precix property. This is not a constituent related to or originating from the Aerovox releases.)
- 9. A peat layer of varying thickness is present across much of the eastern portions of the Site. The sheet pile wall that defines the edge of the Property and is keyed into this peat impede the flow of contaminants with shallow groundwater and from shallow soils into the river, but constituents in deep groundwater and at the overburden bedrock interface can migrate with tidal flow both toward and away from the river.
- 10. The identified DNAPL area is limited in extent at the northeast corner of the sheet pile wall. It is present only at depth and likely originated both from the northern culvert discharges and from near shore dumping of capacitors. The DNAPL contains both PCBs and chlorinated solvents. Based on soil concentrations and UVOST screening results, DNAPL may also be present in shallow soil above the peat layer near the south culvert, but it has not accumulated to measureable amounts in a well. If DNAPL is present in this location, it is presently contained by the HAC cap and sheet pile wall.
- 11. Groundwater flow in deep overburden and in bedrock is strongly influenced by the tides, and flow direction reverses in response to tidal changes. There is strong interconnection between the shallow overburden, deep overburden and shallow bedrock aquifers and between groundwater and surface water. Vertical groundwater gradients exist at the Site between the three aquifer types, and vary between positive (upward) and negative (downward) across the Site. In portions of the Site where tidal influence on groundwater levels is greatest, reversals in vertical gradient from positive to negative are observed with changing tides. Further inland, vertical gradients are largely upward, with the magnitude of the gradient also changing with the tides. Based on data collected for the multi-level bedrock sampling devices



- (Water FLUTes), a positive vertical gradient is observed in shallow bedrock, while negative vertical gradients are observed in deeper bedrock sampling intervals.
- 12. A vapor intrusion assessment was completed for both the Titleist and Precix properties. The weight of evidence indicated that vapor intrusion was not a pathway of concern for Titleist. For Precix, the vapor intrusion pathway is complete but does not present a risk under current site uses. If foreseeable future uses were to include residential use, the vapor intrusion pathway would need to be mitigated.
- 13. A Method 3 Risk Assessment was completed based on the data collected during the Phase II CSA. The Method 3 identified receptors, exposure scenarios and calculated human health risks for current and foreseeable future uses. Risk to public safety and welfare and a Stage 1 environmental risk characterization were also competed. The Method 3 Risk assessment found that:
  - o For the Titleist property, concentrations in surface soil present unacceptable chronic non-cancer and cancer risks for various current (employee, trespasser) and future (potential residential) exposure scenarios. (Note that access control measure, including signage, fencing and gravel coverings were put in place at the outset of the Phase II to limit and control exposure under current site conditions, mitigating any subchronic or acute potential impacts until final response actions can be implemented)
  - o For the Precix property, under current conditions non-cancer risks and incremental lifetime carcinogenic risks are within acceptable limits for employees. Under future conditions, non-cancer and cancer risks are above acceptable limits for hypothetical residents who could be exposed to VOCs in indoor air via inhalation.
  - o For the Property, the results show that non-cancer and cancer risks are within acceptable limits for future construction work on the western side of the Property but above acceptable limits for future construction work within the eastern half of the Property and in the central area surrounding boring B 04BN.
  - A risk to public welfare exists for the Site because PCBs and TCE are above UCLs in soil in some areas on the Property. The results also indicate that the average concentrations of PCBs in groundwater in the vicinity of the DNAPL area (MW-15B) are above the UCL.
  - A Stage I Environmental Screening indicates that groundwater concentrations have the potential to impact surface water above the MassDEP benchmarks. However the foreseeable migration of groundwater contaminants to surface water is valid if and only to the extent that the Site could act as a continuing source to the river after both MCP Phase IV (at the Site) and EPA CERCLA (at NBH Superfund Site) response actions are complete. Only clearly identified contaminants, if any, coming from the Site can be compared to these



benchmarks, and not contaminants from other sources historically or presently impacting the river or from historical conditions in the river that may remain after EPA CERCLA response actions are complete.

Based on the findings of the Phase II CSA described herein, the updated Conceptual Site Model and the results of the Risk Characterization, in the opinion of the Licensed Site Professional of record for the Site, Comprehensive Remedial Actions are necessary at the Site to achieve a Permanent or Temporary Solution as described in 310 CMR 40.1000. A Phase III study for the identification, evaluation and selection of Comprehensive Remedial Action Alternatives as described in 310 CMR 40.0850 is necessary to select remedial action alternatives.

In accordance with the requirements of the MCP at 310 CMR 40.1003, additional response actions will be evaluated to provide source elimination and control, to control subsurface migration of PCBs and CVOCs remaining at the Site in soil and groundwater and to eliminate non-stable NAPL and remove or contain the identified NAPL if and to the extent feasible. Source control remedial action alternatives to be evaluated will include an assessment of a variety of containment or combination containment and treatment technologies.

# Public Involvement Statement

Additional public involvement opportunities are available under the MCP pursuant to 310 CMR 40.1400.

#### Point of Contact

If you have questions concerning these actions, please contact the undersigned at (603) 606-4824, as the LSP of Record and contact person representing AVX Corporation, who is conducting the response actions at the Site.

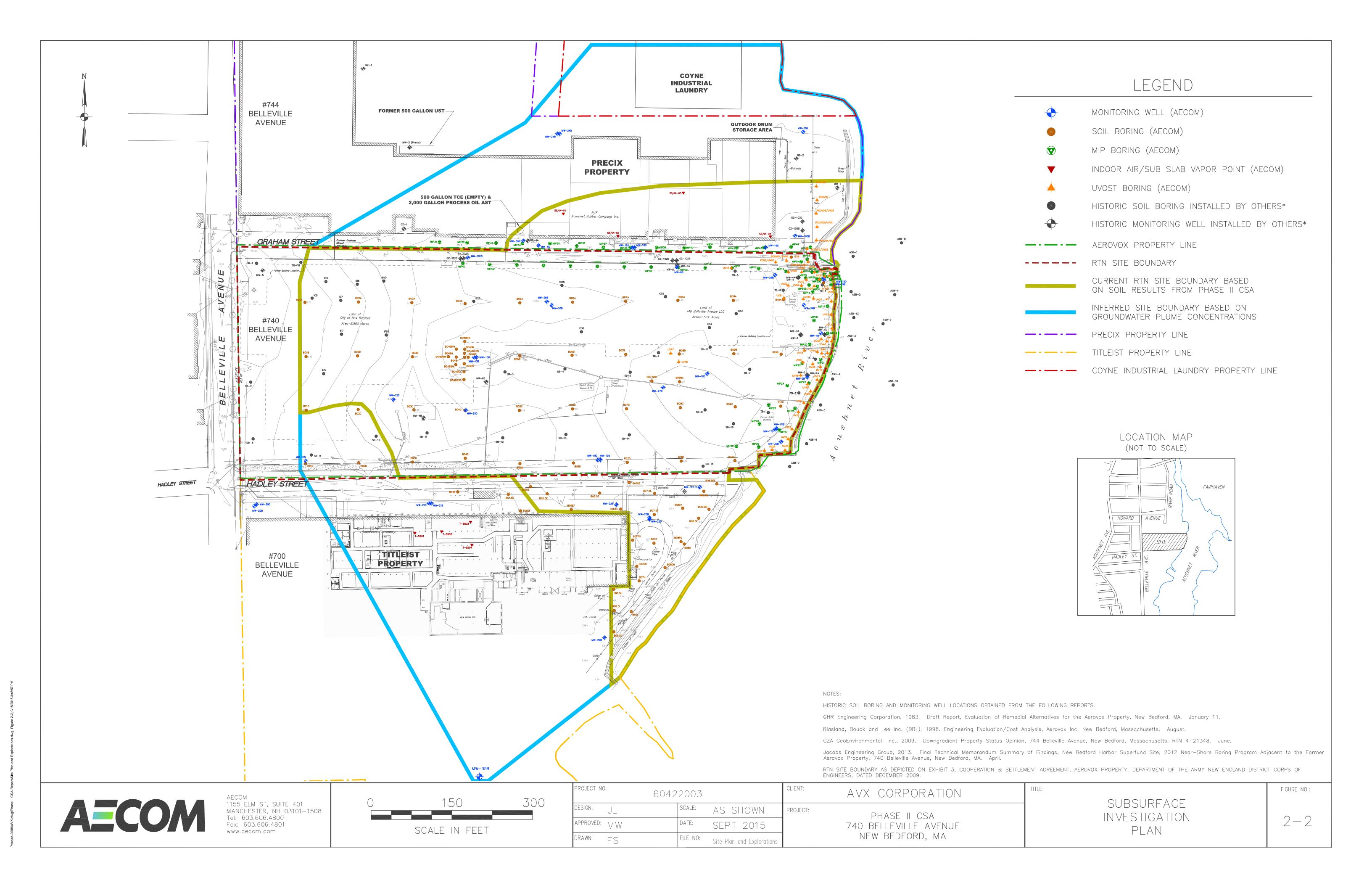
Sincerely, **AECOM** 

Marilyn Wade, P.E. LSP Senior Project Manager

Skirly I Wade

cc: Mr. Evan Slavitt, AVX Corporation

Ms. Michele Paul, City of New Bedford



Appendix W BWSC 123 Notifications (Included on CD only)